

ICFE 2020 - The 6th International Conference on Finance and Economics

Ton Duc Thang University, Ho Chi Minh City, Vietnam

November 18th – 19th, 2020

**PROCEEDINGS OF
THE 6th INTERNATIONAL CONFERENCE
ON FINANCE AND ECONOMICS**

ICFE 2020

Ho Chi Minh City, Vietnam

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PREFACE

Dear Conference Participants!

As hosted by Faculty of Business Administration, Ton Duc Thang University, the 6th International Conference on Finance and Economics (ICFE 2020) has been recognized as a domain for interdisciplinary outlet in its field. ICFE 2020 is credentialed as a remarkable conference that focuses on impactful issues in business and management. For the society, the Conference serves as a vital link to close the academia – practice gap in several business-related fields ranging from Accounting, Finance, Economics, International Business, Management, Marketing, Hospitality and Tourism Management by publishing theoretical findings, pronouncement and novel propositions.

Unlike previous issues, ICFE 2020 has been heavily impacted by the COVID-19 yet we are privileged enough to receive a large number of submissions covering a wide range of topics in business and economics.

After a diligent review and thorough consideration, our scientific committee members selected only potential papers which are qualified for publication. Our earnest acknowledgement goes to Prague University of Economics and Business (Czech Republic); Tomas Bata University (Czech Republic); Montpellier Business School (France); Northeastern Illinois University (United States), La Trobe University (Australia), Dongguk University (South Korea), and Dresden University of Technology (Germany) for their contribution and support during this difficult time of the year. As orientated to bridge the gap between academic research and industries, ICFE 2020 has generated fundamentally new insights. With conceptual and methodological rigor, best papers are selected for presentation and inclusion in the conference proceedings, which published in Thomson Reuters Conference Proceeding ISI Index Database.

To authors who participate the conference, we are longing that you will receive new insights and novel evidence of the research among international scholars. Thank you for your interest in ICFE 2020.

Sincerely,

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MESSAGE FROM THE HOST UNIVERSITY

Following the accomplishment of the previous issues of the International Conference on Finance and Economics (ICFE), ICFE 2020, hosted by Faculty of Business Administration, Ton Duc Thang University (TDTU) aims at promoting academic exchanges with interdisciplinary prospects and bridging the gap between academia and practice. One unconventional element of this season has to be the COVID-19 crisis that heavily affects the organization of ICFE 2020. In light of the developments regarding COVID-19, we would like to assure you that we will continue to strive for delivering a quality conference. It reminds us of how fortunate we are to have the collaboration of many distinguished guest speakers, scholars and international delegations who participate earnestly.

It has been 23 years since our first establishment, TDTU has become a visionary, pioneering, and fast-growing university in Vietnam. TDTU has indeed demonstrated excellence in academic performance and was listed in TOP 800 universities worldwide. As a comprehensive university, we acknowledge our role in the contribution for the prosperity and sustainable development of the society. Research outputs published by TDTU are results of collective efforts of individuals from various research groups, centers and international cooperation between university partners. Accordingly, the ICFE 2020 is an annual activity to bridge the gap between academic research and industry practices.

On behalf of TDTU, I would like to send my deepest appreciation to our university partners, the co-organizers, Prague University of Economics and Business (Czech Republic); Tomas Bata University (Czech Republic); Montpellier Business School (France); Northeastern Illinois University (United States), La Trobe University (Australia), Dongguk University (South Korea), and Dresden University of Technology (Germany) for your great contributions and efforts in organizing ICFE 2020. My sincere gratitude to all the scientific committee members, reviewers, keynote speakers and participants worldwide for their ultimate support in coordinating with us to make ICFE 2020 possible during the COVID-19 pandemic. I wish you, your teams and your loved ones health and safety.

I look forward to a successful virtual conference with all of your participation!

Conference Chair

Pham Thi Minh Ly, *Ton Duc Thang University, Vietnam*

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MANAGEMENT

COVID-19 IMPACT ON BUSINESS MODELS AND BUSINESS PRACTICES: RESULTS FROM AN INTERNATIONAL ONLINE SURVEY

Thierry Tartarin, Timber Haaker, Mihai Tichindelean, Pham Thi Minh Ly, Ahamed Riaz

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ABSTRACT

Organizations worldwide are forced to change their business models and practices in response to the COVID-19 pandemic. Aspects such as digitalization of offerings and processes, reconfiguration of supply chains, management-employee relations and reinterpretation of social value are relevant in the COVID-19 discussions. However, changing towards more resilient business models is difficult because of the unpredictable nature of the pandemic. Also, it is presently uncertain, as to how society and the business environment will respond to the pandemic for the short and longer term. To better understand the actual and anticipated changes in organization's business models and practices, we conducted an international online survey with support from partners in The Netherlands, Romania, Vietnam and India. The survey was provided to organizations in these countries in their national languages as well as in English for others. The survey has attracted response of 453 respondents from 37 countries. Both quantitative and qualitative data results were analyzed to account for similarities and differences among countries. Our analysis indicates that organizations worldwide use digitalization of offerings and services, communication and processes to adapt their business models in response to COVID-19. Business model and supply chain resilience are also fueled through the support of engaged staff, whose flexibility and trust in the management's leadership enables organizations to adapt to this challenging new business context. The analysis further indicates that the social value dimension within business models is gaining momentum against a more traditional market-orientated position.

Keywords: business models; COVID-19; resilience; social value; digitalization

1. INTRODUCTION

The novel SARS-CoV-2 coronavirus originated as a human virus in Wuhan, China in December 2019. During the first half of 2020, the virus travelled all over the world and caused the global COVID-19 pandemic. The spread of the virus has upset societies and economies worldwide on a scale never seen before. Countries, regions and cities went into lockdowns that disrupted the normal way of living, working and doing business. Many companies have been forced to change their business models and business operations as a response to the changing business environment. The ability of companies to adapt and redesign their business models is crucial for their future viability (Sharma, Leung, Kingshott, Davcik, & Cardinali, 2020).

Business model innovation is seen as a key factor for companies to grow or simply stay in business, especially in areas where the business environment is changing rapidly, for example due to market or technology developments (De Reuver, Bouwman, & MacInnes, 2009). The current pandemic has created an extremely fast and strong disruption on a global scale, demanding organisations to be flexible and to rapidly adapt their business models to

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remain in business. There are signs that the perception of value creation is moving from a dominant economic and cost efficiency perspective to a perspective focussed on longer term viability, including social and environmental sustainability (Ratten, 2020) (Heinonen & Strandvik, 2020). Countries worldwide are implementing economic recovery packages that strive to “build back better”, indicating a focus on inclusiveness and well-being. (OECD, 2020)

However, there is a lack of knowledge about how business models can be invigorated in a global disruptive pandemic context, especially how to accelerate digitalization and how to incorporate social value (Di Vaio, Boccia, Landriani, & Palladino, 2020).

Organisations require insights into their vulnerabilities and need options for adapting their business models and/or operations in response to the “new normal”. Many existing business model design tools like the business model canvas (Osterwalder & Pigneur, 2010) start from empty canvases and provide little insight into actual design options and choices fitting a particular context like the COVID-19 pandemic.

In this paper we address the above research gap by studying how the business models of various organizations in different countries are impacted by COVID-19 and how these organizations are adapting their business models as a response. We focus on business model aspects that are particularly relevant in the context of the current crisis, i.e. digitalization of offerings and processes, vulnerability and flexibility of supply chains, changing management-employee relations, and finally, changing perceptions of social value. We examine these aspects through an international survey disseminated via partners in The Netherlands, Romania, India and Vietnam. The survey was provided in five languages (English, Dutch, Romanian, Malayalam and Vietnamese) and collected quantitative as well as qualitative data. The resulting data was analysed using descriptive statistics and specific qualitative techniques to look for similarities and differences between countries.

The results from our survey provide insight into how business model aspects are affected by COVID-19 in different countries. They highlight the role of digitalization in adapting business models as well as the accelerated adoption of digital technologies. Given the global and simultaneous occurrence of COVID-19, we find that organizations in different countries by and large have similar responses, but the rate of adoption of for example digital technologies differs per country. The results also show that creating social value is becoming more prominent in the aftermath of the COVID-19 pandemic. This raises the question of how social value can be better integrated into business model innovation processes.

The paper is structured as follows: The next section provides a literature review on business models and business model innovation and especially on the selected business model aspects covered in the survey. Subsequently, we describe our methodology and analyze the data. After that, we interpret our findings and develop a results-based discussion, challenges and limitations of the research follow; the paper ends with a conclusion including how the research contributes to the field of research as well as suggestions for future research.

2. LITERATURE REVIEW

Business Models as a concept refers to a description of a firm’s logic to create and capture value for its stakeholders (Bouwman, De Vos, & Haaker, 2008), (Chesbrough & Rosenbloom, 2002), (Linder & Cantrell, 2000), (Osterwalder & Pigneur, 2010), (Lüdeke-Freund, Gold, & Bocken, 2019). We define a BM as ‘a description of how an organization or network of organizations intends to create and capture value with its products and services’ (Bouwman,

Faber, Haaker, Kijl, & De Reuver, 2008).

Business models provide managers with a systematic approach to (re)consider and analyse their business options in changing and unpredictable environments (McGrath, 2010). Various ontologies and design methods are available to support systematic business modelling, including the well-known Business Model Canvas (Osterwalder & Pigneur, 2010) with a focus on a focal firm, the STOF model (De Vos & Haaker, 2008) which takes the product or service offering as the focal point, VISOR (El-Sawy & Pereira, 2013) which specializes in digital offerings, and Business Model Navigator (Gassmann, Frankenberger, & Csik, 2015) which provides four straightforward questions to describe any business model, and Business Model Cube (Lindgren & Rasmussen, 2013). While these ontologies differ in scope and focus, they share a set of common components and underlying design variables, for example summarized by Lüdeke-Freund et al. (2019) in a framework with four generic business dimensions and variables within these dimensions, i.e. value proposition (product and service), value delivery (target customer and delivery processes), value creation (partners, stakeholders, value creation processes), and value capture (revenue and costs).

Closely related to business models is the notion of business model innovation. Business model innovation is generally regarded as a simultaneous change in several BM dimensions or variables (Foss & Saebi, 2016). This may lead to entire new business logic for a company or goes beyond mere technological, process or product innovation. Business model innovation is found to be key to (future) business performance (Amit & Zott, 2013). In Europe, 38% of small and medium sized enterprises were found to actively innovate their business model (Heikkilä & Bouwman, 2018). Examples of business model innovation include, digitalization and servitization (Baines & Lightfoot, 2013).

Given the huge impact of the COVID-19 pandemic on virtually any company, it appears reasonable to explore how companies may effectively adapt their business model to the new reality. This new reality is shaped by the medical impact of COVID-19 and its societal consequences such as lockdowns and social distancing. This, in turn, has a major economic impact involving a huge global recession, rising unemployment and whole sectors such as transport and tourism almost completely shutting down at some point (Sigala, 2020).

In this paper we focus on several elements of business models that are found to be particularly susceptible to the COVID-19 pandemic. Susceptible in the sense that existing choices and practices for these elements are not valid anymore due to consequences of and responses to COVID-19 like social distancing, closing borders, lockdowns but also economic relief programs. In particular, we analyse the manner in which companies change(d) their business models concerning:

Digitalization of offerings and processes (within the ‘value delivery’ and ‘value creation’ dimensions)

Digitalization plays a significant role in all aspects of business models. This has already been a clear trend during recent years with companies introducing digital sales channels and adopting digital technologies such as IoT, big data and AI as part of their manufacturing processes or service delivery systems (Bouwman, Nikou, Molina-Castillo, & De Reuver, 2018). The outbreak of the COVID-19 pandemic has accelerated adoption, use and scope of online and digital applications, platforms and channels to levels never seen before. Advisory services, care services and especially educational services are switching to digital channels to replace f2f service delivery and to avoid being present at physical locations. Employees work

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from home and communicate and collaborate remotely with co-workers and customers using a plethora of digital platforms such as Teams, Zoom, Hangouts etc.

Reconfiguration of supply chains (as part of the ‘value creation’ and ‘value delivery’ dimensions)

Many companies have outsourced production and manufacturing to locations where costs are lowest in search of comparative advantage. Driven by cost advantages and relatively low transport costs, companies have become critically dependent on production units that are far away. Supply chains have increased in length and complexity and can be hard to control. For example, complex products such as cars consist of thousands of components that each have their supply chain of considerable length. Already before the COVID-19 pandemic, companies were reconsidering the outsourcing strategy and taking into consideration forms of reshoring (bringing production back home) and/or novel production systems that require less (manual) labour and create less supply chain risks (Samson, 2020). Others considered decreasing the risks associated with a single far away supplier and looked for multiple suppliers, sometimes denoted as a China plus strategy (Enderwick, 2011).

COVID-19 has brought about a significant disruption of supply chains and managers are looking for ways to build supply chain resilience, for example through digitalization (Sharma, Adhikary, & Bikash Borah, 2020), (Samson, 2020).

Redefinition of working practices and management-employee relations (as part of the ‘value creation’ dimension)

The lockdown measures have forced vast numbers of employees worldwide to stay at home exposing them to an unsettling level of freedom as to their daily operations (Ratten, 2020). Organisations had to trust their employees that they would still put in the hours and perform their duties in an unknown context (Kaushik & Guleria, 2020). Employees had to trust their employers that they would lead and facilitate the conditions of their work in a crisis which, over time, evolved into a “new normal”. As a result, the employee-employer relationship has been under duress through the bare lack of face to face communication and the difficulties linked to digital communication (lack of quality bandwidth, unreliable or inadequate technology) in a context of a stressful and volatile business environment (Carnevale & Hatak, 2020).

Organisations quickly realised that staff satisfaction and control were paramount to the efficient running of their operations. The concept of “employee experience” (Carnevale & Hatak, 2020) epitomises the interest in securing the right relation and spatial environment for individuals to perform to the best of their capacity under forced conditions. Traditional human resources management techniques are being revisited through an anthropologic outlook on social behaviour and group dynamics (Bavel, Baicker, & Boggio, 2020). Individual needs both professional (e.g. digital training) and emotional (e.g. psychological support) need to be taken into account to foster a sense of safety and social cohesion (Aguinis, Villamor, & Gabriel, 2020) (Wolf, Haddock, Manstead, & Maio, 2020).

Leadership capacity in times of crisis on the employer’s side combined with the required flexibility and personal adaptations on the employee’s side are critical to this new working relationship.

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Reinterpretation of social value (as part of the ‘value proposition’ dimension)

The effects of COVID-19 on organisations worldwide are very significant to businesses and individuals alike (OECD, 2020). In a market driven context whereby, economical value seems to inextricably overrule social and environmental values, COVID-19 pandemic is reshaping this status quo through the emergence of social value as a possible new key driver for adaptation and business model innovation. The social economy referred to as ‘putting social and environmental concerns at the heart of their business model, prioritising social impact over profit maximisation’ (OECD, 2020) is contributing to reshaping the business environment with people and social advancements as its core instead of profit maximisation (Heinonen & Strandvik, 2020).

The ongoing reduction of key natural resources and its impact on people is facilitating and accelerating the emergence of the social economy engaged approaches in all industries (OECD, 2020). The delicate balance of mercantile and individual interests has been at the forefront of the COVID-19 conundrum for governments the world over (He & Harris, 2020). Different perspectives and strategies have led to controversial decisions potentially affecting the spread of the virus. The pressure is now on organisations to integrate a wider and more specific approach where people are better represented (OECD, 2020).

3. METHODOLOGY

As philosophical grounding, the positivism school’s principles govern the current research. In this regard, the studied reality is an objective and a singular one (ontology), the researchers/authors are independent from the studied subject (epistemology; current authors are not involved in the organizations which provided the answers. (Viera, 2010).

A “mixed methods research design” was performed by applying an international survey containing the four areas pertinent to the research (digitalization, supply chain, management-employee and social value). Digital survey as research instrument has been selected for its ease of dissemination worldwide and ability to provide a reliable understanding of the COVID-19 phenomena in a descriptive context. The survey started with questions about respondents’ background. This was followed by ‘yes/no’-questions and by statements about the four areas to which respondents could agree/disagree on a five-point Likert scale. Questions were reviewed by researchers not involved in the research and pilot tested with intended survey participants. The survey was disseminated using international partners in The Netherlands, Romania, India and Vietnam over a period of four months between April and July 2020. International social media platforms, such as LinkedIn and university partners direct mailing through professional associations were used to disseminate the questionnaire in each country. The survey was available online in five languages (English, Dutch, Romanian, Malayalam and Vietnamese). A total of 453 respondents in 37 countries participated with the largest cohorts coming from The Netherlands (42%), Romania (22%), India (5%), Vietnam (6%), Germany and Lithuania (4%).

82% of respondents are working for a profit-based organisation. Their main roles there are employee (43%), manager (28%) and entrepreneur (24%). 43% of the organisations they represent are large organisations (> 250 employees). The remaining respondents are spread near equality over micro (<10) 22%, small (10-50) 15% and medium (50-250)18% size organizations. A total of 26 questions were asked, made of three multiple-choice questions, six

closed questions, five open and 12 five-point Likert scale. Qualitative data was open, axial and selective coded following grounded theory principles. Open coding used both in vivo codes as well as constructed codes created by the researchers. An inter-rater reliability check for the codes was done by two separate researchers with results above 70% which was considered reliable. Fragments in other languages than English were coded by native speaker researchers from the participating universities. Descriptive statistics (mean, standard deviation and coefficient of variation) were used to analyze the quantitative data.

4. DATA

Changes in operations

The first question asked to respondents was if they had changed anything in their operations in response to the corona crisis.

- Q4: Providing your organization is currently open for business, have you so far changed any of your operations in response to the Corona crisis?

A large majority of all respondents (81.0%) confirmed that they had changed operations, with The Netherlands (88.0%) and India (87.5%) significantly higher percentages than Romania (67.0%) and Vietnam (62.1%).

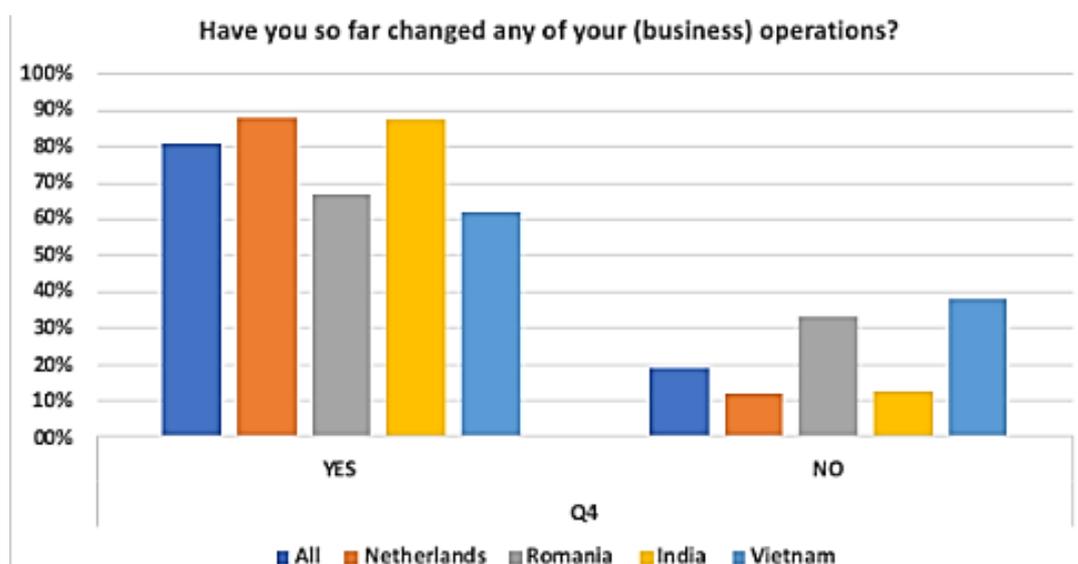


Figure 1. Results about changes in business operations

Digitalization

Digitalization was described as 'input from digital technologies such as the internet, social media, mobile communication in your processes, in collaboration and communication'. Respondents were provided with a series of statements and questions about the role of digitalization in their organization's responses to the corona crisis, to which they could respond with yes or no. Respondents that answered yes were asked to give examples through an open text box:

- Q6: In my offer to clients I now use more digital methods than before the crisis (if yes,

please describe further).

- Q8: In my contact with clients I now use more digital channels than before the crisis (if yes please describe further).
- Q20: Related to the organization’s processes I now use more digital methods.

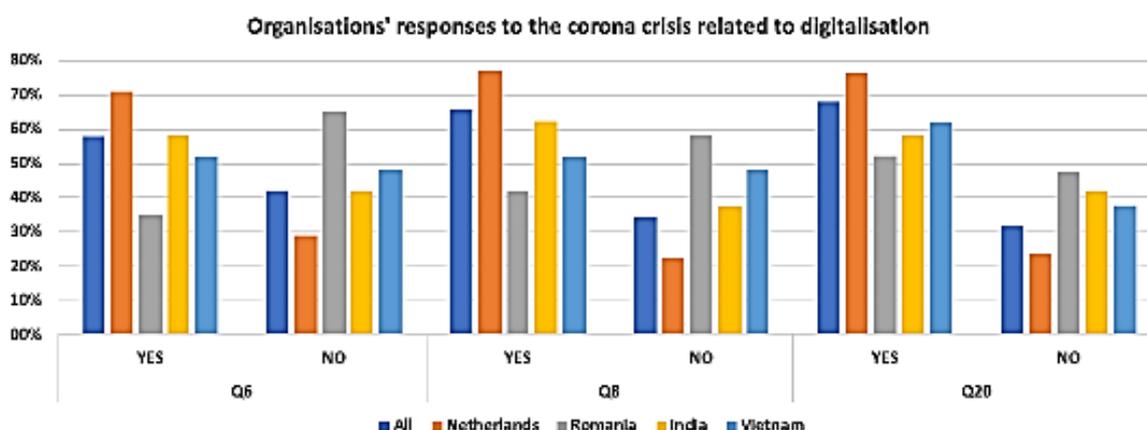


Figure 2. Results about relation with digitalization

The statements and questions were scored by 453 respondents.

- From Q6 and Q8 we find that a large majority of respondents in The Netherlands confirms that they now use more digital methods in their offer to clients (71.2%) and more digital channels in contacts with clients (77.5%) than before the crisis. For India (58.3% and 62,5%) and Vietnam (51.7% and 51,7%), respectively, lower majorities are found regarding the use of more digital methods and channels. Finally, the results for Romania are much lower with 35.0% and 41.7%, respectively. In all countries the increase in the use of digital channels for contact with clients is higher than the increase in digital methods as part of the offering itself. Coding of Q6 generated 10 open codes, three categories leading to three selective codes as follows:
 - New learning programs
 - New ways to communicate with clients and relations
 - Operations are shifting to full digitalization

Table 1. Example of coding from an English language fragment Q6

Fragment	Open coding	Axial coding	Selective coding
Extra digital communication methods we did not use before like Zoom and other platforms	Improved digital communication	Digital process internal development	New ways to communicate with clients and relations

Coding of Q8 used only in vivo coded as data fragments were too limited in length to be further coded. Examples of digital channels from the fragments included teams, Zoom, videos

and skype.

- From Q20 we find that 68.2% of all respondents report increased use of digital methods and channels in their organizations' processes. The increase is strongest in The Netherlands (76.4%) and the lowest in Romania (52.4%). Coding of Q20 was only in vivo coded as data fragments were too limited in length to be further coded.

Supply chain

The supply chain was described to respondents as going from beginning till the end, inclusive of all relevant partners and providers, financial actors contributing collaboratively to the production, distribution, logistics and warehousing. Respondents were asked to rate statements about the supply chain of their organization on a five-point Likert scale, going from 'Completely agree' to 'Completely disagree':

- Q11-1: Due to the corona crisis the unreliability in the supply chain of the delivery of components/goods/services has seriously threatened my organization.
- Q11-2: Since the corona crisis has started, new opportunities have emerged for collaboration in the supply chain.
- Q11-3: Since the corona crisis has started the balance of power in the supply chain has changed.
- Q11-4: As a result of the corona crisis collaboration and communication in the supply chain is more often digital.
- Q11-5: Our existing supply chain systems are flexible to be able to change to possible new ways of operating in the market.

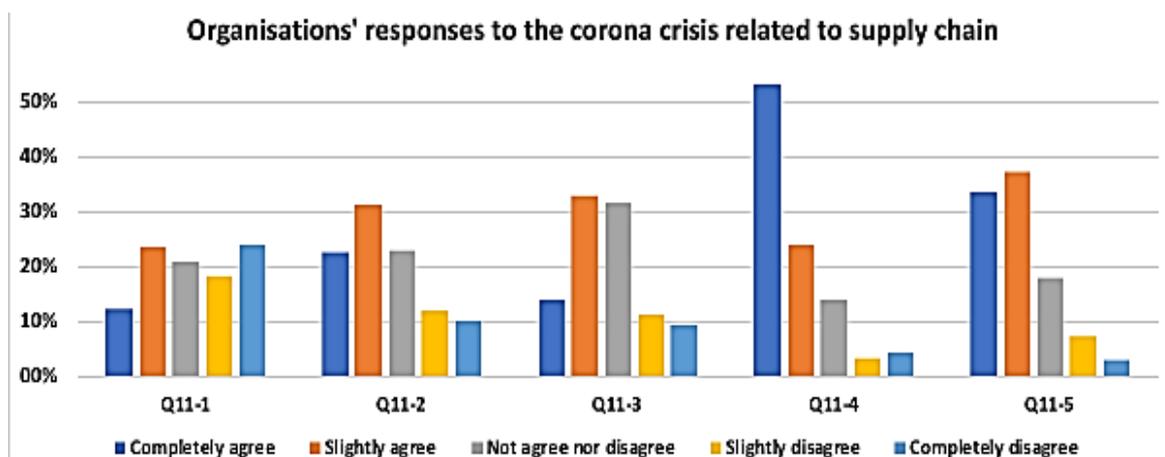


Figure 3. Results about the relation to supply chain

The statements were rated by 445 respondents. For each statement the percentage of respondents selecting the five rating options are shown. The value in the middle, i.e. 'not agree nor disagree' is the neutral value.

- For Q11-1 we find that 36.2% of respondents agree completely or slightly agree with the statement that unreliability in the supply chain seriously threatened their

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organization. This accounts for more than one in three companies threatened because of COVID-19's impact on supply chains. On the other hand, 42.7% of respondents slightly or completely disagree with the statement and do not experience threats to their supply chain. Analyzing in the four focal countries we see some differences. While organizations in The Netherlands (29.3%) and Romania (24.5%) show lower concerns about serious threats due to unreliability in their supply chain, Indian (76.2%) and Vietnamese (58.6%) organizations experience much more serious threats.

- For Q11-2 we find that more than half of respondents (54.4%) state that new opportunities have emerged for collaboration in the supply chain. When looking at respondents per country, we find that in The Netherlands (68.4%) and India (66.7%) this percentage is much higher than in Romania (26.5%) and Vietnam (48.3%).
- For Q11-3 we find that almost half of the respondents (47.3%) at least slightly agree that the balance of power in the supply chain has changed. In India this accounts for (71.4%).
- For Q11-4 we find that respondents largely agree (77.8%) that collaboration and communication in the supply chain are more often digital as a result of the corona crisis. Only Vietnamese respondents score significantly lower with (60.7%) slightly or completely agreeing.
- For Q11-5 we find a large majority of respondents (71.5%) completely agreeing, (33.9%) slightly agreeing and (37.5%) agreeing with the statement that existing supply chain systems are flexible to be able to change to possible new ways of operating in the market. For respondents from Vietnam the agreement is lower (51.7%). Overall, the percentage of respondents completely disagreeing is low at 3.1% with only Vietnam respondents significantly higher at 10.3%.

In the following, we consider the five-point Likert scale, a numerical scale with number 5 standing for the answer 'Completely agree' and decreasing with one point per answer to 1 for the answer 'Completely disagree'. Means, standard deviations and values of variation coefficients were computed for all Supply chain related statements (Table 2).

Table 2. Descriptive Statistics of the Supply chain statements

Supply chain statements	Mean	Standard Deviation	Coefficient of variation
Q11-1	2.82	1.37	0.49
Q11-2	3.45	1.25	0.36
Q11-3	3.31	1.14	0.34
Q11-4	4.19	1.09	0.26
Q11-5	3.92	1.05	0.27

The highest mean value of agreement has resulted for the Q11-4 – collaboration and communication in the supply chain is more often digital statement (4.19), followed by Q11-5 (3.92), Q11-2 (3.45), Q11-3 (3.31), and Q11-1(2.82). A medium to high variation can be spotted within the Q11-1 statement (0.49) meaning that the respondents were not homogeneous in their answers, thus the corona-crisis has threatened the supply-chain for some organizations, while for others not.

Management-employee relations

Management-employee relations was described to respondents as relating to inter-department communication, leadership and individual feelings about their organization. Respondents were asked to rate five statements about these aspects on a five-point Likert scale, going from ‘Completely agree’ to ‘Completely disagree’:

- Q13-1: My organization is welcoming my ideas to help think in new ways to operate to cope with the changes due to the corona crisis.
- Q13-2: My colleagues and I are flexible to change to possible new ways of operating in the market.
- Q13-3: The management has shown leadership in dealing with the effect of the corona crisis.
- Q13-4: As a staff member I am coping well working from home.
- Q13-5: My direct management has given individual attention to my needs (professional, emotional,.) during confinement.

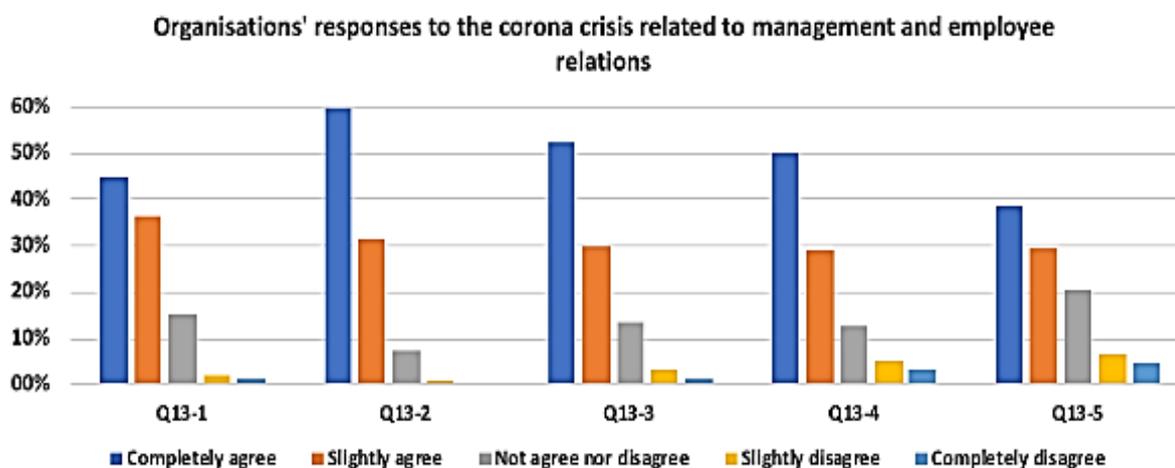


Figure 4. Results about relation to management-employee relations

Table 3. Descriptive Statistics of the Management-employee relations statements

Management-employee relation statements	Mean	Standard Deviation	Coefficient of variation
Q13-1	4.21	0.86	0.20
Q13-2	4.49	0.50	0.16
Q13-3	4.29	0.81	0.21
Q13-4	4.17	1.10	0.25
Q13-5	3.91	1.27	0.29

Table 3 contains the means, standard deviations, and variation coefficient values of the management-employee relations statements when considering the numerical values of the five-point Likert scale. All the five statements have high mean values and low values for variation

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coefficients, implying a high and homogeneous level of agreement of the respondents. Based on this, we can conclude that both employees and the organizations' management are aware of the challenges of the corona crisis for the management-employee relations. Both are acting to minimize its negative effects.

The statements were rated by 453 respondents. For each statement the percentage of respondents selecting the five rating options are shown. The value in the middle, i.e. 'not agree nor disagree' is the neutral value.

- For Q13-1 we find that 81.2% of respondents agree completely or slightly agree with the statement that their organization welcome their ideas to help think in new ways to operate to cope with the changes due to the corona crisis. This percentage is equally high in The Netherlands (81.7%), Romania (74.7%), India (95.9%) and slightly lower in Vietnam (69.0%). Vietnam and India report 0% respondents either completely or slightly disagreeing with very low percentages for The Netherlands (4.2%) and Romania (4.8%).
- For Q13-2 we find that 91.4% of respondents agree completely or slightly agree in the feeling that they and their colleagues are flexible to change to possible new ways of operating in the market. This percentage is equally high in The Netherlands (91.6%), Romania (92.3%) and India (100.0%) whilst Vietnam has slightly less (75.9%)
- For Q13-3 we find that 82.1% of respondents completely or slightly agree that the management has shown leadership in dealing with the effect of the corona crisis. The four largest cohorts show high percentages (The Netherlands (80.7%); Romania (77.7%), Vietnam (89.7%); India (95.8%))
- For Q13-4 we find that respondents largely agree (79.0%) that as a staff member they are coping well with working from home. The Netherlands has the highest percentage (85.9%), Vietnam (72.4%) and India (75.0%) are moderately high while Romania (67.0%) has the lowest percentage.
- For Q13-5 we find a large majority of respondents (68.3%) completely agreeing, (38.9%) slightly agreeing, (29.4%) agreeing with the statement that their direct management has given them individual attention to their needs (professional, emotional,..) during confinement. The highest percentage shows in India (87.5%) with 54.2% completely agreeing and 33.3% slightly agreeing. The Netherlands report 64.4% of completely agree and slightly agree, a similar situation for Romania (65.0%). Vietnam's respondents show that 55% of respondents either completely or slightly agree with 27.6% remaining neutral and 6,9% completely disagreeing.

Social value

The statements related to social value attempted to ascertain the importance of social value for respondents in comparison with an economic and environmental value-based view. Respondents were asked to rate statements about the social value using a five-point Likert scale, going from 'Completely agree' to 'Completely disagree'. Using a yes/no option, respondents were further asked to reflect upon the possible social value of the product/service their organization provide and whether they had initiated a new activity related to social value as a response to the corona crisis. For Q16 and Q20 providing they had answered yes, respondents were asked to further describe using an open text box:

- Q16-1: The corona crisis made me realize that there is a social value to the product/service I provide for my clients (e.g. social interaction of a hairdresser with his customers and customers with each other) (if yes please describe a social value you have identified)
- Q21-1: Once the corona crisis is over, the social value will be relatively more important in comparison with an economical value
- Q21-2: Once the corona crisis is over, the social value will be relatively more important in comparison with environmental value.
- Q22-1: Have you initiated any new activity related to social value as a response to the corona crisis (if yes please describe the activity).

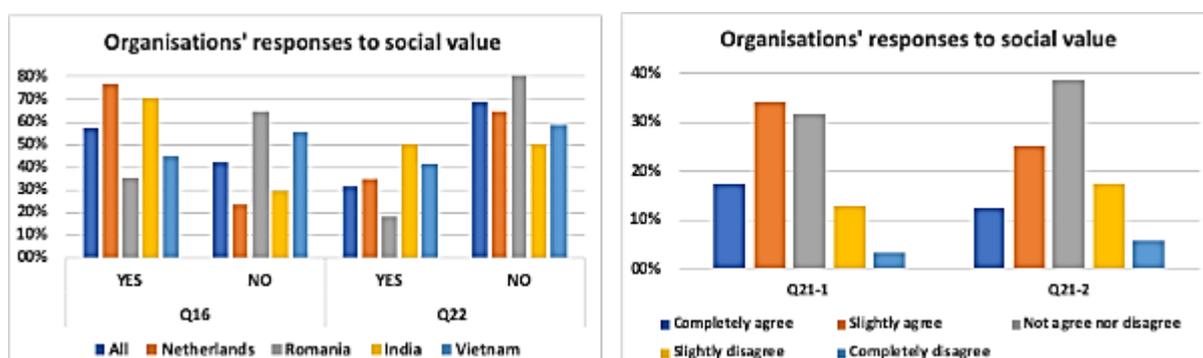


Figure 5. Results about relation to social value

Table 4. Descriptive Statistics of the Social value statements

Social value statements	Mean	Standard Deviation	Coefficient of variation
Q21-1	3.5	1.04	0.3
Q21-2	3.2	1.06	0.33

The mean values of the Social value statements are slightly over the scale's mean of 3 (3.5 for Q21-1 and 3.2 for Q21-2) indicating a nearby neutral opinion regarding how the organizations' social value will be considered after the corona-crisis relative to the organizations' economical value, and environmental value, respectively. This idea is sustained by the relative homogeneous answers for the two statements with variation coefficient values being 0.3 for Q21-1, and 0.33 for Q21-2, respectively.

The statements were rated by 453 respondents. For each statement the percentage of respondents selecting the five rating options are shown. The value in the middle, i.e. 'not agree nor disagree' is the neutral value.

- For Q16.1 we find that 57.6% of respondents answered yes to the statement that they realize that there is a social value to the product/service they provide to their clients. The Netherlands (76,3%) and India (70,8%) are considerably higher and Romania (35,4%) and Vietnam (44,8%) considerably lower. Coding resulted in three open codes, four axial codes and two selective codes being collaborative interaction and individual fulfillment.

Table 5: Example of coding from an English language fragment Q16.1

Fragment	Open coding	Axial coding	Selective coding
As a restaurant owner, social relations give more taste to the food	Emotional fulfillment	Relationship with third parties	Individual fulfillment

- For Q21.1 we find that 51.9% of respondents either completely agree (17.7%) or slightly agree (34.2%) while 31.8% do not agree nor disagree to social value being relatively more important than economical value after the corona crisis is over. Romania, The Netherlands and Vietnam have similar percentages. India with 50% (completely agree) and 37.5% (slightly agree) is considerably higher.
- For Q21.2 we find that 37.67% of respondents either completely agree (12.6%) or slightly agree (25.2%) to social value being relatively more important than environmental value after the corona crisis is over. India with a total of completely agree (54.2%) and slightly agree (25%) is significantly higher.
- For Q22 we find that 31.3% of respondents had initiated an activity related to social value as a response to the corona crisis. India reported 50% of yes to this question while Romania only had 18.6%. Vietnam (41.4%) and The Netherlands (35.1%) also with relatively high percentages. Coding of Q22 produces three open codes, four axial codes and one selective code: building on relationships

Table 6. Example of coding from an English fragment Q22

Fragment	Open coding	Axial coding	Selective coding
Spending one hour per week during office hours doing fun games with the team to stay connected via group call	People bonding	Increased online activities	Building on relationships

5. FINDINGS AND DISCUSSION

The underlying assumption of this paper that organizations are affected, is confirmed in the sense that 80% of respondents claim that something has changed in their operations in response to COVID-19. Usage of digital methods in an organization's offerings and communication with clients and co-workers has grown considerably during the pandemic. While digital transformation was already a clear business trend, our results support the idea of accelerated adoption of digital solutions due to COVID-19, especially related to new learning programs and new ways to communicate with clients and relations. Still, we found considerable differences between countries. With the highest percentage of respondents stating more use of digital methods in The Netherlands and the lowest in Romania. This may be at least partially understood from the quality of digital platforms and internet infrastructure, which is highest in the Netherlands (Chakravorti & Chatuverdi, 2020). A fragment from the qualitative data reflecting this digital acceleration:

“All offers are done online, no visits and presentations on location anymore”.

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Many supply chains worldwide have been affected by COVID-19, and our results suggest that on average this may have caused a serious threat to one in three organizations. While this is a large impact, we also find that two out of five organizations do not experience unreliability in their supply chain as a serious threat. Either their supply chain has met with little disturbances or they have made adjustments to avoid or overcome threats. The latter is supported by the finding that over 70% of respondents state that their existing supply chain systems are flexible to be able to change. Notably digitalization may have contributed to supply chain resilience as almost 80% of organizations see that collaboration and communication in the supply chain has become more often digital. It is also interesting to note that about 50% of respondents state that new opportunities have emerged for collaboration in the supply chain.

People have been directly affected by the pandemic through the basic right of movement being taken away from them during confinement and not being able to work and function as they were used to. Our research shows that, on the whole, staff has coped well amid this difficult context. Management has shown leadership across all countries. Organizations seem to have been able to nurture the potential of employees by welcoming ideas they might have to help solve the challenges created by the COVID-19 crisis. Their flexibility in adapting seems to have played a role in the overall capacity of organizations to cope with the dynamic business environment and sustainability of their business models. The individual attention of management to staff needs is particularly interesting to report in consideration of the emergence of a social value dimension across countries.

The research shows that organizations do identify that there is a social value dimension to their product/service and that it is likely to play a role for their business in the future. Social value is expected to be relatively more important in the future compared with economic and environmental values. Relative high percentages related to this topic in India (70.8%) and The Netherlands (76.3%) could indicate a possible upward shift in the importance of this value for organizations in the future. Qualitative data analysis gives a new insight into this development. In practice we can demonstrate that the COVID-19 crisis has led to social value related activities such as charity activities or an increased use of digital support platforms with a suggested purpose of building on relationships. It can be further expected that the individual fulfillment on an emotional level within the context of social value is a new dimension which could play a role in the future when considering business model architecture. However, the fact that 83% of the respondents come from only four countries does limit the reliability of this phenomena as a true representation of an international trend at this stage. We recommend that further studies be conducted on the importance of social value in the setting up of new business models.

We suggest a possible inter-correlation between the suggested accelerated digitalization and the employee-employer flexibility which could have played a role in the results related to the reliability of components/goods/services in the supply chain. Our results show that there are no significant country differences in the four investigated areas (digitalization, supply chain, employer-employee relations and social value) when it comes to how business models have been affected by the COVID-19 crisis. The differences found can possibly be related to macro-economic factors such as infrastructure or cultural traits.

This research contributes to studies related to new business models in showing that irrelevant of the country of origin, business models incorporating a social value component are bound to be more relevant in the future (Paquin, 2016) and a key driver for values-based innovation (Ludeke-Freund & Breuer, 2017). These developments will serve to support an upcoming social economy orientated market instead of an economically based market.

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Challenges and limitations

It was a challenge for researchers to collect data from across the world as organizations were busy trying to save their business rather than interested in filling in a survey. Therefore although not being a large sample, we consider that 453 respondents is still a satisfactory number, given the current, challenging situation. A limitation of this survey is that it accounted respondents from 37 countries with the four leading country cohorts (The Netherlands, Romania, Vietnam and India) accounting for 83% of the respondents and is therefore not as reliable as if the respondents were more equally spread amongst the countries. The industries or sectors in which respondents conduct their activity is not accounted for in the survey.

The COVID-19 crisis has affected people and organizations in different ways and at different times throughout the world ever since it started in March 2020 (e.g. confinement versus non-confinement depending on the country location and national policies). Although the survey received a majority of respondents within the first two months of being published online (April, May 2020), the results did not take into account the specific situation of the respondents at that time which might have influenced their answers if they had filled in the survey later on.

6. CONCLUSION

Our survey provides insight into how business model aspects are affected by COVID-19 in different countries. It highlights the role of digitalization in adapting business models as well as the accelerated adoption of digital technologies. Given the global and simultaneous occurrence of COVID-19, we find that organizations in different countries, by and large, have similar responses but the rate of adoption of for example digital technologies differs per country. Business models and supply chains are found to be surprisingly resilient and flexible. Not just through digitalization, but also fueled by the flexibility and loyalty of employees and new management-employee relations. We also find that social value has become much more important in the aftermath of the COVID-19 pandemic.

This research actively contributes to the ongoing research efforts worldwide in the field of COVID-19 business related issues. The results offer an insight into which key areas of business model can contribute effectively to the needed organization's adaptation under COVID-19.

For future research, this raises the question as to how social value can be better integrated into business model innovation processes. There is a need for business model tooling which takes the dimension of social value more into account and places the individual stakeholders' impact in business model innovation within a social values-based perspective.

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ROLE OF WORK ENVIRONMENT TO JOB SATISFACTION: EMPIRICAL EVIDENCE FROM VIETNAMESE STATE-OWNED ELECTRIC ENTERPRISE

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ABSTRACT

Human capital is nowadays stated as the most valuable asset for the sustainability development of firms, but its role in emerging countries seems not to be paid attention adequately, even in academic and practice. Align with that concern, this study investigates the theoretical framework of five components of job characteristics, rewards, supervisor relationship, co-worker relationship, and higher-order needs fulfillment (HONF), which are recognized as inherent parts of work environment and its influence to job satisfaction. Thus, by employing a unique data sample of 275 participants from an electricity state-owned enterprise (SOE) from Vietnam, we find the strong significant evidences that job characteristics, rewards, co-worker relationship, and higher-order needs fulfillment play an essential role in increasing employee's job satisfaction, excepting supervisor relationship. Thus, this study indicates the fact that the functions of the supervisor may be considered to firm strategy monitoring rather supporting employees in workplace. Eventually, a recommendation of a better work environment has been suggested to SOE in improving worker's job satisfaction to achieve higher productivity.

Keywords: Job satisfaction, job characteristics, rewards, higher-order needs fulfillment.

JEL class: M10, M54, J28.

1. INTRODUCTION

Nowadays, technological advancements have entirely reshaped the organizations by simplifying the communication and operational issues. Thus, modern technologies have facilitated firms optimizing internal and external resources to sustain their business growth opportunities (Kainkan, 2015). Besides, Luthans and Youssef (2004) state that when costly physical resources has no longer as preventing competitor entering to the market, the companies need to consider carefully non-financial factors to sustain their competitive advantages. In line with that viewpoint, human capital is argued to be an important resource to firm business. Regarding to role of internal resources, Kaya, Koc, and Topcu (2010) indicate that human capital is the essential key that determines the success or failure of organizations. The commitment between employees and organization is emphasized as an important factor to prevent worker quit their job along enhance their productivity, and positively affects firm's value (Kainkan, 2015). In addition, the organization should consider enhancing the job satisfaction by building and maintaining good relationship with their employees which in turn to improve their performance through congenial jobs designing or physical workplace environment (Badayai, 2012). Aligns with that perspective, we highlight an inspiration about creating a flexible work environment that acquires the employee's needs. Thus it leads to the ability to attract, retain and improve worker's job performance (Grant et al., 2010; Morgeson & Campion, 2002). Otherwise, empirical studies have come to establish the basis for

motivating the potential of the work environment to job satisfaction. To show specific illustrations, there are complex assumptions about the influence of perceived work environment (Lee, Magnini, & Kim, 2011; Light, 2004; Abdallah et al., 2016) to job satisfaction (Butt et al., 2005; Kruja & Oelfke, 2009; Chen et al., 2011; Olorunsola, 2012), and its vital effect to workforce motivation (Hang-yue, Foley, & Loi, 2005; Halkos & Bousinakis, 2010, 2017; Al-Abdullat & Dababneh, 2018).

Drawing on the role of human capital resources to firm's sustained competitive advantages, Barney (1991) and Jayawara et al. (2014) mention that the employees play the vital function of organizational system and significantly affect firm's sustained competitive advantages. In particular, the feeling of employees may determine labor productivity and organizational commitment which influence to the way organization reaches their goal. Accordingly, Mudor (2011) emphasizes that the lower job turnover and higher job satisfaction are significantly driven by the characteristics of work. Hence, by focusing on the impact of the work environment on job satisfaction, this study contributes to the current literature in a distinctive way.

Particularly, regarding to the vital argument that the good work environment may enhance employee's satisfaction and encourage them put more effort into enterprise development, we provide a possible recommendation to clarify the right factors of work environment which relate to job satisfaction. Therefrom, we further extend several previous studies linking work environment and job satisfaction (Levy, 2006; Marzuki et al., 2012; De Cooman et al., 2013; Demirkol & Nalla, 2018) by constructing the work environment in-depth review. Thus, this study shows that job satisfaction is not just only built by the staff-empowered organization and co-worker relation (Kainkan, 2015) but also including the job characteristics, the rewards from accomplishing their work, the relationship with supervisor and higher-order needs fulfillment. As such, the proposed research model tests a critical mechanism that is rarely tested within the context of a unique field sector, such as stated-own enterprise, which is the second contribution of this study.

Consequently, we not only fulfill the relevant literature of the relationship between work environment and job satisfaction, but also take into account the context of Vietnamese stated-owner electric company, which plays a critical important role in macroeconomic of Vietnam. To demonstrate our concept, we organize the rest of this study as follows: Chapter 2 presents the literature review. Chapter 3 describes the methodologies. The empirical findings will be discussed in chapter 4, and chapter 5 is conclusions.

2. LITERATURE REVIEW

Job satisfaction

It is widely mentioned that the concepts of job satisfaction are complex because these assumptions are different from the viewpoints and perspectives in a certain context (Consiglio et al., 2016; Schaufeli, 2016; Asrar-ul-Haq, Kuchinke, & Iqbal, 2017; Son & Ok, 2019; Söderbergh, 2013; Schiöler et al., 2015). Particularly, Glisson and Durick (1988) propose that job satisfaction is the employee attitude and feeling towards their job and other mechanisms such as working environment or conditions. Pelit, Öztürk, and Arslantürk (2011) demonstrate several factors affecting job satisfaction related to several establishments such as content of the work, wages and promotion, supervisor management styles or relationship with the colleagues. Levy (2006) presents that the employees are satisfied with their job since they can acquire the expectation of accomplishment in their career, or based on the positive or negative feeling of

employees about characteristics of the work environment (Ellickson & Logsdon, 2001). Mainly, job satisfaction is also positively affected by job-related factors such as salary, promotions, employee relationships, relationships with superiors, job stress, and safety at work (Rukh, Choudhary, & Abbasi, 2014). Besides, Muchinsky (2006) and Kreitner and Kinicki (2007) indicate that job satisfaction is defined as the employee's level of interest in their career.

Job characteristics

Hackman & Oldham (1976) mentioned that the quality of work could be improved if the organization consider designing the job or tasks to acquire the employees' abilities and skills. In essence, what determines employee satisfaction is the characteristics of the work (i.e., recognition, achievement, responsibility, promotion, personal capacity development). These factors are considered "motivation" because they enhance employees' emotional feelings on their job and encourage them to maximize their performance.

To further explore the role of job design, De Cooman et al. (2013) point out that the employee feels more motivated to accomplish the work if they acquire the need for autonomy, connectivity, and competence. Therefore, organizations may consider reducing the work requirements and create a positive working environment to encourage employee's motivation for enhancing their satisfaction. From that view, the job design also needs to connect with the common mission and goals of the enterprise. Thus it will lead to an increase in the whole enterprise's labor satisfaction. Besides, Kashefi (2005) argues that the job characteristics do not necessarily have the same effects on the attitude of employees but the different from perceptions of work values.

According to Barrick, Mount, and Li (2017), the workers have different perspectives from the purposeful work behavior that leads to their satisfaction and performance. The employees may have more motivated in their job if their needs for autonomy, connectivity, and competencies are acquired (De Cooman et al., 2013). Furthermore, Morris and Venkatesh (2010) show the significant evidence that the job characteristics has a positive impact on job satisfaction. We thus propose the first hypothesis as following:

H₁: Job characteristic has a positive impact on job satisfaction.

Rewards

By focusing on internal resources to improve organization performance, Lawler & Porter (1967) point out that the response of employees on achievements is not similar due to the different from their perspectives and psychologies. It means that since workers have a relatively higher income than their living cost, they gradually shift their needs to other work aspects such as toward intrinsic rewards and may have a negative effect on job performance (Kashefi, 2005). In line with that view, Hofmans, De Gieter, and Pepermans (2013) present that the reward-job satisfaction relationship may be driven by the different from personality, mainly financial and psychological reward satisfaction. To clarify the connection between incentives and job satisfaction, Demirkol and Nalla (2018) show that work motivation and rewards make the employees feel more satisfied and enhance their productivity in their job. Similarly, Linz and Semykina (2012) demonstrate that both external and internal rewards have a positive influence on job satisfaction. More specifically, Linz and Semykina (2012) emphasize the impact of extrinsic (defined as tangible or physically given) and intrinsic (is intangible award of recognition) rewards to make employees happy, but the stronger significant with extrinsic

rewards linked to numeric values. In this study, we do not separate two establishments of reward into intrinsic and extrinsic categories, thus rewards will combine all the benefits that employees could obtain for accomplishing something or duty from organization. By expecting on the positive significant between rewards and job satisfaction, we propose the second hypothesis as:

H₂: Reward has a positive impact on job satisfaction.

Supervisor support

In the field of the relationship between employees and supervisors, the support from the higher-level managers plays a vital role in improving and maintaining job satisfaction because it makes employees feel more respected and comfortable at work. Aligns with that viewpoint, Griffin, Patterson, and West (2001) mention that the supports from higher-level managers positively affects employee's job satisfaction. By emphasizing the impact of job stress, Steinhardt et al. (2003) indicate that the support of the supervisor helps to reduce the level of job stress, which in turn was connected to higher levels of job satisfaction. Interestingly, Charoensukmongkol, Moqbel, and Gutierrez-Wirsching (2016) show that the support of the supervisor reduces the employee's burnout conditions by alleviating emotional exhaustion, and hence increase their job satisfaction, the direct and indirect effect are both considered. Additionally, Lambert and Hogan (2009) show that the supervisor support helps employees satisfied more with their work and desire for long-term engagement with the organization. Similarly, Kula and Guler (2014) agree that perceived supervisor support has a positive influence on job satisfaction. Therefore, we acknowledge the third hypothesis as:

H₃: Supervisor support has a positive impact on job satisfaction.

Relations with co-workers

Ng and Sorensen (2008) show the practical evidence to reveal that supports from colleagues or co-workers have a positive effect on job satisfaction. The co-worker support is otherwise mentioned more critically than the supervision from higher superiors in the service sector (Susskind, Kacmar, & Borchgrevink, 2007). Thus, collaborative play a key role in critical psychological states of employees, that would lead to their formation of positive or negative assessments, especially when the psychology of working no longer greatly affects not only the productivity of the whole enterprise and, importantly, the external communication effect (Renn & Vandenberg. 1995). Furthermore, Kainkan (2015) demonstrates that a good relationship between the employee and their colleagues has a strong significant effect on job satisfaction. Thus, the support from colleagues can improve employee trust. They will feel that their contribution valuable, and in some cases, it can reduce the frustration that is caused by the organization. Thus, we propose the fourth hypothesis as:

H₄: Co-worker relationship has a positive impact on job satisfaction.

Higher-order need fulfillment

Higher-order needs are discussed in this study are safety in the workplace, welfare, and coherence. Nowadays, humans (including safety at work) are now much appreciated as the valuable assets of organizations (Azadeh & Ahranjani, 2014). The workers have more feeling

to the committee with their working time and position in the long-term only if they feel safe in working (Marzuki et al., 2012). It also affects job satisfaction and employee performance (Zeytinoglu et al., 2013). It is also mentioned that the better the welfare regime, the more likely it will be for the job to be satisfied (Srivastava, 2004). However, that relationship is mentioned only significant in the short-term (Dorsey, 2013).

Sherman (2002) discusses the leader-member exchange paradigm to emphasize the role of leader inversion affects work-related attitudinal and behavioral outcomes. It is powerfully relevant to job satisfaction, and it is explained by each subordinate to take the leadership role in a specific specialized field. It suggests that the leader inversion positively influences on acquiring higher needs. Meanwhile, employees tend to be satisfied with their job when they achieve what they expect from the job (Levy, 2006). Therefore, we propose the fifth hypothesis as:

H₅: Higher-order need fulfillment (HONF) has a positive impact on job satisfaction.

From all discussions above, Figure 1 presents our proposed framework model that expects the positive impact of five components which are constructed by job characteristics, rewards, supervisor relationship, co-worker relationship, and HONF to job satisfaction.

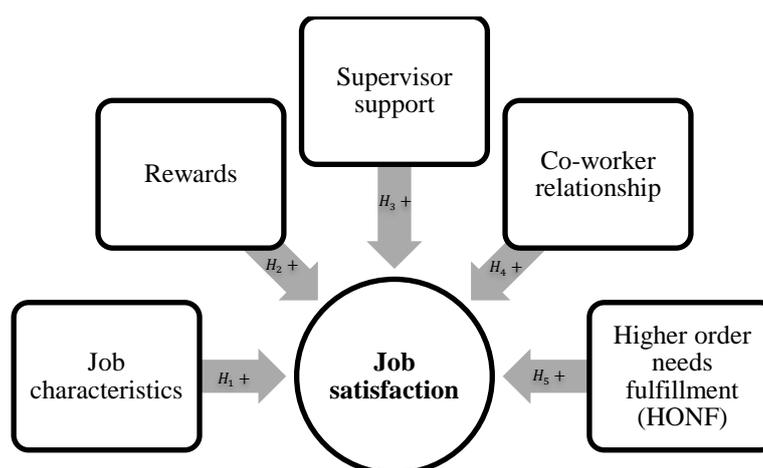


Figure 1. Theoretical framework

3. METHOD

3.1 Survey design

This study used a non-probability convenience sampling method (due to job-specific reasons and the ability to access the questionnaire participants). The survey was sent through two channels as direct interviews and via CPC-e-Office (Central Power Corporation). A total of 383 employees in the Vietnamese electric company participated in the study. The questionnaire is composed of two parts. The first part requests the participants' demographic information while the second part retrieves the attitude of the respondents. All items are modified from the study of Marzuki et al. (2012). Firstly, we directly interviewed 116 first participants for sample pre-testing, and then remove 35 samples (rejection rate is 30.17%), which shows the untrustworthy answers. Secondly, the survey was sent to 267 employees through CPC-e-Office. Online survey is indicated to be a convenient approach to collect data from individual participants (Regmi et al., 2016). After removing the unavailable samples, the

number in this stage remains as 194. Lastly, we obtained a total sample 275 accepted respondents for further analysis.

3.2 Measurement and instrumentation

Job satisfaction is widely defined as the employee's feeling in their career, and hence it motivates them to put more effort into accomplishing the organization's tasks (Muchinsky, 2006; Levy, 2006). Besides, the increasing employee's job satisfaction may be driven by their feeling with the organization (Luthan, 2004). Therefore, it is measured by four items, such as "Will you intend to commit with your organization in long-term?" and were rated on a 5-point scale. Following Marzuki et al. (2012), work environment is constructed by five dimensions, including job characteristics, rewards, supervisor relationships, co-worker relationships, and higher-order needs fulfillment (HONF). In particular, job characteristic describes the job design that is an arrangement in the workplace to overcome worker alienation and job dissatisfaction (e.g., do you apply many self-skills to accomplish your job?). It is scaled by 8-items. Rewards were measured by the 9-item scale that described benefit incentives since the employees perform their tasks (e.g., Do you think that you get fair salary or incentives?). The supervisor relationship is illustrated by the connection between immediate managers, such as "Do you think your supervisor tells you when your work needs improvement?". Similar to Marsuki et al. (2012), participants rated 8-items on a 5-point scale ranging from 1 (disagree) and 5 (totally agree). The co-worker relationship is explained by the relation between employees and their counterparts. It was measured by 3-items, such as "Do you think there are any conflicts with your colleagues?". These items are rated on a 5-point scale from 1 (disagree) and 5 (totally agree), which shows the estimation of the sufficient statistics. Higher-order needs fulfillment (HONF) is described by the safety in the workplace, welfare, and coherence (Sherman, 2002). HONF is measured by 3-items and rated on a 5-point scale. Finally, we included a number of relevant control variables. We asked participants to indicate their gender, age (in years), salary (converted to USD), education, and experience (in years).

3.3 Data analysis and results

Table 1 shows the data descriptive. In particular, the sample is mainly male (82.5%), which is consistent with industry-specific because the work is technical, and male labor is the main force. Furthermore, most of the employees are middle-age (from 30 to under 40 years old, accounting for 60.7%, followed by over 40 years old as 21.8), and 72% of employees have the working-experience over 20 years. It shows the fact that workers have been engaged in organizations for the long-term, and they have more opportunities to be empowered in the future that preventing their retirement. However, the sample also presents a slightly low proportion of workers who have higher education than bachelor degrees (2.2%). In addition, 50.3% of despondences have income from 500 to 1.000USD per month, which is a reasonable salary comparing to the average income in Viet Nam.

In addition, our sample indicates that the participants are very concern and cognitive benefit incentives from their job (Rewards mean = 3.7060, S.E. = 0.0428). The statistic results present that more than an average of participants feel that they are delighted in their job and feel satisfaction in the workplace (S.D. = 0.5609, $\rho < 0.001$). Besides, the respondents show the concern on job characteristics, supervisor supports, higher-order needs fulfillment (HONF), and co-worker relationship when more than average of participants rate higher than the mid-point of 5-point Likert Scale in fourth those work environment dimensions. These results

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indicate that the employee’s perceived work environment is high, and it may affect their job satisfaction.

Table 1. Data descriptive statistics

Items		Frequency	Percentage
Gender	Male	227	82.5
	Female	48	17.5
Age	Under 30	48	17.5
	From 30 to 40	167	60.7
	Over 40	60	21.8
Salary	Under 500	0	0
	500 - < 1.000	163	59.3
	1.000 - <1.500	92	33.5
	Over 1.500	20	7.3
Education	Primary school	64	23.3%
	Technical school	34	12.4%
	College	65	23.6%
	Bachelor	106	38.5%
	Over bachelor	6	2.2%
Experience	From 1 to 3 years	0	0
	From 3 to under 10 years	58	21.1%
	From 10 to under 20 years	19	6.9%
	Over 20 years	198	72.0%

Table 2. Descriptive statistics

	N	Min	Max	Mean	S.E.	S.D.
Characteristics	275	1.38	4.88	3.672	0.043	0.709
Supervisors	275	1.00	4.75	3.561	0.045	0.742
Rewards	275	1.43	4.86	3.706	0.043	0.710
Needs	275	1.00	5.00	3.579	0.050	0.836
Co-worker	275	1.60	5.00	3.698	0.038	0.636
Satisfaction	275	1.50	4.75	3.456	0.034	0.561
Salary	275	2.00	4.00	2.480	0.038	0.630
Gender	275	1.00	2.00	1.830	0.023	0.380
Age	275	1.00	3.00	2.040	0.038	0.626
Education	275	1.00	5.00	2.840	0.074	1.228
Experience	275	2.00	4.00	3.510	0.050	0.821

Note: “Characteristics” denotes job characteristics, “Supervisors” is supervisor support, “Rewards” is tangible and intangible awards that employees are obtained from accomplishing something. “Needs” denotes Higher-order need fulfillment (HONF), “Co-worker” represents for co-worker relationship, and “satisfaction” is employee job satisfaction.

4. EMPIRICAL RESULTS

4.1. Confirmatory factor analysis

To explore the relationship between work environment and employee's job satisfaction, this study employs Structural Equation Modeling (SEM) technique to test the causal-effect relations among the latent constructs. Gefen et al. (2011) mention that SEM integrates the measurement and structural model into a simultaneous assessment. Therefore, this method provides a flexibility to model a relationship among criterion variables and multiple predictors (Chin, 1998).

Table 3. Convergent validity test results

No.	LV	Indicators	Loading	AVE	CR	CA
1.	Job satisfaction	JS1	0.851	0.855	0.902	0.698
		JS2	0.791			
		JS3	0.847			
		JS4	0.851			
2.	Job characteristics	JC1	0.716	0.897	0.918	0.582
		JC2	0.785			
		JC3	0.759			
		JC4	0.743			
		JC5	0.751			
		JC6	0.800			
		JC7	0.773			
		JC8	0.773			
3.	Rewards	RW1	0.784	0.912	0.928	0.619
		RW2	0.800			
		RW3	0.803			
		RW4	0.794			
		RW5	0.761			
		RW6	0.763			
		RW7	0.765			
		RW8	0.820			
4.	Supervisors	SU1	0.779	0.774	0.855	0.596
		SU2	0.806			
		SU3	0.751			
		SU4	0.750			
5.	Co-worker	CO1	0.832	0.719	0.842	0.641
		CO2	0.806			
		CO3	0.762			
6.	Needs	NE1	0.853	0.820	0.893	0.735
		NE2	0.868			
		NE3	0.851			

Note: LV is latent variables; AVE is Average Variance Extracted; CR is Composite Reliability; CA is Cronbach's Alpha. According to Hair et al. (2017), the ratios of loading, Ave, CR and CA are required above 0.7, 0.5, 0.7, 0.7, respectively.

This study conducts the measurement validation and test the model with SmartPLS (partial least square) version 3.2.2 (Astrachan, Patel, & Wanzanried, 2014; Hair et al., 2017). In addition, we run 5,000 bootstrapping replication to get reliable results and to estimates of standard errors for testing the statistical significance of a path coefficient using the t-test (Hair et al., 2012).

Table 3 shows the convergent validity test of the measurement model. The outcomes indicate that all indicators meet the minimum requirement of convergent validity, such as loading values above 0.70, and also AVE values also above 0.50 (Hair et al., 2017). The Heterotrait-Monotrait Ratio (HTMT) test shows the high results of rewards and job satisfaction. However, all ratios are less than 0.90, which confirms the discriminant of all latent variables (Henseler, Ringle & Sartedt, 2015). In addition, the proportions of variance inflation factor (VIF) of all indicators are lower than the threshold value as 5 that shows the minimum collinearity in every item of structural model (Ringle et al., 2015). Hence, we can evaluate the structural model for assessing the specific proposed hypotheses.

Table 4. Heterotrait-Monotrait Ratio (HTMT) discriminant analysis

	CH	CW	JS	ND	RW	SU
1.Characteristics (CH)	0.763					
2.Co-Worker (CW)	0.338	0.800				
3.Job satisfaction (JS)	0.567	0.602	0.835			
4.Needs (ND)	0.254	0.414	0.519	0.857		
5.Rewards (RW)	0.433	0.616	0.722	0.561	0.787	
6.Supervisors (SU)	0.250	0.347	0.475	0.440	0.534	0.772

4.2 Path analysis

Table 3 reports the structural model assessment results after controlling the demographic variables. As we mentioned above, the proposed model was run 5,000 bootstrapping replication to ensure the validity of final results. Hence, these empirical evidences indicate that these are the significant positive impact of 4 dimensions of work environment to job satisfaction (with significant level of 1%). In particular, the outcomes support H_1 since the job characteristics have a positive effect on job satisfaction (Path = 0.302, $\rho < 0.01$) that is consistent with (Morris and Venkatesh, 2010). Furthermore, the positive impact of rewards and Co-worker to job satisfaction (Path = 0.356 and 0.201 with $\rho < 0.01$ respectively) shows the fact that the employees concern not only the benefit incentives but also the good relationship with their colleagues. It support H_2 , which is consistent with Demirkol and Nalla (2018); and H_4 , which is similar to Kainkan (2015). In addition, the positive relationship between the needs (HONF) support H_5 which implies that organization needs to concern more on improving the workplace quality to fulfill higher requirement of employees (Levy, 2006; Marzuki et al, 2012; Dorsey, 2013). However, different from our expectations, we find no significant between supervisors and job satisfaction that rejects H_3 .

Table 5. Structural model path coefficients testing results

Path correlation	Path Coefficient	Standard Deviation	T-Statistics	ρ
Characteristics -> Job Satisfaction	0.302	0.040	7.637	0.000**
Rewards -> Job Satisfaction	0.356	0.065	5.488	0.000**
Co-Worker -> Job Satisfaction	0.201	0.049	4.147	0.000**
Needs -> Job Satisfaction	0.135	0.046	2.925	0.003**
Age -> Job Satisfaction	0.084	0.039	2.169	0.030*
Gender -> Job Satisfaction	-0.061	0.036	1.693	0.091
Salary -> Job Satisfaction	-0.063	0.040	1.570	0.116
Supervisor -> Job Satisfaction	0.070	0.056	1.245	0.213
Experience -> Job Satisfaction	0.042	0.040	1.027	0.304
Education -> Job Satisfaction	-0.002	0.034	0.057	0.954

Note: We report PLS-SEM in testing the hypothesis of the relationship between job characteristics (Characteristics), supervisor relationship (Supervisor), job rewards (Rewards), higher order need fulfillment (Needs), and co-worker relationship (Co-worker) and control variables with job satisfaction. We reject the Null hypothesis of constant variance if p-values < 0.05. Statistically significance is at 1% (**) and 5% (*).

From the results of SEM analysis, we assume that the employees are more concerned about the factors that frequently affect their jobs, such as characteristics, rewards, co-worker relationships, and HONF which are rather than the supports of the supervisor. The reason may occur due to the less connection between supervisors and employees in the workplace. It also can be explained by the function of the supervisor, which is more relevant to monitoring and assessing worker's outcomes rather than guidance in accomplishing work. In that scenario, the workers must finish their tasks by themselves without any supports from higher direct managers. Hence, the employee's job satisfaction would be driven by other factors, excepting supervisor supports. These findings are taken into account in context of Vietnamese electric stated-own enterprise. Specifically, the positive significant between job characteristics and job satisfaction indicates that the employees are very concerned about working demands. There are empirical evidences which explain that relation by previous studies of James and Jones (1980), Judge, Bono and Locke (2000), or the influence of that relationship to prevent the employees quit their job (Samad, 2006).

Furthermore, the impact of rewards on job satisfaction seems to be existed not in the long term since Terera and Ngirande (2014) indicate that the rewards will keep the employees more committed to the organization. Hence, it recommends that organization should deliver rewards immediately to employees when they accomplish their duty or requirements. Besides, the outcomes confirm the role of co-worker relationship in enhancing employee's trust and make them more satisfied in the workplace (Susskind et al., 2007; Ng & Sorensen, 2008). Thus, the good relationship may increase emotional feeling and help the workers feel satisfy with their job. In addition, the positive significance between HONF and job satisfaction indicate that employees may be further concerned about their safety in the workplace, welfare, and coherence which improve their psychology and enhance their satisfaction (Marzuki et al., 2012).

Furthermore, our study confirms the findings of Kainkan (2015). Particularly, the organization needs to provide workers with the resources necessary to perform the job

successfully. It means that the organizations should focus on providing good training program to let workers know their work (the work itself, its nature); appropriate award and promotion policies to encourage when employees accomplish something or duty from managers; activities to connect and enhance the relationship among the employees; and the good welfare policy to support the worker inside and outside workplace.

In addition, Ranaweera and Li (2018) show that the order affects employee's satisfaction in descending as follows: "Characteristics", "Co-workers", "Cooperation", "Working conditions", "Evaluation and feedback", "Salaries" and "Career development opportunities". Accordingly, our findings highlight that the characteristics of work greatly affect the job satisfaction. Eventually, it gives the clear suggestion for managers in creating and improving workplace as well as since the limitation of resources. Organization will have the ideal to allocate appropriately internal resources to increase employee satisfaction and help them put more effort towards the main objectives of the enterprises.

5. Conclusion

Working with people is the most difficult job because people have emotions and judgments, while machinery is based only on what has been programmed or designed. On the other hand, people are considered to be the most remarkable and valuable asset in resources (Guest & Peccei, 2001). Therefore, special care, special treatment, and adequate investment in human resources are needed to improve their psychology, which in turn enhances their labor productivity.

By assuming the environment of the workplace which is constructed by five dimensions such as job characteristics, rewards, higher-order needs fulfillment (HONF), the relationship with co-worker and supervisor. This study aims to explore the relationship between work environment and job satisfaction in depth-review, especially in Vietnamese stated-owned enterprises. From the results, there are four factors which affect to job satisfaction of employees, comprising job characteristics, rewards, relationship with co-worker, and HONF. Although the relationship between supervisor and job satisfaction is widely mentioned in the literature (Steinhardt et al., 2003; Charoensukmongkol et al., 2016), but we did not find any evidences to support that relationship.

Although our study provides provide insights to support the relationship between work environment and job satisfaction, there are several limitations that could be improved in future research. Firstly, the model between work environment and job satisfaction may take account into alternative contexts such as Covid-19 epidemic to further analyze the current results. Secondly, the alternative variables might be considered to be added in the current proposed model, such as the mediating effect of knowledge management (Al-Abdulla & Dababneh, 2018). Finally, future research might consider using different data samples such as finance or heavy industry where employees are required high professional skills, which cause their job stress. Thus, it may influence on job satisfaction.

Appendix

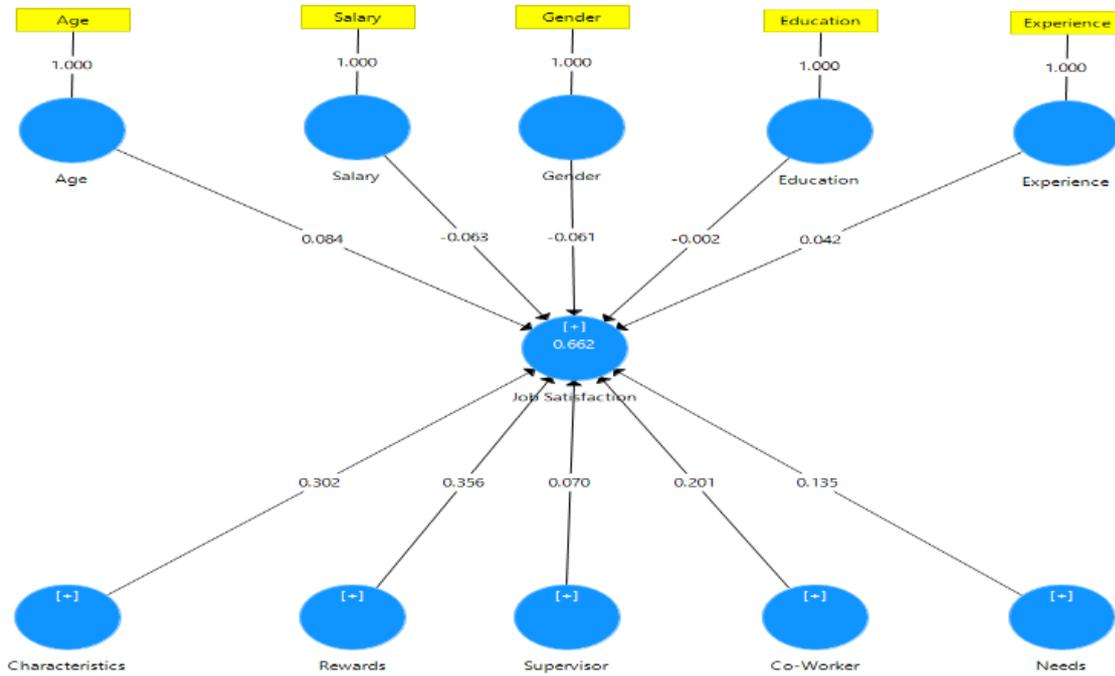


Figure 1. Loading assessment from PLS-SEM.

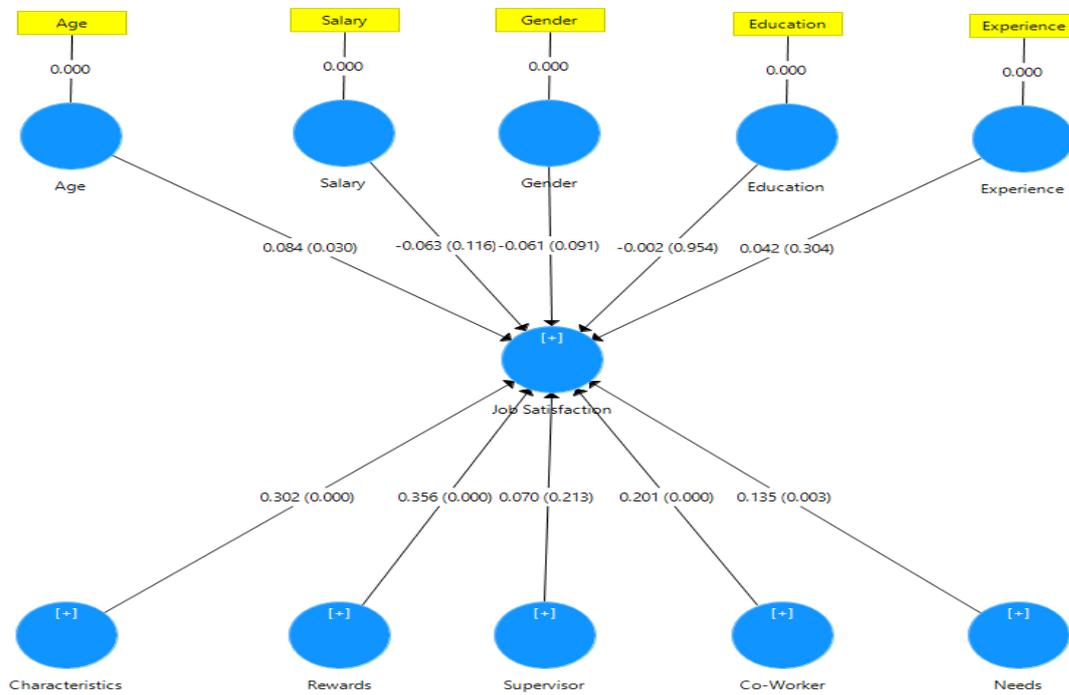


Figure 2. Bootstrapping assessment from PLS-SEM.

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TELEWORKING AND JOB SATISFACTION: HOW THE COVID-19 OUTBREAK SHAPES THE NEW WORKING PATTERN IN VIETNAM?

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ABSTRACT

Teleworking was not a common working pattern prior to the outbreak of the novel corona virus. Owing to social distancing constraints during the crisis, many people around the world have been forced to work from home. What seems to be a temporary solution in the pandemic, however, will likely be the worldwide mainstream working trend considering the fact that WHO has recently warned the Covid-19 pandemic will not go anywhere. In Vietnam, teleworking was widely adopted by governmental services and essential businesses during the nationwide lock down period in the two first weeks of April 2020. If teleworking soon becomes the new normality, the question of what factors shaping job satisfaction of teleworkers is relevant to maintaining their job performance for societal development. Since teleworking in Vietnam is new, not only is there a lack of research on the factors affecting telework in the country in general, but there is also a lack of knowledge about those factors in specific locations and jobs. To contribute to filling in these knowledge gaps, the paper analyzed job satisfaction and factors shaping it among 100 employees in Quy Nhon City, who worked at home during the April 2020 social distancing. Research findings revealed a high level of job satisfaction and the influence of both demographic factors and work-related factors on it. These finding will inform the government and employers about solutions to increase job performance with the new normality of teleworking in Vietnam.

Keywords: Covid-19, job satisfaction, social distancing, teleworking, Quy Nhon, Vietnam.

JEL Classification: A14

1. INTRODUCTION

The concept of teleworking refers to work performed in flexible, independent locations away from the official office / workplace (Baruch, 2000; Di Martino & Wirth, 1990). Teleworking is supported by the development of information technology with computers and specialized software, the main means of communication via e-mail, fax and telephone (Baruch, 2000).

Teleworking is also called home working as most teleworkers work at home (Baruch, 2000). Studies show a number of benefits from remote working. First of all, teleworkers can minimize travel to their offices. Teleworking helps to reduce the agency's operating costs, traffic congestion and general fuel costs for society (Apgar, 1998). When working from home, employees have the flexibility to complete their tasks assigned and thus improve their work efficiency. Teleworking also provides agencies the opportunities to recruit good employees from different regions of the country, even abroad (Baruch, 2000). However, telework also causes some problems. Teleworkers complain about their social exclusion, lack of support and career advancement (Caillier, 2014; Golden & Veiga, 2005). These benefits and disadvantages

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of teleworking together can affect the job satisfaction of remote workers.

It should be noted that teleworking is not a recent phenomenon (Baruch, 2000) because this type of work has emerged since the oil crisis of the mid-1970s (Mann & Holdsworth, 2003). Teleworking got a boost in the 1990s (Shin et al., 2000) thanks to the convergence of information and communication technologies (Di Martino & Wirth, 1990). Nonetheless, it has not yet been common until the global widespread of coronavirus. In December 2019, a new form of coronavirus (SARS-CoV-2) triggered an acute respiratory outbreak (COVID-19) in Wuhan, China (Van Bavel et al., 2020). The World Health Organization had to announce a world pandemic in February 2020 after there were 118,000 infected cases and 4,291 deaths in 114 countries. The global public health campaign to slow the spread of the virus emphasizes washing hand, limiting face contact, wearing a mask in public (Van Bavel et al., 2020). Furthermore, countries have implemented social distancing measures (Ding et al., 2020) that individuals maintain social distance when in public places, schools are closed, reduce congregations and businesses, and people are advised to stay at home to keep them safe (Mohler, 2020).

Owing to social distancing constraints during the crisis, many people around the world have been forced to work from home. What appears to be a temporary solution in the pandemic, however, will likely be the worldwide mainstream working trend as WHO has recently warned that there could be another wave of virus outbreak (Newman, 2020). In Vietnam, social distancing was implemented in the second week to the end of April 2020. Most public institutions, nonessential services and shops have to close. For most state agencies, officials had to work from home and used applications such as Zoom, Google meet, Facebook, Skype to connect and continue working. In the first week of May, working places officially resumed their activities, but teleworking during the social distancing still affected the working patterns with some activities were changed into digital. With the recent WHO warning and also with the second outbreak of covid-19 in Vietnam, started in Da Nang city after 99 days without community transmission, Vietnamese people, like others, must envision their lives along with the virus. If teleworking soon becomes the new normality, the question of what factors drive teleworkers' job satisfaction is relevant to maintaining their productivity for social development.

There is a number of studies on teleworking and job satisfaction but mostly in developed countries. Overall, the empirical connection between telework and employee satisfaction at their jobs is not well understood in the literature (Caillier, 2014). Since teleworking is new in Vietnam, there is a lack of research not only on the factors affecting Vietnamese teleworkers in general, but also in specific locations and jobs. In order to contribute to filling these knowledge gaps, the study conducted a questionnaire survey of 100 people working in Quy Nhon City during the April 2020 social distancing.

The paper consists of 6 sections. After the introduction, section 2 presents the literature review on job satisfaction. Section 3 details the methodology. Section 4 shows the data for this study. Section 5 analyses and discusses the research results and section 6 comes to conclusions.

2. LITERATURE REVIEW

Job satisfaction, which refers to employees' general attitudes and feelings about their work, has attracted high attention from management sciences researchers (Spector, 1997; Waqas et al., 2014). This satisfaction is regarded as very critical for the success of the agency,

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because it dictates employees' working behavior and performance (Khera & Gulati, 2012; Robbins et al., 2010).

Job satisfaction is subjective and can have different implications for different people (Khera & Gulati, 2012). While Price (1997) refers job satisfaction as the degree of positive emotional orientation of employees towards the agency, Aziri (2011) views it in both positive and negative feelings of the employees about the workplace.

Researchers are interested in factors determining job satisfaction (Waqas et al., 2014). Literature on the topic has pointed out the mixed impacts of demographic factors (gender, age, education level, experience) on job satisfaction. Some studies show that job satisfaction is influenced by gender (Morge, 1953), individual needs (Gardon, 1955) and tends to increase with age (Smith et al., 1977). Others (Bhatt, 1987; Sinha & Singh, 1961), however, do not find a significant relationship between job satisfaction with age, gender, education and experience.

Job attributes and working conditions are also keys to employee satisfaction at work. They include job content and meaning, pay, promotion, fairness, supervision and security, agency's personnel oversight and policy (Sinha & Singh, 1961; Lodahl & Kejner, 1965; National Center for Educational Statistics, 1997; Karl & Sutton, 1998; Khera & Gulati, 2012; Saeed et al., 2014). In this respect, Herzberg's two-factor theory of job satisfaction distinguishes between intrinsic and extrinsic factors for employee satisfaction in the workplace (Lu et al., 2005). Intrinsic factors or "motivators", such as recognition, achievement, responsibility, promotion and growth, contribute to growing job satisfaction (Mehta et al., 2016). Extrinsic factors or "hygiene" factors, such as company policies, monitoring, salaries, interpersonal relationships and work environments, are believed to determine job dissatisfaction (Ramllal, 2004; Mehta et al. 2016).

In terms of teleworking and job satisfaction, studies also paint a mixed picture. Some authors suggest that teleworking can increase job satisfaction (Fonner & Roloff, 2010; Wheatley, 2012). Others have noted however its downsides (stress, isolation) that tend to discontent the workforce (Shin et al., 2000; Mann & Holdsworth, 2003; Golden & Veiga, 2005; Morganson et al., 2010; Caillier, 2014).

Overall, research on teleworkers' job satisfaction emphasize both demographic factors and job attributes as well as working conditions. In this study, we paid attention to both types of factors. For demographic factors, we considered age, gender, education level, marital status, and ethnicity. For the job attributes and working conditions, we examined types of work, workloads, salaries, work performance, advantages and challenges of working at home.

3. METHODOLOGY

The research combined methods of quantitative and qualitative research. First, we conducted a literature review on the concepts of teleworking and job satisfaction. Second, we carried out a questionnaire survey with a convenient sampling of 100 people working in Quy Nhon city. The questionnaire consisted of 20 questions that explored whether, how and why respondents were satisfied with their work at home during the April 2020 social distancing in Vietnam. For quantitative data analysis, we performed descriptive statistics with cross tabulation and Chi-square tests using SPSS version 20. Qualitative data from participants' responses about the advantages and challenges of working at home was thematically analyzed to identify the major themes of these issues in teleworking.

4. DATA

The 100 respondents in the survey had an average age of 39 years and ranged from 20 to 60 years old. 85% of the survey respondents were between 31- 50 years old. 53% were male and 47% were female. 100% were Kinh, the major group in Vietnam. All did not follow any religions, 93% got married with children. With respect to occupation, 22% worked for organizations (Women Association, Youth Association, Veteran Association, Farmer Association, departments of the Provincial Party’s Committee), some were the heads of their organizations. 31% were government officials working in different provincial departments, such as Home Affairs, Planning and Investment, Labor- Invalids and Social Affairs... 20% were teaching at schools, colleges and universities in Binh Dinh province. 11% were workers, engineers of power company, hydropower company, construction consulting company. 2% were the journalists at local media agencies (Table 1). Respondents’ monthly income ranged from 1,490, 000 VND (USD 64.3¹) to 10,000,000 VND (USD 431). 3% of respondents who worked in simple document handling earned less than 3 million VND (USD 129.4)/month. 61% earned less than 7 million VND /month (USD 302); and only 7% had their salary higher than 9 million VND (USD 388) (Figure 1)

Table 1. Types of job occupation

Occupations	Count	%
Government officials	31	31
Organizational staff	22	22
Teachers, lecturers	20	20
Service’s employees	11	11
Engineers	9	9
Technical workers	2	2
Researchers	2	2
Journalist	2	2
Doctor	1	1
Total	100	100

Source: SPSS statistics from questionnaire survey

84% of respondents started working from home on April 1, 2020. Others work 2-5 days earlier or later. 57% work in 15 days, 24% in 30 days, some 12% work 60-70 days. Their main tasks were writing report/projects, handling documents, teaching, managing and supervising staff, planning, constructional designing, receiving and handling clients’ grievances, engineering work, accounting, filmmaking, medical consulting and services (Table 2). 45% of respondents had the same task at home as they did at their offices before the social distancing. 37% had some slight changes in their work. Only 4% had to do some more complicated work and 10% had to carry out completely different tasks. All used laptops, computers for work; and emails, Zalo, Skype, Facebook to communicate with their colleagues.

¹ 1 USD=23,176 VND

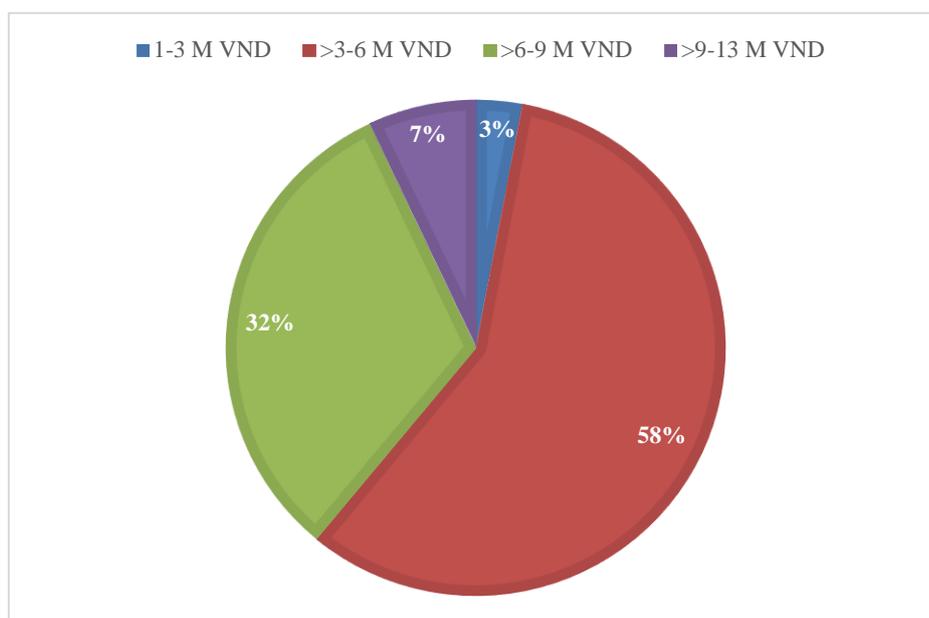


Figure 1. Respondents' salaries

Table 2. Types of duties

Types of duties at home	Count	%
Writing report	19	19
Document handling	19	19
Teaching and relevant activities	17	17
Managing and supervising staff	10	10
Planning	9	9
Construction design	8	8
Receiving and handling clients' grievances	5	5
Engineering work	5	5
Accounting	3	3
Filmmaking	3	3
Medical consulting and services	2	2
Total	100	100

Source: SPSS statistics from questionnaire survey

Job satisfaction

The analysis of quantitative data from the survey questionnaires showed that more than 70% were satisfied and very satisfied with their work from home. Nonetheless, nearly a quarter of respondents (24%) were not satisfied with their task (Figure 2).

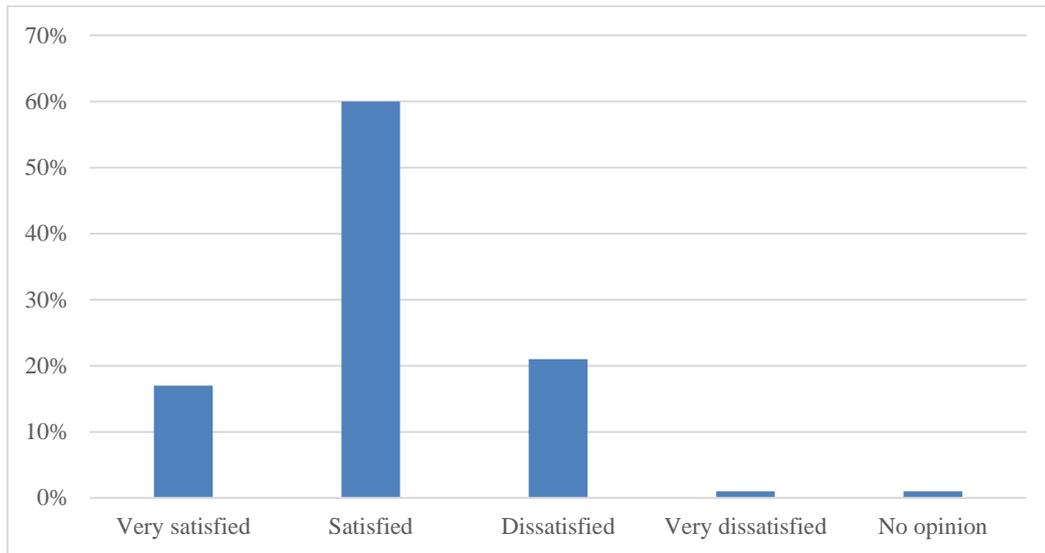


Figure 2. Respondents' job satisfaction

Demographic factors affecting job satisfaction

Because all respondents were Kinh, and obtained their bachelor's degrees, the analysis mainly looked at job satisfaction by age, gender and marital status. The data showed that job satisfaction was not significantly influenced by gender although more male employees were satisfied with their work at home than their female counterparts, and 58.8% of those who were very satisfied were men (Figure 2). Though the rate of male dissatisfaction with teleworking was slightly higher than that of women (52.4% compared to 47.6%), 100% of those who were very dissatisfied were women.

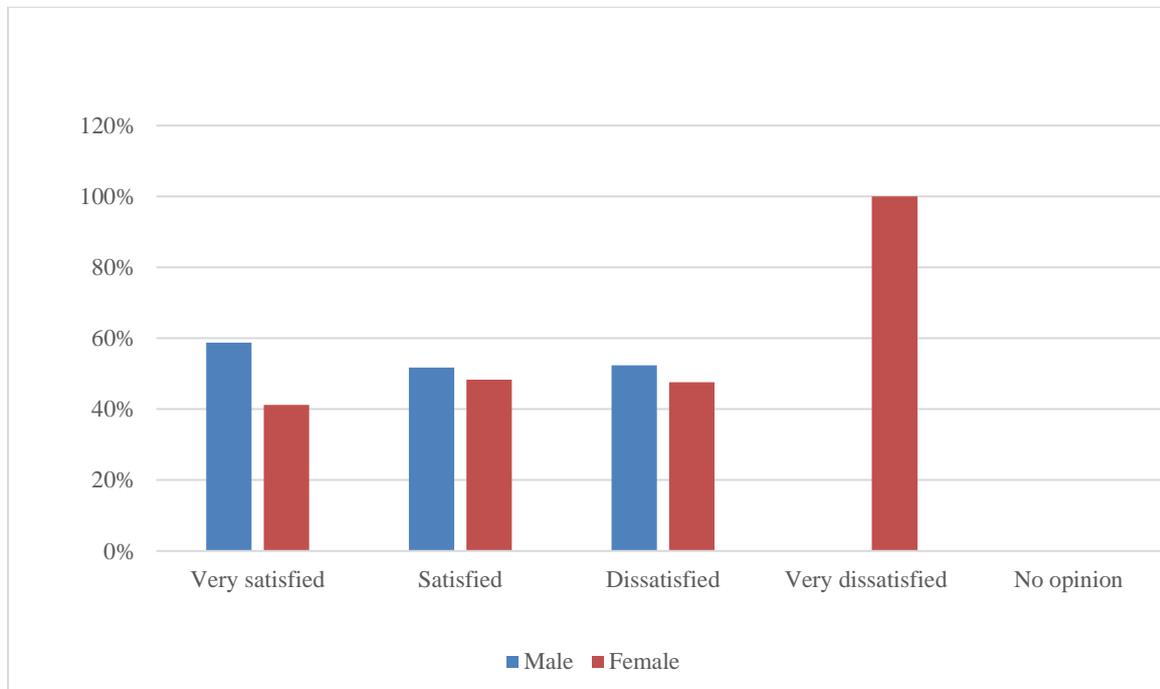


Figure 3. Job satisfaction and gender

Job satisfaction also differed by marital status. 60% of married people were very satisfied with their telework, and 19% was very satisfied, compared with 57.1% of single respondents were satisfied, in which no ones were very satisfied. This difference however was not statistically significant (Figure 4).

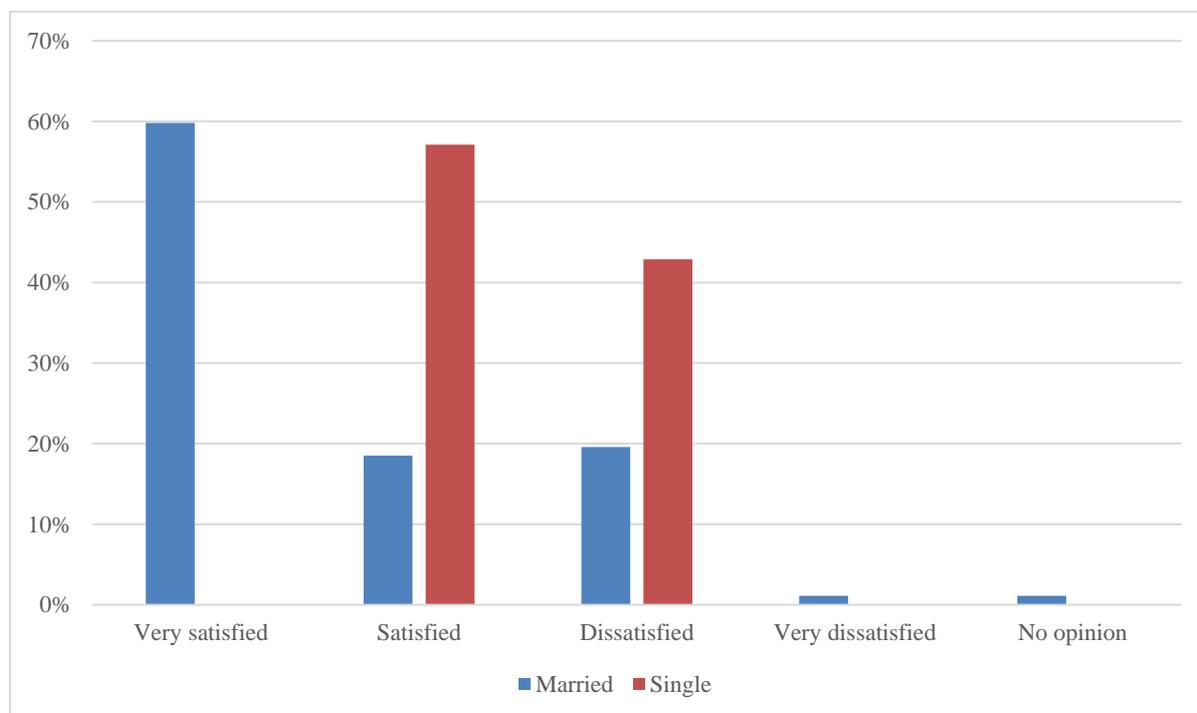


Figure 4. Job satisfaction and marital status

Job satisfaction was statistically related to age (Sig=0.000). Group of respondents from 31 to 41 years old and 41 to 50 were the most satisfied with their work at home during the social distancing. The 31-40 age group accounted for 64.7% of those who were very satisfied and the 41-50 age group accounted for 46.7% of those who were satisfied with working from home (Table 3).

Table 3. Job satisfaction and age

Ages \ Job satisfaction	20-30		31-40		41-50		51-62		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Very satisfied	2	11.8	11	64.7	4	23.5	0	0	17	100
Satisfied	8	13.3	23	38.3	28	46.7	1	1.7	60	100
Dissatisfied	2	9.5	10	47.6	8	38.1	1	4.8	21	100
Very dissatisfied	0	0	0	0	1	100	0	0	1	100
No opinion	0	0	0	0	0	0	1	100	1	100
Total	12	12	44	44	41	41	3	3	100	100

Source: SPSS statistics from questionnaire survey

Work-related factors affecting job satisfaction

For factors related to work, the study looked at respondents’ occupations, duties, salaries, workloads, job performance, advantages and challenges of working from home.

Data analysis showed that during the time of social distancing respondents’ job satisfaction was particularly different among occupations. 71% governmental officials were satisfied with their telework with one in five very satisfied. Service’s employees ranked second with 58.3% satisfied with their job, but only less than 10% of them were very satisfied. Next were engineers and technical workers with about 50-55% satisfied. In terms of job dissatisfaction, the highest level was 33.3% from service staffs, followed by organizational staff (27.3%) (Figure 5).

In terms of duties, about 90% respondents in charge of giving medical advice, directing supervising, documents processing, and planning were the satisfied with their tasks. Next were report writers and teachers (approximately 74-76%) and technical workers, engineers, accounting staff (about 60-67%). In contrast, 60% employees who received and handled customers’ grievances were dissatisfied with their working from home (Figure 6).

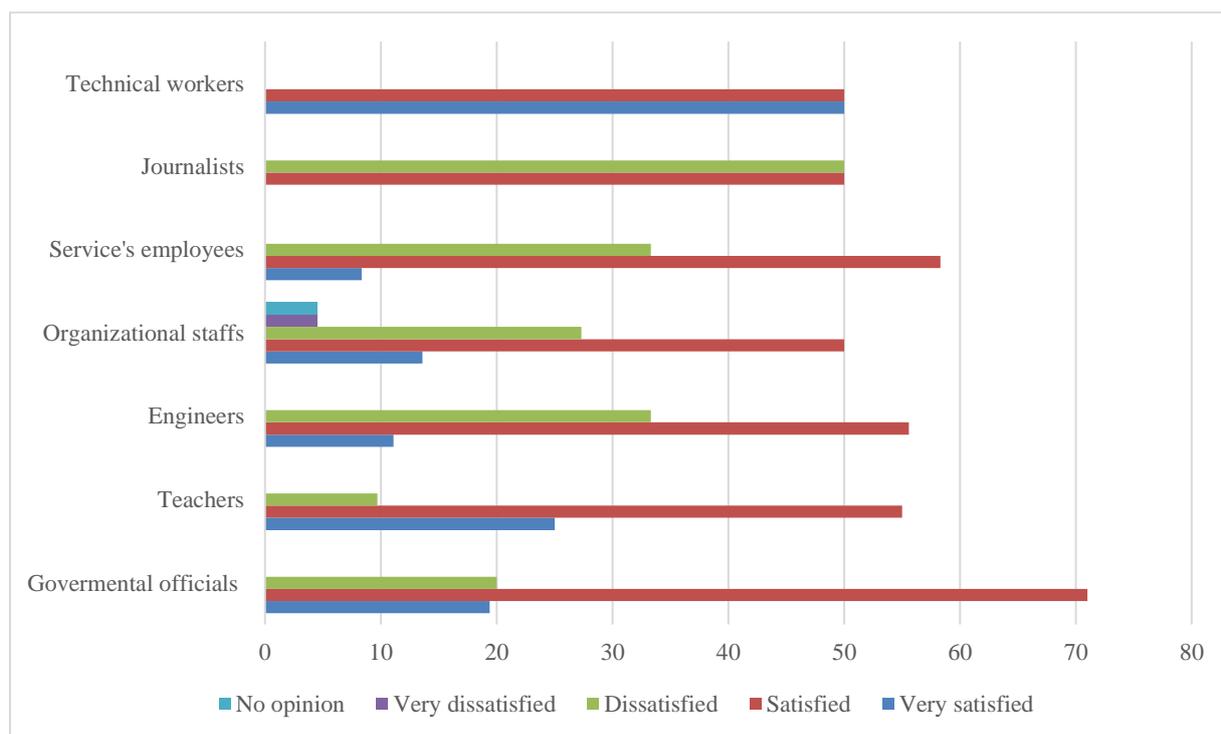


Figure 5. Job satisfaction and occupations

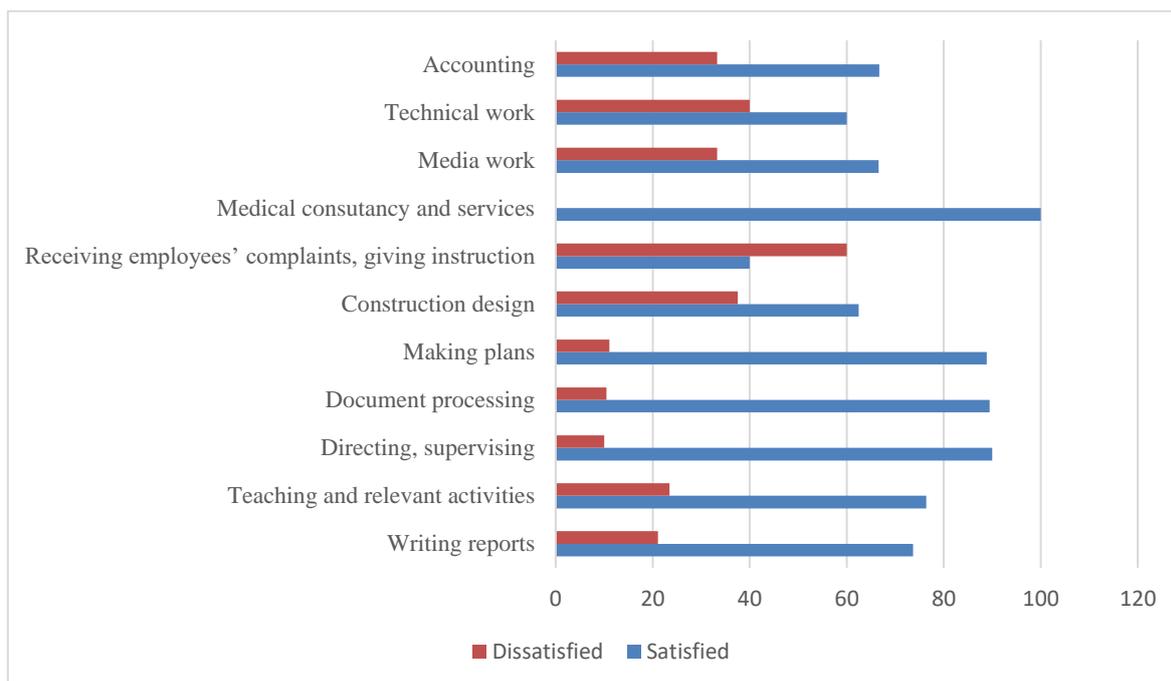


Figure 6. Job satisfaction and work duties at home

80% teleworkers tasked with writing report said they had the same workloads and 70% teachers found their teaching duties slightly reduced. Respondents with engineering and accounting work also confirmed that their mandate was reduced. In contrast, 70% those who received and handled clients' complaints reported their increasing workloads. Employees who were satisfied with their job were mainly those with similar or slightly lower workloads compared than that of before the social distancing (Table 4). This connection was statistically significant (Sig=0.015).

Table 4. Job satisfaction and workload

Workload \ Job satisfaction	The same		Slightly reduced		Slightly heavier		Greatly heavier		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Very satisfied	10	21.7	5	11.6	2	33.3	0	0	17	17
Satisfied	33	71.7	23	53.5	3	50	0	0	60	60
Dissatisfied	2	4.3	14	32.6	1	16.7	4	100	21	21
Very dissatisfied	0	0	1	2.3	0	0	0	0	1	1
No opinion.	1	2.2	0	0	0	0	0	0	1	1
Total	46	100	43	100	6	100	4	100	100	100

Source: SPSS statistics from questionnaire survey

The level of respondents' job satisfaction was also related to their salary. Employees with salaries from >3-6 million VND were the most satisfied with their jobs in social distancing. Next was the group with salaries from >6-9 million VND. More than one fifth of this group were very satisfied with their jobs. The group with salaries below 3 million VND was the least satisfied with their remote work (Table 5).

Table 5. Job satisfaction and salaries

Income \ Job satisfaction	1-3M VND		>3-6M VND		>6-9M VND		>9-13M VND		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Very satisfied	0	0	10	58.8	6	35.3	1	5.9	17	100
Satisfied	3	5	32	53.3	20	33.3	5	8.3	60	100
Dissatisfied	0	0	16	76.2	5	23.8	0	0	21	100
Very dissatisfied	0	0	0	0	1	100	0	0	1	100
No opinion.	0	0	0	0	0	0	1	100	1	100
Total	12	12	44	44	41	41	3	3	100	100

Source: SPSS statistics from questionnaire survey

Table 6. Advantages and challenges of working from home

	Themes	Codes
Advantages	IT support	-Hard ware (computers, laptops, iPad, telephones...) -Software for teleworking -Internet connection
	Flexibility	-Flexible working time -Flexible schedule -Combination with housework
	Efficiency	-Save time for travel -Save cost for travel -Save cost for office operation
Challenges	Distraction	-Distraction by children -Distraction by housework
	Insufficient working conditions	-Lack of facilities (scanners, photocopiers, printers, other machines for work) -Lack of references, materials -Lack of information
	Less interaction	-Less communication with clients -Less interaction with colleagues -Less interaction with students
	Ineffectiveness	-Work disruption (by bad internet connection) -Ineffective teaching

Source: Thematic analysis of interviews' transcripts

Overall, 39% respondents rated their work better than that of before social distancing, 28% saw their performance on average, 11 reported the same performance, and 16% got worse results. 57% of those satisfied with their job evaluated their work performance positively and 26% of people dissatisfied with their job at home graded their results as moderate to poor (Sig=0.000).

49% respondents reported some advantages from working from home while 51% found the opposite. More governmental officials (31.5%) experienced difficulties when working at home than organizational staffs (23.3%). Job satisfaction and having advantages from working at home was statistically significant (Sig=0.035). Nonetheless, 67% respondents who satisfied

with their work still reported they encountered some problems with their telework. Thematic analysis of respondents' answers on the advantages of working at home resulted in three main themes: IT supports, flexibility, efficiency. There were also 4 themes of the challenges respondents reported, namely distraction, insufficient working conditions, less interaction, ineffectiveness (Table 6). Some employees, especially female ones emphasized flexible time, flexible schedule, and the possibility to combine work and housework at home.

In general, 36% of respondents suggested telework should be continued after the Covid-19 outbreak in comparison to 64% rejected this idea. More governmental official (32%) preferred to work at home after social distancing than teachers (27.7%), and organizational staff (15%). This attitude has to do with job satisfaction (Sig=0.000). 76.5% respondents who were very satisfied with their work at home and 53.5% of those who satisfied with it preferred to continue telework after social distancing (Figure 7).

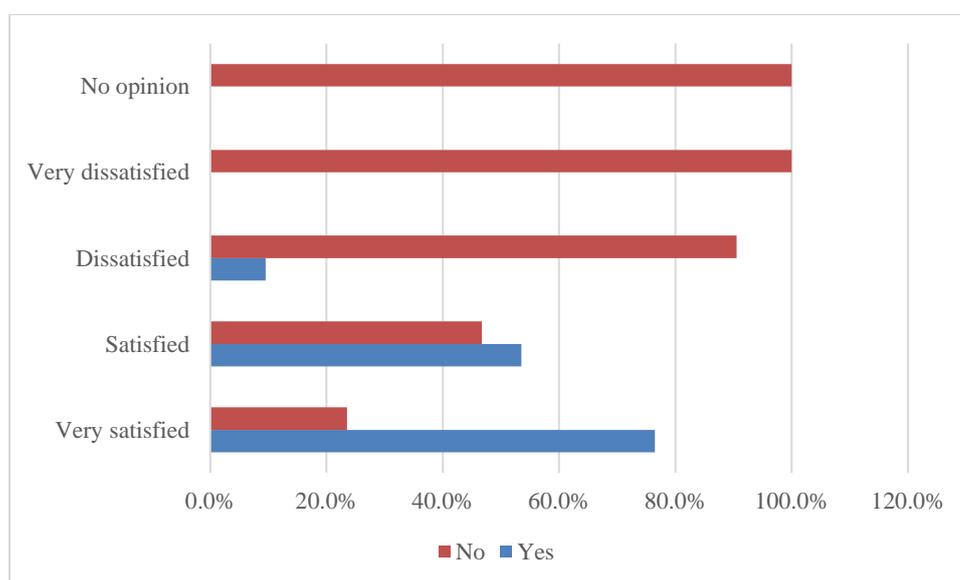


Figure 7. Job satisfaction and teleworking after social distancing

5. RESULTS AND DISCUSSIONS

The research findings show a high level of job satisfaction among respondents on teleworking (>60%) during the April 2020 social distancing in Quy Nhon city, Vietnam. This satisfaction seems to be consistent with other literature on job satisfaction of teleworkers (Fonner & Roloff, 2010; Wheatley, 2012).

The study findings also confirm the effects of both demographic and work-related factors on job satisfaction of teleworkers during the social distancing in April 2020 in Quy Nhon City, Vietnam. Overall, job satisfaction did not differ significantly between male and female employees as well as married and single employees. However, it was linked with age. Mid-career workers showed they were happier with their job than beginners and senior ones. The fact that teleworkers at the mid-career were the most satisfied with their telework regardless of their gender provides an important empirical observation for the debate on whether job satisfaction is shaped by age and gender (Morge, 1953; Sinha & Singh, 1961; Smith et al., 1977; Bhatt, 1987). This influence of age on job satisfaction can be explained by the Maslow theory of need (McLeod, 2007). Mid-career employees have overcome the

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psychological need for their motivation in working outside the traditional workplaces, and at the same time they have the drive for their esteem including achievement, recognition and attention.

In terms work-related factors, job satisfaction did not differ statistically between occupations but was influenced by workload, duties, salaries, job performance, advantages and challenges in working from home. Employees of certain occupations, such as governmental officials and teachers, were likely to be happy because their workloads were similar or slightly reduced compared to that of before the social distancing.

The significant link between job satisfaction and work performance is consistent with other studies on job satisfaction. However, it should be noted that respondents in this study were forced to work from home due to the rule in practice of social distancing, a situation they have not experienced before. The fact that they were still able to complete their tasks with the same or slightly reduced workload during the Covid-19 outbreak gave off their sense of fulfillment and responsibilities in a difficult situation. This explains why a major part of employees who satisfied with their job still found difficulties and did not want to continue teleworking after the social distancing.

Salary was also one of the keys to job satisfaction but their connection was not straightforward. Employees working with a salary less than 3 million VND had the psychological need which made them see their salary as a fair compensation for their less complicated work. Those with a more complicated task and thus with a salary more than 3 million VND had their job satisfaction increased with their salary level. Findings about the effect of salary on job satisfaction show that this “hygiene” factors did contribute to employees’ satisfaction, not only dissatisfaction as Herzberg's two-factor theory stated.

Despite the support of technologies, there were still challenges facing people working from home that can affect their job satisfaction. Problems included distraction from housework (especially female employees), lack of interaction, insufficient working conditions and less effective. People with some specific occupation e.g. clients’ reception and media work faced more difficulties than others.

6. CONCLUSIONS

Studies on the connection between teleworking and job satisfaction (mainly in developed countries) show a high job satisfaction among telecommuters but a mixed picture on factors affecting it. Teleworking has become a new normality in Vietnam during the nation-wide social distancing in April 2020 and then the second outbreak of Covid-19 started in Da Nang city at the end of July 2010. The questionnaire survey of 100 employees working from home in Quy Nhon city, Binh Dinh province, Vietnam during the social distancing focusing on both demographic and work-related factors on job satisfaction provides some important findings. Consistent to other research, the study reveals a high level of teleworkers’ job satisfaction, which were influenced by both demographic and work-related factors. Job satisfaction is not statistically linked to gender and marital status but age. It is not statistically different among occupations but strongly related to duties, workload, work performance, salary, job advantages and difficulties. The high level of job satisfaction of teleworkers in the study seems to be strongly related to the fact that their workloads were the same or slightly reduced compared to that before the social distancing.

Despite the support of technologies, there are still challenges facing people working

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from home that can affect their job satisfaction, and thus their job performance. Problems aroused including distraction, insufficient working conditions, lack of interaction and ineffectiveness. Respondents with some specific tasks, e.g. handling clients' grievances and media work, found more difficulties than others. For these reasons, even a major part of employees satisfied with their job still found difficulties and did not want to continue teleworking after social distancing.

These finding will inform the government and employers of solutions to increase job performance with the new normality of teleworking in Vietnam. The fact that employees in different occupations were able to fulfil their tasks from home with the same or slightly reduced workload as that of before social distancing, shows that some jobs can be done effectively at home. The study findings also indicate that in order to boost teleworkers' performance, it is the matter of compensation, supervision and management. Policy to develop teleworking need to be tailored to age group, occupations, duties and workloads.

Nevertheless, since the study was conducted with a small sample in Quy Nhon City, its findings are still not comprehensive enough to generalize Vietnamese employees' job satisfaction in the new working pattern. More studies are needed with larger samples and in different locations of the country to provide insights into the job satisfaction of teleworkers and the factors affecting it.

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BUILDING THE REVENUE FORECASTING MODEL FOR KOHNAN RETAIL CHAIN AT HO CHI MINH CITY – A MACHINE LEARNING APPROACH

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ABSTRACT

The research aims at building revenue forecasting models for the retail industry based on new technology of machine learning in comparison with traditional models. This study uses primary data from the KOHNAN store at GIGAMALL – The largest retail center in Ho Chi Minh City during the opening period in 2019 and collected more than 185 observations to train different models by using Microsoft's Azure Machine Learning Studio. The forecast results express the importance of choosing the appropriate model. The selected models will focus on providing key benefits in revenue management, which is to support retail managers to be more proactive in managing and implementing plans on goals and operation strategies such as sale, cost reduction, human resource, service quality... Additionally, this study introduces a new approach to analyzing and proposing sales models more efficiently. ARIMA and multiple Regression models will be trained and examined at the same time, on the same dataset to ensure statistical accuracy.

Keywords: Revenue Management; Forecasting; Retail Business; Machine Learning

JEL Classification: O30

1. INTRODUCTION

Homecenter KOHNAN has been a retailer since 1978, 2019 is another important milestone in addition to opening a new store in Vietnam at GIGAMALL and establishing a long-term vision of "New Phase 2025". According to other survey data by Euromonitor International, a market research group, Vietnam emerged as a promising consumer good market, showing that total consumer spending in Vietnam is expected to increase, doubling and reaching approximately 173 billion USD by 2020. But the reality is showing a reverse trend, according to data from the Vietnam Business Registration Administration, in 2019, there will be nearly 90,000 enterprises withdrawn from the market. This represents a potential but really fierce market of over \$90 million.

The concern of revenue management is becoming a hot issue due to the characteristic of an efficient business model that each business unit (corresponding to a chain of stores) maximizes business revenue and minimizes spending to maximize profit. Therefore, the requirement is to have a tool to review the performance of the business, in particular, revenue. Although nowadays, businesses and retail stores have applied POS systems to manage sales figures, this software is ineffective and does not meet the needs of managers.

On the other hand, the tech market now has a breakthrough when Microsoft has rolled out the big data-based Azure Machine Learning Studio - it uses models to predict the future. It features easy to use but things are not as simple as we think because there are countless

algorithms, so what model and algorithm do we have to give the most accurate and efficient result?

Therefore, the objective of this study is to apply, evaluate and compare revenue forecasting models through the use of KOHNAN store data at GIGAMALL. Next is to propose the most accurate forecasting model for the KOHNAN store at GIGAMALL.

2. LITERATURE REVIEW

2.1. Theoretical framework, method and model of research

2.1.1. Theoretical framework

2.1.1.1. Revenue Management

The concept of revenue management is derived from the need to manage revenue of the aviation industry in forecasting the number of seats, whether the price policy is suitable or not. In parallel with the development process, the concept of revenue management is also adjusted to suit the different characteristics of sectors of the industry. That is why the concept of revenue management, or productivity, will be very diverse, depending on each aspect that the research topic wants to address.

According to Talluri and van Ryzin (2006), revenue management is a collection of all strategies and tactics that the company has scientifically used to meet the needs of product quality and service attitude towards customers. Revenue management also means applying data-driven analytics to the merchandise line of business (Bata, S. A., Beard, J., Egri, E., & Morris, D., 2011). Timo.P.K, Sven .F.C (2014) shows that the revenue management is focused on issues related to prices. Based on this, Allos Linn (2016), the nature of revenue management is the understanding of customer perceived value.

The approach of Talluri and van Ryzin is based on the way of managing revenue of the aviation industry, then adjusting the concepts to suit the store. At the same time, according to the research, it helps the store manager to make decisions including:

- (1) Deciding on structure: deciding on the decoration and packaging of products to attract customers.
- (2) Deciding on price: decide price flexibility, adjust the price following the product life cycle and the actual situation of supply and demand of that product.
- (3) Deciding on quantity: deciding on how much to provide for each segment to generate the highest revenue.

2.1.2. The roles of Revenue management

Revenue management will help employees better understand the value they are creating for the store and the store owner will also know the current position of the store compared to competitors as well as the store's ability to occupy the market (Xotels Ltd., as cited by Allos, Linn, 2009). Hayes and Miller (2011), revenue management is a strategy to solve customer problems.

2.1.3. Forecasting revenues

Revenue plays an important role in the operation of the business, especially in the retail industry which is full of fierce competition. Therefore, revenue forecasting is increasingly concerned and has a great influence on the business.

Revenue forecasting is important because:

- Revenue forecasting is an important foundation for the company to set up marketing strategies, pricing strategies. Thereby, the division of goals as well as market access, customer segmentation is more effective at low cost.
- Forecasting revenue contributes to making decisions about time, finance, budget and human resources for the future. Through this, the company owner can be proactive in using capital at a reasonable rate, setting clear specific goals.
- Revenue forecasting is an important factor to help the company overcome difficult times. Through the forecast results, the business will make decisions about whether to continue selling the product or not, whether to operate or stop in order to avoid the generated revenue not enough to cover operating costs.

2.2. Methods of revenue forecasting

Economic forecasting is normally based on time series values with 4 variants – long terms, seasonality, cycle basis and random basis.

2.2.1. Models of forecasting revenues

All forecasting models work on the historical data of time series. The outputs allow the planners to optimize pricing, quality, quantity to see changes in demand of customers. Then, the current data becomes historical again.

2.2.1.1. Linear Regression

Linear regression is a method of analyzing the relationship between dependent variable Y and one or more independent variables X. Modeling uses linear functions. The parameters of the model are estimated from the data.

B: Coefficients

E: Residue

Linear regression method uses the Formula 1:

$$Y = \beta_0 + \beta_1 + \beta_2 X_2 + \dots + \beta_k X_k + E_i \quad (1)$$

The slope of the line is B, and E represents the intercept. Therefore, Y is the response variable which is also called the dependent variable, B's are the weights that are the model parameters, the values of the predictor variables are represented with X's, and finally E is the error term signifying the random sampling noise.

2.2.1.1. Bayesian Linear Regression

By using the approach to linear regression, the use of distributions to consider the distribution of severe errors to accommodate exceptions. When the regression model has errors with regular distributions and a specific distribution form is assumed, the following probability distributions of the parameters give clear results for the model. In particular, in the Bayes linear model, in addition to complex model hierarchy, it also uses a simple regression model with parametric dependent structures with priors.

$$P(w|y) \propto P(y|w)P(w) \quad (2)$$

$$P(w|y) \sim N(\mu, S) \quad (3)$$

$$s^{-1} = s_0^{-1} + \frac{1}{\sigma^2} x^t \quad (4)$$

$$\mu = S(s_0^{-1}\mu_0 + \frac{1}{\sigma^2} x^t y) \quad (5)$$

In Bayesian linear regression, the predictive distribution is calculated using Equation 6:

$$P(y_{new} | y, X, X_{new}, \sigma^2) = \int P(y_{new} | w, X, X_{new}, \sigma^2) P(w|X) dw \quad (6)$$

All possible values of w will be aggregated based on the predicted distribution of Yo's ability to value Xo for a particular w. The current belief of the data about the given data w (y, X) is equal to the probability.

2.2.1.3. Neural Network Regression

The neural network regression uses Equation 7:

$$\sum_{i=0}^M w_i x_i = w \cdot x \quad (7)$$

In Neural Networks, a perceptron is used to take a vector of real-valued inputs to calculate the linear combinations of inputs. If the output is greater than some threshold, then it outputs 1, in the other case it produces -1. The weights have to be calculated according to the perceptron training rules shown in Equation 8 and 9:

$$w_i \leftarrow w_i + \Delta w_i \quad (8)$$

$$\Delta w_i = \eta(t - o)x_i \quad (9)$$

The symbol η refers to the neural network learning rate.

2.2.1.4. Decision Forest Regression

The efficiency in the use of memory during training is also effective in the calculation process. The model can decide non-linearity which represents the boundaries. This is a model consisting of a group of decision trees, in which the integration and classification features are restored even when there are noise features. However, random forest in the method is not a push technique, but rather a bagging technique. In Random Forest, to obtain the last class of the tree, the Gini value is used. Gini value is calculated based on Formula 10:

$$Gini(T) = 1 - \sum_{j=1}^n (P_j)^2 \quad (10)$$

The T dataset is split into T₁, T₂ subsets with N₁, N₂ dimensions, then Gini split value is calculated based on Formula 11:

$$Gini_{split(T)} = \frac{N_1}{N} Gini(T_1) + \frac{N_2}{N} Gini(T_2) \quad (11)$$

2.2.1.5. Boosted Decision Tree Regression

In addition to the name presented on the title, the model is also known with another name, Gradient Boosted Machine. This is a center for machine learning tools in the industry which is considered as one of the most effective machine learning models to provide analysis and prediction. The model combines decisions from a series of baseline models to make predictions and enhance an accuracy improvement with a small risk trend and less coverage. The $F(x)$ is calculated based on Equation 12:

$$F_0(x) = \arg \min \sum_{i=1}^n L(y_i, y) \quad (12)$$

The predictions are calculated based on Equation 13:

$$Y_m = \arg \min \sum_{i=1}^n L(y_i, F_{m-1}(X_i)) - y \frac{\partial L(y_i, F_{m-1}(x_i))}{\partial F_{m-1}(x_i)} \quad (13)$$

2.2.1.6. Ordinal Regression

Ordinal regression can be performed using a [generalized linear model](#) (GLM) that fits both a coefficient vector and a set of *thresholds* to a dataset. Suppose one has a set of observations, represented by length- p vectors \mathbf{x}_1 through \mathbf{x}_n , with associated [responses](#) y_1 through y_n , where each y_i is an [ordinal variable](#) on a scale 1, K .

The model can now be formulated 14 as:

$$Pr(y \leq i|x) = \delta(\theta_i - w \cdot x) \quad (14)$$

2.2.1.7. Poisson Regression

In Poisson regression, we suppose that the Poisson incidence rate μ is determined by a set of k regressor variables (the X 's). The expression 15 relating these quantities is

$$f_{w, b}(x) = E[Y|x] = e^{wTx+b} \quad (15)$$

2.2.1.8. ARIMA

ARIMA (autoregressive integrated moving average) model uses the following. Equations 16-17 and describes the autocorrelations in the data.

$$Y_t = (1 - L)^d X_t \quad (16)$$

$$Y_t(1 - \sum_{i=1}^p \Phi_i L^i) = (1 + \sum_{i=1}^q \Phi_i L^i) \varepsilon_t \quad (17)$$

The parameter L is the lag operator, p is the order which represents the number of time lags of the autoregressive model, and q is the order of the moving-average model. θ are the parameters of the moving average part and Φ are the parameters of the autoregressive part of the model.

2.2.1.9. Seasonal ARIMA

In a seasonal ARIMA model, seasonal AR and MA terms predict X_t using data values and errors at times with lags that are multiples of S (the span of the seasonality). SARIMA uses Formula 18-19-20:

$$\Phi(B)\Delta^d X_t = \theta(B)\alpha_t \quad (18)$$

$$\Phi_s(B^s)\Delta_s^D \alpha_t = s\theta(B^s)\alpha_t \quad (19)$$

$$\Phi(B)s\Phi(B^s)\Delta_s^D \Delta^d X_t = \theta(B_s)\theta(B^s)\alpha_t \quad (20)$$

2.2.1.10. Seasonal ETS

The Seasonal Exponential Smoothing (Seasonal ETS) applies three sub-pass filters recursively with special exponential window functions. The simplest moving averages are the weighting of past observations, but the exponential window functions are multiplied over time to reduce the weight. The simplest formula of seasonal ETS is shown in Formula 21 where α is the smoothing factor and s is the seasonal period.

$$S_t = \alpha X_t(1 + \alpha)S_{t-1} \quad (21)$$

2.2.1.11. Average Method

Estimates of all the future values are equal to the average of the historical data. This approach can be used with any kind of data where historical data is available. Formula 22 shows this simple approach.

$$Y_{t+\frac{h}{t}} = (y_1 + \dots + y_t)/T \quad (22)$$

To make a forecast using averaging, this formula (22) simply takes the average of selected periods of the past data by summing each period and dividing the result by the number of periods.

2.2.2. Criteria to select models

2.2.2.1. Mean Absolute error (MAE)

For a general model with the average of all absolute errors, the MAE is defined as Equation 23:

$$MAE = \frac{1}{n} \sum_{i=1}^n |x_i - x| \quad (23)$$

Where n is the number of errors, Σ is the summation symbol and $x_i - x$ is the absolute error.

Statistically, MAE measures the difference between two continuous boundaries to refer to the result. When different observations are recorded, variables represent the phenomena. With the evaluation of the model based on the data with the use of regression models, MAE also measures the predictions. The above-average test pieces were observed about the difference between the actual and predicted pieces.

2.2.2.2. Average standard deviation (RMSE)

The mean standard deviation is the square root of the mean error as Equation 24:

$$RMSE = \sqrt{\frac{\sum_{i=1}^n (X_{obs,i} - X_{model,i})^2}{n}} \quad (24)$$

2.2.2.3. Using measurement with MAE and RMSE

Weijie. W and Yanmin. L (2018) have demonstrated the reason why using the MAE and RMSE criteria is a good measurement. Two probability distribution data for each rank level, which can be used to round the prediction ranking according to the appropriate integer rank and provide better predictive accuracy. Besides, their experiments have confirmed the accuracy of analysis and effectiveness.

In the experiments made by C.Catal, K.Ece, B.Arslan, and A.Abulbulut (2019). To test the parameters evaluated after time series analysis, the author used Mean Absolute Error and Root Mean Squared Error. The values shown in the table show the assessment results are accurate and highly reliable. In particular, when using measurement with MAE and RMSE, it provides the most accurate measure of a time series analysis technique.

2.2.3. Previous studies

Shucheng Mou, Yang Ji, Chujie Tian (2018) suggest that using the EMD decomposition algorithm to obtain sub-sequences with different amounts of information in the source chain and the final predicted deep learning model obtained by adding a link to the result. Syam.N., Sharma, A. (2018) proposed that using these variables can simulate a shopping center through all complexity of data from the staff provided. This study measures the risks and barriers that may occur in the mall. The author also discusses machine learning and AI in the context of seven sales steps. C.Catal, K.Ece, B.Arslan and A.Akbulut (2019) analyzed time series and regression for sales forecasting problems. After verification by experiments, they found that regression techniques provided greater accuracy and efficiency than other techniques in time series analysis. Specifically, with a coefficient of determination of 0.97, the enhanced Boosted Decision Tree Regression algorithm produces the best sale forecast results.

2.3. Proposed model of research

Research on revenue management projections of other industry groups is based on aviation industry revenue management studies. (L'Heureux, 1986; Lee, 1990; Wickham, 1995). Therefore, the models as well as forecasting the airline's revenue will also be applied to the retail industry.

In the study, the author pointed out that when using the past data series for forecasting, in addition to the traditional models such as simple model, moving average model, etc. The Poisson Regression model is a very useful model for forecasting. This is because the model can lose the very limited assumption that the variance is equal to the mean of the model, combining the attachment of the unknown parameters.

Based on the research results of the authors with extensive knowledge in the field of revenue management, the topic will use models such as simple model, simple leveling, Poisson Regression to make forecasts. At the same time, the thesis will also use indicators such as MAE, RMSE as an important basis for selecting and proposing models suitable to the sales of a specific store.

3. METHODOLOGY

3.1. Research methodology

This study applies many research methodologies. *Comparison analysis* in which different models are put in comparison to see the differences and implications of each model. *The charting method* is to illustrate the trend of revenues for retail in a specified time based on a specific model. *The expert panel* referred to some expert's knowledge for selecting the relevant model for specific retail in Ho Chi Minh City. *Analysis based on experience* is to review the actual activities generating revenues in the past and suggest a practical model for the future. Research revenue data in the form of time series is taken from the unit's POS system, the researcher chooses a store to evaluate and compare revenue forecast models, also select and propose models suitable to the business situation.

3.2. Research sample

The observations used in the paper are secondary data, which are actual collected data for research purposes. The data source is designed to be relevant to the study. For that reason, the collected data was recorded at the end of the day of the studied store. The data collection is carried out continuously over a period of 6 months. Therefore, the number of collected samples is about 185 observations.

4. DATA

Looking at Figure 1, the store's revenues do not fluctuate much and followed a pattern that it was low in the weekdays and increased during the weekends and holidays.

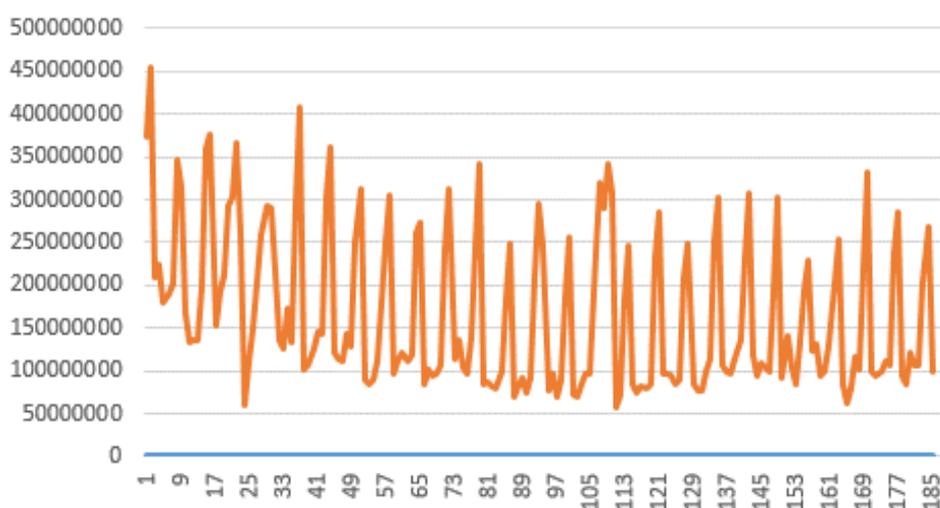


Figure 1. Kohnan store sales in Giga from January 12, 2019 to July 15, 2019

5. RESULTS AND DISCUSSIONS

5.1. Forecasting method

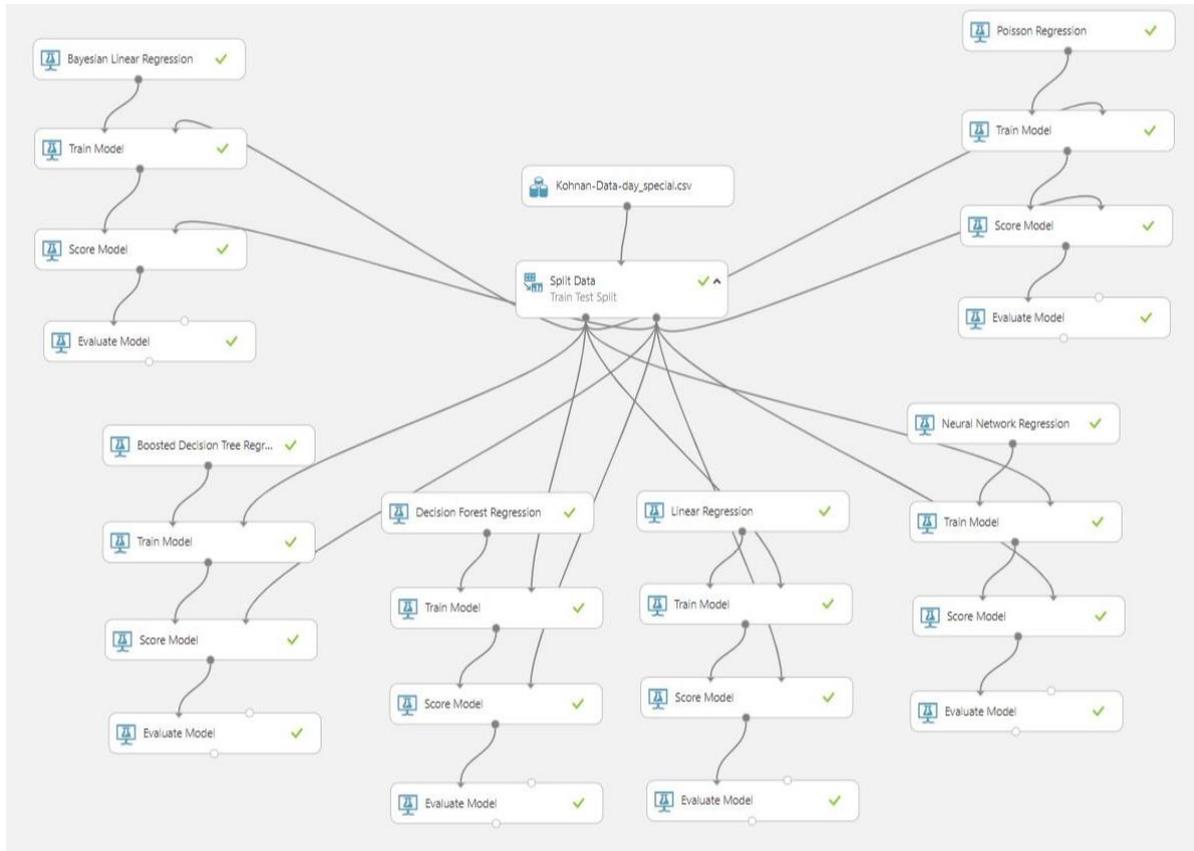


Figure 2. Predictive experiment of all 6 Regression Models

We combine all 6 other Regression models into one experiment and run because they all used the same dataset “Kohnan-Data-day_special.csv”. This dataset has weekends – Saturday and Sundays and public holidays in Vietnam – Tet holiday, International Labour Day, etc. marked as 1 when all other days marked as 0.

As for the other two models we use a different dataset without marking special days due to the nature of the models. We also had to get the Average Seasonal ETS & ARIMA Model from the Azure Gallery.

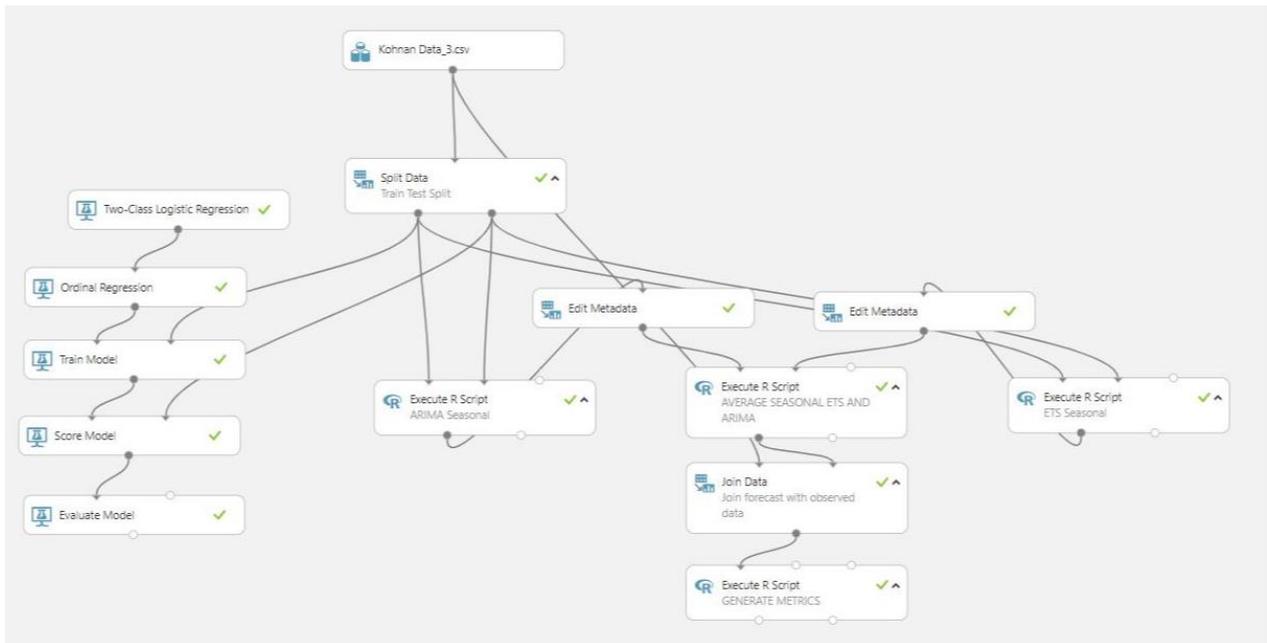


Figure 3. Predictive experiment of Average Seasonal ARIMA & ETS Model and Ordinal Regression

5.2. Model recommendation

The experiment was conducted for only one store and one department of the Kohnan Japan Company. Test results are assessed by several evaluation parameters such as MAE and RMSE. The best approach based on RMSE and MAE value is Poisson Regression as shown in the graph below (Evaluation of experiments) as well as the table.

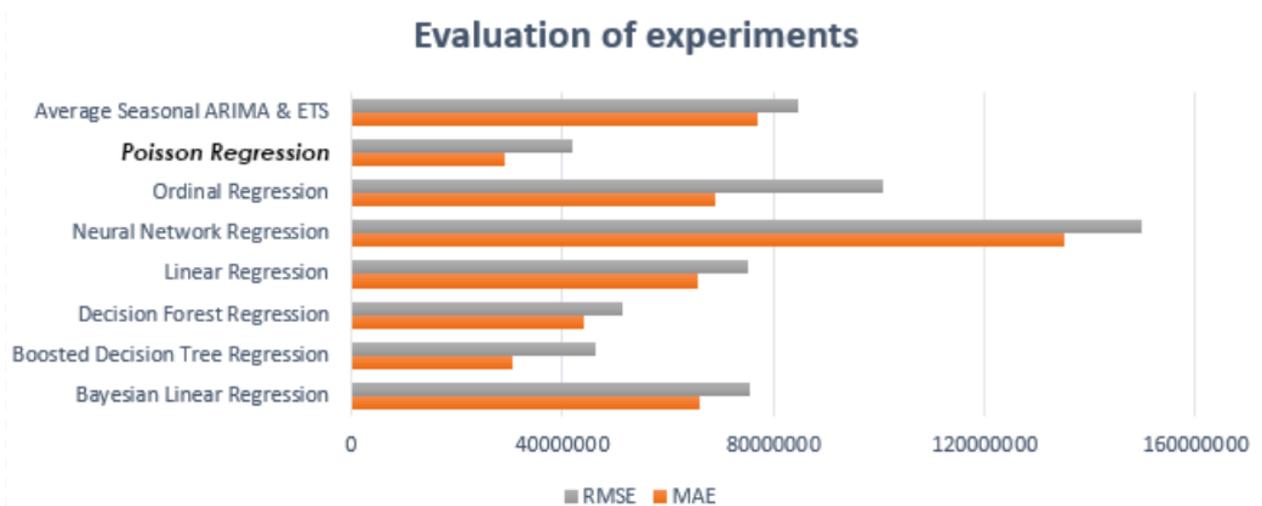


Figure 4: Evaluation of experiments

Table 1: Experiment results

No	Model	MAE	RMSE	Coefficient of Determination
1	Bayesian Linear Regression	65907251.84	75704646.34	0.043118
2	Boosted Decision Tree Regression	30426123.08	46375743.47	0.640917
3	Decision Forest Regression	43968490.34	51564958.78	0.556062
4	Linear Regression	65592022.14	75090903.56	0.058570
5	Neural Network Regression	135070147.3	149736088.6	-2.743399
6	Ordinal Regression	68781527.35	100653851.6	
7	Poisson Regression	29146880.55	41809916.80	0.708142
8	Average Seasonal ARIMA & ETS	76943999.68	84757160.35	

Source: Own computation based on Azure ML Studio

According to the results run using Azure ML Studio, Poisson gave the best MAE and RMSE in 8 models. Not only that, but the Coefficient of Determination of Poisson Regression is 0.7. This means the relationship between the two variables 'Sale 'and 'Special day' explains for around 70% of the variation in the data. The Coefficient of Determination of the Poisson Regression Model is greater than zero which makes it statistically significant.

6. CONCLUSIONS

Through Azure Machine Learning Studio, we can easily process datasets and make accurate recommendations. With KOHNAN's data set, in both RMSE and MAE criteria, Poisson's regression model has the best results.

(1) To be more effective in forecasting sales in the retail industry, it is important to have comparative estimates between the forecasted value and the actual value over different forecast periods. Also, forecasting models should be applied to long-term datasets with many influencing factors like weather or customer gratitude days for higher accuracy. When revenue forecasting is performed at its best, operating costs and service quality will reach optimal levels, as limited resources are reasonably balanced to optimize business capacity and efficiency. To achieve this, we will base on the model that has been identified as the best and come up with the sales forecast for the next day, from which the store manager will have an optimization plan:

- First, he can be more proactive in staff coordination.

- Second is to implement a more flexible price policy, increase or decrease depending on the needs of consumers in certain periods. Low pricing can be done in times of low demand, high in times of high demand. Besides, managers actively implement marketing and promotion policies to stimulate demand through forecasting data.

- Third is to plan short-term and long-term goals. Especially, in the long run, managers should follow the "5 right" criterion as proposed by Kimes (1998): Right product, right price, right time, right customer and right distribution channel.

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(2) Create services and apps for store management and sales through Azure apps. Create and deploy critical web apps to scale with the business through Azure and big data application services. Azure Application Services are HTTP-based services for hosting web applications, REST APIs, and mobile termination. It can be developed in .NET, .NET Core, Java, Ruby, Node.js, PHP or Python. The applications run and expand easily on both Windows and Linux-based environments.

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The output of research is Azure Machine Learning API – API key:

HpaJTpfLjpZM36IIIbAOuYOgBDtlo+Z9b+PbuC1+t1E+W4kAPOL04euH4GPg2DDkUL9uK4L2dsHFNKZjieD7XQ==

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JAPANESE AND FRENCH COST MANAGEMENT ACCOUNTING COMPARED FROM AN INSTITUTIONAL PERSPECTIVE

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ABSTRACT

From an historical perspective, management accounting is a very recent phenomenon that is culturally grounded in a few old-industrialized countries. Notwithstanding the cultural dominance of English-speaking countries in this domain, non-English speaking countries have strong institutional and cultural roots that still influence the ways they manage companies.

This article explores the similarities and differences in Japanese and French cost management from an institutional perspective. While the literature on management accounting compares both European countries and Anglo-Saxon countries among themselves as well as comparing Anglo-Saxon countries with Japan, with European countries and even with emerging countries, no studies comparing France and Japan have been identified.

The research question here is whether France and Japan maintain their own specific cost management systems despite globalization and what the key institutional factors are. The first section describes the theoretical background, the second and third sections present the Japanese and French contexts respectively, while the fourth section discusses our research question. The historical, institutional, and cultural backgrounds of the two countries are reviewed with a focus on cost management. Our comparative approach highlights specific French and Japanese forms of cost management.

Keywords: Japan, France, Institutional Theory, Cost Management, Comparison

JEL Classification: M41

1. INTRODUCTION

From an historical perspective, management accounting is a very recent phenomenon (Johnson and Kaplan 1987) and is culturally grounded in a few old-industrialized countries in Europe (Germany, the United Kingdom, France), the United States, and Japan (Chapman, Hopwood, and Shields 1997). Despite the cultural dominance of English-speaking countries, non-English speaking countries have strong institutional and cultural roots that still influence their forms of corporate management. This proves to be the case when looking at management accounting and more especially at cost management.

This article explores the similarities and differences of Japanese and French cost management over time from an institutional perspective. It seems worthwhile comparing two non-English speaking countries with strong cultural identities and whose companies are internationalized to a high degree. These strong cultural identities mean that Japanese and French companies have developed their own cost management histories while being shielded to some degree from the influence of English-speaking countries.

In the existing comparative management accounting literature, there is a dearth of studies comparing France and Japan. Many works compare Anglo-Saxon countries, European

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countries, Anglo-Saxon countries with Japan, with European countries and even study emerging countries (Endenich, Brandau, and Hoffjan 2011); but no studies have been found comparing France and Japan. In addition, in a context of globalization and the supposed uniformization of management accounting practices, it is interesting to analyze and compare the present-day situations of Japan and France. Japanese methods such as lean management, target costing or kaizen are as popular in France as they are in the English-speaking world. In addition, there are strong relations between France and Japan and many French and Japanese international groups with subsidiaries in Japan and France are interested in understanding the similarities and differences between the two cost management systems. Thus, transnational comparative analyses can have learning effects, facilitate mutual understanding and the successful transfer of techniques (Nobes and Parker, 2006).

The research question is whether, despite globalization, France and Japan continue to maintain their own specific cost management systems and what the key institutional factors are. Section 1 describes the theoretical background, section 2 presents the Japanese context, section 3 the French context and section 4 addresses the research question. The two countries' historical, institutional, and cultural backgrounds are reviewed, focusing on their cost management practices.

While contingency frameworks are commonly used in comparative management accounting, institutional theory can generate interesting results too. Accordingly, the article considers institutional variables by which to compare the beginnings and developments of Japanese and French cost management. The paper considers practices relating to cost management in Japan and France more than theory. This comparative approach pinpoints specific French and Japanese ways of managing costs.

2. THEORETICAL BACKGROUND

The theoretical approaches commonly used in comparative management accounting are contingency frameworks (see Jones et al. 1993; Luther and Longden 2001). Contingency theory states that universally applicable cost management systems which equally satisfy the needs of different organizations under different circumstances do not exist. Efficient management accounting has to be adjusted to meet the characteristics of the country and the company. Variables that are controllable by the organization are arranged to adapt to the contingencies in an appropriate configuration in order to improve performance (Otley 1980).

Numerous scholars have proposed a selection of contingent variables for comparative research on a national basis: Shields (1998); Birkett (1998). Differences in culture are expected to impact cost management systems. Culture is the most frequently-stated influencing factor in management accounting (Chow, Shields, and Chan 1991; Chow, Shields, and Wu 1999).

Endenich, Brandau, and Hoffjan (2011: 376) explain that further studies of comparative management accounting "...should not only employ an extended contingency framework (...) but should also employ other social science theories". Bhimani (1996) claims that companies have an incentive to mutually transfer institutionalized management accounting practices. This may help companies to gain social legitimacy (Ansari and Bell 1990). Accordingly, institutional theory may generate interesting results within a context of converging trends (Granlund and Lukka 1998). This is why this theoretical background structures this research.

The institutional background and the economic situation of the particular country are influential factors (Pistoni and Zoni 2000; Shields 1998: 505–506). Kajüter and Schröder

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(2017) combine contingency and neo-institutional theories in their research and compare management accounting systems of English-speaking corporations with their German subsidiaries. Institutional theory focuses on the influences of the systems surrounding organizations (Scott 2001). Institutions are social constructs directing actions while being sensitive to their influences (Granovetter 1985). These institutions include both formal rules such as government policies, regulations and laws (economic orientation of institutional theory: North 1990; Coase 1998) and informal constraints such as norms of behavior, conventions and codes of conduct derived from cultural and social influences (sociological orientation of institutional theory: DiMaggio and Powell 1983; Scott 2001) and provide us with multiple insights (economic, social, and cultural) into economic phenomena (Polanyi 1968). According to North (1990), allowance for institutions appears to be inescapable when evaluating corporate behavior. So, firms are embedded (Granovetter 1985) in a social, political, institutional, and cultural context. Their behaviors have to be compatible with certain socially accepted values, norms, and rules.

From this institutional perspective, Shields (in Bhimani 1996) identifies seven factors that have shaped and currently influence management accounting practices in European nations. These factors are education, government, professional associations, consultancy, technology, and the international transfer of information. With the same theoretical background, Ramirez (2001) identifies four major determinants: the economic context, the professional context, the teaching context, and the relationship with the authorities.

This theoretical background seems relevant for the present study that looks at different types of institutional influences—tradition, politics, administration, academia, etc.—on Japanese and French cost management. The study is based on historical elements of French and Japanese tradition that enable us to consider a tangle of institutional and economic factors affecting the characteristics of cost management systems.

Using an institutional framework to identify the most important characteristics of cost management in France and Japan, the research focuses on the following determinants:

- the economic and historical determinants at the origins of cost management,
- the management accounting profession and the teaching context,
- the relationship with the authorities,
- the international transfer of information (the influence of other countries on cost management and the convergence trend).

The next two sections account for the mixes of these determinants in the Japanese and French contexts respectively.

3. COST MANAGEMENT IN JAPAN OVER THE COURSE OF TIME

After a description of Japanese cost management systems, this section analyses four institutional factors: economic and historical, professional and educational, the relations with the authorities, and the international transfers of information.

Glancing back over traditions of cost management in Japan, nothing appears really specifically Japanese (Okano and Suzuki 2007) and not dissimilar to Western practices. But closer inspection reveals certain specificities.

The first subsection describes Japanese cost management, its foundation, and development, while the second analyzes its institutional determinants.

3.1. Description of the Japanese Cost Management System

From the end of the nineteenth century, Japan began to study Western management systems and focused in particular on Taylorism in the early twentieth century. Cost accounting became structured before and during the Second World War under multiple influences (Okano and Suzuki, 2007: 1124) and thereafter American influence became increasingly significant.

Historically Japanese companies have used direct costing systems and standard costing as in the US. Japan used budgets from a very early date, notably at Mitsubishi from 1882 onwards (Okano and Suzuki 2007: 1123). As overhead costs increased, a departmental costing system was invented (Shimizu 2014: 21–34). In this system, overhead costs are ascribed to operating and support departments and costs in support departments are allocated to operating and other support departments through four full costing techniques: direct, step-down, grouping step-down, and reciprocal.

As concerns more recent Western innovations, Shimizu (2014) explains for instance that few Japanese companies have experimented with ABC. Using a questionnaire survey, he shows that the rate of overhead costs in Japanese companies is lower than in US companies because Japanese companies directly reduce their overheads. Lean accounting (Maskell and Bagaley 2003), a Western interpretation of Japanese practices, explains why lean practices reduce overhead costs, with lower setup, batch, and inspection costs, and thanks to inter-organizational cost management (Cooper and Slagmulder 2004). So, Japanese companies do not really need the ABC method and its systems for allocating overheads.

Some Japanese companies use a hybrid system combining a step-down full costing method with the Japanese Cost Accounting Standards (CAS), which serves as a good substitute for ABC systems (Shimizu 2014: 30). Another good substitute is the “Kousuu reporting system” which is widely used in Japan. Yoshikawa, Innes, and Mitchell (1997: 49) explain that “Kousuu” are units of resource consumption expressed in physical terms. It is “a detailed inventory of all of the conversion and support activity undertaken in the firm.” It is a resource consumption-based approach enabling users to determine the cost of each resource contributing to an activity. Kousuu provides a high level of detail and is directed at the operational levels of production. In other words, with Kousuu, Japanese companies do not need ABC. Kousuu also feeds the budget and value engineering processes (Yoshikawa, Innes, and Mitchell 1997: 58–59).

Target costing is one of the best-known Japanese innovations. As Feil, Yook, and Kim (2004: 10) explain, early traces of target costing can be detected in US companies such as Ford. These practices were imported by Japanese companies after the Second World War. Japanese companies then transformed them into what is today called target costing. In a sense, target costing is a “travel idea”. The Japanese expression “genka-kikaku” may be misleading. It literally means “cost-planning”. “Genka-kikaku” has much to do with planning, coordinating, and improving in advance of actual production and its calculation.

Even if Japanese scholars disagree on the exact meaning of target costing, there is an all-round consensus that it is a global management process with a cross-functional approach. The main Japanese academics share this view (Kato 1993; Monden and Hamada 1991; Tani, Okano, Iwabuchi, Fududa, and Cooray 1994).

With the foreign influences described in this section and the specificities of the Japanese cost management construction over time, institutional factors will now lend perspective to the observation made.

3.2. Institutional Determinants

When observing the situation in depth, due to the highly endemic cultural identity of Japan, Japanese managers totally reinvented cost management. Japan is regarded as a collective and long-term oriented society. Institutional factors such as permanent employment (Cole 1979) or flexibility and multi-skilling of the workforce (Nishimura 2003) have fundamentally influenced management accounting practices in Japan. As explained by Okano and Suzuki (2007: 1123), “Taylorism in Japan took place at around the same time that Japanese-specific management practices, such as the *Keiei Kazoku Principle*,² the lifetime employment, promotion schemes based on the seniority, were being developed” with the result that economic and institutional factors are intertwined in the construction of management accounting systems.

3.2..1 The Economic and Historical Context

Locke (1984) explains that the adoption of German cost accounting techniques by Japanese firms before the Second World War were overlain by American practices after the Second World War. More recently, the reverse flow of Japanese target costing to America and Germany has been observed.

In Japanese companies, what comes first are industrial and operational questions through the work of engineers setting up procedures and organizational innovations. In this context, cost management consists first and foremost of operational tools devised for engineers, middle managers, and workers. Cost management does not exist in a vacuum but is integrated into operational management systems such as just-in-time, quality control, and target costing.

Historically the characteristics of cost management in Japan are as follows:

- A distinct preference for non-financial, physical, concrete and operational data, contrary to American managers who give precedence to financial and global measures.

As explained by Okano and Suzuki (2007), “unlike the US where monetary terms were utilized in order for the State to rationally allocate resources, the Japanese seemed to have developed some distrust in the monetary valuations.”

- Highly decentralized systems to be as close as possible to the field.

Another factor that favors decentralized cost management is the characteristics of profit centers in Japan which are, according to Cooper (1995) “Microprofit Centers”. Cooper observed in some Japanese companies the division of manufacturing, sales, and support departments into small groups. Shimizu (2017: 136–147) describes the case of the Kyocera Corporation, a fine ceramics manufacturer. Products and sales departments of Kyocera are divided into small groups of five to ten people, called “amoebas”, which are real microprofit centers. These characteristics are in keeping with the cross-functional management style of Japanese companies that appeared in the context of the quality movement. Cross-functional

² The metaphor of the company perceived as a family.

management was introduced in the early 1960s when Total Quality Management was first being introduced.

- A market orientation with a collaborative approach inside and outside the firm (McMann and Nanni 1995). With the Japanese-style transformation of quality control after the Second World War, both buyers and suppliers are supposed to grow together and cost management become a common language to satisfy customers.

3.2.2. The Professional and Educational Contexts

Hiramatsu (1992) explains job rotation for accountants who move to other functions every five to ten years. Consequently, the degree of specialization in cost management is lower in Japan than in France. When it comes to practical education (such as cost accounting), employees are trained essentially in-house and by job rotation, and not in universities (where the programs are more theoretical) or in vocational high schools (where the programs are practical but more elementary). Another characteristic of Japan's collectivism and long-term orientation is the seniority system: wages and promotions rely on seniority instead of performance (Kono and Falkus 1984).

Due to the institutional and cultural factors described, the main characteristics of Japanese cost management are as follows: structures in Japanese companies are less specialized and management accounting is not professionalized. According to Hiramatsu (1992), accountants do not have any accounting major in 69.4% of Japanese organizations. Non-accounting departments have cost management responsibilities. More especially, design and production engineers are frequently involved in cost-reduction programs. The “gemba” and “gembutsu” principles (the 3 Gen principle) also explain why cost management experts are of little use. With an emphasis on basic management units and physical measures, Japanese companies eliminated all forms of cost accounting from a Western point of view. Okano (1995: 351) develops the concept of invisibility about management accounting and notes the “dispersion of management accounting functions” in Japan. The 3 Gen principle is related to the on-the-job training principle in the context of which workers are responsible for improving the process at their level through the practice of auto-control.

This section explains why the management accounting profession remains confidential in Japan and is not so strong as in English-speaking countries and why cost management practices in Japan need to be understood differently.

3.2.3. Relations with the Authorities

There have been Cost Accounting Standards (CAS) regulations in Japan since 1962. Although these standards are not compulsory, manufacturers still use them. CAS regulations are quite relative, according for instance to the classification of operating departments versus support departments and to the allocation of support departments.

Apart from these standards, the influence of the Japanese authorities on the formalization of cost accounting models in companies seems slight as a diversity of practices has been observed. But even now the Japan Cost Accounting Association is considering revising the CAS regulations in order to adapt them to new business circumstances (Takahashi 2016).

Besides CAS regulations, it is necessary to remember that the three decades after the Second World War were a time of government leadership in Japanese cost management.

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Nishimura (2003) shows that Japanese government leadership established modern management accounting in Japan by introducing advanced accounting systems from the USA after the Second World War. In particular the Ministry of International Trade and Industry (MITI)'s Industrial Rationalization Council played a critical role in promoting the spread of modern management accounting techniques. From July 1951 to the 1970s, MITI published many reports on modernization (Nishimura 2003: 24).

3.2.4. The International Transfers of Information

Although Japanese cost management initially imported innovations from other countries, specific systems finally emerged from the practices.

Cost management in Japan is culturally grounded, considering the Western quest for true cost a non-sense and rejecting activity-based costing for instance. Cost management is mainly an influential tool; in other words, costing is more important for decision-making than for control purposes. Japanese management accountants are aware of overhead cost allocation problems, but they prefer cost information for influencing decisions and for motivating employees (Hiromoto 1988). For instance, Japanese managers sometimes allocate overheads on a labor-cost base despite the fact that labor costs are only a small proportion of total costs. This allocation is made to focus design engineers' attention on increasing productivity through automation and for influencing employees, but not for giving information about the cost situation (Hiromoto 1988). Because of the country's collectivist culture, Japanese companies focus more on behavioral control and on motivating employees to reduce costs than on cost control.

According to Hutchinson and Liao (2009: 34), "Japanese management accountants have taken a Zen-like approach to developing cost accounting systems." Considering that there is no such thing as a perfect cost accounting system, the objective of management accountants is not so much to produce precise information. From this perspective, "thinking about cost systems is more important than costing itself." The objective of cost accounting is more to make employees act in accordance with the company's strategy. This philosophy finds an echo in the strategic cost management stream (Shank and Govindarajan 1989). In that sense, a kind of convergence between Japanese management accounting and a modernized approach of management accounting in Western countries can be detected. Other examples of convergence can be detected. For instance, Asada, Bailes, and Suzuki (2000) show a cultural cross-fertilization in a Japanese company between activity-based management and Hoshin management to reduce indirect costs.

The analysis in this section has shown that institutional factors can have ambivalent effects: convergence and differentiation effects. The next part looks at the situation in France using the same approach.

4. COST MANAGEMENT IN FRANCE OVER THE COURSE OF TIME

Several institutional factors explain the specificities of early French cost management as a quite sophisticated system, mainly dedicated to industrial processes, with low managerial and predictive potential.

In the same way as with Japanese cost management, the first subsection describes early French cost management. The second subsection analyzes the institutional determinants

through economic and historical, professional and educational factors, the relations with the authorities and the international transfers of information.

4.1. Description of Early French Full Cost Management

Historically French cost management is largely determined by the industrial cost accounting systems based on a full costing approach, favoring the multiplication of cost centers, volume drivers, and the assignment of indirect costs to cost objects. Cost accounting and budgeting systems were initially separated into two independent cycles. Compared to the Anglo-Saxon accounting system, the French one is also characterized by a sharp divide between cost accounting and financial accounting. Cost accounting is therefore in France explicitly developed for internal decision-making and this is why, according to Nikitin (1990), France made an early contribution to the cost accounting literature.

Even if the French cost accounting systems observed in companies encompass methods based on both full and partial costing, the most significant innovation is based on full costing. Research on cost management practices of French firms during the nineteenth century has focused on the implementation of industrial accounting around 1820 with the accounting for glass production of MGF (“Manufacture des Glaces de France”) and the work of Pierre-Antoine Godard-Desmarest, who was the owner of Baccarat Crystalworks (Nikitin 1990). The MGF company distinguished between the three stages of the manufacturing process: pouring, abrasing, and polishing which led to an overall example of full process costing with a clear distinction between direct and indirect costs. The Baccarat industrial accounting system consisted of a double-entry bookkeeping system with cost calculations and production flow tracking at each stage of the manufacturing process. At the same period, in the field of mining, iron-making, and sugar refining, Guilbault proposed the use of the average-cost method of pricing raw material into production and a process costing system with a distinction between fixed and variable overhead costs (Garner 1954). The work of Lieutenant-Colonel Rimailho, with the “homogeneous section”³ method in military plants, confirmed this preponderance for full costing approaches. Early twentieth-century French firms like Renault deployed such a full costing system.

Thus, French cost management has strong industrial and engineering backgrounds. French cost accounting techniques were developed among others from industrial practices. In this institutional context, the homogeneous sections method was the main innovative concept of French cost accounting in the first part of the twentieth century. This notion was applied to the French military industries during the 1920s by Rimailho (Lemarchand 2002), who was head of the “Commission Générale d’Organisation Scientifique du Travail” (CGOST). Renault, a major French car manufacturer developed sophisticated cost systems (Bhimani 1993, 1996) during the 1920s based on Taylor’s shop floor management system. Other French firms followed Renault’s example. The implementation of budgetary control systems started separately in the 1930s (Berland 1998) and was based on a different process. Cost accounting and budgetary systems long remained two different cycles making it difficult to draw a link between the two. The French cost analytical structure separates direct and indirect costs regarded as cost objects. These cost objects are products and the method does not make it easy

³ A homogeneous section is a cost center organized around a main activity to enable the allocation of its costs to products or to other sections.

to highlight margins based on cost behavior and planning. To do this, a complex correspondence system is required.

Subsequently, the cost management systems of French companies long maintained these distinctive features. After brilliant beginnings, it was therefore difficult to innovate afterwards. In order to do so, innovations on the fringe of management accounting were developed by engineers such as operational dashboards⁴ and the GP-UVA method.⁵ Later on, French companies became interested in innovations from the USA and Japan in particular. This is what we are now going to look into through an institutional interpretation.

4.2. Institutional determinants.

4.2.1. *The Economic and Historical Context*

France is an old industrialized country with a centralized conception of the development of its industries. From its early stages, French cost management was closely tied to its industrial environment. The expression “industrial accounting” was used at that time and several features could be stated:

- the increasing competition experienced by French organizations after the 1820s, which facilitated the emergence of cost management to enhance productivity;
- the influence of the scientific management movement (Taylorism) in relation to the powerful influence of engineers in France;
- in the 1880s, the role of French engineers who developed cost accounting techniques in their attempt to measure the industrial processes. These measures were also designed to help reduce processing costs and to support mass production and the development of innovations. The focus was therefore more on production issues than markets issues, unlike in the US;
- French engineers had also at that time a social view of their role. They saw cost management as an instrument for regulating competition, to justify selling prices, to inform unions, and to promote career advancement for employees;
- in addition to the role played by French engineers and the armaments industry (Lemarchand 2002), the French centralized administration has been very influential.

After the Second World War, France had a state pricing policy. This context reinforced the role of the French administration and cost accounting remained influenced by government authorities through a full costing system. This context remained unchanged until the mid-1960s when demand exceeded supply and production capacity was saturated. The late 1960s saw the beginning of an era in which production capacity regularly exceeded demand. In this context, French full costing was challenged by the introduction of direct or variable costing, but the managerial mind-set was still strongly in favor of full costing. In the 1980s activity-based costing provided an opportunity to re-open the debate.

⁴ The French dashboard (“Tableau de Bord”) focuses on monitoring physical indicators for operational control (Lebas 1994).

⁵ The GP-UVA (added value unit) method simplifies the calculations by fictively reducing multi-product firms to firms that only produce one product thanks to a system of standard cost indexes (Levant and de la Villarmois 2004).

As a consequence, the historical perspective shows that a conservative vision of cost management has gradually taken hold in France with the dominant homogeneous section method which reflects a rather static approach to costs. Subsequently several studies have revealed homogeneity problems in French cost centers leading to cross-subsidization phenomena. Another characteristic of the French full costing method is that it does not consider the capacity question and does not distinguish fixed from variable costs. For that reason, it needs to be completed with the “rational allocation” method to calculate sub-activities or over-activities in production. As a consequence, French cost management systems have been supplemented by innovations from French engineers, by the GP-UVA method of French dashboards, or by innovations from other countries: direct/marginal costing, ABC, or target costing.

4.2.2. The Professional and Educational Contexts

In France, the accounting profession has a low level of recognition. The management accounting profession did not really exist until recently and the development of management accounting was mainly supported by the engineering profession. Levant and Zimnovitch (2013) explain that France was characterized by a dominant engineering culture during the nineteenth and twentieth centuries and that Taylorism was highly influential in France. So, during the nineteenth century several French engineers worked on cost accounting and developed a high degree of rationalization with sophisticated full cost systems. Burlaud and Simon (1981: 22) explain that “the French manner of product costing, embracing the idea of a ‘complete cost’ is an attempt to link scientific precision with practical policies.” Their opinion is that while the procedure is rooted in law, it has also gained popular acceptance due to the “Cartesian element of the French psyche”. It was also a way for engineers to strengthen their overall influence. Famous French entrepreneurs like Renault also influenced the promotion of full costing.

As a consequence, a sophisticated analytical and rational method became popular, namely the French homogeneous sections method. This method, dealing with indirect charges through cost centers, resembles the German full costing method (see Lebas 1994; Cauvin and Neuman 2007). As Boyns, Edwards, and Nikitin (1997a: 418) explain, “the slower development of the French accounting profession provided a window of opportunity for new ideas to be advanced...” with a major role played by the engineering profession.

But, due to the professional situation described, the cost accounting and budgetary systems in the French tradition remained two separate cycles and the traditional cost process made it difficult to link the two. The cost analytical structure separates direct and indirect costs with reference to cost objects and a complex correspondence system, which it is difficult to implement, tries to articulate the two cycles.

Concerning the teaching context in France, the development of management accounting was supported by practitioners and the Chambers of Commerce. Cost accounting and management education did not really exist in French universities. Accordingly, the French education system was characterized by a practical and technical orientation of courses on cost management, without any academic background. This situation slowed innovation in France and imposed a conservative view of accountants and management accountants.

However, the globalization of higher education is leading to other perspectives and a trend towards homogenization. In this context, with phenomena of mimicry at work, French

cost management studies have opened up to Anglo-Saxon methods with notably greater emphasis on strategic and management aspects.

4.2.3. Relations with the Authorities

France has a long history of strong governmental influence with a powerful technocracy. This has been the case since the origins of capitalism with mercantilism and state intervention in the economy (1630–1720). Bhimani (1994) described this situation with the “manufacture des glaces de France” (the Royal Glass Work) case, Boyns, Edwards, and Nikitin (1997b) through industrial accounting during the nineteenth century and Nikitin (1990) with the costing system of Saint-Gobain around 1820.

The French full costing system was institutionalized in the “Plan Comptable” (chart of accounts) with formal rules and fiscal matters which influenced the costing systems. Influenced by the German occupation of France, the chart of accounts of 1942 was very similar to the German plan of 1937 and was maintained after the Second World War. The French state continued to control cost accounting after the Second World War with the introduction of centralized planning and national accounts. As Levant and Nikitin (2012) explain, the French state played a major role in the separation of accounting systems and the failed attempt of the “système croisé” (dual system) to re-integrate them.

As a consequence, the French state was a conservative factor. The influence of legal obligations on accounting policy was so strong that French firms were reluctant to divulge their costs and maintained a sharp separation between financial and cost accounting. French companies tended not to make slight changes to their cost management systems, allocating real costs to the products via the homogenous sections method.

But external influences have also to be mentioned.

4.2.4. The International Transfers of Information

Lock (1984) describes the mutually influential movements between countries, for example between Japan and the US, and between the US, France, and Germany. Shield (1998) describes the American costing techniques in France and Germany in the 1920s, echoing Fordism and Taylorism.

As a result of the elements described in the previous sections, French cost management is sensitive to innovations from other fields (such as engineering) and from abroad due to a robust but rigid initial system, weak professional and educational contexts, and relations with binding authorities. This is why French engineers have had a marked influence on cost management. French controllers have also been sensitive to innovations concerning budgets, management and costing techniques from other countries and in particular from the US and Japan with ABC, target costing, and lean management.

A major US influence on French cost management dates back to the early years of the Marshall Plan (early 1950s). As a consequence, a number of leading French managers studied management accounting in the US. Thus, an increased emphasis on budgeting and management control was observed in the following years. More recently the adoption of activity-based costing, balanced scorecard, and target costing methods are good examples of the phenomenon of international transfers of information. Concerning target costing, differences between a French approach and the Japanese one have more to do with the management philosophy

concerning top leadership, team orientation, commitment to work, and mutual work and education, than with the method itself (Feil et al. 2004: 17). So, a tendency to adopt internationally recognized innovations with a logic of imitation seems to be at work in France.

5. DISCUSSION AND CONCLUSION

This article compares Japanese and French cost management. It shows that there are specific French and Japanese ways of introducing cost management that are substantially different from the Anglo-Saxon approach. At the same time, tendencies towards homogenization are observed. These developments have justified the research objective of examining the institutional determinants that explain why Japan and France maintain specific cost management systems.

According to institutional theories, mimicry phenomena can explain the international diffusion of cost management methods and practices. Notwithstanding this tendency toward uniformization, Japan and France both retain their own institutional characteristics, which explains why their cost management systems have maintained strong specificities over the course of time. The table below synthesizes the similarities and differences between France and Japan.

To summarize the table, we observe that French cost management is grounded on a strong tradition of analysis and control. By contrast, Japanese cost management is more managerial and globally integrated into the whole management system of companies. Through an institutional approach, several comparative determinants between French and Japanese cost management traditions have been discussed. The research shows that the specific practices of cost management observed in France and Japan highlight institutional differences and similarities between the two countries. The points raised are:

- the two countries' traditions of cost management are rooted in an industrial history dominated by the role of engineers, promoting rational, technical, and manufacturing-oriented systems;
- the weakness of the French and Japanese management accounting professions and academic environments consolidates the industrial orientation of cost management in both countries;
- the relationship with national authorities is quite different in France and Japan with respect to cost management. France is a highly centralized country and the influence of the state administration explains the use of highly standardized and separate cost accounting systems, from a conservative perspective. French controllers focus more on the checking behind the control, whereas Japanese controllers favor the steering. French cost management focuses on historical analyses whereas Japanese cost management concentrates on planning.

Accordingly, French managers need other information systems such as the operational dashboard for decision-making purposes. French management accounting is rooted in two contradictory and complementary traditions (Lebas 1994): a tradition of a standardized cost accounting system as a universally accepted method, the homogeneous section method, and a tradition of engineers, developing autonomous methods and a strong interest in foreign methods such as activity-based costing and target costing.

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Table 1. Similarities and differences among French and Japanese cost management

Dimensions identified	Key similarities	Key differences	Consequences for cost management
Globalization phenomenon	Homogenization of practices around the world Both countries influenced by the US innovations	Japan is less permeable than France to innovations from abroad The specificities of Japanese management are stronger than those of French management	Japanese cost management in a firm is part to a globalized management system The French cost management system is more analytical and dissociated from other management mechanisms
Institutional determinants			
1. The economical and historical contexts	Two industrial histories dominated by the role of engineers Cost management for engineers	A more outward-looking economy in Japan A less outward-looking economy in France Family dimension of business relationships in Japan In France, a culture of business secrecy	More external-oriented cost management in Japan than in France: Target costing and life cycle costing/versus homogeneous sections in France A non-cooperative culture of cost management in France/ Versus a cooperative culture in Japan
2. The professional & educational contexts	Management accounting is a "weak" profession in both countries	Higher specialization of functions in France Trained in-house, job rotation and seniority in Japan	A strong technical and control tradition in France/ versus a more philosophical and managerial tradition in Japan
3. Relations with the authorities	Regulations of cost accounting in both countries	Stronger influence of the French government on accounting practices A brake on innovation in France	Greater homogeneity of practices in France with the historical influence of the homogenous section method. More contextualized approaches in Japan
4. The international transfers of information	Widespread dissemination of the world's most popular innovations	A stronger interest for foreign methods in France Japan is a major world influencer Cost management systems are more contextualized in Japan	Cost management adapted to the cultural specificities of Japanese companies Cost management as part of an overall management philosophy in Japan Innovations imported from abroad can coexist with national practices in France

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By contrast, cost management systems in Japan are adapted to companies' operational needs. They are contextualized. Target costing is a global managerial method that needs to be adapted to the specificities of each situation. Target costing is not a specific technique like the French full costing method but a set of principles sustained by a managerial philosophy.

- A “non-cooperative” culture of cost management in France, within and between companies. As French companies tend to favor centralized decision-making systems, cost management may be perceived as an instrument of domination, controlled by experts and high-level managers. This is not the case in Japan and target costing is a good illustration of this difference. Target costing involves employees at the middle management and operational levels with self-control mechanisms.

Cost management in Japan is more outward-looking than in France with a focus on customers, suppliers, and partners. Concerning the cooperative dimension of Japanese cost management, companies with close business relations share common information through value chains. This is the case for instance in the automotive industry between car makers and their main suppliers. Target costing combined with inter-organizational costing and open-book accounting approaches is also a good illustration of this institutional characteristic. In France, there is a reluctance to share costing information, even if target costing is now quite popular in French industries.

Despite the specificities described, the study also shows that a trend towards homogenization of cost management practices is at work. Both countries are influenced by the Anglo-Saxon practices, and evidence of convergence seems to be emerging with for instance the popularity of methods such as the Balanced Scorecard. But these influences may only remain on the surface and may not have much impact on managerial behavior. The literature also indicates, though, that Japan is moving toward Western countries' managerial behavior. For instance, the seniority and permanent employment principles are on the decline in Japan (Pudelko 2009). According to Hopper, Koga, and Goto (1999), several Japanese companies have started generating more detailed cost information and adopting individualized payment systems. In France, the influence of English-speaking countries through the strategic cost management trend is shaking up traditions which are moving toward more external and strategic-oriented cost management systems. The Japanese influence with the lean management movement is also transforming French habits.

Thus, research reveals a hesitation and opposing influences between a trend towards homogenized practices and a trend aimed at maintaining their specificities.

This is why two propositions emerge from the research:

Proposition 1: Japan and France will maintain their specific cost management practices despite the phenomenon of globalization. The differentiated uses of innovative practices may put this proposition into perspective.

Proposition 2: Institutional factors in particular account for the maintenance of the specificities observed, while other institutional factors explain the convergence phenomenon.

So, for future research, it would be worth analyzing these subtle changes in more depth through case studies and by testing the two propositions. Case studies could focus for instance on analysis of the use of target costing or lean management in a French company or Western practices in a Japanese one.

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DIGITAL TRANSFORMATION AND ITS INFLUENCE ON PERFORMANCE OF CREATIVE INDUSTRY COMPANIES

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ABSTRACT

Digital transformation has recently become a popular concept in the world along with the development of high technologies following the trend of industrial 4.0. It has brought many creativity and innovation for development in different industries. Especially, the technology innovation, which is based on digital platforms, is so important for companies to compete in the marketplace. This paper analyses digital transformation and its influence on the performance of creative industry companies; moreover, it also identifies the key factors, which affect digital transformation adoption in the creative industry. The proposed research framework model fills the research gap by using the technology adoption model approach, which is called a TOE framework related to technology context, organization context, and environment context; especially, it also emphasizes how company performance is affected by digital transformation. The research's findings help researchers and practitioners in creative companies to understand more factors, which are technology, organization, and environment may impact the decision-making of digital transformation adoption and bring new insight into company performance influenced by digital transformation. Further research will apply the research framework model in the creative industry with a specific context.

Keywords: Digital transformation, TOE, creative industry, Industry 4.0.

JEL Classification: O14, O32.

1. INTRODUCTION

Currently, it can be said that the revolution of Industry 4.0 has fundamentally changed the world's manufacturing base with the feature of thoroughly utilizing the pervasive power of digitization and information technology. Related to industry 4.0, Lindberg and Hemvik (2015) indicated digital technology was used to improve companies' performance, and Nwankpa and Roumani (2016) also showed the change and transformation using technology platforms; thus, digital transformation is considered as an organizational transformation to technology platforms with many high technologies; for instance, data analytics, social media, and so on. According to WEF (2019, p.5), the support of innovation convergence for industry 4.0, which is related to physical, biological, and digital fields, transforms the way of individual and community life, work, and interacts; especially, integrated and automated mobility solutions are popularly applied for a conversation by using artificial intelligence (AI) and 5G technology. The study's purpose focuses on the theoretical framework and proposes the research framework model to identify how company performance is affected by digital transformation in the creative industry, as well as which factors influence the digital transformation adoption of companies in this industry. The following parts of the article are referred to as important items, as follows: chapter 2 focuses on concepts and theories related to industry 4.0, digital transformation, creative industry, company performance, and technology adoption theory; chapter 3 contains a conceptual approach for the proposal of the research model, which is

introduced in chapter 4; the last chapter of the paper summarizes and concludes with the idea of future research.

2. LITERATURE REVIEW

The industrial revolution is divided by four stages between 18th century and 21st century, as follows: (1) the steam-based machine was taken place in the 18th century; (2) the electrical energy-based mass production was from 19th century to 20th century; (3) the computer and internet-based knowledge happened at the end of the 20th century; (4) an era of the artificial intelligence, big data, internet of thing (IoT), cloud, blockchain has been in the 21st century (Imran et al., 2018). This is also referred by UNCTAD (2018), the digital trend of the digital-creative economy is advanced by big data capture and analytics, augmented reality (AR), artificial intelligence, virtual reality (VR), blockchain, digital marketing, and online advertising.

Additionally, digital technology adoption does not only improves the performance but also the scope of enterprises (Lindberg & Hemvik, 2015) in many industries; especially, the creative industry is classified by (UNCTAD, 2008) including “*traditional cultural expressions, cultural sites, visual arts, performing arts, publishing and printed media, audiovisuals, design, creative services, and new media*”. The study of Mangematin et al. (2014) also reveals that digitalization is applied to music, movies, videos, publishing, video games, and television in the creative industry; therefore, dissemination, circulation, and storage of content are affected by digital technology.

Moreover, digital transformation is considered as a significant background in companies, which may gain competitive advantages for value-creating from information technology development; as a result, the business model, processes, and products help to improve the scale of an enterprise as well as company performance (Goerzig & Bauernhansl, 2018) that comprise internal and external conditions, in which internal factors can be governance, innovation, organizational culture, capital structure, and external factors related to economic conditions, political situation, economic growth (Fujianti, 2018). This problem was also analysed by WEF (2016), they talked about the impacts of digital transformation based on financial factors are shareholder returns related to revenues, costs, capital allocated, and the social impacts, which are environment, population, resources. The study of Stavre (2013) focuses on the benefit of production cost-saving from digital transformation adoption in the television for broadcasting as well, and Surriadi et al. (2019) prove how the way to interact with a customer by using social media and websites. Similarly, the study of Osmundsen et al. (2018) indicates that there is a positive effect of digital transformation on company performance as measured by profitability, customer retention, return on investment, and sales growth.

Nevertheless, the key point of the companies in the creative industry is if they would like to apply the best digital technology and digital transformation; particularly, they must centralize technology adoption theories which are technology acceptance model (TAM) of Davis (1989), technology organization environment (TOE) of Tornatzky and Fleischer (1990), and so on. Many previous studies were actually applied and conducted with appropriate models, such as the study of Abu-Dalbouh (2013) based on the TAM model of Davis (1989) specified how to measure the components related to behaviors, as well as distinguishing between beliefs and attitudes; moreover, Gangwar et al. (2014) also implied the organizational level by using TAM and TOE models instead of others because the TAM model is explained by user behaviors due to IT acceptance and usage in different contexts, but the TOE model is

more popular of the enterprise adoption level with the different products and services from IS/IT, it may provide for an overall picture of user adoption and the factors which are affected by business innovation and organizational development capability depending on technology, organization, and environment variables. Moreover, Zhu et al. (2006) pointed out the TOE framework with three factors that affect the organization's technological innovation including "*Firstly, technological context merged the existing technologies in use and relevant technical skills available in the organization. Secondly, organizational context burning to internal measures of the organization such as its size. Thirdly, environmental context is the external arena in which a company conducts its business and industry, competitors and trading partners*". Similarly, Mohammed et al. (2016) emphasized three specified factors for innovation adoption in the TOE frameworks, such as technology, organization, and environment; especially, Lin et al. (2018) proved that the TOE framework is applied by the investigators to study various technology acceptance including mobile marketing, enterprise 2.0, mobile reservation systems, ERP systems, e-commerce, ICT, and so on; Mohammed et al. (2016) also explored TOE frameworks, which is used for several studies related to IT acceptance; for example, electronic data interchange (EDI), e-commerce, and ERP.

3. CONCEPTUAL DEVELOPMENT OF THE RESEARCH MODEL

The developed theoretical background focuses on previous studies with key factors, such as industry 4.0, digital transformation, creative industry, company performance, technology adoption theory, and so on; thereby, the outcome of theoretical background help this study may be expanded the propositions based on digital transformation following the trend of industry 4.0 and its effect on company performance in the creative industry. The TOE framework theory is used in the proposed research model to consider the influence between technology, organization, and environment and digital transformation adoption; moreover, it also considers the factors of company performance is affected by digital transformation.

3.1. Technology context

According to Awa et al. (2010; 2015), the technology platform based on IT applications depends on technical skills, application developers, user experiences, and the internal technology infrastructure of enterprises. Especially, UNCTAD (2018) proposed industry 4.0 that is applied in the creative industry, such as big data capture and analytics, augmented reality, artificial intelligence, virtual reality, blockchain, digital marketing and online advertising. For the technology context in the creative industry, we argue it is suitable for creative companies to study and develop their business operation practice. We propose:

H1: Technology context significantly influences digital transformation adoption.

3.1.1. Big data capture and analytics

The study of Pappas et al. (2018) refers to big data as a large volume of data with generated online data in an ecosystem of digital media, in which the events are analysed by big data analytics tools as well as the support of artificial intelligence for automatic processes and creation of new business types. Trabucchi (2017) also showed a case study analysis related to big data and analytics with leverage of two-sided structure in advertising, it enables companies to collect data with the valuable users and the long-term business paradigm for clients with free-to-consumers that do not only focus the targeted advertising but also data providers; hence, the companies are going to customize advertising messages through value data. We propose:

H1a: Big data capture and analytics application significantly influence digital transformation adoption.

3.1.2. Augmented reality

The study of Li (2013) identifies the augmented reality, which supplements real-life with virtual objects as well as a wealthy experience along with news for customers.. Especially, Clini et al. (2014) conduct the augmented reality experience via a mobile application which enhances the museum visit experience in the digital mediation of cultural heritage, and Peng (2013) reveals creative products by using the technology of augmented reality; for instance, the valuable data of users is collected by their experience and interaction, so a recommendation system is built by the summarized and analyzed data from the user. We propose:

H1b: Augmented reality application significantly influences digital transformation adoption.

3.1.3. Artificial Intelligence

Artificial intelligence can be considered as the programs with algorithms and systems, which help to advance product or service that becomes more intelligent (Shankar, 2018). Particularly, Crawford and Stark (2019) focused on artists in their study, which addresses social tensions around privacy and surveillance; the identity of media forms includes architecture, film, literature, popular music, digital games, and power as mediated by data, artificial intelligence, and machine learning in their artistic output. We propose:

H1c: Artificial intelligence application significantly influences digital transformation adoption.

3.1.4. Virtual Reality

The research of Jung and tom Dieck (2017) emphasized virtual reality, which is individual experiences, is a creation of the digital world for various experience illustrations; for instance, virtual museums are also the best ways for users to remotely access art and culture. Moreover, virtual reality can be seen as technological progress due to a large applying in fashion with the realistic computer-simulated environment from virtual reality, so it authorizes clients who may interact with the real world (Park et al., 2018). We propose:

H1d: Virtual reality application significantly influences digital transformation adoption.

3.1.5. Blockchain

In research of educational field application, Chen et al. (2018) explored the blockchain is the core technology for creating the cryptocurrencies; similarly, it is widely used in many areas as well, such as finance, judiciary, commerce, and education with many advantages are reliability, trust, security, and efficiency. Especially, Dutra et al. (2018) surveyed twenty startups that involve in the blockchain-enabled business models with variously produced and distributed content types in many fields including music, television, social media as well as digital art, and so on; furthermore, they actually recognize that revenue and digital assets

management of companies is transformed by many applications and business paradigms. We propose:

H1e: Blockchain application significantly influences digital transformation adoption.

3.1.6. Digital marketing and advertising online

According to Chiang et al. (2015), digital marketing is considered as a non-traditional marketing model and marketing activities, which are combined by using information technology and digital instruments. Peterson et al. (2010) showed that there are many advantages in digital marketing such as speed, flexibility, interactivity, and accountability, as well as marketing strategy depending on profit-driven with four supports from individual consumers related to behaviors, needs, communication, and types of usage; as a result, the target customers are identified by the right channel, right time, and the right message from intelligent tools which support for making a decision. We propose:

H1f: Digital marketing and advertising online application significantly influence digital transformation adoption.

3.2. Organization context

The factors of organizational context have been studied by researchers. The study of Scott (2007) focuses on organizational culture, organizational change processes. Meanwhile, Awa et al. (2010) classify the factors of organization context, such as the scope of business operations, individual difference factors, organization mission, firm size, facilitating condition, and social influences. Moreover, Chandra and Kumar (2018) focus on some factors which are the knowledge of decision-makers, strength of finance, as well as the support of top management. Hence, within the scope of the study, the factors will be proposed in this study that are social influences, organization mission, and financial strength. We propose:

H2: Organizational context significantly influences digital transformation adoption.

3.2.1. Social influence

Soares and Pinho (2014) analyzed the influence of recognized pleasure in the reply of advertising from social networks, they point out the social influence variable involved in social identity and group norms. In particular, the study of Shokouyar et al. (2018) found that social influence includes three various procedures based on compliance, identification, as well as internalization; for instance, the social network's members affect each other compared with the trust and idea of other peoples are personalized. We propose:

H2a: Social influence significantly influences digital transformation adoption.

3.2.2. Organization mission

Organization mission is distinguished by the difference of other companies related to overall goals and operational scope (Awa et al., 2010). Additionally, Malbašić et al. (2018) recognize the organization mission which is the foundation for activities of an organization and the responsibility of top management; they also research into the relevance between personal and organizational missions with organizational values which depend on a mission-based

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paradigm, in which it comprises four measurements including steadiness, progress, self-orientation, and orientation of social. We propose:

H2b: Organization mission significantly influences digital transformation adoption.

3.2.3. *Financial strength*

Chandra and Kumar (2018) evaluated financial strength in the company, in which it is so important for any technological innovation; for instance, monetary, engineering, and management are the background for companies to begin innovation. Moreover, the financial restriction causes company innovative activities that are affected due to bigger difficulty, characteristic, and level of unreliability innovative plans (Mateut, 2018). We propose:

H2c: Financial strength significantly influences digital transformation adoption.

3.3. **Environment context**

The context of the business environment relates to the government, industry, competitors, partners, and customers. That is the reason why Hwang et al. (2016) focus on four types of factors in the environmental context that are government regulation, customers, competitors, and social communities. Likewise, the study of Scott (2007) also refers to competitive pressure, regulatory environment, and customer readiness; however, Chiu et al. (2017) only mention competitors and business partners, similar to Chandra and Kumar (2018) identify consumer readiness and competitive pressure. Particularly, Awa et al. (2010) recommend consumer readiness, perceived trust, the pressure of competition, and the readiness of trading partners. Hence, within the scope of the study, the factors will be proposed in this study that are customer, competitor, competitive pressure, and social community. We propose:

H3: Environment context significantly influences digital transformation adoption.

3.3.1. *Customer*

It can be said that customer-related issues are mainly based on factors; for example, satisfaction and demand of customers in a competitive environment, that is the reason why we need to meet customer requirements. According to Hwang et al. (2016), they said that “*To meet environmental challenges in an economically and environmentally sustainable way, a company and its customers may form partnerships that allow them to find solutions for current issues and to seek innovations for future benefits*”. Additionally, the study of Javed (2017) also referred to the concept related to the customer, such as the satisfaction of the customer, the perceived value of the customer, the management of customer relationships, and the loyalty of the customer. We propose:

H3a: Customer satisfaction and demand significantly influence digital transformation adoption.

3.3.2. *Competitor*

Hwang et al. (2016) showed that companies may imitate competitors from their success in business activities; similar companies belong to the separate industry should understand each

other to evaluate and rival others. To research more competitors, companies need to focus on their strengths and weaknesses (Valentina et al., 2015). We propose:

H3b: Competitor's threat significantly influences digital transformation adoption.

3.3.3. Competitive pressure

The research of Meutia and Ismail (2015) explained that the competitive pressure may push the entrepreneurs who innovate to create more valuable products than competitors; for instance, newcomer, substitute products, supplementary product, supplier bargaining power, customer bargaining power, and industrial competition threat. Moreover, according to Awa et al. (2010), competitive pressure is recognized as an innovation adoption driver; it leads to information system technology adoption which transforms the industry practice and creates plenty of new competitors. We propose:

H3c: Competitive Pressure significantly influences digital transformation adoption.

3.3.4. Social community

The community of social in company comprises factors, such as the organizational environment, groups of the community as well as other separate groups (Hwang et al., 2016). Especially, Kim and Chandler (2018) explored that companies may use shared and published news in the social community for more success in product launching based on social media with social characteristics including community, publishing, entertainment, and commerce. We propose:

H3d: Social Community significantly influences digital transformation adoption.

3.4. Company performance

According to Fujianti (2018), company performance is dominated by variables related to internal and external conditions. Internal conditions focus on governance, innovation, organizational culture, and capital structure; however, external conditions comprise economic conditions, political situations, and economic growth. Moreover, Stavre (2013) revealed the benefits of production cost saving for digital television broadcasting by a solution that applies digital transformation in the television field; Surriadi et al. (2019) also explored how the way to interact with the customer through social media and websites on the internet. Especially, Osmundsen et al. (2018) researched previous studies based on digital transformation which directly and indirectly affects different results and performance of the company; especially, the study indicated there was a positive effect between digital transformation and company performance, such as profitability, customer retention, return on investment, and sales growth. Hence, within the scope of the study, the factors will be proposed in this study that are customer engagement, profitability, cost reduction, sales growth, and innovation. We propose:

H4: Digital transformation positively affects company performance.

3.4.1. Customer engagement

Customer engagement can be understood as “*Customer's behavioral manifestations that have a brand or company focus, beyond purchase, resulting from motivational drivers*” (Bitter

& Grabner-Kräuter, 2016, p.291). According to the perspective of Surriadi et al. (2019), there are many various ways to appeal and interact with clients; for instance, new and strange creative content is published on websites and social media, which helps to make both customers and communicated brand interaction. We propose:

H4a: Digital transformation positively affects customer engagement.

3.4.2. Profitability

Lesáková et al. (2019) explain that profitability is the gained result related to resources that are used to achieve it; moreover, profitability measurement is constructed by profitability indicators. Burja (2011) also indicated the profitability of companies in any country or economy sectors related to indicators; for example, net operating profitability, return on assets, return on invested capital, economic value added, return on equity, operating profit margin, and so on. We propose:

H4b: Digital transformation positively affects profitability.

3.4.3. Cost reduction

According to Mpwanya et al. (2015), cost reduction may be done by innovated methods which include new revenue generation, product improvement, and many various services compared to competitors with the improvement of client experiences, the provision of better products and services, as well as cost minimization for the customer. Especially, Stavre (2013) studied the influence of digital technology on the editorial content in his study related to the new management and business model in mass media, the study result identified when digital technology is applied for digital television channel broadcasting, which may be transmitted more eight times compared to the analog television channel, but it still gives smaller production costs. Moreover, Bouwman et al. (2008) also referred to the development of internet protocol television (IPTV), which makes the opportunity for telecom operators to integrate multi-channel specialized networks into a cost-efficient network. We propose:

H4c: Digital transformation positively affects cost reduction.

3.4.4. Sales growth

In the study of Brush et al. (2000) related to sales growth and firm performance, they were aware of sales growth that is influenced by factors, such as internal motivations, promotion, and retention of talented employees; however, it must also be based on investment opportunities for new types of equipment and technologies to upgrade the whole of the production process. Especially, Rodriguez et al. (2016) indicated in their study about the resource-based view as a foundation for social media which is used by large companies with big sales forces; furthermore, the result of study showed that there is a positive relationship between the support of top management, the ability of business staff and the habit of online tools; thus, it is easy to embrace digital client trends and the customer experiences, save time for analyzing data, reduce the cost of sales and condense the sales lifecycle. We propose:

H4d: Digital transformation positively affects sales growth.

3.4.5. Productivity

Kasypi et al. (2013) explored that productivity is measured by the quantity and quality of work performance with considered resource utilization; it is related to doing a task or job in the best possible way, as well as the applied criteria for individuals, groups, and organizations. Moreover, Li et al. (2017) referred to the augmented reality is applied to improve process efficiency and productivity in engineering analysis and simulation. Especially, Huang et al. (2018) examined productivity is affected by big data deployment; as a result, the study result proved that productivity archives higher level if big data is implemented. We propose:

H4e: Digital transformation positively affects productivity.

3.4.6. Innovation

According to the perspective of Borshalina (2019), innovation is the best way for products or services, which applies new opinions and procedures that are suitable for a dynamic environment. Especially, Jaw et al. (2012) emphasized the cultural production innovations which are developed by the innovative puppetry companies from the development of an organization, user interface, and applied technology for option. We propose:

H4f: Digital transformation positively affects innovation.

3.5. Control variables

The control variables are used to this proposed research model to avoid the messy information impacts through two important variables which are company size and type of sector as defined by UNCTAD (2008). Especially, Nwankpa and Datta (2017) found out the previous studies related to company size that impacted an organization's performance and innovativeness.

4. RESEARCH FRAMWORK MODEL

After studying and summarizing in detail the theories and related studies, we propose the research framework model which is based on the TOE framework theory with context factors, such as technology, organization, and environment that identify the impact of these contexts on digital transformation adoption, as well as between digital transformation and company performance (Figure 1).

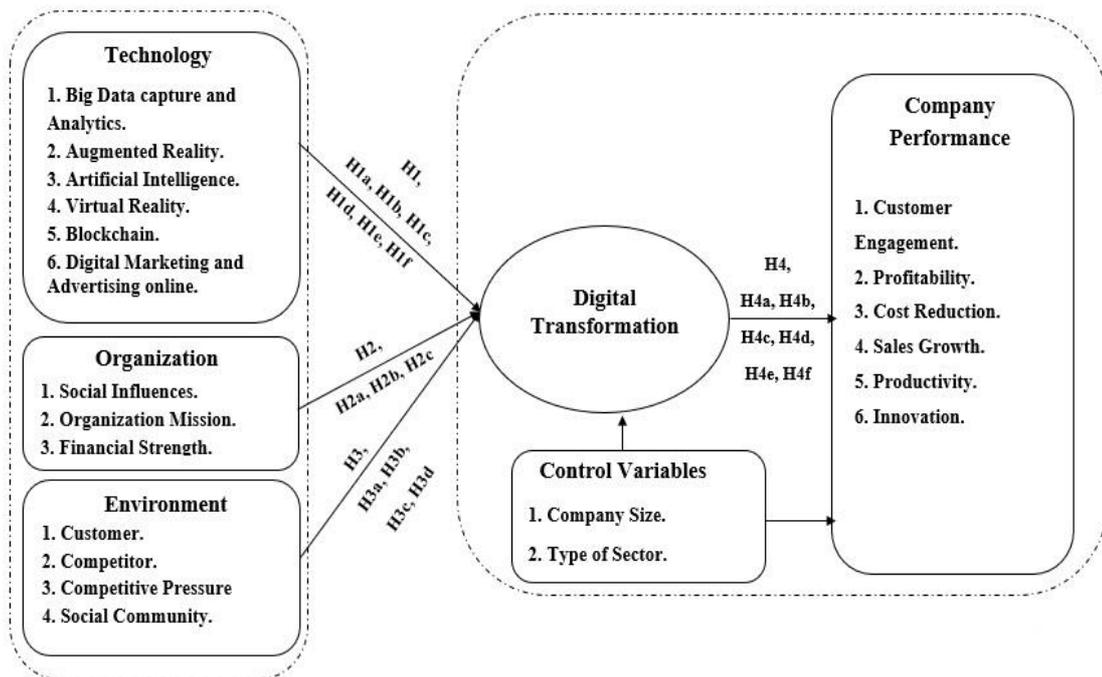


Figure 1. Proposed research framework model.

Source: Own processing.

5. CONCLUSIONS

In our paper, we introduced the research framework model for investigation of the digital transformation in the companies doing business in the creative industry. We identified, the factors influencing the creative companies' digital transformation adoption, and we also considered the digital transformation's influence on company performance. We applied the TOE theoretical framework model to analyze selected factors based on the published references. This research structural paradigm is based on conceptual assumptions, an empirical study will continue by the following research. We will continue with a survey among experienced experts working in the creative industry using a quantitative approach with the application of structural equation modeling (SEM). In general, the proposed research framework model of this research is a basic framework model for companies in the creative industry to understand more and more the major important factors based on technology, organization, environment, and company performance.

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APPLICATION AUTO GUIDED VEHICLE (AGV) IN WAREHOUSE OPERATION: CASE STUDY FAST MOVING CONSUMER GOODS (FMCG) FACTORY

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ABSTRACT

Warehousing has been considered as one of the most important parts adding value in supply chain. Currently, with rapid development of technology, the use of Cyber-Physical systems, warehouse management system (WMS), sensor networks will improve productivity as well as boost up levels of customer service in warehouse operation. One of the smart devices, namely AGV which is a useful tool that can be flexibility with whole warehouse system and increase efficiency and profitability in many order fulfillment operations. By the method case study, data to be collected in one of the FMCG factories. In this paper, it is presented some reflections regarding the implication of AGV contributing to value stream mapping (VSM) in FMCG warehouse operations and showing the picture that AGV gradually replaced forklift drivers in some process of warehouse operation.

Key words: AGV, warehouse operation, logistics 4.0, WMS, FMCG, VSM

1. INTRODUCTION

It is undeniable that warehouse is an essential part in supply chain. The management of a large warehouse is complex tasks and high responsibilities with challenges and pressures in meeting customer requirement's lead-time. Because the fact that there have been thousands of orders receiving daily, across a wide range of thousands of stock keeping units (SKU), serving all consolidator orders or separated orders and shipping in hundreds of vehicles. In order to work smoothly, the planning in warehouse need to undertake at the good levels (René B. M. De Koster et al 2017). They have to calculate the capacity in the peak reason or for the long term, medium term. And in the short term, workload planning is required to assure that appropriate levels of resources such as headcount, equipment are available. They have to correctly balance the resources in the flow through -put to avoid waste time and financial difficulties. In the conventional warehouse it is noted the significance of warehouse management system (WMS) in improving productivity, speed and accuracy.

Thanks to that communication advancement with the various systems involved in the logistics process, it enhances the features and operation of the devices, thereby ensuring the highest level of efficiency of the operation. AGV is also a practical idea to reduce the inefficiencies of day by day practices, avoid inaccuracies as least as possible as well as to solve the labor shortage issue (Navodika et al 2019).

Hence, this paper is aimed at answering the following research questions:

1. Which process in warehouse, AGV could replace forklift drivers?
2. What are values of AGV once they have been applied in warehouse?
3. What are differences if AGV is replaced humans?

4. Which suggestions should the AVG widely used in warehouse to keep up with high technology development trend of smart warehouse?

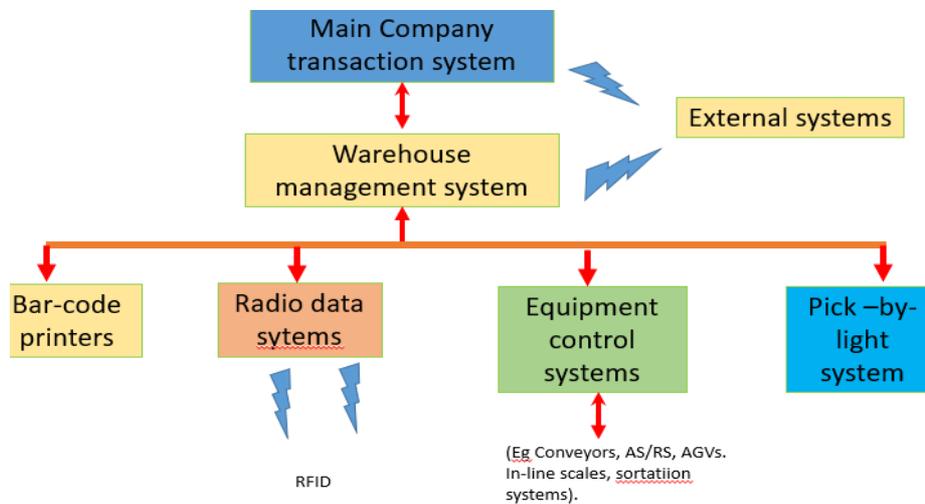


Figure 1. WMS in warehouse

Source: Handbook of logistics and distribution management page 322

2. LITERATURE REVIEW

2.1 Overview of Auto Guided Vehicle (AGV)

In logistics 4.0, robots or self-driving are becoming more popular in warehouse. They have play an important role in replacing humans working in process. According to Hana Neradilova (2017) AVGs have developed into a reliable and efficient technological equipment during more than fifty years. Currently they are used within logistics systems in different types of industrial enterprises and trade lines. Bülent SEZEN (2003) showed in his study that General Motors Company is the pioneer of such an assembly system built in the U.S. with 185 unit-load carriers. H. R. Rabie (2016) revealed in his reseach that different industries are adopting AGV for unique roles in the manufacturing, automotive, search and rescue and military applications.

The first auto guided vehicle application was transportation of groceries in warehouse (Bülent SEZEN (2003). According to I. F. A.VIS (2006) AGVs are also used for repeating transportation tasks in other areas, such as warehouses, container terminals and external (underground) transportation systems. There are classified AGV as towing vehicles, pallet trucks and unit load carriers. Pallet trucks in warehouse use to move pallet horizontally with full pallet load. The AGV can pick up and drop off two pallets or one pallet at once, it depends how many forks installed. The mechanism of AVG working is that wire- guidance systems or magnets which is buried on floor and optical guidance by strips or painted lines. Nowadays, technology has dramatically developed so the launch of off-wire guidance techniques such as laser triangulation, floor-grid referencing, and gyroscopic guidance. (Alan Ruston, 2010).

Technology innovations have launched new version from AGVs generation to LGVs (Wang 2009). The advantages of these techniques are that there is no need for floor cutting or painting, and the guide paths are easily modified. Furthermore, there is no requirement to install

satellite devices for guidance such as wires, magnets, guides etc...., providing total freedom in organizing and adapting the plant layout by software modification only.

2.2 The role of Auto vehicle guided

The AGVs are considered as the effective tools that connect and ensure the integrated and automated management of systems and processes communicating with palletizers, wrappers, coordinating the movements of goods, storage in the warehouse through to the organization and optimized planning of transport time in warehouse. Its typical applications are horizontal movement of pallets from goods receipt zones to the racking storage or pick-face area to dispatch area. Those pallets are moved parallel to the ground rather than going up and down. The AGV carriers are equipped with a rotating laser head above that allows its narrow, invisible and safe light beam to sweep around in the building. When the beam hits a reflector, an “eye” in the laser head reads the direction or angle to the reflection point. By on planned routes on the digital map in warehouse zone, the AGV could be guide itself through the zone. AGV system could optimize warehouse operation means that reduce average driving time and minimize carriers’ traffic. It also trims down accidents that occurred by mistakes or careless etc....

2.3 Benefit of AGV

It is undoubted that more and more AGV systems are used in the warehouse operation. This usage will dramatically impact on how the warehouse will be organized in relation to new technologies and configuration. AGV will coordinate intralogistics flows and different hardware systems, integrates manual and automatic operations. The benefits of using AVG technology in term of delivering palletize goods in warehouse are:

- Saving the labor cost and operation expenses:

Warehouse manager’s responsibilities are to take care their employees, health and safety, working hours. In some kind of warehouse, he has to pay much attention to how to handle to the hazardous goods such as chemical goods, special goods. Furthermore, he needs to carry out to control potential hazards, methods of how to avoid or reduce the impact the risks may happen in related to equipment, resources... He has to think about zone allocated or truck, the policy for truck driver or just settle down working hours, day- off for holidays, or national days. The AGV systems are considered like robots working in warehouse without any requirement benefits as well as remuneration or social welfare. We do not worry about the headcount’s resources rising annually or thinking of yearly upgrade salary or other benefit of forklift drivers or motivation base on KPI performances.

- Putting safety priority:

Well-designed AGVs determine the most effective use of both labor and space in order to reduce waste. They work in the planned paths with equipment lasers, cameras and other sensors that can recognize the surrounding, the obstacles, safely choose to operate around that environment. Some advanced systems have warehouse floor simulators, enabling users to create potential floor plans within the system. These simulators let you place pallets, shelves and other equipment’s that need to accommodate for in warehouse, optimize the flow to movement. By contrast, equipment run by human operators, such as forklifts, do not have as many built-in safety mechanisms and ultimately rely on human input, whereas a human

operator always has the potential to become distracted or fatigued and therefore cause an accident. Moreover, AGV can work in any time whether Sunday or holidays or not, in the cold or heat environment which may be impact on labor productivity.

- Improving warehouse productivity and increasing accuracy:

In warehouse operation, there are thousands of tasks happening daily with thousand order waiting for handling. In peak reason, mistakes may be arisen by people without controlling or anticipating any trouble. By replacing the human resources with LVG, a lot of potential inaccurate workflows or workload will reduce partially and increase output, this helps operation become more smoothly and productive. With LVG systems, there is no limit of working time, capacity of LVG can work 24 hour per day 7 day per week.

2.4. Value stream Mapping (VSM)

VSM theory first applied in manufacturing plant -Toyota was known as lean manufacturing to eliminate the waste, improve lead time, improve cycle time, productivity (Womack J.P. et al 1991). It is a way to improve customer level, resources utilization and finished goods. According to R.M. Belokar et al. (2012), VSM mentions about the flow of material and information mapping as standard method for mapping the flows visually and it has widely used throughout the world, in many businesses to strategically plan. VSM tool is now utilized in many fields such as aircraft, in wood industry, in steel produce, in automotive Industry (R.M. Belokar et al. (2012). VMS in logistics is considered as Rafael S et al. (2010) showed that a value stream map basically is a drawing that represents the total supply chain, Womack and Jones (1991) said “Identifying the value stream for each product line is the next step in lean thinking. More recently. VSM shows the big picture of shop floor rather than individual processes and improving each area at the production line. It is used to draw attention to different wastes and eliminating them in future state map (Praveen Saraswat et al. 2015). In warehouse operation as Frank C.Garcia, P.E (2012) found that warehouse improvement requires optimizing material flow, order picking, replenishment, and dock operations. VSM is one of the useful tools to start implementation of lean concept in warehouse. It follows the production path from beginning to end and shows a visual representation of every process in the material and information flows. The maps show the linkage between information flow and material flow for product movements. VSM applied on warehouse operations as a tool to describe all existing interaction between the parts composing the warehouse processes in order to standardize and optimize them.

3. CASE STUDY

The case study approach seems suitable since the topic of this paper is still understanding, discovery and description stage as H. R.Rabie (2016) said. Currently, AGVs are applied at manufacturing factory. There are some reasons for choosing this factory for this research:

Firstly, the characteristics of products in factory. Its products belong to Fast consuming consumer goods (FMCGs). It is the fact that FMCGs have a short shelf life because of high consumer demand (e.g., **processed foods, Beverages**) ... These goods are purchased frequently, consumed rapidly, priced low, and sold in large quantities...

Secondly, most of orders in factory is almost make-to- stock orders, the flows of goods come from warehouse and majority of shipments are handled in a palletized form. So optimal load planning has an impact on both transport costs and handling. Warehouse is an apart of flow of goods from plant to DC to retail shop. The daily throughput of finished goods handling in warehouse are large volume and high speed for keeping up with customer’s need.

The brand names of the factory will be kept due to confidentiality reasons. This data collected in the brewery warehouse in normal situation not peak season, during the time from March to April 2019 with parameters will be presented in the next part below. It is true that the company’s products are widely consumed in the Southern and Mekong Delta, Viet Nam. Most of finished goods are directly delivered from production site to customers.

A small warehouse is a part of big brewery factories, is about 12500 m with the length of warehouse 500m, located in Ho Chi Minh, equipped with internal infrastructure necessary for fast moving process. The facility consists of nearly 125000 sq. of handling areas, roads and parking lots. It located near the huge plant where the finished goods are transported from production line. From this, all of goods will be moved to customers. The typical divided of floor area used for these functions (receiving, sortation and marshalling and dispatch). It is also taken up a substantial floor area. Sometime zones for picking and packing are combined. It is interesting that added value services often take up little space, but this is frequently because they are an integral part of the picking and packing activities. Some warehouses act as cross-dock or trans-shipment points and, in these situations, there is no reserve storage function. Such warehouses include parcel sortation centers, fashion garment sortation centers (where garments may be imported already destined for particular shops) and perishable goods centers (where perishable food items may be immediately sorted to their destinations). Observation the layout of factory goods from the production line to the dispatch zone. It is noticeable to know the process the warehouse operations consist of goods receipt from production line or other brewery, storage, picking and make delivery.

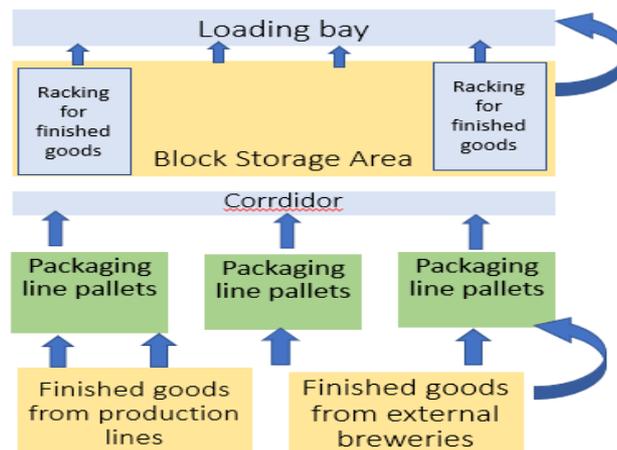


Figure 2. Flow of goods movement

Source: Authors collected at factory warehouse

The current value stream map states that how flows of the finished goods moving in the warehouse. Once finished goods which have been produced at factory, are immediately moved to warehouse nearby to meet customer’s orders. The other finished goods come from external breweries. Because there are some the brand names of production line, all orders are handled

at factory warehouse. The warehouse processes are being controlled and scheduled by information flows.

4. METHODOLOGY

Case research methodology is both appropriate and essential when there is a lack of theory or when theory exists, but the environmental context is different (Stuart *et al.*, 2002).

- Selection of Case:

Since case- based research partly depends on investigate observation. So, case study is qualitative data and has mainly been collected through interviews. (forklift drivers, supervisors, leaders, managers who work in warehouse).

- Data collection:

Data mainly focused interviews, which according to Yin (2009) are suitable for explorative studies. These kinds of interviews are also recommended by Stuart *et al.*, (2002) since they allow some flexibility regarding the data collected.

- Descriptions of case:

- ✓ Observe the layout of factory: how it works manually with the limit of shipping
- ✓ Map the flows of material that may use the resources of AGV or forklift if any
- ✓ Build bottom up calculation of warehouse resources planning AVG/ Forklift drivers by collecting data through- put (volume), shift, labor force working, efficient hours and other numbers, checking consistency of the volume, labor fluctuation.
- ✓ Analyses business case of using either AVG or Forklift driver for each flow.
- ✓ Scale the scenario of two options. The first option is to use the labor as warehouse usual. The second option is that to apply the AGV to replace human force. Comparison (cost or other reason).

- Analysis:

There are inbound flows of goods in warehouse factory or movements in logistics (from its own products and other factories, suppliers), movement finished goods, materials for production, goods from external factory. It is clear to understand that how to manage efficiently these mentioned movements. Inbound logistics includes all those activities, which are necessary to make the goods available for operational processes, just in time for their requirement. It consists materials handling, transportation, stock control, production or make delivery.

The current state map shown in figure 3 could reveal the flow of inbound in the warehouse:

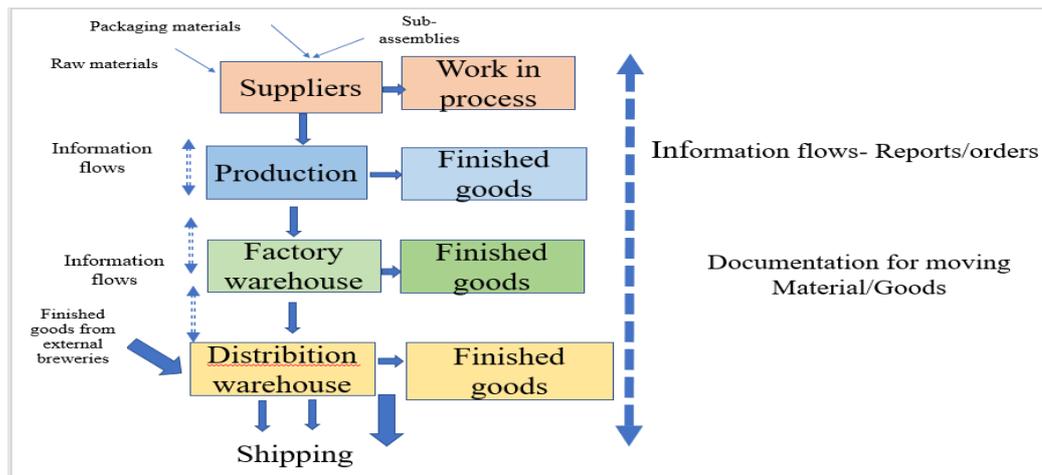


Figure 3. the Flow of Inbound in the warehouse

Source: Authors collected at factory warehouse

Because there are wide ranges of equipment available for moving pallets around warehouse, from simple manual tasks to sophisticated computer -controlled equipment. In the case we employ forklift drivers to move pallets in transactions of warehouse operations.

With the data collect as follows:

Table 1. Calculation about how many forklift drivers working in process of warehouse

Warehouse square	$500 \times 250 = 12500 \text{m}^2$	The length of warehouse 500m pallets/day (assumption: full pallet operation)
Volume through-put	7,400	
Working shift	3	shifts
Efficient hour	6.5	

Source: the authors collect data and calculate

Volume through -put: the quantity of pallet handled per day in warehouse. At warehouse, there are 3 shift per day, efficient hours are 6.5 hours/ shift after reducing for private stuff. There are scenarios.

- First option with daily volumes handled at warehouse, there is no AGVs implication.

The below table 2 show resources needed to plan.

Table 2 explains how many headcounts really in need in warehouse in the normal situation, planning forklift drivers, forklift trucks, calculating the expenses paid for labor forces. It takes about one billion a month to make sure all through- out operation.

- Second option with implication AGV in warehouse. Supposed some parameters are same as first option. However, some conditions have changed a little such as: the speed of AGV moving in warehouse, no over time charge.

The below table 3 shows the planned resources.

In the table 3, with the same volume, factory requires planned twenty-two AGVs to handle all the quantity of pallets. There is imbalance in financial status. The money company

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needs to pay per month in second option increases more than 50 % with the figure of about 500 hundred million Viet Nam Dong.

And the flow chart changes once AGV is replaced instead of forklift drivers in some processes in warehouse such as:

- Transfer of finished goods from production lines and interface conveyor to warehouse
- Transfer of finished goods from warehouse to shipping staging areas
- Transfer empty pallets stacks from warehouse to the production lines
- Transfer of raw material from an interface conveyor to the warehouse and from the warehouse to the production lines.

Table 2. In case there is no AGV implication

Option 1: Resource = Forklift driver + forklift truck	Parametres for calculation	Notes
The average speed that forklift move in warehouse (m/s)	2.8	In Viêt Nam regulation, the average speed that forklift move is 10km/hour
Numbers of Pallet in one movement	2	If we use forklift with 4 forks can move 2 pallets. Otherwise the forklift has 2 forks can move 1 pallet
Number of turns of pallet move per 1 hour	20	If in an hour, the pallet truck moves continuously The turn is understanding that one way has pallet and return has no pallet.
Pallet moved per 1 hour	40	pallets
Pallet moved per 1 FTE	260	Pallets full time equivalents FTEs can measure the amount of labor hours that a company's part-time employees work during the course of year.
No of FTE per day	28	If there is not overtime (OT)
Planned forklift driver head count	29	capacity= FTEx1.1 (OT 10%) can up to 10% on top of 7400 -> 8140
Planned forklift truck	17	back up 1 more truck in case OT
Forklift truck – the rent for Forklift (vnd/month)	36,000,000	Power truck with x 3.5T x 4 forks
Forklift driver – all expenses (vnd/month)	11,000,000	All expenses that company covers including such as: social insurance paid health care... all the income of a worker we divide into a month ...It is 5 year-experienced workers
Total expenses one months (VND/m)	919,000,000	

Source: the authors collect data and calculate

Table 3. in case there is AGV implication

Option 2: Resouce = AGV	Parametres for calculation	Notes
Speed of LVG in warehouse (m/s)	1.7	
Numbers of Pallet in one movement	2	
Number of turns of pallet move per 1 hour	12	One AVG move continuously maximum about 20 turns (a turn include round trip (one way go and one go for return))
Pallet moved per 1 hour	24	
Pallet moved per day	576	
Planned AGV	22	
Investment cost per 1 AGV (average)	420,000	Usd/AGV (at the time 2019) from offer the Eletronic Italian Company
Total investment cost VND	9,240,000	USD/21 AGV/10 ten years
	217,140,000,000	
VND/y	18,095,000,000	
Total expenses one months (VND/m)	1,507,916,666.67	

Note: Just simple calculation not consider the index such as ROI, payback.

Source: the authors collect data and calculate

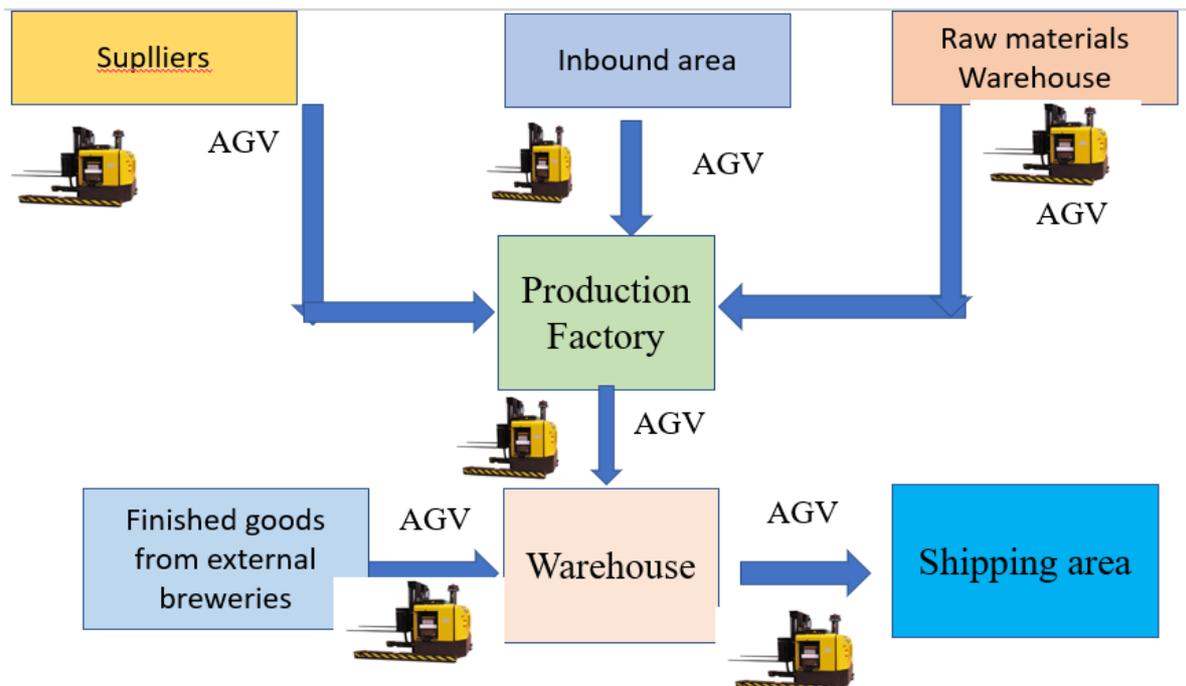


Figure 4. AGVs replace forklift in process of warehouse

Source: Authors collected at factory warehouse

5. DISCUSSIONS

5.1. In the period: at present

It is likely that there is difference between the result of two options. Because AVG can be seem as remarkable tools in the way of order accomplishment, but at this moment, this system does not benefit for every warehouse in this time. Here are some reasons making AVG is not efficient tools using in the warehouse operation in Viet Nam.

- The initial investment expenditure and labor cost. There is a bit of contrary of cost breaking down.

It is the fact that, AGV can robust the bottom line for warehouse operation by reducing labor costs, solving labor stuff and by increasing productivity. However, in term of price, in the short terms, when purchasing a AGV system, it is likely that company invest a huge of money higher than expenses paid for forklift drivers. Because the wage paid for those persons is so lower that every warehouse board management could determine carefully. If the initial investment can be a big burden on operations, they will certainly choose the labor force.

As Vietnam's economy continues growing steadily, salary increase will be essential feature of doing business. Furthermore, with lot of free – trade agreements in regions, bilateral agreement between Viet Nam and other countries, low labor cost is one of important element to attract for foreign investors locating their offices. This is one of Viet Nam's comparative advantages in region when more Foreign Direct Investment (FDI) into countries especial logistics field.

- The limit flexibility in operation of AGV.

When thinking of investing AGV system, the whole processes in warehouse need to be standards, AGV just deal with conventional tasks that they are programmed ready for doing one task but in different zones. It works depend on the synchronized system. If there are changes example special order in high peak reasons or other urgent cases, manager finds it hard to gain good performance. It is difficult to change something that processes are designed or planned before that. It takes time to adjust to make up a sudden change.

5.2. For the next 5 years:

- Price for AGV coming down because of popularity.

It is the fact that finance is one of main reason for considering investment LVG at the moment. The price for one LVG is so high and expensive, not limit to other system in warehouse configuration. In meanwhile the wage for workers is a little bit low. What is going on for the next 5 years? The logistics 4.0 with application of Internet of Things, Cyber-physical Systems, Artificial Intelligence (AI), machine learning, will assure that the smart factory with high technologies work well. The main goal is to foster the intelligent networking of products and processes along the value chain, thus allowing it to use more efficiently the organizational processes, into the creation of goods and services to enhance customer benefit (L.Barreto et al 2017).

The warehouses have always been a center in the flow of goods in the supply chain. The effect of industry 4.0 era will make remarkable changes in organizing a warehouse model where smart management and robots work as human being in meeting high requirements of inbound and out bound logistics (Ruththie Bowles 2020). The whole systems get on well with from every transaction such as pallets are designed to move at nominated /stated locations, or

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delivery zones, racking areas/ waiting for replenishment or visibility inventory, capacity planning... helps to improve and rise customers level. So, it is definite to say that application high technologies in warehouse activities is a certain thing need to do. Once technology advancements become popular, price for it will be cheaper. Thus, it is obvious for mass production and wide application in logistics especially in terms of warehouse operation.

- Remuneration paid to workers rising yearly.

Besides the living standards improves in according with income and other benefits, the amount of money paid to workers by employee will be adjusted year by year. This is completely contrary to price of high technologies. The workers know that working environment has changed. They have to keep learning and want to make themselves more qualified and more valuable workers. It takes years or more than a year for employee to adopt new high technology. The skilled and qualified headcounts will be hired for management of robots or driverless forklifts using in warehouse. The work force will be deeply divided depending on their talent, their qualified requirement.

6. THE SUGGESTION OF IMPLICATION OF AGV

From the above analysis, this study proposes some suggestions for applying AGV to warehouse operation.

Firstly, it is essential for board management to raise awareness of efficiency of AVG. So, they build business case in long terms. They see the benefit of AGV and operation costs so that they allow smart AGV to be integral part in every warehouse operation.

Secondly, it is agreed that implication of new technology in warehouse operation also brings challenges to workforces, to the management boards. So, they consider to build human strategies for flexible change and adaptability with high customers services.

To sum up application the new technology such as AGV has brought lot of advantages. At the moment, it is hard to confirm that using AGV is one of the best solutions in warehouse operation in terms of cost. It is clear that it is driverless forklifts are an integral part of warehouse operation in near future.

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KEY OPERATIONAL FACTORS FOR CUSTOMER RETENTION AT SUPERMARKETS IN VIETNAM

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ABSTRACT

In the technology revolution era and the emerging competitive market of Vietnam, Customer retention has become a critical issue for retailers' survival and development while supermarket shopping frequency has decreased in recent years. For this study, the Descriptive Research, through In-depth interview and Questionnaire, is employed to observe the shopping frequency, attitudes, beliefs, prejudices, preferences, motives, opinions of shoppers for the key operational factors (including People, Products, Premises, Price, Stock, Systems, and Services) and Customer retention at Supermarkets in the context that other types of physical stores (e.g. convenience stores, mini-marts) and Online-retailers have been becoming their critical competitors. Furthermore, Correlation and Linear Regression analysis will be associated to examine the relationships and impacts of these seven factors on Customer retention in the form of Retail operations framework. Expectedly, the research findings may be considered as supplements for the previous concepts as well as considered as new component(s) of Operational Management Models used in retailing.

Keywords: Customer retention, Operational factor, Retail Operations Framework, Supermarkets.

JEL Codes: M12, M19

1. INTRODUCTION

The Vietnamese retail industry has made impressive strides in terms of scale and sales growth since January 01st, 2009 when Vietnam completely opened the retail market for foreign companies as a commitment to WTO which Vietnam joined in 2007. As of 2019, Vietnam had 240 shopping malls (General Statistics Office of Vietnam, 2019), 330 supermarkets, and more than 5,400 convenience stores (To, L., n.d.); which contributed USD161 billion to Vietnam's GDP (General Statistics Office of Vietnam, 2019). With the efforts and achievements of recent years, the retail market has been recognized as one of the top potential and development markets in Asia (Portell et al, 2019).

Mentioning the structure of the Vietnam retail market, there are three groups (EVBN, 2018, p.15): Traditional retail (i.e. Wet market and Grocery stores), Modern retail (i.e. Hypermarkets/ Supermarkets, Department stores/ Shopping centers and Convenience/ Specialty Stores) and Online retail (Figure 1), in which Vietnamese consumers still spend their money mostly in Traditional retail channels for daily consumption.

From 2013 to 2018, the sales proportion of Modern retail channels has remarkably increased and expected to reach 45% of total retail sales share in 2020 (EVBN, 2018, p.16) because of a significant shift in shopping habit from Traditional markets to Modern retail

channels, however, the frequency of shopping at supermarket⁶ channels reduced from 3.26 in 2010 trips/month to 2.45 trips/month in 2018 (Figure 2, Nielsen, 2019). The rationales for this matter may be partly explained with the shifts in shopping habits at new-format retailers (convenience or specialty stores) or online channels (EVBN, 2018, p.36). Hence, the question is placed whether Supermarkets' operations in the terms of "Retail Mix"⁷ (Berman et al, 2018, p.435 & 443; Dunne, 2011, p.61), or "Retail Operational Models" (Esquivias et al, 2010; Sorescu et al, 2011, p.S3; Pal and Byrom, 2003, p.518) may affect shopping frequency, while customers are not easily aware of internal operational activities directly or indirectly impacting their retention.

This paper will serve as a retail operations framework with proposed definitions, in which operational key factors offered by Supermarkets will be assessed by customers in the Vietnam context.



Figure 1. Structure of Retail Market in Vietnam (EVBN, 2018, p.15)

⁶ Supermarket is defined as a modern physical store (including supermarket and hypermarket for this research), where various and mass merchandises are bought from suppliers or processed to sell customers, who are end-users. The goods sold consist of Ultra-fresh food (Meat, Fish, Vegetable, Fruit, Bakery and Ready-to-eat-processing food), Processing food (Dry food, Grocery, Canned foods, Confectionery, Spices, Beverage, Alcohol, Milk, and Dairy), Non-food for household (Cosmetic, Beauty and Health care, Chemical for cleaning and sanitary, Utensil, Electric/Electronic devices), Non-food for other usages (Stationary, Decoration, Do-it-yourself tools-DIY, Equipment for office and other usages), Textile (Bedding, Clothing, Fashion) and Accessories (Shoes, Suitcases, and Tools or materials for traveling and other usages), as Vietnamese standards (Decision No.1371/2004/QD-BTM, issued by Ministry of Trade of Vietnam on 24Sep2004).

⁷ The combination of merchandise, pricing, advertising and promotion, location, customer services and selling, and store layout and design (Dunne, 2011, p.61)

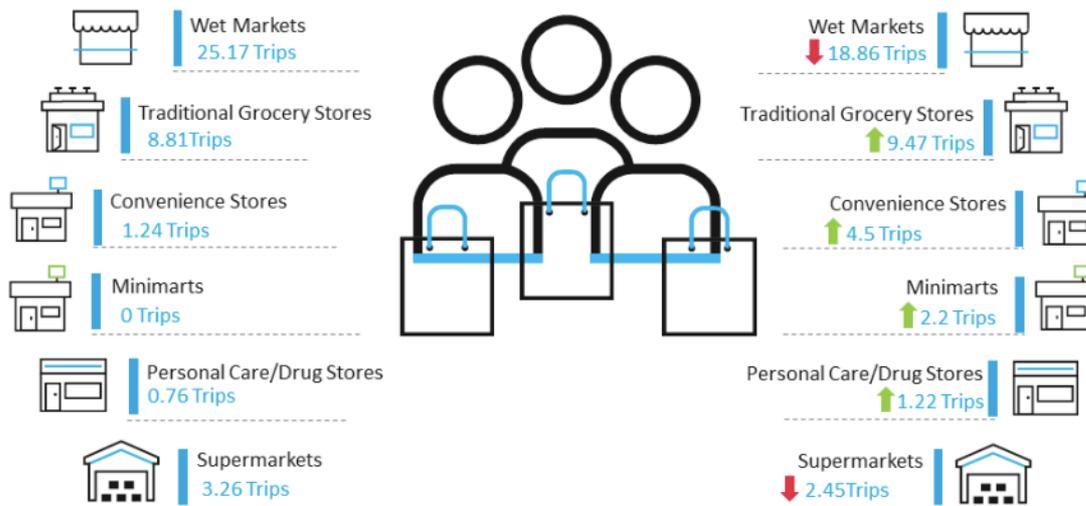


Figure 2. Average shopping frequency at different trade channels claimed by Vietnamese shoppers (Nielsen, 2019)

2. LITERATURE REVIEW

2.1 Research background

Operations are the core of what businesses do to create goods or provide services (Stevenson, 2018, p.3). Refer to operations management, Slack et al (2013, p.4) emphasize that it is very important, challenging, and exciting for all types of organization, and as a business view, operations management has been using available resources to satisfy customer demands (Slack et al, 2013, p.4). In the retail business, to achieve the business objectives, Zentes et al (2017, p.196) claim that Retailers should utilize the Marketing Mix (Store location, Merchandise and category management, In-store marketing, and Customer relationships management) as strategic management tools, simultaneously more focus on Buying, Logistic and Performance Measurement. While Berman and Evans (2013, p.39), Berman et al (2018, p.60) and Zentes et al (2011, p.323) agreed that the relationships between retailers and suppliers were long term collaborative, the price was the total-cost focus, and logistics was considered as a core competitive advantage if they owned storage facilities for stock holding and enough transportation to distribute goods timely so that retailers can satisfy customer needs.

Pal and Byrom (2003, p.524) firstly develop the operational retail model entitled “Five Ss of retail operations: a model and tool for improvement”, which is depicted as a fishbone diagram (Figure 3) and it has become the foundation for further research in recent years. In this model, Pal and Byrom (2003, p.523) define the “Shoppers’ benefits” as an imperative effect to survive and success for a retailer. When mentioning the controllable factors, they suggest that Stock (p.523) directly impacts on the cash flow and lack of availability can lead to customers migrating to other stores, and Space (p.524) is where and how Stock (merchandises) to be displayed for selling. They indicate that Staff (p.524) not only operate the business but also mainly contact customers to provide services. In this model, Pal and Byrom also claim that Systems (p.525) are extremely important because it involves all retailing activities such as ordering, displaying, and serving, while Standards (p.525) are the competitive advantage to ensure all operational processes executed smoothly to satisfy customers’ needs. Especially,

they emphasize the cause-effect impacts among the factors and Shoppers' benefits in their model as the framework that can be exploited by retailers (p.526 & 527).

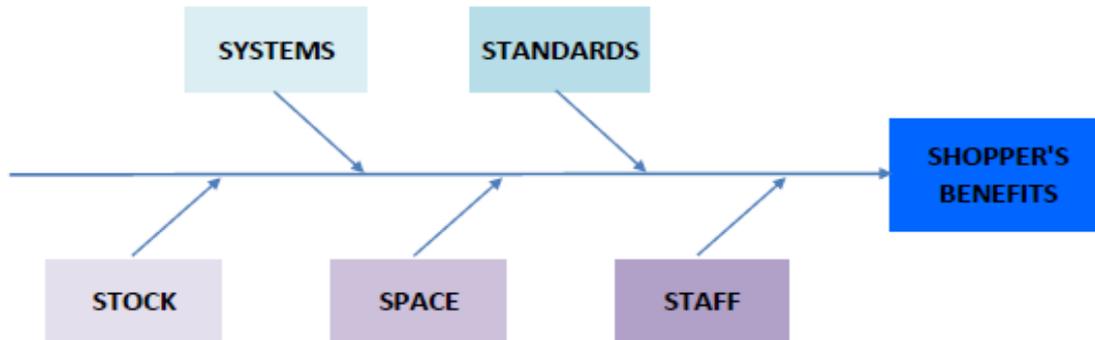


Figure 3. The 5 Ss of retail operations: a model and tool for improvement (Pal and Byrom, 2003, p.524)

In recent decades, Retail Operations Models (Pal and Byrom, 2003, p.524) or Retail Business Models (Esquivias et al, 2010; Sorescu et al, 2011, p.S3) have been discussed and developed by many researchers and authors and used by practitioners. As a matter of fact, in the context of aggressive competition among retailing channels, modern retailers always try to establish the close relationships with customers services (Blut et al, 2018, p.113) and associated with Operations Management (Mou et al, 2018, p.399; Patel et al, 2017, p.243). The concept of patronage in retailing is defined by Blut et al (2018, p.113 &117) as the reciprocity between retailers and shoppers, in which retailers offer services to obtain their shoppers' positive attitude and behavior for their performance. Additionally, Kamran-Disfani et al (2017, p.14), in empirical research, also emphasize that the satisfaction-loyalty link in retailing is more important than ever with store format enhancements.

Using a different approach, Almad and Buttle (2002, p.149) recommend that researchers and practitioners should focus on Customer retention because it is a critical managerial issue and a key objective of business (Almad and Buttle, 2002, p.149; Aspinall et al, 2001, p.79; Buttle, 2009, p.260; Dunne et al, p.452). In fact, Customer retention is defined as the maintenance of customers' continuous purchasing over the long term (Butler, 2009, p.258). He also adds that Customer retention is the number of customers doing business with the company and expressed in the percentage of active customers in a fiscal year (p.258).

Almad and Buttle (2002, p.151) claim that both new and existing customers should be treated with mix strategies including (i) Product and Service design; (ii) Pricing; (iii) Sales; (iv) Advertising; (v) Direct marketing; and (vi) Distribution. Especially in the Retail industry, Dunne et al (2011, p.54 & 452) and Kalwal and Rajput (2014, p.1799) argue that Customer retention is so important because it is the major issue that retailers are facing every day and they try to acquire the high customer retention rate by not only building relationships and marketing strategies (Berman and Evans, 2013, p.77 & 555) but also Store operational strategies (Aparna et al, 2018, p.73; Stevenson, 2018, p.406).

Regarding measurements of customer retention, different from the practitioners who mostly use quantitative methods and the data recorded in the fiscal year in the forms of managerial reports (Nexcess, n.d.; Smile.io, 2019), Aspinall et al (2001, p.84) conduct

interviews with managerial employees or directors in marketing and recommend several methods of measuring customer retention, such as Behavior (e.g. Trends in sales, Sales and Sales at the individual level, Percentage of customers buying and Frequency) and Attitude (e.g. Measure of declared loyalty/ commitment, Customer attitude, and Product preferences), however, they also claim that their research is lacking in practice (Aspinall et al, 2001, p.87). This also shows that the previous concepts, models, and methods should be discussed, updated, and supplemented to adapt to the current context.

2.2 Research gaps

No doubt to say that the models and concepts mentioned are really valuable resources and foundations for this paper; however, they have been mostly presented as implementing marketing strategies. Additionally, while the world is constantly changing and affecting business in the 4.0 technology revolution, whether these models and concepts are suitable in the retail industry with high demands of customers. Besides, the definitions or descriptions of elements, causal or reciprocal impacts of models' factors have not been fully updated, discussed, or developed in the previous papers and researches in Vietnam. For instance, Pal and Byrom, (2003, p.523) mention that the lack of stock' availability and presentation in supermarkets can lead to customers migrating to other stores and identify the influences on Stock such as Staff, Standards, and Systems, but they have not proved whether customers will return and do shopping though they are offered many benefits. Furthermore, Information Technology (IT) has been discussed in these models but not much as a critical subject while it substantially contributes to the ordering process, stock displaying, payment making and delivery of goods to customers, assists shoppers to access products' information, place orders by PC or smartphone any time from anywhere. Additionally, Systems (including technology infrastructure, applications, and data) are currently not only helpful for all transactions to be completed perfectly but also are very important sources for management decision-making. When discussing "Products", Blut et al (2014, p.115 & 117) define it in terms of product range and product quality whereas "Products" in retail operation management cannot stand alone for selling without in-store-marketing such as decoration, presentation for accessibility, and experience (Zentes et al, 2011, p.273), safety and easy conditions, i.e. storage, traceability sources, hygiene and safety standards (Zentes et al, 2011, p.17 & 42; 2017, p.409 & 412), and reasonable price or discount rate, that strongly attract shoppers' sight and coming back as well as create customer trust (Zentes et al, 2011, p.251; 2017, p.279). In recent years, many studies focus on customer satisfaction and loyalty, whereas Kanwal and Rajput (2014, p.1799) argue that Customer retention has become a critical issue for business survival, especially in the retail industry. In their research scope, they illustrate that Customer retention is due to customer satisfaction with brand community, shopping convenience, and personalization of service (Kanwal and Rajput, 2014, p.1799), while Patel et al (2017, p.241 & 242) claim that service operation management plays a very important role for retail survival, but they just limit for new ventures. A machine-learning approach for forecasting Customer retention (Schaeffer and Sanchez, 2020, p.3 & 5) is very interesting, however, the approach is based on historical data, it does not reflect the retailers' efforts through their operational activities.

As a prediction, Grewal et al (2017, p.1) believe that the future of retailing will be based on (i) technology and tools to facilitate decision-making, (ii) visual display and merchandise offer decisions, (iii) consumption and engagement, (iv) big data collection and usage, and (v) analytics and profitability, but it is hard to find a study in Vietnam that deeply addresses or discusses the relationships or effects of these factors on customer retention. This situation may

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be one of the rationales for the necessity to propose a framework which may identify and examine the gaps between business practice and previous models and theories in the context of the retail market of Vietnam, where the economic and social conditions are very different from those of the developed countries. Furthermore, when discussing the concepts or building models of customer retention, authors often rely on marketing perspectives, while operations are the foundation that drives customer retention.

Therefore, it is essential to have a specific and suitable study on what key operational factors that Supermarkets perform to manage and increase Customer retention as well as to test whether retailers' offers are adequate to meet their customers' demands based on operational perspectives. The retail operations framework with the correlations and impacts of the seven key factors on customer retention as proposed in this research is inspired and derived from Operational management models (Berman et al, 2018; Pal & Byrom, 2003; and Zentes et al, 2011; 2017), and developed from business practices through the 8-year-observation with the special corporations of store managers of the biggest Retailers in Vietnam.

Different from previous concepts, models, and frameworks relating to customer retention, the framework proposed in this paper will focus on investigating whether supermarkets' operations to meet customer requirements and make their customers retain to do shopping or not. This may inevitably lead to inaccuracies because customers hardly discern the operational activities behind what they can see visually in the supermarket. However, the research results will hopefully be a reliable reference in the academic field and helpful insights for the retailing sector.

2.3 Research Objectives

The first objective is to describe the key factors that Vietnam Supermarkets should manage, assumed in the terms of People, Product, Premises, Price, Stock, System, and Services to maintain Customer retention with their relevant indicators (measures), based on the concepts or theories of previous researches, and assessment of practitioners and shoppers. The second objective is to examine the positive correlations and impacts of these factors on Customer retention among the factors and Customer retention in the form of the retail operational framework. Expectedly, the research findings may be considered as the supplements for the previous theories as well as new component(s) of Operational Management Models used in the retail industry of Vietnam.

The seven factors including People, Product, Premises, Price, Stock, Systems, and Services are assumed to be the key operational factors which attract customers to repurchase in supermarkets more frequently and help supermarkets manage, maintain, and increase their Customer retention rate, one of the Key Performance indicators that Supermarkets efforts through their operational activities to achieve. Customer retention and these factors are defined and measured by relevant indicators, as follows:

- i. **Customer retention** in this research, based on the definition of Customer retention of Butler's (2009, p.258) can be redefined as the maintenance of continuous relationships with customers over a specific period. More specifically, Schaeffer and Sanchez (2020, p.2) modify and customize Customer retention as the activities and actions that retailers take to engage and retain customers for repurchasing, or to decrease customer defections over a specific period. Hence, since Customer retention is vital, supermarkets' efforts are trying to offer the products and services which are exceeding customer expectations through their operational activities (Dunne et al, 2008, p.452).

Therefore, in this research, Customer retention is defined as the dependent variable influenced by the seven factors below and examined by customers' feedback, which is collected by a questionnaire survey. It is also recommended that shopping frequency is the measurement of Customer retention (Aspinall et al, 2001, p.80; Nielsen, 2019, p.2), in terms of the number of shopping trips per month, which will be used in the customer survey process. In practice, Supermarkets use calculable metrics such as Repeat rate, Churn rate, Upselling ratio, Lifetime value (Matu, 2019; Nexcess, n.d.) to assess Customer retention, however, these figures are internal business recordings, not customers' consideration or concerns. In this paper, the indicators of Customer retention at Supermarkets to be proposed for the shoppers' assessment, are Shopping frequency, Referral or Recommendation to others for shopping (Buttle, 2009, p.261), Size of expenditure or Budget for shopping (Aspinall et al, 2001, p.80), Involvement or Joining clubs (or events) (Aspinall et al, 2001, p.80) which will be considered and examined in study results.

- ii. **People**, the company's assets, and the major source of customer value (Buttle, 2009, p.213 & 216), also called Staff by Pal and Byrom (2003, p.253), is the strongest factor to deliver products and services to customers to create company image and reputation. According to Zentes et al (2017, p.7) and Berman et al (2018, p.123), People in retail are skillful and knowledgeable staff who run the stores, involve from product seeking and sourcing to serving customers after-sales. Additionally, they emphasize that staff are "brand ambassadors", the pivotal factor of customer-centric strategy (Zentes et al, 2017, p.317) because they are dealing with customers every day. Shopping in Supermarkets, customers expect to seek Human contact (Blut et al, 2018, p.117; Buttle, 2009, p.216), Staff's Helpfulness (Berman et al, 2018, p.37); Buttle, 2009, p.256; Pal & Byrom, 2003, p.525), Empathy (Berman et al, 2018, p.523; Buttle, 2009, p.209) and Ethic behavior (Berman et al, 2018, p.63 & 324), which are recommended to examine the People factor's impacts on Customer retention.
- iii. **Products**, according to marketing perspectives (Lamb et al, 2017, p.172), are both favorable and unfavorable things that customers want to purchase. In retailing, Products involve several critical issues such as Categories, Assortments, Quality, Packaging, and Services enclosed (Berman et al, 2018, p.24, 369; and Zentes et al, 2017, p.5). For supermarkets, Products displaying or presenting as planograms or schematic is an advantage to attract customers' sight, then encourage them to physically experiencing (Zentes et al, 2017, p.330 & 331). As the assumption of this research and other authors' opinions, Products of Supermarkets may increase Shopper retention because of its characteristics such as Diversification (Blut et al, 2018, p.117; Zentes et al, 2017, p.77), Physical experience (Buttle, 2009, p.165 & 214), Quality Assurance (Blut et al, 2018, p.117 & 265; Dunne et al, 2011, p.123 & 147), Differentiation, and Customization/ Personalization (Berman et al, 2018, p.233; Blut et al, 2018, p.117; Buttle, 2009, p.284), which will be used as indicators to test whether they affect on Customer retention during the survey conducted.
- iv. **Premises** of Supermarkets are described as a business environment consisting of Location, Buildings, and other Facilities for a retail business with Security, Safety, and Hygiene conditions as standards and regulations. According to Berman et al (2018, p.240), trading-area analysis (geographic, demographic information) is one of the most important foundations to decide the new store location. The premises on the selected location can be owned or leased provided that it can attract and serve customers well

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because customers coming supermarket not only for shopping but also for experience and enjoyment (Berman et al, 2018, p.197 & 464). Nowadays, the Premises of Supermarkets are expected as Store format and design with Safety and Security conditions (Berman et al, 2018, p.155 & 341; Kamran-Disfani et al, 2017, p.15), Convenient Ecosystem (Blut et al, 2018, p.117; Dunne et al, 2011, p.233), Accessible location (Berman et al, 2018, p.238; Blut et al, 2018, p.117; Dunne et al, 2011, p.229) with Shopping infrastructure and Additional convenient facilities (Blut et al, 2018, p.117) for customers to do shopping. Thus, these characteristics of Premises will be proposed to be the measurements of this factor in this study.

- v. **Price** is a key element in a retail store's positioning strategy (Lamb et al, 2017, p.419). Additionally, Lamb et al (2017, p.255) claim that higher prices often indicate a higher quality of products, and enhance the retailers' prestigious brand-names as marketing perspectives. In the research, Price is considered as one of the competitive strategies which are supermarkets' efforts to attract and retain customer repurchasing, including indicators of Good value or "Value-for-money" (Berman et al, 2018, p.35; Blut et al, 2018, p.117; Buttle, 2009, p.261; Zentes et al, 2017, p.43), Discount (Zentes et al, 2017, p.34-36), Transparency, and Comparability (Berman et al, 2018, p.42 & 89).
- vi. **Stocks** (or Inventory) are the critical factor in the operating strategy of retailers, and the main tasks of store managers are ensuring that the stores are always well-stocked (Berman et al, 2018, p.461). Moreover, Byrom and Pal (2003, p.523) also claim that under stocking or out of stock may negatively impact on customer satisfaction, therefore retailers, on one hand, try to decrease stock level for effectiveness, on the other hand, they attempt to ensure stock availability to increase service level in store. They also argue that retailers should maintain the optimized stock loads with the right quantities at the right place, right time, and reasonable price, otherwise the customers may migrate to competitors (Byrom and Pal, 2003, p.523). In this study, whether Stock of Supermarket with its indicators including Mass merchandise (Fernie et al, 2003, p.327 & 331), Availability (Berman et al, 2018, p.155 & 203; Pal & Byrom, 2003, p.254), Well-displaying (Pal & Byrom, 2003, p.254), and Good preservation (proposed by the author) can attract in-store customers and increase Customer retention will be investigated in a questionnaire survey conducted to find out what the Shoppers attitudes.
- vii. **Systems** consist of hardware (PC, POS, and other IT infrastructure), software/ applications, data/ information assets, internet, and business intelligence used to operate a retailing company in practice. Because of the Systems' significance, it can be considered as the "nerve system" of a retailer (Berman et al, 2018, p.378). In fact, the IT can help retailers with the systems of operational management, marketing and controlling, offer customer shopping conveniences as well as maintain the customer relationship (Berman et al, 2018, p.378; Pal and Byrom, 2003); therefore, without Systems, modern retailing is impossible. For Supermarkets, investment in Systems does not only enhance their business processes but also improve customer services (Pal and Byrom, 2003, p.525). According to Berman et al (2018, p.117) and Folarin and Hassan, (2015, p.17), mobile applications' development has been the most critical for survival and development when consumers use more smartphones for shopping. So, with the Systems, Supermarkets assumingly enhance Customer retention with Speedy processes (Berman et al, 2018, p.33, 157 & 220; Buttle, 2009, p.256; Pal & Byrom, 2003, p.525; Zentes et al, 2017, p.36 & 90), Personalized dual-communication (Berman et al, 2018, p.56; Folarin and Hassan, 2015, p.20), Information accessibility, (Berman et al, 2018,

p.164 &172; Zentes et al, 2017, p.81 & 87 & 97), and Online-shopping (Berman et al, 2018, p.151, 162 & 172; Folarin & Hassan, 2015, p.20; Zentes et al, 2017, p.ix, 17).

- viii. **Services** of supermarkets are defined as quality services by which customers are not only served with a wide range of products and additional services but also experiencing what Retailers offer while E-tailers cannot (Berman et al, 2018, p.69 & 162). Probably, Supermarkets' Service is one of the pivotal factors that can keep customers coming and returning while online shopping is booming. In order to serve customers better, retailers use CRM (customer relationship management) to targets customers based on knowledge of shopping behavior (Zentes et al, 2017, p.311). The retailers usually offer additional services such as special personal events (sometimes like marketing activities), loyalty programs, and other facilities for customer experience and enjoy while shopping (Berman et al, 2018, p.55, 56, 105 & 430). Services in supermarkets nowadays are more dominant than other retail channels, not only including after-sales services, free delivery, but also loyalty programs, promotion, sampling for customer experience, decoration, music, and other facilities to obtain customers' most satisfactions. With the Systems' support, customer relationship management (CRM) has been becoming the essential tools to understand customer demands and measure Customer retention so that supermarket can serve customers better and better with their offers consisting of Interior designs and Decorations (Berman et al, 2018, p.53; Buttle, 2009, p.256; Zentes et al, 2017, p.311), After-sales services (Berman et al, 2018, p.36 & 53), Loyalty programs (Berman et al, 2018, p.204 & 209; Blut et al, 2018, p.115; Buttle, 2009, p.43; Zentes et al, 2017, p.351 -358) and Well-handling for complaints (Berman et al, 2018, p.53, 66, 69; Buttle, 2009, p.202; Zentes et al, 2017, p.354 & 356), which will be examined by the Shoppers through the survey.

However, this research will have a couple of limitations. It focuses only on Supermarkets, physical modern retailers, which are the most popular in Vietnam and have significant buying power on the market, thus it cannot be implied to other types of retail (such as convenience stores, department stores, or shopping malls). Moreover, this study lacks theoretical and perspective frameworks which are applicable in Vietnam, research developed is mainly based on phenomena and business practice. Despite its weaknesses, this research will hopefully be a reliable reference for further researches and helpful resources for practitioners in Vietnam's retail industry.

2.4. Hypothesis formulation and hypothetical framework

The research objective, after describing Customer retention and People, Product, Premises, Price, Stock, Systems, and Services factors through the relevant indicators, is to examine the positive relationships and impacts of these factors on Customer retention at supermarkets among them in the form of the retail operational framework. Therefore, correspondingly to these seven factors, there are seven hypotheses respectively as follows:

- H1: Good behavior of People (Staff) in Supermarkets has positive correlations and impacts on Customer retention.
- H2: Physical product presentation, diversification, and quality in Supermarkets have positive correlations and impacts on Customer retention.
- H3: Premises with Convenient ecosystem and Facilities, Safe and security conditions of Supermarkets have positive correlations and impacts on Customer retention.

- H4: The ways of Price quotation and discount policies in Supermarkets have positive correlations and impacts on Customer retention.
- H5: Stock availability and preservation in Supermarkets have positive correlations and impacts on Customer retention.
- H6: Systems (Information technology and applications) of Supermarkets have positive correlations and impacts on Customer retention.
- H7: Good Services and Loyalty customer programs of Supermarkets have positive correlations and impacts on Customer retention.

Based on objectives and hypotheses of the research, the hypothetical framework is proposed in the form of seven key operational factors of Supermarkets, consisting of People, Products, Premises, Price, Stock, Systems, and Services with their relevant indicators, which are assumed to have positive correlations and impacts on Customers retention, presented in Figure 4.

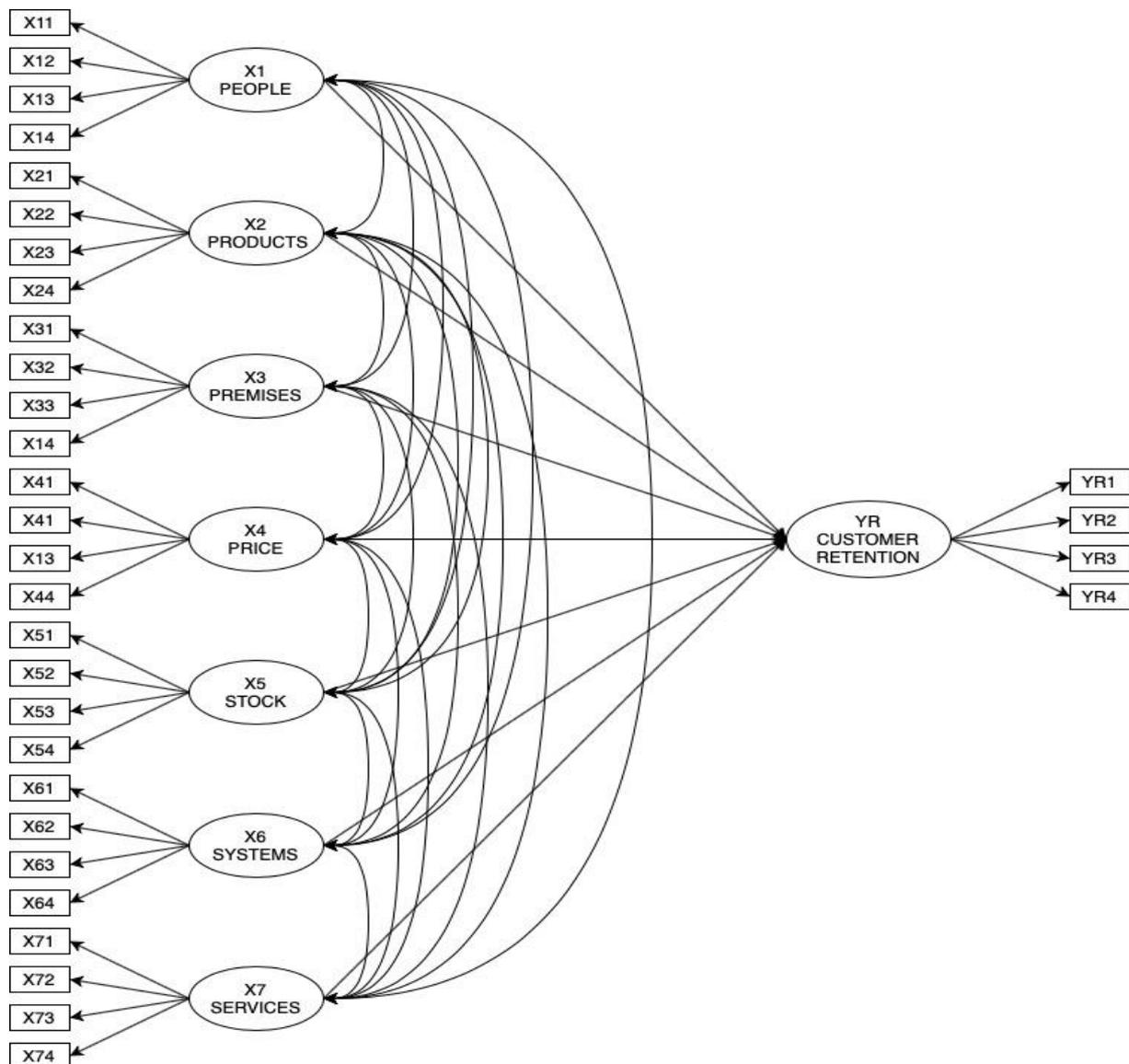


Figure 4. Hypothetical framework (Author, 2020)

3. METHODOLOGY

Descriptive Research, through In-depth interview with structured-interview-protocol and Questionnaire, is employed to observe the shopping frequency, attitudes, beliefs, prejudices, preferences, motives, opinions of shoppers for the key operational factors (including People, Products, Premises, Price, Stock, Systems, and Services). Furthermore, Linear Correlation and Regression analysis are associated to examine the relationships and impacts of these seven factors on Customer retention in the form of a Hypothetical Retail operations framework.

3.1. Sampling

3.1.1. *In-depth interview*

For collecting practical information and piloting the questionnaire, an In-depth interview with structured-interview-protocol is designed for the target interviewees, who are store managers with at least 2 year-working-experience in Supermarkets or Hypermarkets in Vietnam. Sampling for the interview is non-random and purposive to collect the best enable answers to meet the research objectives, based on knowledge of the research problem, that fit particular criteria of exploratory and pretesting a questionnaire. Twenty-five interviewees are selected from Aeon, BigC, Coop-Mart, Lotte Mart, and VinMart (5 interviewees/ Supermarket chain). Document analysis and interview data collection will be transcribed and analyzed by NVivo.

3.1.2. *Questionnaire survey*

The 5-level Likert questionnaire⁸ is designed in Google Docs form based on the results of the in-depth interview, with 4 questions per factor, for the target respondents who are shoppers at stores (with support of store managers of the 5 biggest Supermarkets: Aeon, Big C, Coop-mart, Lotte Mart, and VinMart), colleagues and their peers, and Social network members (e.g. LinkedIn and Facebook) and can respond the questionnaire with PC or smartphones. The minimum sample size is 314 (calculated by G*Power for Correlation and Regression analysis⁹). Data collected is summarized and analyzed by JASP¹⁰.

3.2. Variable definitions

3.2.1. *Independent variables*

As the hypotheses discussed above, there are seven independent variables, including People, Product, Premises, Price, Stock, Systems, and Services, and assumed to be the key

⁸ 5-level-rating answers and scores accordingly i.e. Strongly disagree: 1; Disagree: 2; Neutral: 3; Agree: 4; Strongly agree: 5

⁹ Where:

- d (effect sizes): 0.2
- α (the probability of making a Type-1 error, reject the null hypothesis when the fact is true): 0.05 (or 5%)
- β (probability of making a Type-2 error, failure to reject the null hypothesis when the fact is false): 0.05 (or $1 - \beta = 95\%$)

¹⁰ A free open-source statistics program, developed by the University of Amsterdam (Goss-Sampson, 2018), available at <https://jasp-stats.org/download/>

factors which are assumed to impact on or contribute to Customer retention of supermarkets, presented in X_1 , X_2 , X_3 , X_4 , X_5 , X_6 , and X_7 , respectively, of which values are defined by their indicators' average scores collected through the questionnaire survey (detailed in Table 1)

3.2.2. Dependent variables

Customer retention, the target factor that is tried to be understood and predicted, and presented as dependent variable Y_R , dependent on X_1 , X_2 , X_3 , X_4 , X_5 , X_6 , and X_7 , and its value is determined by its indicators' average scores collected through the questionnaire survey.

4. FINDINGS AND DISCUSSION

4.1. Descriptive

The in-depth interview results (Table 1) illustrate that almost the interviewees agree with the factors and indicators accordingly for Customer retention, of which descriptions are detailed based on the previous theories and practical issues in various ways. Furthermore, Good preservation of Stock, a new indicator with newly updated definition and descriptions, is proposed to be included in the questionnaire and considered to be developed as the new measure of the Stock factor. It is explained that Good preservation of Products in Supermarkets is one of the differentiation and advantages to create customers' trust when comparing with other channels.

Regarding the Questionnaire survey, Table 2 shows that 326 of 384 responses received have the quality to satisfy the research requirements with 59% of responses totally with "Completely agree" and "Agree" answers, and 26% of responses with "Neutral" answers. Though the survey result cannot reflect the whole picture, it shows that shoppers have positive attitudes with the factors and respectively indicators, in terms of operational activities performed by supermarkets, which may encourage them to do shopping again.

4.1.1. Customer retention

Positively, there are 190 of 326 respondents (i.e. 58.3%) who do shopping at supermarkets at least 3 times a month. In other words, the Shopping frequency is 3.00 trips/month (Table 3), 28.57% higher than that of Nielsen in 2018 (2.45 trips/month). Additionally, 60% of respondents agree and completely agree to refer or recommend others to do shopping at supermarkets (Table 2); whereas, not many of them agree that Involvement or Joining clubs (or events), Providing Suggestion/ Feedback/ Comment for supermarkets' improvement and Size of expenditure or Budgeting for shopping in the supermarkets are motivations for shoppers to repurchase at supermarkets (Table 2). Although these indicators are not much relevant to Supermarket operations, they can be used to estimate a customer's likelihood of returning to do shopping. With a general average score of 3.13 in Table 3, they should be deeply discussed and developed in further studies.

4.1.2. People

With the average scores of 3.61 (Table 3), it shows that People is always the essential factor when more than 67% of respondents agree that Human contacting, i.e. friendly face-to-face communication with smiles and respective attitudes, personnel selling treatment of stores' staff, is one of the rationales for them to retain shopping at supermarkets (Table 2). Besides,

50% of respondents claim that with Staffs' helpfulness, they are advised and assisted immediately provided unformation beyond their needs. Moreover, with 65% of respondents agreeing with the contents in the questionnaire, it infers that customers are seeking Empathy from supermarkets' staff when their questions are understood and answered correctly or they are treated with care and satisfied by stores' staff. Additionally, store managers believe that the Ethics of employees are especial concerns, and placed at the top of the recruitment and training process as supermarket culture to attract shoppers. Therefore, 64% of responsdents agree that shoppers return and repurchase in Supermarkets if the employees meet the requirements such as being courteous, polite in communication or honesty, and trustworthy in dealing with customers.

4.1.2. Products

Shopping at a Supermarket, almost all customers expect that they can purchase many kinds of goods at the same place at the same time. Hence, more than 59% of respondents confirm that they retain shopping at supermarkets because of Diversification (Table 2). In fact, supermarkets offer various categories of goods e.g. Food, Ultra-fresh food, Non-food, Textile, Household & Electronic/ Electric... in sales areas, which offers the opportunities for shoppers to get Physical experience such as seeing, touching, checking, tasting, smelling, fitting, etc. before making a purchasing decision. Therefore, 53% of interviewees agree that they may retain their purchasing at supermarkets because of Physical experience. Last but not least, Quality assurance of goods is one of the advantages of supermarkets because all goods are well controlled to ensure the quality, expiry date, clear and traceable original as standards and regulations as well as enclosed Specifications and guidelines for users. While 53% of respondents agree that Quality assurance is supporting for goods buying, only 40% of them agree that Differentiation of products such as Nationality, Speciality, Signature products, Brands, etc. and Customization/ Personalization can maintain customers' repurchases. It also illustrates that the Differentiation of products sold is a less important motive that maintains Customer retention at supermarkets. However, with the average scores of 3.43 (Table 3) and agreement rate of 52% (Table 2), generally, it shows that respondents have a positive attitude and allows to expect that Product may be a key factor for Customer retention at Supermarkets.

4.1.3. Premises

As Vietnamese standards¹¹, Premises of Supermarkets must satisfy the compulsory conditions such as architectural works with solidly technical designs, equipment meeting hygiene, safety, security and fire fighting requirements, convenience for customers, e.g. having parking place and restroom for customers, places for personal luggage keeping, services for people with disabilities, having modern warehouses and technical equipment for preservation, packaging, sale, payment, delivery and business management. Therefore, Store formats and designs with Safety and Security conditions are not only the prerequisite for Supermarkets to operate but also the rationales for Customer retention with 64% of respondents agreeing (Table 2). Besides the minimal facilities associated with the building, other services, and entertainment including Barbershops/ Hairdressers, Health and Beauty care, Cinemas, Games, Gym have created a Convenient ecosystem that helps customers enjoy during shopping time.

¹¹ Stated in Decision No.1371/2004/QD-BTM, issued by the Ministry of Trade of Vietnam on 24 Sep 2004

As the survey result in Table 2, 55% of respondents reveal that they regularly visit the supermarkets not only for shopping but also for enjoying entertainment or take care of themselves. Moreover, whatever Supermarkets are in central or isolated locations, Accessibility of Supermarkets is also the matter for shoppers. Practically, 51% of customers prefer to shop if it is accessible by foot, car, bike, and public transport means. Though Shopping infrastructure and Additional convenient facilities (e.g. Comfortable shopping atmosphere, Physical equipment such as elevator/ escalator, Shopping cart, ATM, free parking, seats for waiting, Smoking areas, Car services, Pet care, Disable care, etc.) seem not to be attractive, in general respondents agree that Premises is one of the key factors maintaining Customer retention at Supermarkets (with 54% responses are “Agree” and “Completely agree” totally and the average score is 3.42, as in Table 3)

4.1.4. Price

Nowadays, low prices seem not to be an advantage or strength of Supermarkets because traditional markets and E-tailers usually offer a lower price. However, store managers believe that they offer a reasonable price for customers, thus 58% of respondents confirm that they are willing to repurchase at Supermarkets because of Good value for money (Table 2). Besides, Discount price is one of the motives attracting shoppers when Supermarkets usually apply for promotional programs with a high discount rate for big volume sales, and in seasons or events. Surprisingly, 63% of shoppers say that they prefer direct price reduction to free-gift offers. Additionally, Price in Supermarkets is Transparency (e.g public quotation including tax and fees), Fairness (non-bargain), hence it has created the trust for customers when shopping. Though 67% of interviewees agree that they repurchase at Supermarkets due to transparent prices, few of them agree that Comparable price is interesting whatever they can compare the price among brands of one kind of certain products within the stores or even among stores and E-tailers before making a buying decision. Anyway, both store managers and shoppers still believe that Price is one of the most important factors that customers consider when shopping in supermarkets and it may maintain Customer retention (with the average score of 3.52 referring to Table 3) if Supermarkets satisfy shoppers’ expectation as commitment.

4.1.5. Stock

Regarding the descriptions of Mass merchandise in Table 1, Stocks in supermarkets are stored in SKUs¹² in both sales areas and warehouses, with numerous Type, Brands, Sizes, Packages of certain products for more choices, and easier picking up in bulk, therefore 69% of respondents agree that shoppers are encouraged to buy products in big quantities. Practically, Mass merchandise of stock in supermarkets is one of the critical features that traditional retailers, Mini-stores, and E-tailers cannot have. When shopping at supermarkets, 68% of customers usually expect that physical products are stored or reserved with the right quantity, right time, and the right place for their choice. Additionally, the Well-displaying of stock in sales areas as Presentation standards, Layout, Categories, Goods’ nature/ specification will help shoppers with Accessibility to all products for picking. Through the survey, it shows that 56% of shoppers are satisfied if stocks of goods are well presented in sales areas provided that all items can be accessed easily. However, to ensure that stocks are fully displayed for selling and to prevent stockout, managers must control stock in stores and sales areas effectively. Last but

¹² Stock-keeping-Units

not least, Good preservation of stock, i.e. special and suitable storage for each kind of goods within a limited time, is not only compulsory requirements as Vietnamese laws but also a commitment of Supermarkets to customers for product quality assurance. The survey results (Table 2) illustrate that 56% of respondents agree whether the goods are displayed in the sales area or stored in warehouses, they are always in the best conditions. In general, shoppers are well aware that controlling stock in Supermarkets is crucial, and both managers and customers can believe that good stock management is an approach for Supermarkets to retain customers.

4.1.6. Systems

In the era of the Technology revolution, almost all operational and controlling activities in supermarkets are dependent on the Systems, especially stock management, product displaying (e.g. planogram or schematic application), pricing and quotation, payment, and delivery, thus Speedy processes have made shoppers more satisfied. Positively, 70% of respondents reveal that thanks to the systems, shoppers can save time for goods searching, ordering and picking, checking-out, and delivery (Table 2). In practice, Supermarkets have invested a lot in software and applications to deliver the most information to their customers, thus it helps customers to access the information effectively. Additionally, 63% of interviewees agreeing that Information accessibility via digital or mobile devices assists them in product searching, price comparison as well as approach promotion program for purchasing (Table 2). Furthermore, based on the digital and internet foundation, On-line shopping has become a vital trend of Supermarkets to expand sales channels and compete with E-tailers and other channels, by assisting customers to place orders by PC or smartphone and receive goods at any time, anywhere as committed. It really brings benefits to customers when up to 66% of interviewees agree that they will continue shopping when the supermarkets have an online sales channel as an additional option (Table 2). Last but not least, Supermarkets' Systems also include Dual-communication channels between them and their customers via online-helpdesk, live-chat, Chatbots¹³, messenger applications, or email with private accounts to ensure customers' suggestions to be recorded and handled well; hence, more than 53% of respondents believe that it makes customers satisfied with immediately special care. To sum up, Systems is indispensable since it determines the survival of Supermarkets in terms of operational management and customer services, and it continues influencing on Customer retention as more than 63 of respondents agree (Table 2) with an average score of 3.60 (Table 3).

4.1.7. Services

As ever, the Service factor is an irreplaceable strength in Supermarkets. As the survey results, 56% of respondents agree that Interior designs, Decorations, Sampling, Music, Daily and Seasonal promotion events, or Sales supporting activities attract more customers' sight and traffic as well as encourage customers to purchase. Besides, After-sales-services have made customers most satisfied when up to 70% of respondents are satisfied when they exchange or return goods easily or they receive free services such as delivery, warranty, wrapping and sending gifts, and other additional services (Table 2). Moreover, Loyalty programs, widely used with Membership cards with Rewards, Rebate, Cashback, Shopping/ Gift voucher, Customer events, and other member benefits, have been the essential tools to maintain and increase Customer retention at Supermarkets. Even though 64% of respondents agree that

¹³ Automate Customer Chats

shoppers can benefit from Loyalty programs, more than 71% of them pay much attention to the Complaint handling process, which must be quickly and effectively. Practice shows that if a customer complaint is not handled well, customer losing is unavoidable. Generally, Services are not only the image and brand name of Supermarkets but also impact on Customer retention with 73.8% responses agreeing (Table 2) and 3.68 average scores (Table 3).

4.2. Linear Correlation analysis

Refer to the JASP results (Table 4), variables correlate interdependently because all cases have p-value $<0,001$ and it is much lower than the significance level¹⁴ of 0,05; hence, it means that there are statistically significant relationships among the variables. Furthermore, the values of Correlation Coefficients are all positive, which reflect the Positive relationships among People, Product, Premises, Price, Stock, Systems, Services factors, and Customer retention. Although the average scoring results of the questionnaire are higher than 3.00 (only 1 item Y_{R4} has a 2.83 of average score), and almost the factors and their indicators are agreed by the respondents (Shoppers), this does not mean that these seven factors and Customer retention have the strong relationships among them. Based on the Thresholds of Coefficients of Salkind (2012, p.208)¹⁵, it can be seen that Products, Price, Stock and Service factors have Moderate correlations (of which coefficients are in the range of >0.4 to 0.6), while People, Premises and Systems factors have strong correlations (of which coefficients are in the range of >0.6 to 0.8) with Customer retention (detailed in Table 4).

To sum up, with the positive coefficients between variables, it can be figured out that the key operational factors of supermarkets are statistically and positively related to Customer retention. In the other words, any change of People, Product, Premises, Price, Stock, Systems, Services factors may lead to a corresponding change in Customer retention with the different levels as R² value detailed in Table 4.

4.3. Linear Regression

The results of linear regression in Table 5.1 enable to claim that Adjusted R² (adjusted R-squared coefficient) = 0.661, that is, the seven independent variables have affected 66.1% of the variation of the dependent variable. In the other words, the key operation factors including People, Products, Premises, Price, Stock, Systems, and Services may statistically impact 66.1% on the change of Customer retention, while its 33.9% remain is influenced by the default errors and other factors that are not included in the framework, with the significance level of $0.048 < 0.05$ (Table 5.1). Although the ANOVA results in Table 5.2 show the significance level of $p < 0.001$, and it may be suggested that the seven predictors in the framework

¹⁴ Significance measures how much risk to be taken to conclude about the relationship between variables, while Significance level is the risk to be taken with less than 100% confident that the difference is caused by an unpredicted or unforeseen factor (Salkind, 2012, p.33 & 34)

¹⁵ The strong level of Correlations

Description of the Strength	Coefficients
Very weak	>0.0 to 0.2
Weak	>0.2 to 0.4
Moderate	>0.4 to 0.6
Strong	>0.6 to 0.8
Very strong	>0.8 to 1.0

are less than 0.05 and significant to Customer retention, only the regression coefficients of People, Products, Premises, and Systems are significant as the results shown in Table 5.3. Additionally, refer to Table 5.3, the average VIF is 2.16 (and no value <1) and no Tolerance value is <0.2, hence, it can be suggested that there is no bias in the framework (Goss-Sampson, 2018, p.61). Therefore, it may be claimed that these four factors (People, Products, Premises, and Systems) have statistically significant impacts on Customer retention.

Generally, the research results show that there are positive correlations between the seven factors identified in the theoretical framework: People, Products, Premises, Price, Stock, Systems, and Services with Customer retention. Furthermore, Linear regression has verified the impacts of these factors on Customer retention and illustrated that only People, Products, Premises, and Systems directly impact on Customer retention. Refer to hypotheses set in this paper, H1, H2, H3, and H6 are accepted because they have the positive correlations and statistically significant impacts on Customer retention, while H4, H5, and H7 are partly accepted because they have positive correlations with but no statistically significant impacts on Customer retention.

5. CONCLUSION

This research aims to describe the key factors affecting Customer retention including People, Products, Premises, Price, Stock, Systems, and Service, in terms of indicators assessed by customers. Thereby, several gaps of descriptions and indicators of operational factors between theories and practice, differences between supermarkets' performance, and customers' expectations are discovered. Hence, several definitions and indicators are suggested to be updated into the models or theories in previous studies. As the objectives and theoretical frameworks mentioned in this study, Correlation analysis has illustrated that there are statistically positive correlations between the seven key operational factors with Customer retention in Supermarkets. However, Linear regression analysis has verified that only People, Products, Premises, and System have statistically significant impacts on Customer retention. In the scope of this paper, Linear and Regression analysis can not demonstrate or examine whether the causal relationships exist among the factors and Customer retention, however, it may be a foundation for further discussion.

The key operational factors for Customer retention at Supermarkets which are presented and discussed in the form of a retail operational framework with an operations management perspective is quite new in Vietnam. Even though there are many difficulties for customers to be aware the Supermarkets' efforts to offer them the best thing as much as possible, that could lead to several inaccurate assessments, this study may serve as a quick test whether the previous theories, concepts, and models are suitable for Vietnam emerging market as well as an initiate of a new operational model or framework to be used in the retail industry. And expectedly, it may be a reliable reference for further research in the academic field and helpful material in the retail sector of Vietnam.

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Table 1. In-depth Interview results

Variables	Descriptions of Indicators	Sources	Agreement	%	Remarks¹⁶
Y_R: Customer Retention	(Y _{R1}) Shopping frequency: trips to visit/ revisit and purchase/ repurchase at supermarkets in a month.	Aspinall et al (2001, p.80); Nielsen (2018, p.2)	23	92%	Accepted
	(Y _{R2}) Referral, or Recommendation to others for shopping in supermarkets	Buttle (2009, p.261)	22	88%	Accepted
	(Y _{R3}) Size of expenditure or Budget for shopping in the supermarkets	Aspinall et al (2001, p.80)	20	80%	Accepted
	(Y _{R4}) Involvement or Joining clubs (or events): Providing Suggestion/ Feedback/ Comment for supermarkets' improvement	Aspinall et al (2001, p.80)	20	80%	Accepted
X₁: People	(X _{1.1}) Human contact: Friendly face-to-face communication with smiles and respective attitudes; Personnel selling treatment.	Blut et al (2018, p.117) Buttle (2009, p.216)	25	100%	Accepted
	(X _{1.2}) Staff's helpfulness: Immediately assist and consultation, Information providing beyond customer needs	Berman et al (2018, p.37) Buttle (2009, p.256) Pal & Byrom (2003, p.525)	24	96%	Accepted
	(X _{1.3}) Empathy seeking: Caring to deeply understand and satisfy customer demands	Berman et al (2018, p.523) Buttle (2009, p.209)	18	72%	Accepted
	(X _{1.4}) Ethics behavior: Trustworthiness, Honesty, Courtesy	Berman et al (2018, p.63 & 324)	16	64%	Accepted
X₂: Products	(X _{2.1}) Diversification: Various categories e.g. Food, Non-food, Textile, Household & Electronic/ Electric...	Blut et al (2018, p.117) Zentes et al (2017, p.77)	25	100%	Accepted
	(X _{2.2}) Physical experience: Really and physically experiencing: Seeing, Touching, Testing, Tasting, Smelling, Fitting before making purchasing decision	Buttle (2009, p.165 & 214)	25	100%	Accepted
	(X _{2.3}) Quality Assurance: Checkable Quality, Expiry date, Specification and Original	Blut et al (2018, p.117 & 265) Dunne et al (2011, p.123 & 147)	24	96%	Accepted
	(X _{2.4}) Differentiation and Customization/ Personalization: Nationality, Speciality, Signature products, Brands,	Berman et al (2018, p.233); Blut et al (2018, p.117); Buttle (2009, p.284)	19	76%	Accepted

¹⁶ Indicator with less than 50% agreement rate will not be accepted to be included in the questionnaire

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Variables	Descriptions of Indicators	Sources	Agreement	%	Remarks ¹⁶
X₃: Premises	(X _{3.1}) Store format and design: Layout standardized to ensure Hygiene, Safety and Security	Berman et al (2018, p.155 &341) Kamran-Disfani et al (2017, p.15)	22	88%	Accepted
	(X _{3.2}) Convenient Ecosystem: Entertainment and Services in the same building e.g. Cinemas, Games, Barbershops/ Hairdressers, Beauty & Health Care, Gym, Book stores...	Blut et al (2018, p.117) Dunne et al (2011, p.233)	24	96%	Accepted
	(X _{3.3}) Accessible Location: Central or isolated Location provided that it is accessible for foot, car, bike and public transport	Berman et al (2018, p.238) Blut et al (2018, p.117) Dunne et al (2011, p.229) Zentes et al (2017, p.32)	22	88%	Accepted
	(X _{3.4}) Shopping infrastructure and Additional convenient facilities: Comfortable shopping atmosphere, Physical equipment e.g. Elevator/ Escalator, Shopping cart, ATM, free parking, seats for waiting; Smoking areas, Car services, Pet care, Disable care	Blut et al (2018, p.117)	20	80%	Accepted
X₄: Price	(X _{4.1}) Good value (for money) or Reasonable	Berman et al (2018) Blut et al (2018, p.117) Buttle (2009, p.261) Zentes et al (2017, p.43)	18	72%	Accepted
	(X _{4.2}) Discount: For Quantity, Promotional, Seasonal, Geographical... with direct price reduction	Zentes et al (2017, p.36 & 34)	22	88%	Accepted
	(X _{4.3}) Transparency: Public quotation including tax and fees, fairness (non-bargain)	Berman et al (2018, p.42 & 89)	18	72%	Accepted
	(X _{4.4}) Comparability: Comparable among brands, size in store; even among stores and E-tailers.	Berman et al (2018, p.42 & 89)	18	72%	Accepted
X₅: Stock	(X _{5.1}) Mass merchandise: with numerous Type, Brands, Sizes, Packages for more choices and easier picking up in bulk	Fernie et al (2003, p.327 & 331)	19	76%	Accepted
	(X _{5.2}) Availability: Stock-in-store, Stored/ Reserved with right quantity, right time and right place	Berman et al (2018, p.155 & 203) Pal & Byrom (2003, p.254)	18	72%	Accepted
	(X _{5.3}) Well-displaying: Accessibility, Presentation, Standards, Layout, Categories, Goods' nature/ specification	Pal & Byrom (2003, p.254)	20	80%	Accepted
	(X _{5.4}) Good preservation: Special and suitable storage for each kind of goods to ensure quality.	Assumed as new development	23	92%	Accepted

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Variables	Descriptions of Indicators	Sources	Agreement	%	Remarks¹⁶
X₆: System	(X_{6.1}) Speedy processes: Time saving for Goods searching, Quick check-out at store, fast delivery	Berman et al (2018, p.33, 157 &220) Buttle (2009, p.256) Pal & Byrom (2003, p.525) Zentes et al (2017, p.36 & 90)	25	100%	Accepted
	(X_{6.2}) Personalized dual-communication via PC or smartphones, email account, Chatbots	Berman et al (2018, p.56), Folarin & Hassan (2015, p.20)	20	80%	Accepted
	(X_{6.3}) Information Accessibility: Product searching, Price checking points, Promotion information for purchasing encouragement	Berman et al (2018, p.164 & 172) Zentes et al (2017, p.81 & 87 & 97)	25	100%	Accepted
	(X_{6.4}) Online-shopping: Product searching, Order and deliver anytime and anywhere	Berman et al (2018, p.151, 162 & 172) Folarin & Hassan (2015, p.20) Zentes et al (2017, p.ix, 17)	20	80%	Accepted
X₇: Services	(X_{7.1}) Interior designs, Decorations, Sampling, Music, Daily, Daily and Seasonal promotional Events, Sales support	Berman et al (2018, p.53) Buttle (2009, p.256) Zentes et al (2017, p.311)	24	96%	Accepted
	(X_{7.2}) After-sales services: Free and on time delivery, Guaranty, Gift wrapping, Easy return or exchange, and additional services	Berman et al (2018, p.36 & 53)	25	100%	Accepted
	(X_{7.3}) Loyalty programs: Reward, Rebate or Cash back, Shopping/ Gift voucher, Customer events and other Member benefits	Berman et al (2018, p.204 & 209) Blut et al (2018, p.115) Buttle (2009, p.43) Zentes et al (2017, p.351 -358)	25	100%	Accepted
	(X_{7.4}) Complaint handling: Quickly and Effectively	Berman et al (2018, p.53, 66, 69) Buttle (2009, p.202) Zentes et al (2017, p.354 & 356)	24	96%	Accepted

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Table 2. Frequency

Indicator	Score	Frequency	Percent	Valid Percent	Cumulative Percent
YR1	5	52	16.0	16.0	16.0
	4	73	22.4	22.4	38.3
	3	65	19.9	19.9	58.3
	2	95	29.1	29.1	87.4
	1	41	12.6	12.6	100.0
	Total	326	100.0	100.0	
YR2	5	48	14.7	14.7	14.7
	4	146	44.8	44.8	59.5
	3	83	25.5	25.5	85.0
	2	37	11.3	11.3	96.3
	1	12	3.7	3.7	100.0
	Total	326	100.0	100.0	
YR3	5	16	4.9	4.9	4.9
	4	101	31.0	31.0	35.9
	3	125	38.3	38.3	74.2
	2	74	22.7	22.7	96.9
	1	10	3.1	3.1	100.0
	Total	326	100.0	100.0	
YR4	5	8	2.5	2.5	2.5
	4	66	20.2	20.2	22.7
	3	135	41.4	41.4	64.1
	2	98	30.1	30.1	94.2
	1	19	5.8	5.8	100.0
	Total	326	100.0	100.0	
X11	5	71	21.8	21.8	21.8
	4	146	44.8	44.8	66.6
	3	66	20.2	20.2	86.8
	2	33	10.1	10.1	96.9
	1	10	3.1	3.1	100.0
	Total	326	100.0	100.0	
X12	5	29	8.9	8.9	8.9
	4	133	40.8	40.8	49.7
	3	103	31.6	31.6	81.3
	2	54	16.6	16.6	97.9
	1	7	2.1	2.1	100.0
	Total	326	100.0	100.0	
X13	5	57	17.5	17.5	17.5
	4	154	47.2	47.2	64.7
	3	83	25.5	25.5	90.2
	2	24	7.4	7.4	97.5
	1	8	2.5	2.5	100.0
	Total	326	100.0	100.0	
X14	5	48	14.7	14.7	14.7
	4	160	49.1	49.1	63.8
	3	84	25.8	25.8	89.6
	2	27	8.3	8.3	97.9
	1	7	2.1	2.1	100.0
	Total	326	100.0	100.0	

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X21	5	33	10.1	10.1	10.1
	4	159	48.8	48.8	58.9
	3	88	27.0	27.0	85.9
	2	40	12.3	12.3	98.2
	1	6	1.8	1.8	100.0
	Total	326	100.0	100.0	
X22	5	34	10.4	10.4	10.4
	4	139	42.6	42.6	53.1
	3	95	29.1	29.1	82.2
	2	49	15.0	15.0	97.2
	1	9	2.8	2.8	100.0
	Total	326	100.0	100.0	
X23	5	36	11.0	11.0	11.0
	4	144	44.2	44.2	55.2
	3	110	33.7	33.7	89.0
	2	30	9.2	9.2	98.2
	1	6	1.8	1.8	100.0
	Total	326	100.0	100.0	
X24	5	26	8.0	8.0	8.0
	4	106	32.5	32.5	40.5
	3	126	38.7	38.7	79.1
	2	56	17.2	17.2	96.3
	1	12	3.7	3.7	100.0
	Total	326	100.0	100.0	
X31	5	49	15.0	15.0	15.0
	4	160	49.1	49.1	64.1
	3	76	23.3	23.3	87.4
	2	35	10.7	10.7	98.2
	1	6	1.8	1.8	100.0
	Total	326	100.0	100.0	
X32	5	51	15.6	15.6	15.6
	4	127	39.0	39.0	54.6
	3	90	27.6	27.6	82.2
	2	54	16.6	16.6	98.8
	1	4	1.2	1.2	100.0
	Total	326	100.0	100.0	
X33	5	30	9.2	9.2	9.2
	4	137	42.0	42.0	51.2
	3	84	25.8	25.8	77.0
	2	62	19.0	19.0	96.0
	1	13	4.0	4.0	100.0
	Total	326	100.0	100.0	
X34	5	28	8.6	8.6	8.6
	4	115	35.3	35.3	43.9
	3	92	28.2	28.2	72.1
	2	78	23.9	23.9	96.0
	1	13	4.0	4.0	100.0
	Total	326	100.0	100.0	

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X41	5	11	3.4	3.4	3.4
	4	177	54.3	54.3	57.7
	3	89	27.3	27.3	85.0
	2	41	12.6	12.6	97.5
	1	8	2.5	2.5	100.0
	Total	326	100.0	100.0	
X42	5	41	12.6	12.6	12.6
	4	165	50.6	50.6	63.2
	3	85	26.1	26.1	89.3
	2	30	9.2	9.2	98.5
	1	5	1.5	1.5	100.0
	Total	326	100.0	100.0	
X43	5	47	14.4	14.4	14.4
	4	173	53.1	53.1	67.5
	3	67	20.6	20.6	88.0
	2	28	8.6	8.6	96.6
	1	11	3.4	3.4	100.0
	Total	326	100.0	100.0	
X44	5	17	5.2	5.2	5.2
	4	135	41.4	41.4	46.6
	3	132	40.5	40.5	87.1
	2	33	10.1	10.1	97.2
	1	9	2.8	2.8	100.0
	Total	326	100.0	100.0	
X51	5	45	13.8	13.8	13.8
	4	180	55.2	55.2	69.0
	3	77	23.6	23.6	92.6
	2	17	5.2	5.2	97.9
	1	7	2.1	2.1	100.0
	Total	326	100.0	100.0	
X52	5	41	12.6	12.6	12.6
	4	182	55.8	55.8	68.4
	3	69	21.2	21.2	89.6
	2	27	8.3	8.3	97.9
	1	7	2.1	2.1	100.0
	Total	326	100.0	100.0	
X53	5	34	10.4	10.4	10.4
	4	148	45.4	45.4	55.8
	3	99	30.4	30.4	86.2
	2	33	10.1	10.1	96.3
	1	12	3.7	3.7	100.0
	Total	326	100.0	100.0	
X54	5	47	14.4	14.4	14.4
	4	136	41.7	41.7	56.1
	3	101	31.0	31.0	87.1
	2	31	9.5	9.5	96.6
	1	11	3.4	3.4	100.0
	Total	326	100.0	100.0	

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X61	5	56	17.2	17.2	17.2
	4	173	53.1	53.1	70.2
	3	65	19.9	19.9	90.2
	2	24	7.4	7.4	97.5
	1	8	2.5	2.5	100.0
	Total	326	100.0	100.0	
X62	5	30	9.2	9.2	9.2
	4	143	43.9	43.9	53.1
	3	107	32.8	32.8	85.9
	2	37	11.3	11.3	97.2
	1	9	2.8	2.8	100.0
	Total	326	100.0	100.0	
X63	5	32	9.8	9.8	9.8
	4	174	53.4	53.4	63.2
	3	78	23.9	23.9	87.1
	2	29	8.9	8.9	96.0
	1	13	4.0	4.0	100.0
	Total	326	100.0	100.0	
X64	5	28	8.6	8.6	8.6
	4	186	57.1	57.1	65.6
	3	84	25.8	25.8	91.4
	2	21	6.4	6.4	97.9
	1	7	2.1	2.1	100.0
	Total	326	100.0	100.0	
X71	5	36	11.0	11.0	11.0
	4	147	45.1	45.1	56.1
	3	112	34.4	34.4	90.5
	2	22	6.7	6.7	97.2
	1	9	2.8	2.8	100.0
	Total	326	100.0	100.0	
X72	5	48	14.7	14.7	14.7
	4	179	54.9	54.9	69.6
	3	74	22.7	22.7	92.3
	2	20	6.1	6.1	98.5
	1	5	1.5	1.5	100.0
	Total	326	100.0	100.0	
X73	5	48	14.7	14.7	14.7
	4	162	49.7	49.7	64.4
	3	83	25.5	25.5	89.9
	2	28	8.6	8.6	98.5
	1	5	1.5	1.5	100.0
	Total	326	100.0	100.0	
X74	5	41	12.6	12.6	12.6
	4	190	58.3	58.3	70.9
	3	69	21.2	21.2	92.0
	2	17	5.2	5.2	97.2
	1	9	2.8	2.8	100.0
	Total	326	100.0	100.0	

Source: Author, 2020

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November 18th – 19th, 2020**Table 3. Descriptive Statistics**

Variables	N	Minimum	Maximum	Sum	Mean	Std. Deviation
YR1	326	1	5	978	3.00	1.289
YR2	326	1	5	1159	3.56	.996
YR3	326	1	5	1017	3.12	.919
YR4	326	1	5	924	2.83	.900
X11	326	1	5	1213	3.72	1.013
X12	326	1	5	1101	3.38	.936
X13	326	1	5	1206	3.70	.926
X14	326	1	5	1193	3.66	.903
X21	326	1	5	1151	3.53	.900
X22	326	1	5	1118	3.43	.961
X23	326	1	5	1152	3.53	.876
X24	326	1	5	1056	3.24	.953
X31	326	1	5	1189	3.65	.926
X32	326	1	5	1145	3.51	.985
X33	326	1	5	1087	3.33	1.015
X34	326	1	5	1045	3.21	1.028
X41	326	1	5	1120	3.44	.845
X42	326	1	5	1185	3.63	.873
X43	326	1	5	1195	3.67	.942
X44	326	1	5	1096	3.36	.840
X51	326	1	5	1217	3.73	.841
X52	326	1	5	1201	3.68	.874
X53	326	1	5	1137	3.49	.940
X54	326	1	5	1155	3.54	.965
X61	326	1	5	1223	3.75	.910
X62	326	1	5	1126	3.45	.909
X63	326	1	5	1161	3.56	.929
X64	326	1	5	1185	3.63	.814
X71	326	1	5	1157	3.55	.878
X72	326	1	5	1198	3.67	.883
X73	326	1	5	1223	3.75	.836
X74	326	1	5	1215	3.73	.850
Valid	N	326				
(listwise)						

Source: Author, 2020

Table 4. Pearson Correlation Coefficients

Variable		YR	X1	X2	X3	X4	X5	X6	X7	R ²
1. YR	Pearson's r	—								
	p-value	—								
2. X1	Pearson's r	0.769	—							59.14%
	p-value	< .001	—							
3. X2	Pearson's r	0.576	0.556	—						33.18%
	p-value	< .001	< .001	—						
4. X3	Pearson's r	0.607	0.636	0.439	—					36.84%
	p-value	< .001	< .001	< .001	—					
5. X4	Pearson's r	0.576	0.658	0.490	0.564	—				33.18%
	p-value	< .001	< .001	< .001	< .001	—				
6. X5	Pearson's r	0.495	0.549	0.425	0.546	0.469	—			24.50%
	p-value	< .001	< .001	< .001	< .001	< .001	—			
7. X6	Pearson's r	0.684	0.680	0.462	0.635	0.645	0.548	—		46.79%
	p-value	< .001	< .001	< .001	< .001	< .001	< .001	—		
8. X7	Pearson's r	0.541	0.628	0.491	0.581	0.518	0.635	0.613	—	29.27%
	p-value	< .001	< .001	< .001	< .001	< .001	< .001	< .001	—	

Source: Author, 2020

Table 5. Linear Regression

Table 5.1. Model Summary - YR

Model	R	R ²	Adjusted R ²	RMSE	Durbin-Watson		
					Autocorrelation	Statistic	p
H ₀	0.000	0.000	0.000	0.772	0.060	1.876	0.261
H ₁	0.817	0.668	0.661	0.480	0.100	1.798	0.045

Table 5.2. ANOVA

Model		Sum of Squares	df	Mean Square	F	p
H ₁	Regression	129.368	7	18.481	91.330	< .001
	Residual	64.349	318	0.202		
	Total	193.717	325			

Note. The intercept model is omitted, as no meaningful information can be shown.

Table 5.3. Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p	Collinearity Statistics	
							Tolerance	VIF
H ₀	(Intercept)	3.127	0.043		73.137	< .001		
H ₁	(Intercept)	-0.640	0.163		-3.927	< .001		
	X1	0.538	0.061	0.472	8.864	< .001	0.368	2.715
	X2	0.197	0.043	0.186	4.585	< .001	0.636	1.572
	X3	0.109	0.049	0.105	2.233	0.026	0.476	2.102
	X4	-0.025	0.050	-0.023	-0.492	0.623	0.473	2.113
	X5	0.006	0.046	0.006	0.134	0.893	0.527	1.897
	X6	0.272	0.054	0.257	5.032	< .001	0.402	2.488
	X7	-0.062	0.054	-0.057	-1.165	0.245	0.442	2.262

Source: Author, 2020

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CUSTOMER-DIRECTED EXTRA-ROLE PERFORMANCE AND EMOTIONAL UNDERSTANDING: EFFECTS ON CUSTOMER CONFLICT, FELT STRESS AND JOB PERFORMANCE

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ABSTRACT

This research investigates the influence of the Customer-directed extra-role performance and emotional understanding on Interpersonal Conflict, Felt Stress and Job performance. Quantitative research method with convenient sampling and snowball sampling techniques were adopted to reach sales and customer service employees who are working in Ho Chi Minh City. 176 valid responses were collected via online and offline questionnaires. SPSS and AMOS softwares were utilized to examine proposed hypotheses and the important results were found out. Firstly, sales or customer service employees' interpersonal conflict with customers is positively related to felt stress (H1). Secondly, Sales or customer service employees' interpersonal conflict with customers are negatively related to job performance (H2). Thirdly, Sales or customer service employees' understanding others' emotions are positively related to CDERP (H5). Next, Sales or customer service employees' CDERP is positively related to job performance (H7). Notably, understanding others' emotions was found to be directly and positively related to job performance (H8). Based on the above results, managers should be seriously consider solutions to reduce interpersonal conflict with customers at workplace and provide particular emotional training courses for sales and customer service employees to increase their ability to understanding customer which enhance job performance.

Keywords: Customer directed extra-role, Emotional understanding, Interpersonal conflict, stress, Job performance.

JEL Classification: O15

1. INTRODUCTION

Salespeople involved in the marketing of complex services often perform the role of “relationship manager.” It is, in part, the quality of the relationship between the salesperson and the customer that identified the chance of continued interchange between those parties in the future (Lawrence A. et al, 1990). Previous researches agreed that sales and customer service jobs often go through many levels of emotion and interactions lead to feelings of stress and impact on job performance if they are fail to controll. Researches also showed that managing the emotions of salespeople is one of the most important factors in their success. Specifically, according to Kidwell, Hardesty, Murtha, and Sheng (2011), emotions and emotional management play a very important role in sales and customer service affect the emotions and attitudes of salespeople. For salespeople, emotions strongly influence psychology and performance decreases (Brown, Cron, and Slocum, 1997). Customers are always the decisive factor for the success or failure of the

business. Accordingly, salespeople always have direct contact with customers and conflicts. Disputes are always inevitable. Dubinsky et al (1986) found that interpersonal conflict is a typical problem always faced with a sales job. The conflicts are diverse with many different issues. (Reid et al, 2004). Therefore, the management of conflicts has become one of the most important factors for salespeople and customer service, especially this is also applied in the marketing strategy of relationships (Weitz and Bradford, 1999). In the field of marketing, researches related to conflicts focused on conflicts between sales managers and salespeople, or sales team members. There are very few researches concentrate on interpersonal conflict between salespeople and their customers (Reid et al., 2004), or customer service employees with their customers (Grandey et al, 2004).

While most researches are conducted in developed countries, there has been lack of relevant research about this topic in Viet Nam. Thus, the authors desire to implement this research to explore two questions: *RQ1: How does the customer- directed extra-role performance and emotional understanding affect interpersonal conflict with customers, felt stress and job performance of sales and customer service employees?* and *RQ2: How do managers enhance the job performance of salesperson and customer service employees?*

This research is believed to provide important contribution to current literature review. Firstly, while previous studies were conducted in developed countries this research was carried out in Viet Nam, a country with a developing economy. Secondly, whereas in previous research, author focused on salespeople and customer service employees in the financial and software industries at large Indian companies (J.P. Mulki & J.W. Wilkinson, 2017), this research exploits sales and customer service employees in diversified industries such as import and export, real estate, automotive industry, beauty service, hospitality, fast moving consumers goods (FMCG) manufacturing and finance services. Furthermore, there has been an increase in proportion of female employees recruited in our sample to ensure the gender balance compared to prior published research. Finally, the research provides deeper understanding of how customer- directed extra-role performance and emotional understanding impact on customer conflict, felt stress and job performance, which helps to propose some important implications for managers to enhance performance of salesperson and customer service employees.

2. LITERATURE REVIEW

2.1 Definition of variables

Understanding Others' Emotion

Emotional Intelligence (EI) as “the ability to monitor one’s own and others” feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (Salovey & Mayer, 1990). Based on the theory of emotional intelligence, emotional intelligence is established in a multidimensional structure, able to perceive emotions, understand emotions and adjust emotions (Mayer, Salovey, & Caruso, 2008). According to Brackett et al. (2010, p. 407) individuals who have ability to regulate their emotion will control emotions better and maintain emotions more effectively and in turn, will reduce unexpected conflicts. Understanding Others’ Emotion is also defined that knowing others’ emotions not only from their behaviors but also the emotions of people around them and good at the observing of others’ emotions (J.P. Mulki, J.W. Wilkinso, 2017).

Customer-directed Extra-role Performance

Netemeyer and Maxham (2007, p. 132) defined customer-directed extra-role performance (CDERP) as “the degree to which the service employees “goes the extra mile” and “helps customers beyond job requirements”. Customer-directed citizenship behavior was pointed out by Stauss et al (2010, p. 521) as employees “going out of the way” or beyond “the call of duty” for customers. The customer support was measured by two elements: spontaneous employees’ behaviors and response to special requests (perceptions of customer support) and cooperation with the supplier in the form of courtesy 'and being' polite (customer commitment). However, because of the low level of customers’ trust, salespeople and customer service employees must have empathy and enthusiasm to boost the relationship to help customers understand not only the service but also its products (Reid et al ,2004).

Interpersonal conflict (IC)

Interpersonal conflict is considered within various frameworks of adolescent development. Conflict, defined as behavioral opposition, is distinguished from related constructs. Differences between adolescent relationships and across age groups are reviewed in the incidence and intensity, resolution, and outcome of the conflict. The influence of setting on conflict behaviors and effects are emphasized. Interpersonal conflict occurs when a person or group of people frustrate or interferes with another person's efforts at achieving a goal (Scott Schieman & Sarah Reid, 2008). There was a positive association between authority and conflict, but that association was more positive among men and younger workers. Interpersonal conflict has not been widely studied in the literature on occupational stress factors, although there are still some evidences that interpersonal conflict is one of the most fundamental factors causing stress (Keenan & Newton, 1985). Interpersonal conflict in the working environment can start from very small actions from disagreements about work to debates with customers. Interpersonal conflict can be public or may be confidential.

Felt Stress (FS)

The stressful feeling is an expression of depressed psychology, job-related inhibition (McFarland, 2003, p. 312). When psychology is unstable, employees easily fall into brownout syndrome. Brownout syndrome - the boredom of work, simply put into working energy depressed, frustrated with work even though health is still completely stable. This is not a rarely situation, almost everyone has been depressed, tired and not excited about the job. Employee often faces stress at work. Especially when handling and contacting customers. The factors that cause stress at work are often the work environment. Liu, Spector and Shi (2017) argued that tensions come from interpersonal conflict between different national occupations and cultures. His research also suggests that tension creates conflicts. Employee stressed occurs when the workload is overloaded for a while and they cannot control their behavior. From there, interpersonal conflict will be created and the ability to control emotions will be reduced.

Job Performance (JP)

Employees are the key resource that push up the company's revenue. The higher the employees have job performance, the greater the revenue for the company, especially for sales and customer service teams. A great concern of managers is how to increase the salespeople's job performance as they are dependent on their monthly or annually sales and goals. In order to make a rise in productivity, each salesperson must curb his or her emotions, increase positive emotions and reduce negative tendencies while communicating with customers. During work, employees should minimize interpersonal conflict with customers and try to convey ideas to convince them easily. At work, interpersonal conflict is something that can't be done. Thus, a vast knowledge and information should be shared among employees to provide and support their customers as much as possible (Narver & Slater, 1990). Moreover, they should enhance their knowledge to convince customers in an effective way to beat the competitions at different levels. This can be said to be a fair and effective competition.

2.2 Interpersonal Conflict with customers and its effect on Felt Stress

Salespeople and customer service employees often encounter Interpersonal conflict in verbal form (Dormann & Zapf, 2004; Grandey et al., 2004) and rude, uncivilized actions (Sliter et al., 2010, p. 468) when faced with difficult customers. They must also regularly serve difficult customers with different requirements while keeping the resource constraints balanced (Jaramillo et al., 2011, p. 349). Interpersonal conflict between individuals and customers can produce feelings of anxiety, negativity and decreased satisfaction (Judge et al., 2014). The feeling of stress is described as the psychological and physiological manifestation of the individual as a work-related stress factor. Salespeople constantly experience stress at work because they have to balance customers' needs and organizational needs. Stress management is very important because it affects the satisfaction of the work, the welfare of the company, the health of the employees and the intention to stay at the company.

Workplace stress studies that get results from a common workplace are called interpersonal conflict (Bruk-Lee and Spector, 2006 p. 267). Studies of workplace stress indicated that a sense of tension in all occupations and national culture was created from the conflicts between individuals (Liu, Spector, & Shi, 2007). According to Spector and co-researchers, the feeling of suffering is rooted from stress. Moreover, Jaramillo et al. (2011) also suggested that Interpersonal Conflicts harm Salespeople. Previous research conducted by Fernando Jaramillo, Jay Prakash Mulki & James S. Boles in 2013 also suggested a positive relationship between felt stress and interpersonal conflict.

2.3. The effects of Interpersonal Conflict with customers and Felt Stress on Job Performance

In order to succeed in sales, salespeople and customer services employees must develop relationships with them (Pettijohn et al., 2002). Relationships will be established based on mutual trust. Customers trust salespeople because of their providing and salespeople also believe that customers will bring in their profits (J.P. Mulki et al., 2017). When customers and salespeople encounter interpersonal conflict, it leads to a lack of trust and mutual respect. Since unpleasant

interactions are known to create a negative impact on employees' affective dispositions (Bailey & McCollough, 2000), salespeople may find it difficult to be customer-oriented to rude customers and may deliberately withhold efforts to find solutions for those customers. Since the company's profits will be reduced and the relationship will be completely lost. Salespeople and customer service employees have difficulty in contacting and working with fastidious customers. Therefore, interpersonal conflict causes felt stress and emotional harm to employees leading to lower job performance (Bruk-Lee and Spector, 2006). In research of J.P. Mulki and J.W. Wilkinson (2017), sales and customer service employees' interpersonal conflict with customers are indicated to be positively related to felt stress and negatively related to job performance.

2.4 Understanding other's emotions, Customer-directed extra-role performance and Interpersonal Conflict with customers and Job Performance.

McFarland et al. (2016, p. 110) agreed that the more salespeople and customer service employees can control emotions, the easier it will be to handle interpersonal conflicts. For example, if there is no ability to be sensitive to customers' emotions, that employees are more likely to get caught up in conflicts and the situation will get worse. It is easier for employees to handle the smallest controversy if they are sensitive to the client's emotions (Kidwell et al., 2007, p.119). As a result, Law et al (2008) had found that salespeople and customer service employees must be sensitive to the others emotion in order to predict the upcoming reaction of others to promptly respond when the worst cases happened. Jay Prakash Mulki et al (2014) concluded in his research article that Regulation of Emotion is negatively related with Interpersonal Conflict. A greater understanding of customers' emotions seems necessary to enable effective regulation of emotions and, in turn, to reduce the interpersonal conflict. One of the greatest concern of managers is employee performance. For managers, they can evaluate the performance of salespeople and customer service employees by two indicators: business profits and efficiency. Narver and Slater (1990) indicated that in the workplace, conflicts should be controlled and employee should support each other to enhance customer value. Besides, salespeople and customer service employees must understand the main needs of customers to serve and respond to that requirement (Betancourt, 2004).

According to Cropanzano and Mitchell (2005); Emerson (1976), there has been a mutual relationship between customers and suppliers. Customers want to buy good products and services. Suppliers want to increase profits from selling products and services to customers. Therefore, customers and suppliers are inseparable in the relationship of buying and selling. Customers will respond to CDERP by purchasing multiple products and using multiple services (loyalty) or they will respond with vulgar words or complaints if products and services are not as good as they expected or request (Complaints) (Bettencourt, 1997).

A research by MacKenzie et al. (2001) and Richetal (2010) indicated that salespeople and customer service employees will receive rewards from the company when they receive positive customer reviews and retail sales from that customer increase up. Social exchange theory suggests also shows that customers will support suppliers when they have promotions to those around them (Podsakoff and MacKenzie, 1997). In fact, suppliers need more positive customer actions for their products and services than sweet words or promises from customers (Sliter et al., 2011). Studies of Brown et al (1997); Halbesleben and Bower (2007) supported that emotion is the driving force to

boost employee productivity. Emotion is a motivating force for employees since their Job Performance is also increased (Brown et al., 1997; Halbesleben & Bower, 2007). Joseph and Newman (2010) argued that emotional insight affects Job Performance to work through emotional regulation.

Marketing studies has found the relationships between emotional intelligence (EI) of sales employees and selling effectiveness (Kidwell, Hardesty, Murtha, & Sheng, 2011; Rozell, Pettijohn & Parker, 2004; 2006). Once dimension of EI, names “emotional self/ other control” means ability to control communications and interpret the emotional communications of others was proven to be positively related to the performance of salesperson in research (Elizabeth J. Rozell et al, 2006). Conversely, negative emotions, such as anxiety, could facilitate employees’ ability to focus on their work tasks. Employees with high emotional intelligence should be more adept at regulating their own emotions and managing others’ emotions to foster more positive interactions, which could lead to more organizational citizenship behaviors that contribute to performance (Mossholder, Bedian, & Armenakis, 1981; Wong & Law, 2002).

According to the above literature review, a research framework is proposed to investigate the customer-directed extra-role performance, understanding Others’ emotions and their interrelationships with interpersonal conflict, felt stress and job performance of sales and customer service employees.

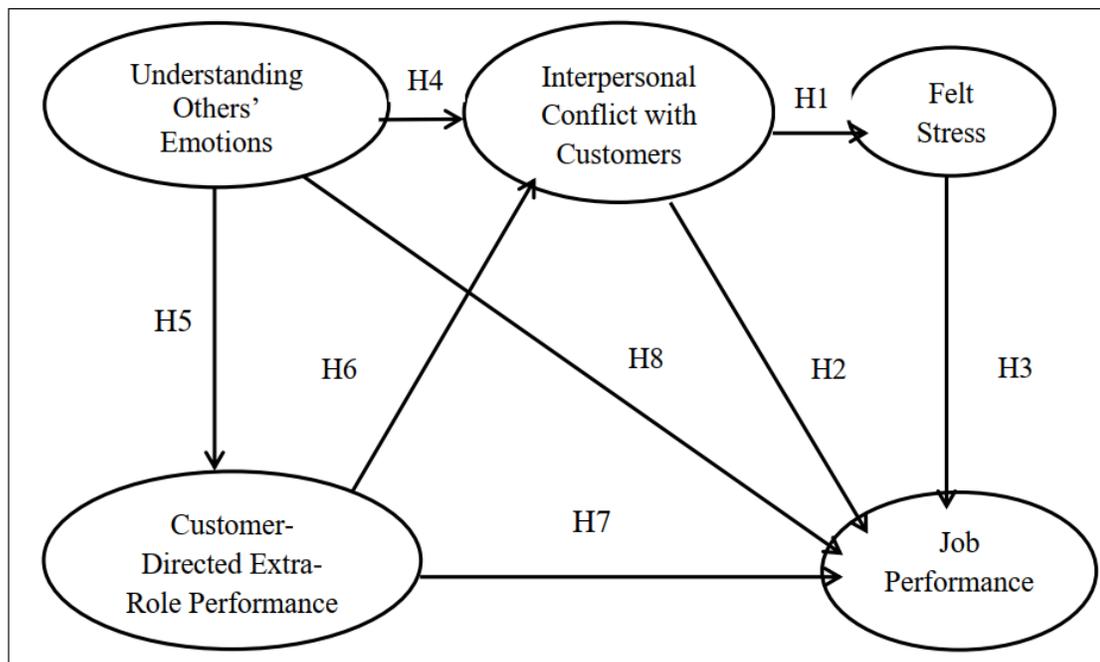


Figure 1. Hypotheses developed from prior research

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H1: Sales or service employees' Interpersonal Conflict with customers is positively related to Felt Stress.

H2: Sales or service employees' Interpersonal Conflict with customers is negatively related to Job Performance

H3: Sales or service employees' Felt Stress is negatively related to Job Performance

H4: Sales or service employees' Understanding of Others' Emotions is negatively related to Interpersonal Conflict with customers.

H5: Sales or service employees' Understanding of Others' Emotions is positively related to CDERP.

H6: Sales or service employees' CDERP is negatively related to Interpersonal Conflict with customers.

H7: Sales or service employees' CDERP is positively related to Job Performance.

H8: Understanding Others' Emotions is positively related to Job Performance.

3. METHODOLOGY

3.1 Sample

Responses from sales and customer service employees in various industries such as import and export, financial, real estate, fast moving consumer goods manufacturing and other industries in Ho Chi Minh City were collected for this research. This research utilizes convenient sampling and snowball sampling techniques via questionnaires. Online and offline questionnaires were distributed to alumni of Ton Duc Thang University and employees working at the offices building in Ho Chi Minh City. Besides, the participants were asked to deliver questionnaire to the others that they feel willing to participate in the survey. As a result, totally 176 valid responses were collected to analyzed. Then, SPSS and AMOS program were used to analyze data and SEM was applied to test the hypotheses.

3.2 Measurement scales

This research adopts four items for Customer-directed extra-role performance (CDERP) and three items for Felt Stress (FS) from Netemeyer et al (2005), three items for Understanding Other's Emotion (UE) used in Law et al (2004), and six items for Job Performance (JP) from Piercy et al (2001). Except for three items of Interpersonal Conflict with Customers, all measures used Likert-type ratings ranging from "1= Strongly disagree" to "7= Strongly agree". Interpersonal Conflict with Customers was measured Likert-type ratings ranging from "1=Never to 6= Extremely often". This scale is measure by Spector and Jex (1998) to report the frequency of interpersonal conflict with customers.

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4. DATA

Table 1 summarizes the respondents' demographic information about gender, age, department, experience years and company industry. In 176 respondents, there were 73 male 103 female, occupied for 41.5% and 58.5% respectively. Specifically, more than a half of respondents are in the age of 18-26 with 51.1%. while about a third of them are in the age between 26 - 30 and about 16% of them is over 30 with only 28 people. From Table 1, 102 respondents said they worked in the sales department, rate for 58% while 74 people answered customer service, rate for 42%. Because the object of the survey is sales and customer service employees so this survey was distributed to employees who are working in various industry including real estate, beauty care, tourism and hospitality, finance and insurance, import and export, automotive industry and fast moving customer goods. The results showed that employees who are working in the import and export industry covered the largest rate of 29.5%. Next, 21.6% respondents came from fast moving consumer goods, finance and insurance industry occupied for about 20% , tourism and hospitality accounted for 14.8%. Last but not least, employees work in beauty service , real estate and automobile industry contributed smallest proportion in the survey with 6.8%, 6.3 % and 1.1 % respectively.

Table 1. Sample Demographic

	Frequency	Percentage (%)
Gender		
Male	73	41.5
Female	103	58.5
Old		
18 – 26 years old	90	51.1
26 – 30 years old	58	33
Over 30 years old	28	15.9
Experience Years		
Under 1 year	59	33.5
1 – 3 years	62	35.2
3 – 5 years	27	15.3
Over 5 years	28	15.9
Department		
Customer Service	74	42
Sales	102	58
Industry		
Real Estate	11	6.3
Automotive industry	2	1.1
Beauty Service	12	6.8
Tourism- Hospitality	26	14.8
Fast moving consumer goods	38	21.6
Finance and Insurance	35	19.9
Export and Import	52	29.5

5. RESULTS AND DISCUSSIONS

5.1 Reliability and Exploratory Factor (EFA) Analysis

Cronbachs Alpha is a tool that helps examine whether the observed variables of a factor are reliable and good or not. This test reflects the close correlation between observed variables in the same factor. Cronbach (1951) provides a scale reliability coefficient. If a variable measures the correlation coefficient, then the variable is satisfactory (Nunnally, 1978; George & Mallery 2003; DeVellis 2003; Zikmund 2010). In Corrected Item - Total Correlation less than 0.3 means that the variable does not show the character of the factor, so it will be removed from the scale. Reliability of the scales was assessed with Cronbach's alpha and found to be above 0.70: Understanding Others Emotions (0.823), Interpersonal Conflict with Customer (0.912), Customer Directed Extra Role Performance (0.859), Job Performance (0.907), Felt stress (0.790).

According to Lam et al in 2014, EFA is widely applied in research with the aim of to examine the factor structure or the correlation model between variables. The EFA examines the relationship between variables in all different groups to discover the observed variables uploaded many factors or observed variables that are misaligned from the original.

Table 2 . Pattern Matrix

	Factor				
	1	2	3	4	5
JP6	.884				
JP3	.850				
JP4	.841				
JP5	.759				
JP2	.758				
JP1	.554				
CDERP3		.869			
CDERP1		.792			
CDERP4		.787			
CDERP2		.570			
IC2			.957		
IC3			.830		
IC1			.793		
UE2				.896	
UE3				.716	
UE1				.711	
FS2					.783
FS3					.765
FS1					.629

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

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The criteria required in the EFA are KMO coefficients (Kaiser-MeyerOlkin) that need to be greater than or equal to 0.5 (Hair, Anderson, Tatham & Black. 1995). Second, Bartlett's test of sphericity should be less than 0.05 (Tabachnick & Fidell. 2007). Third, Total Variance Explained needs to be greater than or equal to 50%. And last but not least, Factor Loading is greater than or equal to 0.5. KMO value from current data is 0.845, greater than 0.5. The Bartlett's Test of Sphericity is 0.000, less than 0.05. Besides, Total Variance Explained is 60.735%, greater than 50% satisfy the conditions of Exploratory Factor Analysis.

5.2 Correlation analysis

The results from table 2 show that Understanding Others Emotions is positively correlated with CDERP. CDERP is positively correlated with Job Performance. Besides, Interpersonal Conflict is negatively with Job Performance and Interpersonal Conflict positively correlated with Felt Stress. Among the demographic variables, Gender is found to be positively correlated with Understanding Others' Emotions and Felt Stress. Old is positively correlated with Experience, Understanding Others' Emotions, CDERP and Job Performance. Moreover, Experience is positively correlated with Understanding Others' Emotions, CDERP and Job Performance.

Table 3. Correlation Analysis

		SEX	DEPARTMEN T	OLD	EXPERIENCE	INDUSTRY	UE	IC	CDERP	JP	FS
SEX	Pearson Correlation	1	-.133	.042	.132	.045	.237**	.098	.019	-.048	.215**
	Sig. (2-tailed)		.078	.577	.081	.553	.002	.194	.799	.528	.004
	N	176	176	176	176	176	176	176	176	176	176
DEPARTMENT	Pearson Correlation	-.133	1	-.170	-.176*	.150	-.078	.060	-.079	-.045	-.061
	Sig. (2-tailed)	.078		.024	.019	.046	.303	.431	.299	.553	.421
	N	176	176	176	176	176	176	176	176	176	176
OLD	Pearson Correlation	.042	-.170*	1	.727**	.030	.237**	-.138	.285**	.230**	-.146
	Sig. (2-tailed)	.577	.024		.000	.694	.002	.068	.000	.002	.053
	N	176	176	176	176	176	176	176	176	176	176
EXPERIENCE	Pearson Correlation	.132	-.176*	.727**	1	.009	.235**	-.096	.227**	.235**	-.077
	Sig. (2-tailed)	.081	.019	.000		.906	.002	.207	.002	.002	.308
	N	176	176	176	176	176	176	176	176	176	176
INDUSTRY	Pearson Correlation	.045	.150*	.030	.009	1	.138	.012	.070	.001	-.049
	Sig. (2-tailed)	.553	.046	.694	.906		.067	.878	.353	.994	.520
	N	176	176	176	176	176	176	176	176	176	176
UE	Pearson Correlation	.237**	-.078	.237**	.235**	.138	1	-.120	.345**	.396**	-.028
	Sig. (2-tailed)	.002	.303	.002	.002	.067		.112	.000	.000	.710
	N	176	176	176	176	176	176	176	176	176	176
IC	Pearson Correlation	.098	.060	-.138	-.096	.012	-.120	1	-.017	-.199**	.486**
	Sig. (2-tailed)	.194	.431	.068	.207	.878	.112		.822	.008	.000
	N	176	176	176	176	176	176	176	176	176	176
CDERP	Pearson Correlation	.019	-.079	.285**	.227**	.070	.345**	-.017	1	.568**	.082
	Sig. (2-tailed)	.799	.299	.000	.002	.353	.000	.822		.000	.280
	N	176	176	176	176	176	176	176	176	176	176
JP	Pearson Correlation	-.048	-.045	.230**	.235**	.001	.396**	-.199**	.568**	1	-.069
	Sig. (2-tailed)	.528	.553	.002	.002	.994	.000	.008	.000		.364
	N	176	176	176	176	176	176	176	176	176	176
FS	Pearson Correlation	.215**	-.061	-.146	-.077	-.049	-.028	.486**	.082	-.069	1
	Sig. (2-tailed)	.004	.421	.053	.308	.520	.710	.000	.280	.364	
	N	176	176	176	176	176	176	176	176	176	176

Note: **. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

5.3 Confirmatory Factor Analysis (CFA)

5.3.1 Check for Model fit

The suitability of the model is determined by the correspondence between the observed covariance matrix and an estimated covariance matrix taking the results from the proposed model. Results of the analysis showed acceptable fit indices: The CMIN / DF received a value 1,820, well appreciated, CFI received a value of 0.940 (0.940 > 0.9), TLI has a value of 0.927 (0.927 > 0.9). RMSEA received a value of 0.068. In general, this model is quite appropriate, it meets most threshold criteria.

5.3.2 Check composite reliability, convergen validity and Discriminant Validity

All the varibales get composite reliability value exceed 0.7 , satisfied the standards of composite reliability according to Hair et al (2006), Fornell & Larcker (1981). Moreover, the loading factor (the standardized estimate) and AVE were greater than 0.5 ensured the convergence validity. Finally, As was shown in table 3, MSV less than AVE and the correlation between two constructs is less than 0.85 confirmed discriminant validity.

Table 4. Composite reliability, convergen validity and Discriminant Validity

	CR	AVE	MSV	ASV	UE	JP	CDERP	IC	FS
UE	0.829	0.621	0.199	0.094	0.788				
JP	0.909	0.626	0.367	0.155	0.446	0.791			
CDERP	0.862	0.611	0.367	0.133	0.392	0.606	0.782		
IC	0.916	0.784	0.297	0.092	-0.140	-0.225	-0.012	0.885	
FS	0.793	0.562	0.297	0.079	-0.044	-0.071	0.110	0.545	0.750

5.3.3 Testing Hypothesis

Structural equation modeling (SEM) is intended to analyze complex relationships in causal models. SEM models have been widely used in research areas such as psychology (Anderson & Gerbing, 1988; Hansell and White, 1991), sociology (Lavee, 1988; Lorence and Mortimer, 1985), research development of children (Anderson, 1987; Biddle and Marlin, 1987) and in the field of management (Tharenou, Latimer and Conroy, 1994). The analysis results revealed that CMIN / DF has an acceptable value, which is 1,809. The CFI value is 0.940 (0.940 > 0.9), TLI received a value of 0.928 (0.928 > 0.9) and RMSEA is 0.068. In general, these values are relatively appropriate because they meet the criteria. The hypothesis (H1) which proposed that "Sales or service employees' Interpersonal Conflict with customers is positively related to Felt Stress" is supported as p value is 0.05. In contrast, the hypothesis (H2) which proposed that "Sales or service employees' Interpersonal Conflict with customers is negatively related to Job Performance" is supported because the p value is less than 0.05 and the estimate is -0.225. The hypothesis (H3) which proposed that "Sales or service employees' Felt Stress is negatively related to Job Performance" is rejected because the p value is exceed 0.05 (0.423 > 0.05). The hypothesis (H4) which proposed that "Sales or service employees' Understanding of Others' Emotions is negatively related to Interpersonal Conflict with customers" is rejected because the p value is

greater than 0.05 ($0.097 > 0.05$). The hypothesis (H5) which proposed that "Sales or service employees' Understanding of Others' Emotions is positively related to CDERP" is supported because the p value is less than 0.05 and the estimate is 0.392. The hypothesis (H6) which proposed that "Sales or service employees' CDERP is negatively related to Interpersonal Conflict with customers" is rejected because the p value is more than 0.05 ($0.886 > 0.05$). The hypothesis (H7) which proposed that "Sales or service employees' CDERP is positively related to Job Performance" is supported because the p value is less than 0.05 and the estimate is 0.606. The hypothesis (H8) which proposed that "Understanding of Others' Emotions is positively related to Job Performance" is support because the p value is less than 0.05 and the estimate is 0.446.

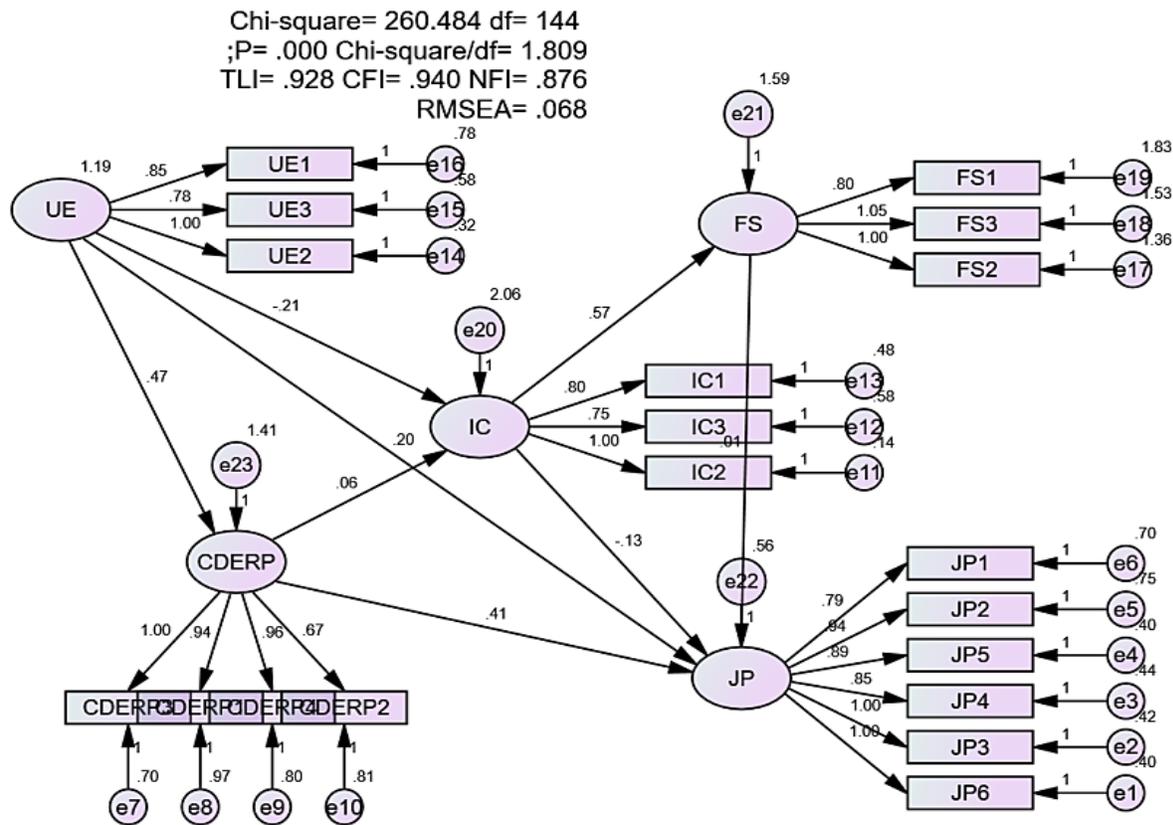


Figure 2. Structural Equation Model (SEM)

6. CONCLUSIONS

The purpose of this study is examining the influence of the Customer-directed extra-role performance and emotional understanding on Interpersonal Conflict, Felt Stress and Job performance. Five out of eight initial hypotheses were supported including: Sales or service employees ' Interpersonal conflict with customers is positively related to Felt Stress (H1) but negatively related to Job Performance (H2), CDERP are positively related to Job performance (H7), Understanding of Others 'Emotions is positively related to CDERP (H5). Our finding confirm Fernando (2013), Mulki et al (2015, 2017) earlier result that Sales and customer service employees interpersonal conflict are positively related to felt stress and negatively related to

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Understanding Others' Emotions. Compared to the previous research, the new hypothesis was noted that Understanding of Others' Emotions is positively related to job performance (H8). This finding provides an important contribution to the current literature review since there has been a few studies investigate the direct impact of understanding customer emotion on job performance. This result is also inline with research finding of Elizaberth (2006).

As mentioned above, understanding others' emotions not only is positively directed related to job performance but also positively indirected related to job performance via CDERP. Thus, managers should focus their expertise and practice well to understand employees and support building a lasting relationship with customer. In fact, when there is a relationship, the above employees will be supported and feel enthusiastic and excited at work. This is perfectly consistent with previous research showing that stress for customer contact makes employees feel exhausted. Sales managers should have training courses and career guidance for employees (Jaramillo et al., 2013; Mulki et al., 2012). When the salespersons and customer service employees understand the needs of customers and capture the psychology and subsequent feelings of customers, the profit from customers is huge. And, when their salespeople and customer service employees understand and understand customers' psychology, they will say more beautiful words that customers feel like building relationships in the sales and customer service employees. To increase business profitability, salespeople and customer service employees must control emotions and understand customers' feelings to understand customers' needs and preferences. Besides, sales managers need to minimize interpersonal conflict between sales and customer service employees with customers in order to increase their job performance since Interpersonal conflicts and rude customer behavior indicate a lack of trust and disdain for a salesperson's offerings, resulting in loss of commitment and purchases (Jay P. Mulki a, John W. Wilkinson, 2017). Managers should think about increasing employee engagement and support employees when they feel overwhelmed. In order for employee performance to be effective, managers have boosted the positive emotions of employees in the work environment. Since then, positive emotions will be spread to customers and increase the value of profits for the company.

Salespeople and customer service employees are more accessible to customers. Because the number of samples collected in two months is not so large, the following studies should choose a larger sample size (about 300-500 samples) to increase the representativeness of the research. Also, the following studies should be upgrade current model to discover other dimensions of EI to fully research impact of EI on IC. Because popularly salesman's stressful feeling when customers have requirements beyond the control and capacity of salespeople and customer service employees (Mulki, Jaramillo, Malhotra, & Locander, 2012) so the next study should further research the impact of EI on JP and EI on FS. Besides, for developed economies such as Japan, South Korea, China or India, the interaction between salespeople and customer service with customers is affected by economic and cultural factors (WangandWaller, 2006). Hence, later research should be focus on cultural and economy factors on research model.

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MARKETING

FAST FOOD CONSUMPTION TREND AND ITS RELATIONSHIP TO OVERWEIGHT IN STUDENTS

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ABSTRACT

The consumption of fast food is becoming increasingly popular worldwide, and Vietnam is not an exception. Its consequences are obesity and other cardiovascular diseases. In Vietnam, students are one of the groups that consume fast food at the highest. The authors of study chose the major subjects are students (ages 18-22) in Ho Chi Minh City. The study surveyed about 300 students of universities here, using one-dimensional anova analysis techniques, logistic regression analysis and data analysis using SPSS software. The goal of study was to examine the connection of overweight in students that related to fast food consumption. Research showed that: food choices, frequency of consuming and regular exercising are related to overweight. The findings also lay a foundation for enterprises running fast-food to adjust the fat and sugar content in their product, beside individuals have to adjust their emotions in consuming fast food as well. The study provides empirical evidence about the relationship between fast food consumption and overweight of Vietnamese students. This research would be quite interesting since it provided the overall about overweight in university students and other information which could help fast-food cooperations adjust the fat and sugar in their products. On top of that, students could control themselves when consuming fast food instead of other healthier foods.

Keywords: fast food, food consumption, overweight, university students.

JEL Classification:

1. INTRODUCTION

It seems that fast food consumption has become a global phenomenon in general and particularly, in Vietnam. The fast food industry here is developing very fast over many years. In 1997, Lotteria was the first Korean fast food restaurant to infiltrate into Vietnam, and then a range of other big companies like KFC, Burger King and Jollibee joined in 2000. But it was not until 2013, McDonald joined this fertile market (Wang, Tran, & Nguyen, 2014). Thereby we can realize that Vietnam is not only a potential fast food market but also a lucrative bait for multinational corporations.

The consequence of excessive fast food consumption is Obesity, and practically, this is very important. Indeed, "Obesity is recognized as one of the major public health problems in developed countries. In Asia, this disease is associated with an increased danger of mortality as well as the risk of dangerous chronic diseases such as diabetes, heart disease, cancer, etc. The diagnostic criteria for obesity have not been completed, though. Currently, obesity is diagnosed based on the Body Mass Index (BMI), or sometimes called "the Quetelet index" that mathematician Adolphe Quetelet developed in the 19th century. According to the World Health Organization (WHO), any

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adult with a BMI of 30 kg / m² or more is considered as "obese". This standard is applied to many countries in the world, and considered as an important measure to evaluate the scale of obesity in population" (Lan, Minh, Khanh, Hoa, & Dinh, 2011).

The cause of obesity is the amount of energy consumed in fast food. Excessive consumption of fast food leads to high energy density and blood sugar, which contributes greatly to the rate of increase in overweight and obesity (Rosenheck, 2008). There is also evidence that the trend of eating at fast food restaurants has increased and this is closely related to "obesity" (Jeffery, Baxter, McGuire, & Linde, 2006). However, the relationship between fast food consumption and obesity is unclear in scientific documents in Vietnam. This creates difficulty to develop the doctrine and limits about its meaning in practice.

The research team has shown that the relationship of family meals (father, mother) affects to the overweight in children: Parents who buy fast food for family meals account for a higher proportion than other family meals, about 3 times per week (Boutelle, Fulkerson, Neumark-Sztainer, Story, & French, 2007). And another relationship that affects fast food consumption is advertising: fast food companies' advertisements increase the amount of sugar and fat in their products (Hoek, & Gendall, 2006). The last but not least, human emotions affect their eating, especially the negative emotions: Anxiety is one of the factors affecting eating and causing human obesity (Schneider, Appelhans, Whited, Oleski, & Pagoto, 2010).

In addition, if all of these problems are solved, experts will apprehend more about the degree of Vietnamese people' overweight. The goal of this study was examining the association between the overweight in students and fast food consumption. Students are one of the objects who are at very high risk of fatness due to busy studying, overtime work, etc , then it is difficult to avoid rushed eating for work . The quick and simple choice is fast food at cafeteria or restaurant. So the question is whether there is a relationship between eating fast food and obesity. If the question is solved, it will contribute to practical and scientific research. Specifically, experts will understand more about the degree of obesity - overweight in Vietnamese people. The findings could lay the foundation for fast food businesses to adjust the fat and sugar' degress in their products; Parents know how to adjust their own family diet; and finally, we know how to control our own emotions or handle the fast food consumption. Moreover, the research contributes to science by providing empirical evidence on the relationship between fast food consumption and overweight in the context of Vietnamese students.

This research is essential to examine again in Vietnam as the number of university students being overweight is increasing on a daily basis, which attributed to three main factors being media, family members and psychology.

2. LITERATURE REVIEW

Vietnamese students from 18 to 22 years old, this stage of maturity is considered as an essential time in the growth and development of an individual's body and psychology (Bhave, & Nair, 2002). According to a study on issues affecting health and nutrition, physical growth conducted by Kotecha et al shows that diet has a great influence on these issues (Kotecha, Patel, Mazumdar , Baxi, Misra, Mehta, & Bakshi, 2011). The comprehensive development of a body depends greatly on the amount of nutrients that are absorbed. Physical growth and the need to

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receive nutrition were developed simultaneously. A survey was conducted in developing countries about adolescents' diet and nutrition found that their diets are often high in refined fats and carbohydrates. This is the main cause leading to obesity in the population of these countries (Kotecha, Patel, Baxi, Mazumdar, Shobha, Mehta, & Ekta, 2013). Therefore, we assumed that eating fast food during the student age of 18 to 22 is the reason of obesity in Vietnam.

Finding out unhealthy eating habits and the factors that impact on them, focusing attention on regular eaters and having appropriate interventions are essential to promote healthy eating habits, avoid the wrong eating habits and minimize health problems such as being overweight in students.

Fast-food consumption habits are recorded from 97.5% of the students who are surveyed in China (Zhu, Ding, Lu, Wang, Yang, Wang, & Zhao, 2008). And other places like Lucknow and Jammu Kashmir in India with 98% of students taking part in the survey (Vaida, N., 2013). It has shown that fast food consumption mainly takes place in the student environment. Eating a diet high in sugar, saturated fat, salt and high calorie content will lead to early onset of obesity in the youth. Along with obesity is hypertension, dyslipidemia and low blood sugar (Kotecha, Patel, Baxi, Mazumdar, Shobha, Mehta, & Ekta, 2013).

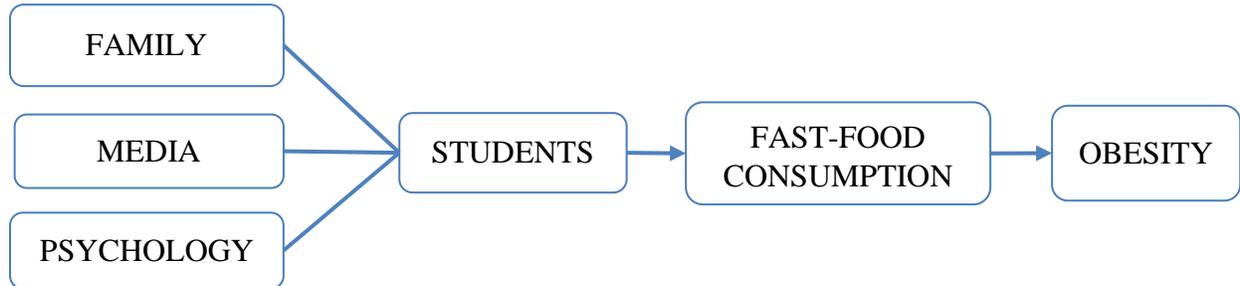
Everyone is aware of that: Organic foods and vegetables are very beneficial to our health. However, fast food is a highly attractive and satisfying dish for students (Brown, McIlveen, & Strugnell, 2000). The brand of fast food is one of the factors affecting the student's diet. Depending on the circumstances and conditions indicate whether students love branded fast food or not.

Television is the fastest and widely shared information source today. Commonly, a student can get information about fast food from television, parents or magazines. Studies also showed that young people who spend lots of time watching TV will have more unhealthy eating habits and perspective on food than minimum viewers (Signorielli & Lears, 2009). The reason is that current food advertisements rarely promote healthy foods using. Instead, they often encourage people to consume fast moving consumer goods (FMCG) such as fast food, instant noodles, ect. Ads for fast food often have vibrant colors, slow-motion, sharp images. Increasing appetite for viewers, especially teenagers. This caused many difficulties for parents to adjust healthy eating habits of their children. Therefore, it is extremely important to carefully check the promotional messages. The authorities should pay special attention, construct and strictly implement. It affects people' perceptions and mindsets during their development.

One of people's favorite recreational activities is consuming fast food. In a study of fast food consumption conducted in Syria, psychological and physiological factors conducted in China (Zhu, Ding, Lu, Wang, Yang, Wang, & Zhao, 2008) found out that: Different circumstances will form the ability to consume different foods of students. Specifically, the proportion of those who ate in an emotional state was 56.2%, while boredom was 28.8% and when feeling nervous was 24.7%. It can be said that people who are psychologically or emotionally emotional will have the habit of consuming more fast food than normal people. Therefore, psychological factors also play a big role in forming fast food eating habits of students. Serious effects on adolescent obesity. In addition, another factor influencing students' fast food consumption is the family's fast food consumption history. It is a conclusion from the research in Iran (Sharifirad, Yarmohammadi, Azadbakht, Morowatisharifabad, & Hassanzadeh, 2013). All early habits of a child are absorbed and learned from people around them. Children cannot cook and choose their own diet. It

completely depends on his family's diet. It has an important influence on their development in the future. Similarly, the eating and living habits of a person are largely influenced by the family and the culture of the place of birth. One of the common reasons for using fast food in the family is busy work. In the current lifestyle, parents have to work and do not have much time to take care of their family, so fast food become the number one priority. For a long time, this creates a detrimental barrier to make a habit from the beginning of one's life (Kaushik, Narang, & Parakh, 2011). All of these prove that family has the main role in shaping a person's eating habits.

In this study, the number of overweight students was proportional to the frequency and duration of their fast food consumption. Most are one time or more in a day. Similar to the research results of (Li, Dibley, Sibbritt, & Yan, 2010) and (Savige, MacFarlane, Ball, Worsley, & Crawford, 2007). Fast food is the major factor in the risk of obesity. Although in recent years, weight gain has been found to be the most frequent among food users in this study, it is not statistically significant (Ashakiran & Deepthi, 2012).



3. METHODOLOGY

3.1. Research sample

The study was sampled from 300 students at universities in Ho Chi Minh City, who got access to the Internet and ate fast food. The reason for sample selection is Ho Chi Minh City has been considered as the country's economic center in the service industry, especially, the food market is more and more popular. Along with that, almost all students in the city nowadays can access the Internet via smartphone and have a private social networking account. In addition, the samples are students between the ages of 18 and 25 because they often spend more money eating and drinking. Along with the diversity of the food market in the city- especially fast food, gathering to have meals together has gradually become a trend, that makes it easy to access the survey. Since all criteria were proposed, it helped the study achieve more accurate and realistic data, bringing practical results. After filtering the data, the study selected 281 valid samples. In summary, at the last number of valid samples, the male rate was 47.3% (133 samples), the female rate was 52.7% (148 samples).

3.2. Data collection process

300 questionnaires including 19 closed questions were sent via messages of social networking sites such as Facebook, Zalo, ... to students at some universities (Ton Duc Thang

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University, Polytechnic University, Ho Chi Minh City University of Technology) .HCM-HUTECH, ...) in March 2020. The questionnaire was in Vietnamese and contained semi-structured questions about the frequency of fast food each week. Participants were informed of voluntariness and truthfulness when taking part in the survey and would be guaranteed about their identity.

The creation of an online questionnaire in order to expand the scale of interviews for people that could not be directly surveyed as well as with the popularity of the Internet would make data collection faster and more convenient. The questionnaire contains questions about the frequency of eating fast food per week. A list of fast food items is also provided to clarify the definition of fast food for participants. In addition, It has other questions like the year (duration) of consumption, reasons for consumption, awareness of health hazards and the parents' fast food consumption.

After the initial questionnaire was created, an in-depth discussion and discussion between university lecturers and graduate students was conducted to refine this tool. The first 20 questionnaires were conducted for preliminary experiments in mid-February 2020 and found errors in the questionnaire to avoid leading to erroneous results in the study and then a complete questionnaire was concluded. The questionnaires were collected with a response rate of 100% (300/300), of which 93.6% (281/300) is a valid response rate. The official questionnaire was sent in early March 2020 and summarized after 2 weeks of the survey, including two main parts:

- A. General information (Information of participants such as name, age, height, weight, etc)
- B. Information directly related to the research

The research team sent a complete questionnaire to university student community sites in the city, most of the students joined in the survey are studying at Ton Duc Thang University.

The complete questionnaire is in the appendix at the end of the study.

3.3. Measurement

Hypotheses were tested through a developed closed questionnaire by using the identity scale from the document (Res, 2015). The questions mainly mentioned the frequency and habits of fast food consumers. The three main variables of the study are through multiple choice questions. For body mass index, participants were asked about their height and weight to calculate BMI directly through SPSS software. Regarding the family variable, the study gave some questions about eating fast food of participants' parents with two answers: A. Yes and B. No. And finally, similar to the family variable, exercise was also surveyed with two answers A. More (More than 1 hour / day) and B. Less (Less than 1 hour / day). For the other variables, most of the participants ate a lot of fast food and answered questions about their fast food' hobbies as well as prioritizing fast food than other food or not. The answer has 3 options: A. Yes, B. No and C. Normal. In addition, with questions about fast food choice preferences, our team made the answers revolve around the choices like the names of most favorite fast food items, and other options. At the top of the survey, participants provided demographic characteristics such as gender, age and university year. The participants' weight requirements were also asked to calculate body mass index (BMI) using the formula based on Vinmec : $BMI = \text{Weight} / [(\text{Height})^2]$. The BMI is calculated from the participants and compared with the ideal body mass index Vietnamese that from 18.5 to 23 (Khanh, Ngoc, 2019). The duration of physical activity was surveyed in a whole day, and the minimum

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level of physical activity required for young people can be concluded at least 1 hour a day (Quang, 2018).

3.4. Analytical techniques

The study was entered data, analyzed by SPSS software and used one - way Anova to check the link. Independent predictors of overweight and obesity were found through logistic regression analysis.

4. DATA

The response rate in this study was 93.66% with 281/ 300 questions distributed, filled out by the participants. The average age of students is 20.21 ± 0.9 years. The average height of students is 1.66 ± 0.4 meters and the average weight is 62.88 ± 9.5 kg. 105 (37.36%) students were overweight or obese.

Table 1. Demographic distribution of students.

Characteristic	Quantity	Percent
Students		
Freshman	42	14.9
Sophomore	162	57.7
Junior	42	14.9
Senior	35	12.5
Ages		
19	56	19.9
20	143	50.9
21	48	17.1
22	34	12.1
Genders		
Female	148	52.7
Male	133	47.3
Body Mass Index		
Normal/ Underweight	176	62.6
Overweight	33	11.7
Obesity	72	25.6
Total	281	100.0

Almost all 195 students (69.4%) ate fast food. Among them, the majority of 229 (81.5%) have been consumers for the past 2 to 5 years. The most common information source about fast food is television advertising 130 (46.26%), following is by friends 93 (33.1%) and parents 58 (20.64%). There are up to 109 (38.8%) participants said that they like fast food than regular meals [Table / Picture-2]

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Table 2. Fast food consumption habit of students.

Characteristic	Quantity	Percent
Do you often consume fast food?		
Yes	195	69.4
No	86	30.6
The type of fast food you consume		
Without fruits or Vegetables / Mixed Meals	104	37.0
Vegetables	177	63.0
The frequency of eating fast food in a week		
Once	103	36.7
Twice	75	26.7
Once two days	28	10.0
All day	43	15.3
Almost once a day	28	10.0
More than once a day	4	1.4
Time has eaten fast food		
<1 year	21	7.5
1-2 years	31	11.0
2-3 years	22	7.8
3-4 years	76	27.0
4-5 years	69	24.6
> 5 years	62	22.1
Choosing fast foods than other foods		
Yes	109	38.8
No	80	28.5
Normal	92	32.7
The type of fast food		
Pizza	79	28.1
Burger	75	26.7
Chocolate	35	12.5
Fried Chicken	84	29.9
Others	8	2.8
Fast food brand choice		
Yes	193	68.7
No	20	7.1
Normal	68	24.2
Choosing carbonated water than fruit juice		
Yes	109	38.8
No	116	41.3
Normal	56	19.9
Places to eat fast food		
Home	58	20.6
Fast food restaurant/cafeteria	135	48.0
Airport, Train station	4	1.4
Others	84	29.9
Total	281	100.0

The reason for not consuming fast food claimed by non-users was following the advice of

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parents from four research trends: Awareness of negative effects, spicy, not fresh and get diseases after consuming. Awareness of the harmful effects of fast food consumption was recorded in 254 (90.4%) students. 228 (81.1%) of fast-food consumers felt that they need to control their current fast-food consumption activities. The reasons mentioned were related to health hazards, tendency to cause weight gain, parents' pressure to give up and waste money. Awareness of controlling was related to awareness of the health risks about using fast food among participants.

Table 3. Perceptions of the need for its control among participants.

	Needed Controlling	Needless Controlling	Total
Be aware of the harmful effects	228 (81.1 %)	26 (9.3 %)	254 (90.4 %)
Not be aware of the harmful effects	8 (2.8 %)	19 (6.8 %)	27 (9.6%)
Total	236	45	281

There are up to 83.9% of respondents saw that it was necessary to control fast food consumption, including 2.8% who were not aware of its harmful effects. In addition, 9.3% of survey participants were aware of the harmful effects about fast food consumption but they did not consider them as a major hazard to be controlled.

Table 4. Relationship of different risk factors to fast food consumption among participants.

Feature	Regularly Consume (%)	Not Regularly Consume (%)	Total
Age			
19	36 (64.3 %)	20 (35.7 %)	56
20	105 (73.4 %)	38 (26.6 %)	143
21	31 (64.6 %)	17 (35.4 %)	48
22	23 (67.6 %)	11 (32.4 %)	34
	$\chi^2 = 2.355, p = 0.502$		
Types of food			
Without vegetable/ mixed meals	53 (51.0 %)	51 (49.0 %)	104
Vegetable	142 (80.2 %)	35 (19.8 %)	177
	$\chi^2 = 26.416, p = 0$		
Whether parents eat fast food			
Yes	118 (69.8 %)	51 (30.2 %)	169
No	77 (68.8 %)	35 (31.3 %)	112
	$\chi^2 = 0.036, p = 0.849$		
Awareness of the harmful effects			
Yes	168 (66.1 %)	86 (33.9 %)	254
No	27 (100.0 %)	0 (0.0 %)	27
	$\chi^2 = 13.173, p = 0$		
Total	195	86	281

In 4 assumptions shown in Table 4, there are 2 assumptions about age and family are not significantly correlated due to the p value > 0.5 . The remaining 2 assumptions about food type and

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perception were significantly correlated with extremely detailed p value ($p = 0$). The link between age and fast food consumption among students is negligible ($p = 0.502$). Consumption of fast food among parents was not significantly related to its use in students ($p = 0.849$).

Table 5. Relationship of fast food consumption to body mass index

	Body Mass Index		Total
	Normal/ Underweight (%)	Overweight/ Obesity (%)	
<i>Regularly consuming fast food</i>			
Yes	101 (51.8 %)	94 (48.2 %)	195
No	75 (87.2 %)	11 (12.8 %)	86
Total	176 (62.6 %)	105 (37.4 %)	281
$\chi^2 = 12.984, p = 0.005$			
<i>Frequency of fast food consumption during the week</i>			
Once	80 (77.7 %)	23 (22.3 %)	103
Twice	61 (81.3 %)	14 (18.7 %)	75
Once 2 days	14 (50.0 %)	14 (50.0 %)	28
All day	5 (11.6 %)	38 (88.4 %)	43
Almost once a day	15 (53.6 %)	13 (46.4 %)	28
More than once a day	1 (25.0 %)	3 (75.0 %)	4
Total	176	105	281
$\chi^2 = 74.267, p = 0$			

Table 6. Relationship between frequency of fast food consumption and physical activity of students.

	Duration of exercise		Total
	More (%)	Less (%)	
<i>Usually consuming fast food</i>			
Yes	33 (16.9 %)	162 (83.1 %)	195
No	56 (65.1 %)	30 (34.9 %)	86
Total	89 (31.7 %)	192 (68.3 %)	281
$\chi^2 = 64.050, p = 0$			
<i>Frequency of fast food consumption during the week</i>			
Once	46 (44.7 %)	57 (55.3 %)	103
Twice	32 (42.7 %)	43 (57.3 %)	75
Once 2 days	6 (21.4 %)	22 (78.6 %)	28
All day	2 (4.7 %)	41 (95.3 %)	43
Almost once a day	3 (10.7 %)	25 (89.3 %)	28
More than once a day	0 (0.0 %)	4(100.0 %)	4
Total	89	192	281
$\chi^2 = 35.620, p = 0$			

It can be seen that the consumption of fast food once or more a day has a higher rate of overweight or obesity than ordinary consumers ($p = 0$). Physical activity time was found to be low among students who ate fast food in a day and was the cause of obesity as well when this

association was feasible ($p = 0$). Logistic analysis shows that both important factors of the study are Frequency of fast food consumption in a week and The amount of time participants spent exercising are very detailed ($p = 0$).

Table 7. Binary logistic regression analysis of the relationship between physical activity time and weekly fast food consuming with overweight or obesity of fast food users.

	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I.for	
							EXP(B)	B
Frequency of fast food consumption in a week	1.347	.244	30.472	1	.000	3.845	2.384	6.203
Amount of times participants spend doing sports?	2.651	.622	18.162	1	.000	14.167	4.186	47.945

5. RESULTS AND DISCUSSIONS

After research process, this research paper is not very compatible with the previous one. Specifically, when compared to a study conducted in Chandigarh by (Puri, Bhatia, Swami, Rai, & Mangat, 2008), about 58.8% of teenagers prefer fast food than other normal meals, and this is higher than our team's study. But if compared to the age of 21.9% children consuming fast food were conducted in India (Joseph, Nelliyanil, Sharada Rai, Kotian, Ghosh, & Singh, 2015) with the results of this study, it was lower. But in general, the attractiveness of fast food for students in Vietnam is not too high so educators or health researchers can advise them to abandon the habit of consuming fast food so often in order to avoid causing harmful health effects. Although there are a few students who are bored with family food, they should have proper nutrition from their families and suitable nutrition advice for them.

In this study, three main factors that influence students' fast food consumption behavior are: family, media and psychology. Through intermediate variables like students and fast food, they showed that up to 69.4% of students had ever eaten fast food. Among the age from 18 to 22 years old, students consume fast food the most at the age of 20. Specifically, the number of students consuming fast food by age varies from 64.3% - 73.4%. 81.5% of students consume fast food for a long time with a daily frequency or more is 36.6%. However, the truth is 66.1% of students are aware of the harmful effects of eating fast food but still using them. According to a study conducted in Badora, India explained the question why students know the harmful effects of fast food but still consuming them daily. The reasons are: the food preferences, strong taste and the sense of satisfaction make it so hard for a person to be able to give them up (Kotecha, Patel, Baxi, Mazumdar, Shobha, Mehta, & Ekta, 2013). On the other hand, It proves that students can often rely on the young and healthy body as a reason for lifestyle according to personal preferences without regarding its harmful effects on their body. It can be said that healthy eating must be accompanied with physical activity in order to create a healthy body. So obesity also partly impacts to exercise. In 195 students in the study who ate fast food, there were up to 162 (83.1%) students had little or virtually no exercise. In stark contrast to 56 (65.1%) students who did not eat fast food and had high physical activity time. This shows that the number of students focusing on health and fitness will be conscious in consuming less eating fast foods on the market.

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Student obesity status is measured by body mass index of BMI. Through the survey, we found that the number of obese students with fast food consumption was 94 (48.2%) students and no fast food consumption was 11 (12.8%) students. Overweight and obese students have lower rates than those who eat them. This is in contrast to the research results of (Li, Dibley, Sibbritt, & Yan, 2010). The reason may be due to the differences in Eastern and Western cultures. Westerners tend to buy frozen foods, as well as canned foods and fast foods. In contrast, Eastern people will prefer fresh and homemade food. However, this figure is a warning to the increasing obesity in Vietnam. Parents, school, media, and most importantly, everyone has to change their minds. Promoting a healthy lifestyle to create a clean eating habit for each person. In addition, we can see the correlative relationship between age with fast food consumption and parental consumption with fast food consumption is not consistent with the initial research hypotheses. From the studies of China and India, the majority of children, students eat fast food, up to 97.5% of students have eaten in China (Zhu, Ding, Lu, Wang, Yang, Wang, & Zhao, 2008) and 98% in Lucknow, India (Abuzaid, 2012). However, our research only focuses on students at the age of 19-22, it led to unrealistic and inaccurate results. Along with that is Vietnamese culture, when eating at home or affordable restaurants are very popular, especially for students, they prefer restaurants with cheaper prices than convenience. Fast food restaurants have a little high price compared to Vietnam markets such as Lotteria, Mc. Donald or KFC, although there are still traditional fast foods like bread, it does not take positive data for the study.

Regarding the relationship between parents and fast food consumption, different from the Iranian studies (Gholamreza Sharifirad, Parastoo Yarmohammadi, Leila Azadbakht, Mohammad Ali Morowatisharifabad, and Akbar Hassanzadeh, 2013) and China (Zhu, Ding, Lu, Wang, Yang, Wang, & Zhao, 2008): fast food consumption among family members was significantly related to the consumption in children. There was no clear connection or correlation in our research, the reasons already mentioned above when the main research goal is students in Vietnam. They rarely eat with their families because of being self-reliant, living far away and they prefer to cook by themselves or choose affordable restaurants. Fast food consumption of parents did not affect students who live with their families. In addition, Vietnamese parents pay much attention to health and therefore, they take time to cook nutritious meals for their family regularly. They do not let their children eat outside as well, it different from the sample research which showed that it is not easy for health educators to persuade children to give up fast food (Nitin Joseph, Maria Nelliyanil, Sharada Rai, Raghavendra Babu, Shashidhar Kotian, Tanima Ghosh and Manisha Singh, 2015).

In summary, the results are consistent with the proposed hypothesis: food choices, frequency of consumption and exercise are all related to overweight. The only correlation between age and parents is not feasible, possibly due to the narrow scale of research (from 19 to 20 years old) as well as cultural differences. Other important factors like the surrounding environment (Vietnam) with so many affordable restaurants located everywhere make fast food not a major choice for students. However, it is still undeniable that the overweight of Vietnamese students is partly due to fast food consumption.

6. CONCLUSIONS

In Summary, it can realize that eating lots of fast food has no benefits to health and development of people. Regular consumption of high-calorie foods often is high in fat and sugar,

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increasing the risk of obesity. Therefore, the study of fast food intake and its harmful effects in students is a very important study. This helps people understand more about the impact of fast food on health is larger than the benefits they take. As a result, consumers will consciously restrict eating fast food and adjust to the healthiest diet. For businesses, based on this study, 83.9% of participants realized that it was necessary to control the fast food consumption, from that businesses could meet the healthy eating needs but still maintain revenue compared to types of foods that are not good for consumers' health. They can combine to make healthier fast food sets. The creation of more fast food from vegetables along with fruit juices may be the best option available for businesses nowadays. Vietnamese university students are not affected seriously in overweight. The fast-food consumption in Vietnam is quite similar to India since both nations belong to Asia and do not tend to consume too much fast-food. From this research, we could recognize that eating fast food is not a popular tendency as well as Vietnamese students workout quite stable. Thanks to those reasons, the policies in Vietnam are not changed much and could encourage fast-food cooperations to make more products which do not contain much calories.

The major subjects for the survey are only students in Ho Chi Minh City. The online questionnaire was sent via Facebook, Zalo, etc. The research team believes that students are the subjects with faster access to online survey form than other groups who consuming fast food. Therefore, the representative of the sample is not really excellent. The second limitation of the study is the questionnaire only included closed questions. They do not help the author's team to delve into the causes of the answers but only receive answers based on the available suggestions. As a result, it reduces the reliability of the collected data. In the next studies, the authors will try to diversify methods of the survey: online survey combined with direct survey (interview, send questionnaire directly) to be able to reach many different subjects: Children, adolescents, adults, middle-aged people ... The study needs to develop a Likert scale beside the identification scale in order to assess more accurately the emotional degrees of the subjects who are surveyed.

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THE IMPACT OF ONLINE WORD OF MOUTH ON DESTINATION TRUST AND REVISIT INTENTION IN FIVE-STAR HOTELS IN HO CHI MINH CITY

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ABSTRACT

This study was conducted with the aim of understanding the interaction between the online word of mouth, destination trust and revisit intention of customer in the travel service industry. The selected context for the study is 5-star hotels in Ho Chi Minh City and the target audience is tourists currently using services at those hotels. Survey scale was 200 subjects and the author used qualitative and quantitative methods to study.

In particular, qualitative research serves as a prerequisite to provide information and data for the research questionnaire, while quantitative research helps to check and provide accurate figures to find research results. In the processing of collected data and analysis, the author used two software to analyze data: SPSS (Cronbach's Alpha, EFA) and AMOS (CFA, SEM).

The results obtained are that online word of mouth affects destination trust and revisit intention, destination trust affects revisit intention. All results are positive. Through the results, the author concludes that online word of mouth has a strong impact on the tourism industry in general. Therefore, with the hope that we can contribute to the development of tourism in Ho Chi Minh City in particular and Vietnam in general. The author has made a number of recommendations and comments based on the analyzed results.

Keywords: online word of mouth (eWOM), destination trust, revisit intention

JEL Classification: M31, L80

1. INTRODUCTION

Although Vietnam's tourism industry has started to grow more slowly than other countries, it is not inferior to neighboring countries. Vietnam's tourism industry in recent years has reached great numbers. According to the survey data of the General Statistics Office, Vietnam's tourism has achieved good growth over the years. The number of international and domestic tourists from 2000 up to now has been significantly difference. If we just received 2.1 million international visitors in 2000, it was 7.5 million arrivals in 2013, the number increased to 12.9 million and 15.5 million arrivals in 2017 and in 2018. In September 2019, the number of visitors to Vietnam has reached 12.8 million. This number is 10.8% higher than the same period in

Through that we realize that Vietnam's tourism industry has been known more in the world, many places in Vietnam were voted as one of the most favorite places for international tourists. Especially Ho Chi Minh City, according to the Ho Chi Minh City Tourism Department's report in 2015 about 4.6 million international tourists and 19.3 million domestic tourists, 2016 year Ho Chi

Minh City welcomed about 5.2 million international tourists and 21.8 domestic tourists, in 2017
Ho Chi Minh City welcomed about 6.4 million international visitors.

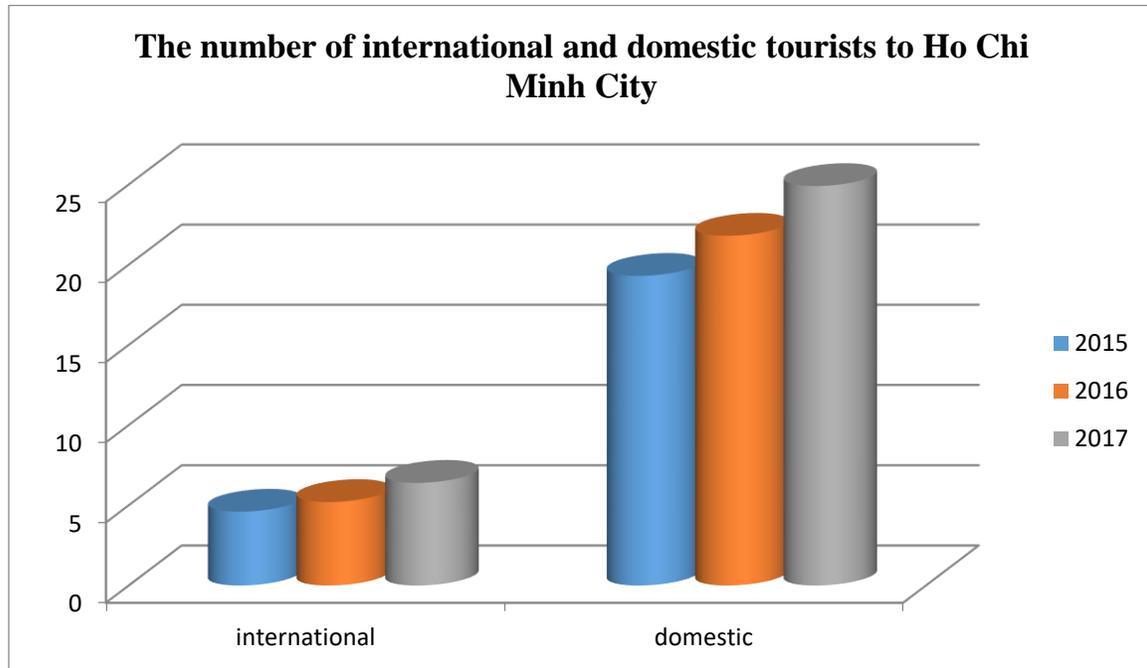


Figure 1. Chart of the number of international and domestic visitors to HCMC

Source: General Statistics Office in Vietnam (2019)

Besides the great numbers, there are still some issues facing Vietnam tourism industry in general and Ho Chi Minh City in particular. It's how to spread the beautiful image to new customers as well as retain old customers. Regarding the issue of retaining old customers, though the number of tourists coming to Vietnam is increasing, the proportion of tourists returning to Vietnam is quite low. Currently, there are many wrong views of some businesses about creating a destination trust for new customers but forgetting old customers. Instead, they have to do both at the same time, both creating destination trust and building revisit intention with customers. Besides, according to the research of Esch et al. in 2006, the brand trust evokes consumers' emotional attachment toward a brand. And this is one of the top issues that Vietnam's tourism industry is facing.

According to Um and Crompton in 1990, the majority of tourists had little knowledge and understanding of new tourist destinations they had never been to there. So images and destination information are important. Accordingly, tourists will build the images of their favorite destinations through their imagination through information sources such as books, newspapers, magazines, television, internet or word of mouth, etc. and from there they will form in their minds the confidence of the destination they care about. When travelers have confidence in the destination they are interested in, decision making will go smoothly and quickly. Therefore, building trust for new guests is also extremely important. Now with the rise of information technology, customers

have many ways to access the information they want to learn. With the media mentioned earlier, perhaps the most popular method, the most popular and the most prominent is the online word of mouth. Compared to the speed of transmission and the amount of information of word of mouth, this online version has been upgraded more strongly. E-WOM has proven to be the most used source of information and it inspires and trusts twice as much as traditional methods (Hung & Li, 2007). Therefore if new customers want to learn about new places or find some information instead of viewing traditional advertising or manually asking friends, customers will be use social media, review websites, online travel agency websites to see other customers' reviews. According to previous studies, E-WOM has a very strong impact on the tourism industry, mainly due to the inherent intangible nature. According to a report on Travelindustrywire website in 2007, about 67% of US travelers use the internet each year to search for information about destinations of interest. In the 2011 Tripadvisor report, hundreds of customers visited online reviews of hotels they were interested in learning about. In total, about 84% of customers are influenced by these reviews when making a decision of choice. So for the tourism industry in general, E-WOM has a significant impact (TIA, 20015).

Recognizing the importance of online word of mouth, destination trust and revisit intention to the development of Vietnam's tourism industry in general and Ho Chi Minh City in particular. The research topic will contribute to clarifying the causes of difficulties that Vietnam's tourism industry is facing, such as building revisit intention, creating destination trust for old and new customers. In addition, for the reason of wanting to develop myself in the future because for the tourism-service industry, the management of the image of the business and attracting customers is extremely important. So for the author this topic is very important and meaningful. The author has chosen the topic name "The impact of online word of mouth on destination trust and revisit intention in 5-star hotels in Ho Chi Minh City".

2. LITERATURE REVIEW

2.1. E-WOM

Previous research on traditional WOM shows that factors such as reliability and the direction of WOM (positive or negative) are the premise of the WOM effect (Arndt, 1967). However, in E-WOM, "unlike the case of WOM from interpersonal sources, recommendations are usually from unknown individuals and in text-based format. Therefore, online consumers have difficulty using source similarity to determine the reliability of information" (Chatterjee, 2001).

There has been a lot of research on E-WOM as well as its power, reliability, impact or influence. Another study has shown that E-WOM may have a higher level of reliability, empathy, and customer satisfaction than market sources (Bickart and Schindler, 2001). By 2004, a few more papers had commented that: "The advent and expansion of the Internet has expanded consumer choices to collect product information by including reviews of other consumers, posted on the Internet and offering consumers the opportunity to give advice regarding their consumption by participating in electronic words (E-WOM)" (Hennig-Thurau et al., 2004), "The Internet has emerged as a source and an outlet for verbal communication (E-WOM) for customers" (Hennig-Thurau et al., 2004). In the research of Chevalier and Mayzlin (2006), "E-WOM has more persuasive power and persuasive propaganda than traditional marketing methods because the media is considered more independent and reliable. In recent years, E-WOM has been widely used,

such as online forums, online communities, social media (e.g. Facebook, Instagram or Blog) and online reviews that can be modified and stored on the Internet”. Contrary to traditional WOM communication, E-WOM eliminates the negativity associated with imparting the subjective experience of friends, colleagues, relatives and family because the assessor's identity cannot be verified. It is clear that even identity information is hidden (Abubakar, Ilkan, & Sahin, 2016).

2.2. Destination Trust

According to a research paper by Su, Hsu, & Marshall (2014) “trust promotes a lot of important structures in travel decisions, your satisfaction, a return review or a commitment and commitment success”. In a more practical and simple way, destination trust ensures that tourists can choose to go to a specific destination, providing services that are transparent, reliable, risk-free and no trouble (Roodurmun & Juwaheer, 2010). Destination trust is very important to the tourism industry because there are many authors studying the relationship between these factors. For example, destination trust co-operates on customer loyalty (Chen & Phou, 2013; Loureiro & Kastenholtz, 2011; Loureiro & González, 2008), destination trust and tourism intent (Ekinici & Hosany, 2006; Mohammed Abubakar, 2006), or impact on revisit intention (Kim & Oh, 2002). The authors Castaldo, Perrini, Misani and Tencati (2009) have found that the relationship between businesses and customers has found that the implementation of social responsibility activities helps to strengthen consumer confidence for the business and its products or services.

Previous studies have shown that images of destinations can have an impact on consumer confidence in a new travel destination (Artigas et al., 2017; Johnson & Grayson, 2005). Besides, if some aspect of the destination trust is ruined, the entire destination trust can be immediately destroyed. This is a matter of great practical significance for tourism destination management today, with an increasing number of travel quality issues or customer retention such as travel harassment incidents. Calendar and fraud behavior at some destinations. “Unreasonable prices of travel products from local suppliers and the unfair or dishonest treatment of tour guides are examples of activities that can lead to a destination trust crisis in an indirect or direct way” (Chang, 2014).

2.3. Revisit intention

Consumer preferences and needs are diverse and change very quickly. Therefore, understanding the purchasing behavior and intention to return to the destination of tourists is an important issue for tourism managers. Therefore, there have been many research papers on this issue. From the past years, there have been a lot of research and comments on the revisit intention of researchers, but most experts think that revisit intention is derived from consumer behavior as defined below.

The concept of a visitor's intention to return comes from the intention to conduct, which is defined as "a planned or planned future behavior" (Fisbein & Ajzen, 1975). Considered to be one of the components of consumer behavior intentions, the intention to reconsider may be considered to be the intention of the consumer to experience the same product, brand, location or region within future (Zeithaml, Berry, & Parasuraman, 1996). The intention to reconsider is the likelihood that a customer will repeat an activity or revisit a business (Baker & Crompton, 2000). According to

Williams & Buswell (2003) “ Behavior of tourists can be divided into three period: before, during and after travel. Specifically moreover, tourist behavior included: decision making, experience on pages network, evaluate experience after the trip and behavioral tendencies after the trip. These future behavioral intent includes revisit intention even word of mouth positively”.

In most service industries, such as from eating or drinking, travel, the intention of customer review is a very important topic for researchers or businesses. Because the intention of customers to revisit or not revisit from using at least one service or a specific product will directly relate to the success of that business and their loyalty. with 1 service or 1 product. Many previous researchers have explored potential incentives for customer review intent (Han et al., 2009; Pizam et al., 2016). The consumer industry of tourism is usually made up of two different classes. One is the consumer who uses the service for the first time, and the second is the consumer who comes back later (Huang & Hsu, 2009). First-time decision-making for consumers is primarily based on information gathered from various sources of information, which leads to an expectation of customers' expectations for services. at the selected location. This expectation has been studied by many experts, contained in hotel documents as intended to visit. The materials target potential consumer behavior and investigate the influence of various predictive factors in the customer's decision making process. Most studies have predicted that the intention to revisit an extension of satisfaction stemming from a customer's first experience of using a service or product (Huang & Hsu, 2009; Um & Chon et al, 2006). This study intends to expand the study by establishing the predictive effect of E-WOM on customer review intent.

2.4. E-WOM and Revisit Intention

“E-WOM communication has received a lot of attention in recent years, due to its widespread power to consumers and its impact on marketing strategies” (Smith et al. 2007). The importance of the impact of E-WOM on services in general and the tourism industry in particular has been recognized by the research of Litvin et al (2008). E-WOM has been shown to directly influence consumers' intention to revisit.

Therefore, when customers are satisfied with the experience of a service at a hotel, they will be happy to recommend the service to friends, relatives or strangers on social media or forums and ready to revisit the hotel in next time (Cantalops and Salvi, 2014). In a study of the low-cost airline service industry, Kim and Lee (2011) demonstrated that high E-WOM increases customer revisit intention. According to the study of Kim et al. in 2009 proved empirically that customer communication from WOM was recognized as an important premise for future behavioral intent to revisit customers. Ko et al (2011), if a business can reduce negative E-WOM, it will ensure the return of customers.

Numerous studies have proved these points in empirical evidence in the hospitality industry that E-WOM may affect a traveler 's travel and intention to visit again (e.g. Arsal et al. 2008; Filieri & McLeay, 2014; Filieri, 2015; Vermeulen & Seegers, 2009). This article argues that E-WOM can have the affect on revisit intention in the tourism industry. Therefore, the following hypothesis has been proposed.

2.5. E-WOM and Destination Trust

E-WOM has been considered a very important source of information in tourist destination selection in recent years (Jalilvand & Samiei, 2012). According to Wu and Wang study in 2011, there was a link between E-WOM, brand trust and buying intent, so E-WOM will have an impact on the increase or decrease of the intended purchase of consumers (Lin & Lu, 2010).

Zhu and Lai in 2009 pointed out how E-WOM affects the choice of tourist destination. Destination confidence increases the willingness of tourists based on the destination's ability to carry out its advertised capabilities. More practically, destination trust ensures that the average traveler chooses to visit a specific destination, and providing information about that service is more transparent and reliable. Besides, the risk and problem will be less (Roodurmun & Juwaheer, 2010). Perhaps a destination engraved in the visitors' mind can easily become a mark. Potential tourists are more likely to come from friends and colleagues through searching for information about the destination. Even people with whom they have relationships to consult with differing individuals (Lee et al. 2007). This is because the WOM message helps customers reduce fear and uncertainty and ensure service quality (Martilla, 1971). In another study, it was similarly stated that in order to reduce their problems and minimize their risk as much as possible, potential tourists tend to reference information from previous customers, or from trusted and experienced individuals. Scholars have come up with evidence to support that E-WOM plays an important and positive role in curbing travelers' risk perception when booking (Gretzel & Yoo, 2007; Sparks & Browning, 2011). According to Morgan et al. (2003), E-WOM will have a negative effect in the case of unsatisfied tourists and share unpleasant, disdainful comments about their experiences.

This will adversely affect the destination image of other tourists (Dennis et al. 2009). Recently, a study by Ladhari and Michaud in 2015 noted that customer trustworthiness is increased thanks to positive feedback at one destination. Therefore, this article argues that E-WOM will reduce the risk and uncertainty of potential customers related to a destination. Based on the arguments and theories of this experiment, it is proposed that WOM online will have a significant impact on tourist confidence.

2.6. Destination Trust and Revisit Intention

“Brand trust evokes the emotional attachment of consumers to a brand that has never used or used its products or services” (Esch et al. 2006) . Lin and Lu (2010) argue that “Trust has a significant influence on consumers' buying intentions. Therefore, scholars believe destination trust will be an effective way to minimize customer uncertainty or anxiety (e.g. Pavlou et al 2007; Han & Hyun, 2013). According to Chiu et al. 2012, it is revealed that customer trust has an impact on customer acquisition intent.

Likewise, destination trust can evoke emotional nostalgia among travelers to the destination and that engagement can predict the readiness of consumers to return and use the service. There (Thomson et al. 2005). According to the study of Phillips et al. (2013) conducted a study that included customers' intention to revisit, satisfaction and destination trust. Then, collected data on 317 samples to check the results. Based on the results of the structural equation modeling (SEM) method, destination trust has been studied as a key driver for the customer's intention to revisit.

In terms of structure results, destination images are distinguished into cognitive images and key images that are the main indirect drivers of tourists' intention to revisit. Swan et al. (1999) concluded in their study that in relevant empirical studies, customer trust led to four results which included two outcomes are customer trust driving intent customer purchases and customers will choose to buy goods provided by businesses they trust. Based on theoretical poit and evidence presented, the following hypothesis has been proposed.

3. METHODOLOGY

3.1 Research Model and Hypotheses

3.1.1. Research Model

Based on the above theory and the research “eWOM, revisit intention, destination trust and gender” (Abubakar et al, 2017), research model is presented by the authors as in Figure 2 to apply the questionnaires to customers experienced the service in 5-star hotels in Ho Chi Minh City.

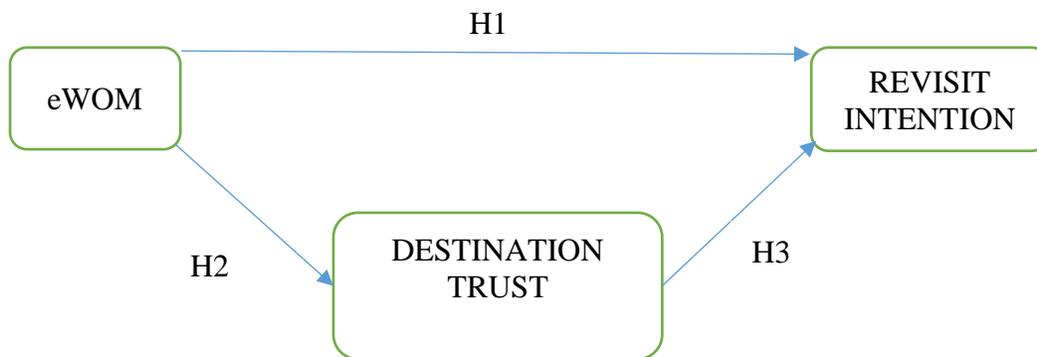


Figure 2. Proposed research model

To be sure of the author's theoretical model is suitable for the working environment in the hotel industry in the city or not. The authors held a group discussion on the observed variables in the model, with qualitative research results using a highly consensus group discussion method.

In particularly:

- eWOM variance: measured based on 06 observational variables based on the studies of Abubakar et al. (2017); Jalilvand & Samiei (2012a)

- Destination trust variance: measured based on 08 observational variables based on the study of Abubakar et al. (2017)

- Revisit intension variance: measured based on 08 observational variables based on the studies of Blodgett et al. (1997); Kim, Park, Kim, & Ryu (2013).

3.1.2. Hypotheses

H1: E-WOM has a significant impact on the revisit intention in the context of hotel services.

H2: WOM online has a significant impact on destination trust for hotel.

H3: Destination trust has a significant influence on the revisit intention in the hotel context.

3.2. Procedures and sample

3.2.1. Procedures

The research process was carried out through two main phases:

In the first phase of the preliminary study, it is done in 2 steps: the first step uses qualitative methods with group discussion method to adjust the nuclear scale and factors in the star research model. for more perfection; In the second step, in order to verify the reliability of the scale, a preliminary quantitative survey must be conducted by interviewing 35 customers at a random hotel. Once 35 test samples are available, the author will base on the results to confirm the feasibility scale in practice and proceed to the next important step of the official 200 sample survey

When entering the second phase of research, formal methods are carried out through quantitative methods. Data for the quantitative study were collected using questionnaires with respondents using 5-star hotels in Ho Chi Minh City. The final step in this paper is to perform the analysis of results obtained by SPSS 20, AMOS 20 software and make final comments and conclusions for the study.

3.2.2. Sample

The research was conducted by directly surveying customers who use accommodation services at 5-star hotels in the city. The observed variable of the research model is 24. Based on the study of Hair et al. (1998) to indicate the expected sample size, if the standard of one observation is five samples, then the expected sample size is $n = 120 (24 \times 5)$. As with multivariate regression analysis, the minimum sample size to be obtained is calculated using the formula $n = 50 + 8 * m$ (m is the number of independent variables) (Tabachnick and Fidell, 1996). In the author's paper, the number of independent variables is 3. Thereby $n = 50 + 8 * 3 = 74$.

To achieve a sample size of 200, a total of 243 questionnaires were sent to the interviewees and collected 200 valid questionnaires and used them to check the research data. This study adopts a convenient sampling method. The process of gathering information through direct surveys with questionnaires. The author has used two main methods to collect data: directly and indirectly:

Direct method: the author will directly interview travelers currently staying at 5-star hotel in Ho Chi Minh City. The locations selected for face-to-face interviews are before selected 5-star hotels (InterContinental Saigon, Caravelle, Rex, Nikko, Sheraton, Majestic, Renaissance, Lotte Legend, Windsor, Pullman, Equatorial, Hotel Des Art, New World) and in places that attract tourists (Nguyen Hue Walking Street, Ben Thanh market, ...). The process of implementing this method from November 2019 to early January 2020.

Indirect method: the author has used the close relationships of close friends and family to be able to collect tourist data in the hotels mentioned above through the hotel staffs. The advantage of this method is fast, accurate data, saving time. Besides the cons are high costs, unable to collect evidence. This method is used after the author has assessed that data collection method directly does not work well and the processing time is from early January to mid-February 2020.

4. DATA

In this thesis, the author uses 2 analytical software: SPSS (Statistical Package for the Social Science) and AMOS (Analysis of MOment Structures). The reason for using both software is because the author's research model needs to build structural models (SEM) to analyze models with higher precision than standard multivariate statistical techniques. SPSS software is not capable of handling in case there are many dependent and intermediate variables appearing in the model. SPSS software supports the classification and analysis of primary data - information collected directly from the research object, commonly used in sociological and economic investigative studies. SPSS includes many functions but the author uses Descriptive statistic, Cronbach's Alpha reliability test, EFA Discovery Factor Analysis for research.

The author then continues to use AMOS software to identify, estimate, evaluate, and present the model in an intuitive interface to verify the relationship between hypothetical variables. In AMOS, the author conducted the analysis of affirmative factors CFA (Comfirmatory Factor Analysis) and Structural Equation Modeling (SEM), SEM also has other names such as Analysis of Covariance Structures or Causal Modeling. The total number of customers taking the survey includes 21 nationalities. The nationality in the survey with the most number of votes is Vietnam with 32 votes, the United States with 20 votes. The least number of nationalities in the survey is Denmark, Swiss, Africa, UAE with 1 response as shown in table 2.

Table 1. A list of 5-star hotels was surveyed

No	Name of hotel	Number	Percent	No	Name of hotel	Number	Percent
1	InterContinental Asiana	15	7.5	8	Lotte Legend	8	4.0
2	Caravelle	25	12.5	9	Windsor	9	4.5
3	Rex	19	9.5	10	Pullman	11	5.5
4	Nikko	23	11.5	11	Equatorial	14	7.0
5	Sheraton	17	8.5	12	Hotel Des Art	12	6.0
6	Majestic	13	6.5	13	New World	9	4.5
7	Renaissance	18	9.0	14	Others	7	3.5
Total						200	100.0

Source: Surveying and processing from SPSS

Table 2. Statistics of the nationality of visitors surveyed

No	National	Number	Percent	No	National	Number	Percent
1	Vietnam	32	16,0%	13	Thailand	5	2,5%
2	China	20	10,0%	14	India	4	2,0%
3	Korea	19	9,5%	15	Australia	3	1,5%
4	Japan	19	9,5%	16	Germany	2	1,0%
5	US	18	9,0%	17	Philippine	2	1,0%
6	Hong Kong	16	8,0%	18	Canada	2	1,0%
7	Singapore	12	6,0%	19	Mexico	2	1,0%
8	Malaysia	10	5,0%	20	Denmark	1	0,5%
9	Russia	9	4,5%	21	Swiss	1	0,5%
10	Taiwan	8	4,0%	22	Africa	1	0,5%
11	France	7	3,5%	23	UAE	1	0,5%
12	UK	6	3,0%		Total	200	100,0%

Source: Surveying and processing from SPSS

5. RESULTS AND DISCUSSIONS

The SEM linear structure model analysis method is applied to test theoretical research model, this method has many improvements compared to the traditional multivariate regression method because it can be calculated after number. measure. Similar to the CFA test of the scale model, the ML estimation method (Maximum Likelkel) is applied to estimate the model parameters. The SEM test results are presented in Figure 3.

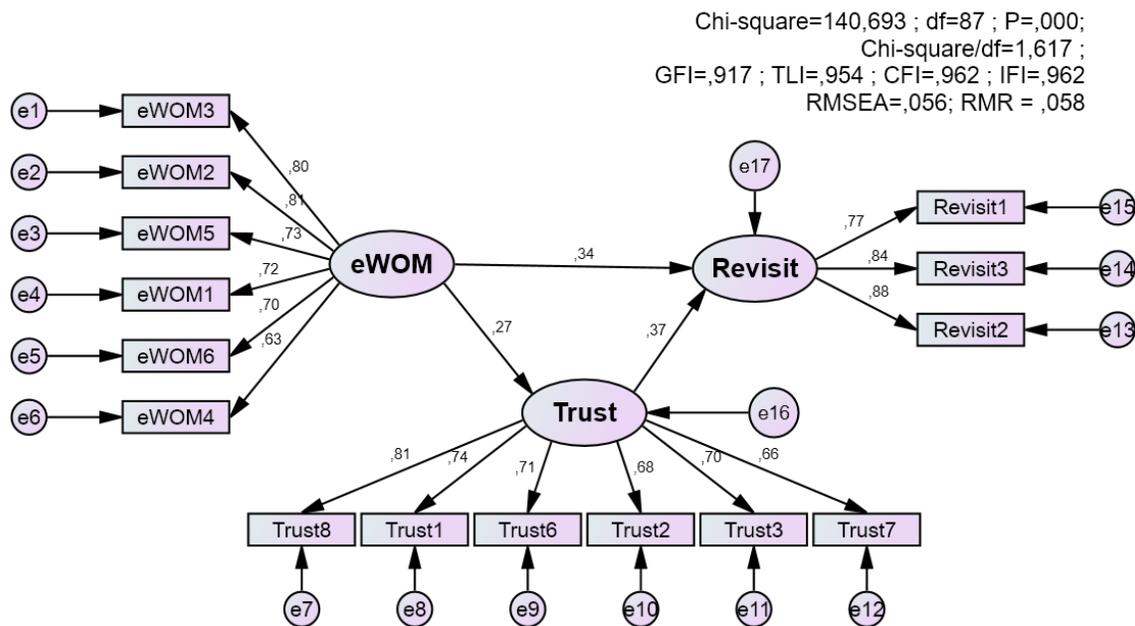


Figure 3. SEM results of the research model (standardized)

Source: Processing from author's survey data

Table 3. Results of testing the relationship between the concepts in the model

Correlation			Estimate	SE=SQRT((1-r ²)/(n-2))	CR= (1-r)/SE	P-value
			r	SE	CR	P
Trust	<---	eWOM	0.271	0.104	6.982	0.000
Revisit	<---	eWOM	0.339	0.102	6.478	0.000
Revisit	<---	Trust	0.370	0.101	6.252	0.000

Note: r: regression coefficient; se: standard deviation ($se = \text{SQRT}((1-r^2)/(n-2))$); cr: critical value ($cr = (1-r)/se$); p: significance level ($p\text{-value} = \text{TDIST}(cr, n-2, 2)$); n: number of degrees of freedom of the model

Source: Processing from author's survey data

According to the results obtained from the linear structure analysis, the model has 87 degrees of freedom with the Chi-square statistic value of 140,693 (P-value = 0.000); Chi-squared / df = 1.617 (<3); Besides, we also need to pay attention to more suitable measurement criteria such as GFI = 0,917; IFI = 0.962; TLI = 0.954; CFI = 0.962 is both greater than 0.9 and RMSEA = 0.056 (<0.08). Based on the above criteria, the research model is consistent with the market data. The estimated results of the parameters are shown in Table 3. These results demonstrate that the relationships are statistically significant ($p < 5\%$).

Based on the above results, we have enough grounds to conclude the following hypotheses:

Hypothesis 1: Online word of mouth (eWOM) affects destination trust (Trust)

We see that the regression coefficient showing the causal relationship between the variable eWOM and Trust is 0.271 at thought level $p = 0.000 < 0.05$. Thus, we see that the word of mouth has a positive impact on customer confidence in 5-star hotels in Ho Chi Minh City and this impact is statistically significant at the 5% significance level. Thus hypothesis H1 is accepted. That is the more positive the word of mouth for 5-star hotels is the more influential it is to the confidence of the customers' destination in 5-star hotels in Ho Chi Minh City and vice versa. Finally, when E-WOM increases by 1 unit of standard deviation, Trust will increase by 0.271 units of standard deviation.

Hypothesis 2: Online word of mouth (eWOM) affects revisit intention (Revisit)

We see the standardized regression coefficient showing the causal relationship between the variable eWOM and Revisit is 0.339 at thought level $p = 0.000 < 0.05$. Thus, we see that E-WOM has a positive impact on the intended return (Revisit) and this impact is statistically significant at the 5% significance level. Such a hypothesis is accepted. That is, the more positive the verbal transmission of customers to 5-star hotels in Ho Chi Minh City, the better their revisit intention to these hotels. Finally, when E-WOM increases by 1 unit of standard deviation, Revisit will increase by 0.339 units of standard deviation.

Hypothesis 3: Destination trust (Trust) affects revisit intention (Revisit)

The results show that the standardized regression coefficient showing the causal relationship between the destination trust variable (Trust) and the intended return (Revisit) is 0.370 at the thought level $p = 0.000 < 0.05$. Therefore, the trust of the destination has a positive impact on the intended return and this impact is statistically significant at the 5% significance level. Hypotheses

are accepted. That is, the better the confidence of the destination, the more impact it will have on its intention to return to 5-star hotels in Ho Chi Minh City. Finally, when Trust increases by 1 unit of standard deviation, Revisit will increase by 0.370 units of standard deviation.

6. CONCLUSIONS

According to the descriptive statistics, the author obtained the proportion of male (45.5%) female (54.5%) in tourists is uneven but there is not too much difference, so it can be seen that attracting tourists in HCMC is general and attracts tourists who do not have a gender imbalance. Next is about the age of tourists collected. As the results analyzed in chapter 4, the number of tourists coming to HCMC varies in age but in adulthood and middle age from 31 to 40 (36%) and from 41 to 54 age (32.5%) makes up the majority. This means that the HCMC industry is lacking in organizing new and dynamic tourism activities to attract young tourists. Another positive result of the fact that tourism services in HCMC mostly attracts educated tourists, the educational level of tourists accounting for a high percentage is that they have graduated from universities and colleges (60.5 %) and masters and doctoral degrees (13%). Therefore, it can be seen that the tourism industry in HCMC is very developed, there are many tourist activities, famous places with high culture and civilization to attract the number of intellectual tourists.

Observing the results in Cronbach's Alpha and EFA sections, the author assumes that the E-WOM factor has a high reliability coefficient, so the variables in this factor are not excluded as the revisit intention factor. This means that the survey data obtained has high agreement results and most respondents agree with those variables. Thereby proving that the agreement and the impact of the two variables above. But besides that, the destination trust factor is disqualifying the trust 4 and trust 5 variables because of a relatively low non-consensus and low consensus. The content of trust 4 and trust 5 variables are related to the belief about the service of the hotel where the respondent is staying. Since then, we can see that the quality of service and the ability to create trust for customers today in some 5-star hotels in HCMC has not been guaranteed and reached the best quality.

With the results obtained from SEM, it is proved that the author's theoretical research model is accepted as an official research model and has a positive impact coefficient between factors. The first is the factor E-WOM and destination, E-WOM has an impact on destination trust and impact factor of 0.271. This means that E-WOM has a positive impact on the destination trust and every time E-WOM increases by 1 unit, the destination trust will increase by 0.271 units. Next is between E-WOM and revisit intention, which has a positive effect of E-WOM on revisit intention with a coefficient of 0.339 but when there is an intermediary factor of destination trust, the coefficient increases to 0.339. Finally, there is actually a positive relationship between destination trust and revisit intention, which is still a positive effect between destination trust and revisit intention with a coefficient of 0.37. With the above results, the author concludes that thanks to the outstanding development of information technology, E-WOM is increasingly developing strongly. E-WOM has a direct impact on important factors in the tourism service sector, such as destination trust and revisit intention. Most travelers today, before deciding whether to choose a hotel in their first destination or ever, they will use E-WOM to gather the necessary information, different opinions. of travelers who have previously used to give them confidence about where they are going. Besides, the research results make it important for customers to come back next time.

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Because retaining customers or creating loyal customers is the core of the service-tourism industry. Wanting to retain customers is not only about creating trust for existing customers, but also managing the brand image for old customers.

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THE EFFECT OF LOGISTICS SERVICE QUALITY ON CUSTOMER SATISFACTION: AN EMPIRICAL ANALYSIS OF VIETNAM FIRMS IN HO CHI MINH CITY

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ABSTRACT

In the context of globalization, the opening up of economic and cultural exchanges is necessary and important for each nation. Vietnam is not out of the trend, moving towards a more export-oriented economy and deeper integration into all regions in the region and in the world. Therefore, logistics is one of the key economic sectors of Vietnam in general and Ho Chi Minh City in particular. All most reputable and prestigious companies' logistics present in Ho Chi Minh City because Ho Chi Minh City is one of the most developed areas in Vietnam. However, logistics service quality in Ho Chi Minh has low, not exploited the maximum potential of the industry and not meet the need of the customer. So that, this study is based on the SERVQUAL model of Parasuraman et al. (1988). A survey of 300 customer of logistics service providers is conducted in Ho Chi Minh city. The analytical results reveal customer satisfaction is positively affected by four factors including Assurance, Reliability, Tangibles, and Empathy. Among these, the two most important factors in improving logistics service quality in Ho Chi Minh City are Assurance and Empathy. Thus, the author of this study is based on the results of the analysis combined with the current situation and potential development of the logistics industry to give some implications for managers to develop specific plans and strategies to improve customer satisfaction the quality of logistics services of the company.

Keywords: Logistics service quality, SERVQUAL model, customer satisfaction, Structural Equation Modeling.

JEL Classification: O30

1. INTRODUCTION

In the context of globalization today, the opening up of economic and cultural exchanges is necessary and important for each nation. Vietnam is not out of the trend, moving towards a more export-oriented economy and deeper integration into all regions in the region and in the world. In particular, according to the plan of the Socio-Economic Development for the period 2016-2020, the Government goal will achieve a GDP per capita of USD 3,141 - 3,261 by 2020. Besides, according to the World Bank's Logistics Performance Index (LPI) 2018, Vietnam ranked 34th among 160 countries and positioned 3th in ASEAN afterward Singapore and Thailand. According to statistics of the Viet Nam Logistics Business Association (VLA), the country has about 4,000 logistics enterprises are operating annual market scale is estimated at 40 - 42 billion USD with a growth rate of 12 -14%/year. In addition, when Vietnam joins the WTO and TPP, foreign logistics companies are allowed to invest 100% of their capital in Vietnam, so the competition among

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companies in the logistics service sector becomes more severe. Consequently, logistics companies face the challenge of meeting the needs of their customers and striving for customer expectations by exploring new business strategies to achieve the goal that maintains existing customers and attract new prospects in Vietnam.

Furthermore, most reputable and prestigious companies are present in Ho Chi Minh City because Ho Chi Minh City is one of the most developed areas in Vietnam, with 70% of logistics enterprises are concentrated in Ho Chi Minh City and neighboring provinces with different activities. This shows that the potential development of the industry logistics at Vietnam. The logistics industry in Ho Chi Minh City has not been developed synchronously and companies have not exploited the maximum potential of the industry, most of the domestic logistics companies with small and medium scale, weak financial capacity, management level, equipment and personnel capacity have a lot of restrictions, just attach special importance to price and use price policy to attract customers. Meanwhile, companies have not really invested properly to enhance the quality of service meet the needs of customers, so domestic logistics enterprises although strong in number, accounting for 80% of total amount of logistic business companies but only acting as agent level 2, level 3 or even level 4 for foreign companies, so should only occupy 20% of the logistics market share, the remaining 80% belong to the foreign logistics company.

In this situation, logistics Vietnam firms must seek new visions, improve service quality, and create new services to meet the multiple needs of the type of customer today as well as competition with the foreign company. Therefore, the quality of logistics service of Vietnam firms in Ho Chi Minh City needs both to be continuously maintained at a high level and need to be enhanced in the near future. Enhancing the quality of logistics services of Vietnam firms and customer satisfaction in Ho Chi Minh City is urgent as well as needs to be resolved promptly. Thus, Vietnam firms in Ho Chi Minh City are a case that is worth-researching for the purpose of giving with a generalized set of solutions to maintain as well as enhance customer satisfaction in the logistics industry. Research objectives of the paper are three main goals. First, this research aims to identify the quality components of logistics services that affect customer satisfaction when using logistics services of Vietnam firms in Ho Chi Minh City. Second, it investigates the impact of logistics quality factors for Vietnam firms on customer satisfaction in Ho Chi Minh city. Third, it's to findings resolution to improve factors that are important to enhance logistics service quality as well as customer satisfaction in the logistics service industry.

2. LITERATURE REVIEW

2.1. Service quality model

2.1.1. Logistics service

The term logistics has been mentioned extensively in books, magazines or in specialized conferences, but until now there has not been a consistent term to describe the words that are relevant, accurate and meaningful on logistics. Therefore, the author only introduces the familiar definition of logistics to clarify this term. According to Commercial Law (2005), “Logistics service is a commercial activity whereby trader organizes one or more activities including receiving, transportation, storing, customs clearance, other paperwork, customer consultancy, packing, marking, delivery or other services which relate to goods as an agreement with a customer for

remuneration.” Besides that, according to Council of Supply Chain Management Professional, 2017 “Logistics management is a part of supply chain management including: Planning, implementation, control of transportation, storage goods, services as well as the information which relates to the origin place and consumption place.” In short, logistics is not a single activity, but a chain of activities that are linked and interacting with one another to transport goods from production to the consumer at low cost, fast time. Through the development process, logistics will gradually become a business area playing an important role in commercial activities.

2.1.2. Quality of Logistics Service

The quality of logistics services has also been developed based on service quality concepts, but it is tailored to fit the specific features of the logistics industry. In Coyle et al. (1992), seven tools were used to measure the quality of logistics services: “Deliver the right amount, in the right quantities, at the right place, at the right time, with the right conditions and information, the good price”. This scale has been further demonstrated by research by Rafid et al. (2007) that defines “The quality measurement of logistics as a set of features such as: timeliness, conditions and accuracy in the process of service, quality information to customers, availability, and capacity of service providers”.

The quality of logistics services is studied in two different perspectives: objective quality and subjective quality. Specific, in the objective quality perspective, the quality of logistics services is as an accurate assessment of all the activities or stages required to provide logistics services to customers. This assessment is more relevant to the provision of technical services. In the other hand, in the subjective point of view, it transfers the evaluation of the quality of logistics services to customers who directly use the service. This assessment is from the perspective of Parasuraman et al. (1985) and Cronin & Taylor (1992) in the study of service quality. In fact, the quality of logistics services is the benefit that logistics service providers to customers in order to respond their demand based on the following criteria. Firstly, it mentions about how to make delivery of the goods as originally committed on time and place. Second, it refers to how to ensure the goods are safe during transportation. Thirdly, it reminds to advise clients on issues related to goods such as costs, shipping methods, import/export procedures, insurance, payment, etc.

2.1.3. Service quality model of Gronroos (1984)

According to Figure 1, Gronroos (1984) offers three criterias for measuring service quality: technical quality, functional quality, image quality. In addition, the model also shows that the marketing activities also affect the quality of services such as: advertising, PR, word of mouth, etc.

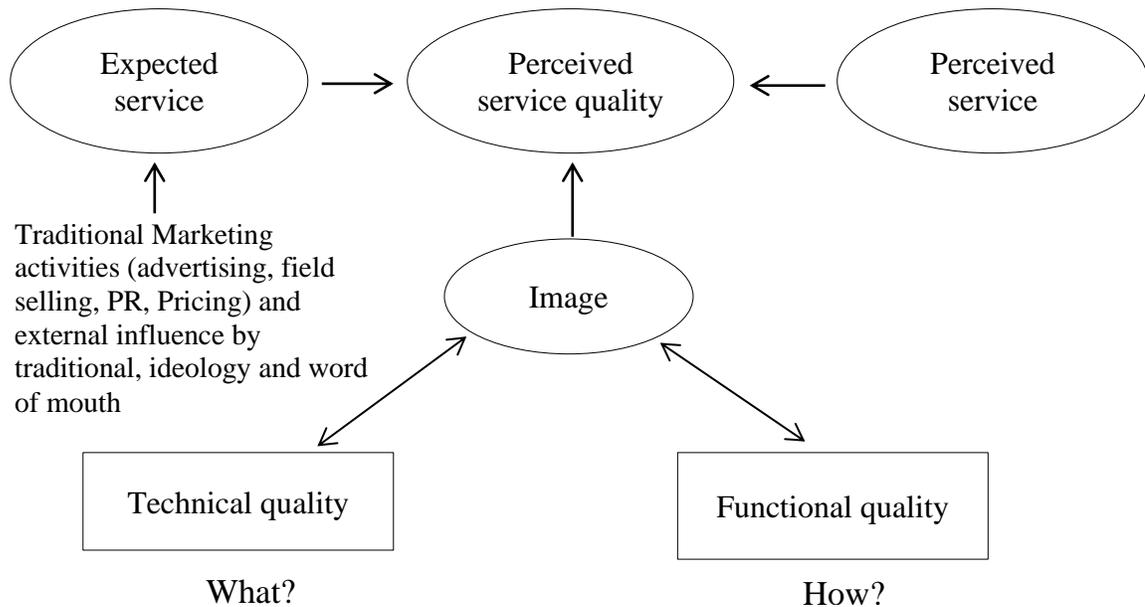


Figure 1: Technical quality and functional quality model of Gronroos (1984)

Source: P. 35-44, European Journal of Marketing, 18(4)

2.1.4. Importance – performance analysis model

The IPA (Importance – performance analysis) model is developed and applied in the field of marketing in the 70s of the 20th century. According to Martilla and James (1977), IPA helps businesses determine the importance of the indicator service as well as strengths, weaknesses of the product/service supply level on the market. Specifically, the IPA development process is implemented by comparing the two criteria form the decision to choose of customers, specifically: (1) Relative importance of attributes quality and (2) the level of performance of quality attributes. Besides that, according to the Barsky (1995), the level the lowest importance of the attribute indicates the likelihood little have the effect on the general perception of service quality. Contrary, attributes are of the level high importance will greatly affect perception theirs.

The means of the performance and importance divides the matrix into four quadrants. This matrix shows that the level importance of attributes based on quadrants location. Specifically, in Quadrants I, attributes located in this is considered very important to the customer, but the level of performance of the service provider is very poor. Thus, management strategy in this quadrant is “Concentrate here”. Next, in the Quadrants II area, attributes located in this is considered very important to customers and service providers are also very good performance. So that, management strategy in this quadrant is "Keep up the good work”. In addition, in Quadrants III part, attributes located in this is consider the level of performance of the service provider is very low and it is not important to the customer. So, management strategy in this quadrant is “Low priority”. Finally in Quadrant IV, attributes located in this consider the level of performance of the service provider is very high but it is not important to the customer. Management strategy in this quadrant is “Possible overkill”.

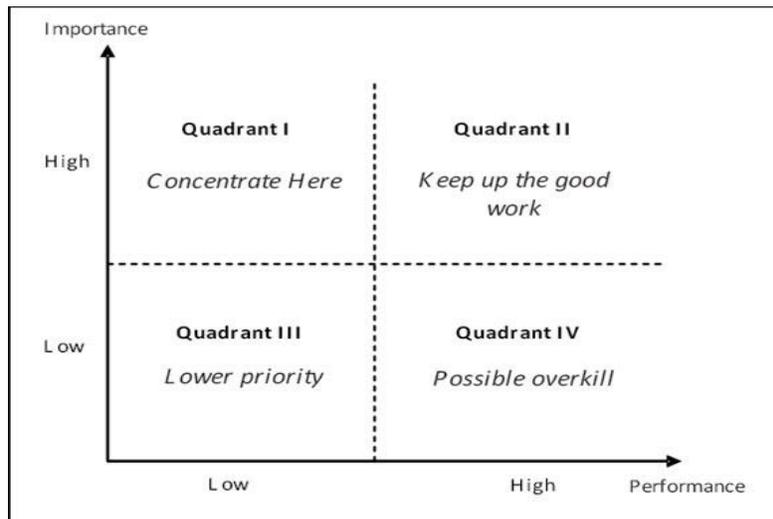


Figure 2. Importance – performance matrix

Source: Martilla and James (1977)

2.1.5. SERVQUAL model

As mentioned above, the SERVQUAL model of Parasuraman et al. (1985) is commonly used to measure service quality. Figure 3 shows the construction of their theory for using the gap analysis in service quality. In this study, they find five gaps between expectation and perception in service quality which is measured as follows:

The service quality model of Parasuraman et al. (1985) have given an overall picture of service quality. The advantage of the ten-component model of service quality was covered almost every aspect of the service. Nevertheless, this model has some disadvantages of complexity in the measurement. This exploratory study was delicate with their next scale named SERVQUAL for measuring customer’s perception of service quality (Parasuraman, 1988). While the model by Parasuraman (1985) has the advantage of covering all aspects but the drawback is too complex to measure, evaluate and analyze, he and his colleagues modified and formulated the new five-component model and it is presented in table 1.

The SERVQUAL instrument consists of 22 statements for assessing consumer perceptions and expectations regarding the quality of a service. These five distances are represented by a two-part scale: the first part is to define the customer's expectations for the service in general. It means that does not focus on a specific company, the respondent said their degree of want for the service. The second is to define the customer's perception of the service provided. That is, based on the particular services of businesses surveyed for the evaluation. The distance between customer expectations and the perceived service they provide will reflect the level of service quality. The narrower the distance, the higher the quality is. The GAP model suggested that service quality is viewed as a function of the distinction between expectations and performance together with quality dimensions.

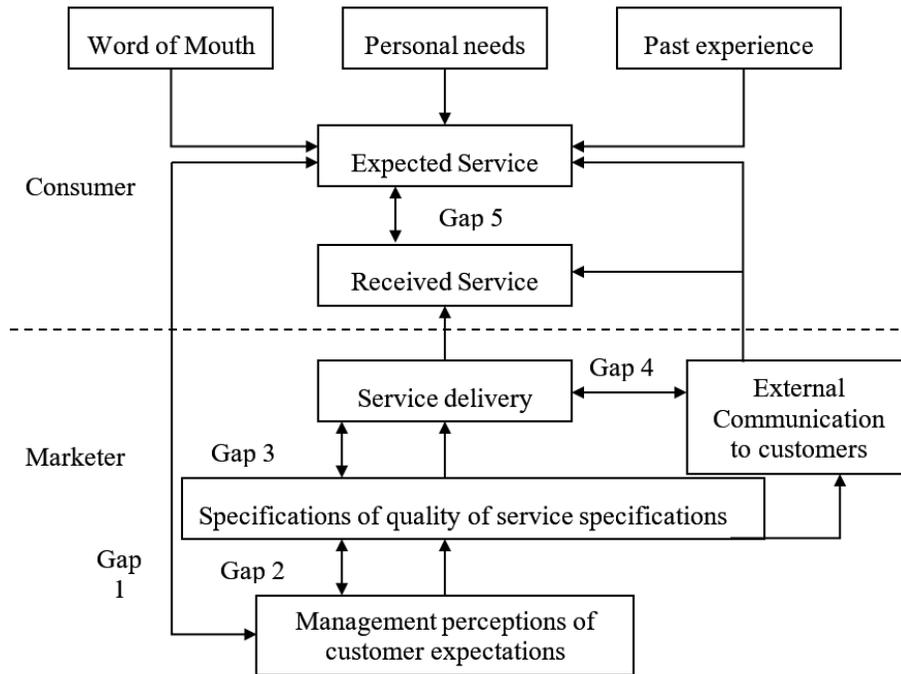


Figure 3. The Gap theory of service quality

Source: Parasuraman et al. (1985)

Table 1. Relationship between the original model (1985) and the calibration model (1988)

Original model	Calibraion model	Definition
Reliability	Reliability	The ability to perform the promised service both dependable
Responsiveness	Responsiveness	The willingness to help customer and to provide prompt service
Tangibles	Tangibility	The appearance of physical facilities, equipment, personnel and communication materials.
Competence Courtery Credibility Securirty	Assurance	The knowledge and courtesy of employees and their ability to convey trust and confidence
Assess Communication Understanding customer	Empathy	The provision of caring, individualized attention to customers

Source: Zeithaml, Parasuraman & Berry (1988)

2.1.6. SERVPERF model

The studied is adapted from SERVQUAL model which developed by Cronin and Taylor (1992). According to Cronin & Taylor (1992), quality service is best reflected by the customer's perception of service rather than customer expectations of service, the SERVQUAL scale has been

adjusted to the SERVPERF scale. This new scale still has five factors and 22 observations of the previous SERVQUAL scale but retaining only customer perception of the product service. The degree of customer perception related to service is the best approach to reflect the service quality.

2.2. The relationship between service quality and customer satisfaction

Service quality and customer satisfaction are the key aspects in success and survival for every business organization in today's competitive market. In other words, customer satisfaction is turning into one of the most main goals which any company want to look for an enduring relationship with the customer considers as the top priority. Thus, the relationship between quality of service and customer satisfaction is a topic discussed by researchers over the last decade.

According to Bitner & Hubbert study (1994), the main goals of service providers are to gratify the demands of the customer to create the profit. They will go on to utilize the service and more frequently if its response to their needs.

Normally, service providers frequently suppose that service quality is the degree of customer satisfaction. However, many researchers have shown that the theory about service quality and customer satisfaction are different. (Zeithaml et al. 2000). "Customer satisfaction is a general concept, expressing their satisfaction when consuming a service. Meanwhile, the quality of services focused on specific components of services" (Zeithaml et al. 2000). However, very few studies made an effort to examine the degree of effect of components of service quality on customer satisfaction, in specific in each service area (Lassar et al. 2000). Therefore, although service quality and satisfaction are distinct notions, there are closely correlated to each other. Table 2 will present previous studies that researched factors of service quality affecting customer satisfaction.

2.3. Research model and hypotheses

Through the synthesis of fundamental theoretical foundations and references to previous studies on customer satisfaction measurement of service quality through the SERVQUAL model of Parasuraman et al. (1988) or tissue Cronin and Taylor (1992) 's SERVPERF model modified from the SERVQUAL model, we can see the advantages and disadvantages of these models. The authour use SERVQUAL model in this research.

We adapted from Parasuraman et al. (1988) and Cronin and Taylor (1992) to analyzes the customer satisfaction based on the five components, reliability with five items, responsiveness with five items, assurance with four items, empathy with five items, and tangibles with four items. This study proposes those following hypotheses:

- + H1: Tangible has positive effect on customer satisfaction (expectation +)
- + H2: Reliability has positive effect on customer satisfaction (expectation +)
- + H3: Responsiveness has positive effect on customer satisfaction (expectation +)
- + H4: Assurance has positive effect on customer satisfaction (expectation +)
- + H5: Empathy has positive effect on customer satisfaction (expectation +)

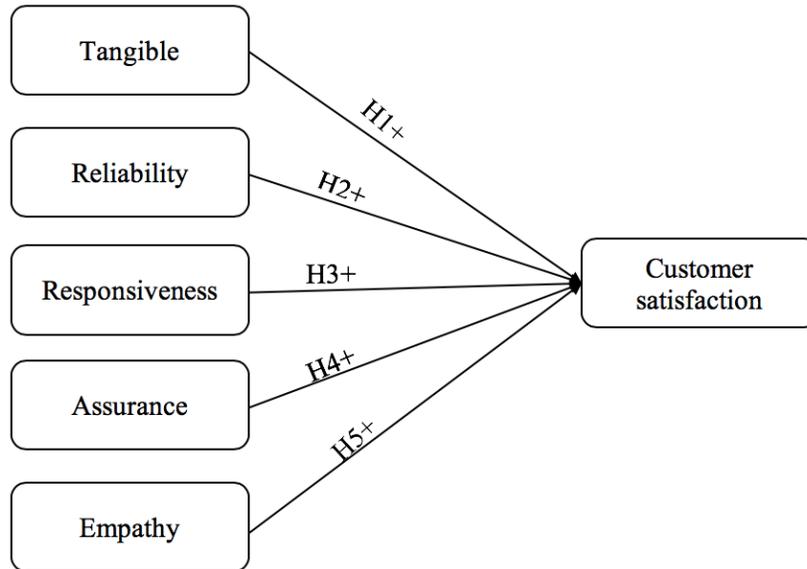


Figure 5. Customer satisfaction about logistics service quality model

Source: Parasuraman et al. (1988))

3. METHODOLOGY

3.1. Research process

This research is implemented in two stages qualitative methodology and quantitative methodology which is illustrated by this model.

3.1.1. Preliminary research

Basing on the theories of literature review about the service quality, measurement service quality, customer satisfaction as well as the relationship of service quality and customer satisfaction and some realistic researches in logistics sector, author has presented the recommended model of the research. From that, author constructs the preliminary scale as a groundwork to establish an official scale and questions table. After that, author starts to implement qualitative methodology research by asking the experts in logistics field such as directors, manager in logistics Vietnam firms for their advices, opinions about the model and scale that are applied in measure the quality of service, customer satisfaction. The survey question will be also sent to fifteen customers who have been using logistics service to find out what they think about the question. Then, basing on those opinions, author will modify and present the official scale.

3.1.2. Official research

Quantitative research is applied in the process of the conducted official research. This quantitative research is conducted 320 questionnaires which responders are the users of logistics service Vietnam firms in Ho Chi Minh City. They are the person who directly use and perceive the

logistics services because it is their daily tasks, so these staffs will be the best reflections of customers' perception and expectation as well as represents the satisfaction about logistics services. The official research was conducted from 22 January 2019 to 22 February 2019.

3.2. Data analysis methods

After gathering responses from the service users, the author proceeded to filter out the damaged questionnaires, conduct data entry and encrypt the data. Subsequently, the author started to analyze the data and test the suggested research model as well as the proposed hypotheses. The data will be processed via SPSS 22.0 software. Some of the analysis methods using this research such as: SEM, SERVQUAL gap and Importance – Performance analysis (IPA) matrix.

3.3. Sampling method and sample size

3.3.1. Sampling method

After considering the previous theories, samples will be chosen by applying non-probability sampling modes. The author careful consideration of the time, funding, and available resources of this study, from that the author had chosen a non-probabilistic method with convenience sampling for this research

3.3.2. Sample size

According to Tabachnick & Fidell (1989), in order to achieve best results by regression analysis, the sample size must satisfy the formula $n \geq 8k + 50$ with k is the independent variables of model and n is the sample size (cited by Pham Anh Tuan, 2008). The survey questionnaire in the official study included 23 observational variables for service quality, to achieve high reliability for regression analysis, the sample size should be greater than or equal to 234 ($8 * 23 + 50$) samples.

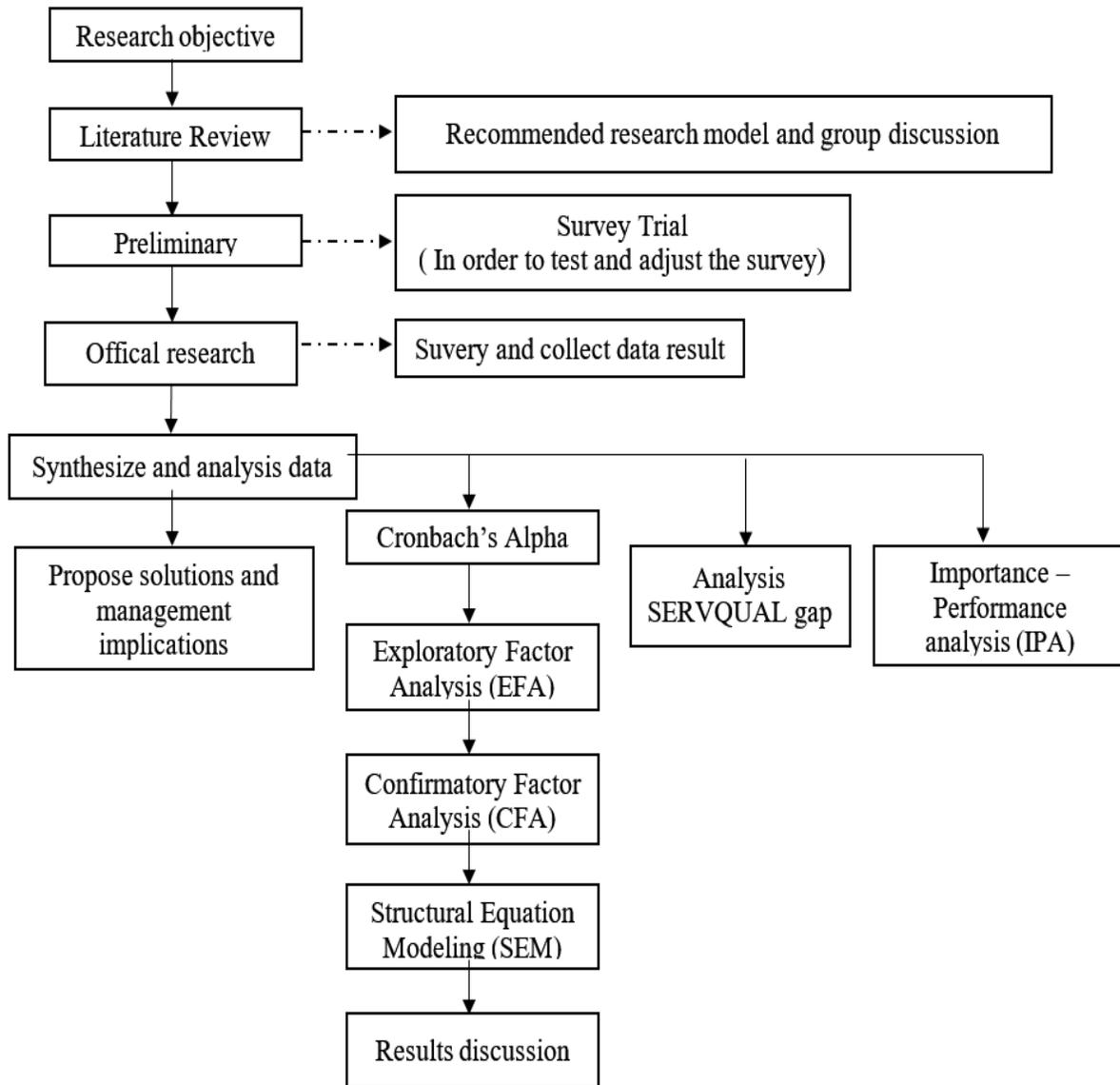


Figure 4. The research processes

Source: The synthesis of the author, 2019

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Table 2. A Summary of previous studies

Factors	Author (year)	Empirical Test	Findings	Characteristics
Empathy	Parasuraman et al.(1988), Parasuraman, Berry, and Zeithaml (1991),	The U.S	Positive	This paper provide five dimension of service quality such as: tangible, reliability, responsiveness, assurance and empathy. The SERVQUAL instrument consists of 22 statements for assessing consumer perceptions and expectations regarding the quality of a service
	Cronin and Taylor (1992)	The U.S	Positive	The findings indicate that service quality performance still has five factors (tabibility, reliability, responsiveness, empathy and assurance) and 22 observations of the previous SERVQUAL scale but retaining only customer perception of the product service.
	Soon-hoo So et al., (2006)	Korea	Positive	The author used the AHP method to determine the relative weights of the five service quality dimensions (i.e. tangibles, reliability, responsiveness, assurance and empathy) to eventually select the best 3PL service provider.
	Liu et al. (2014)	Changdao	Positive	This research through combining between SERVQUAL model and LSQ theoretical model. The highlight of this study is the author had made an empirical assessment this kind of service in Changdao province in China. Five components of the service scale include: reliability, protection, assurance, empathy, and tangibles.
	Sabine Limbourg et al., (2016)	Da Nang City	Positive	This research was conducted by using SERVQUAL model with five dimensions: Tangible, reliability, responsiveness, assurance and empathy. The empirical results presented that customer expectations are considerably different from their perception values, which means they are not satisfied with the logistics service quality.
Assurance	Parasuraman et al.(1988), Parasuraman, Berry, and Zeithaml (1991),	The U.S	Positive	This paper provide five dimension of service quality such as: tangible, reliability, responsiveness, assurance and empathy. The SERVQUAL instrument consists of 22 statements for assessing consumer perceptions and expectations regarding the quality of a service

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	Cronin and Taylor (1992)	The U.S	Positive	The findings indicate that service quality performance still has five factors (tabibility, reliability, responsiveness, empathy and assurance) and 22 observations of the previous SERVQUAL scale but retaining only customer perception of the product service.
	Soon-hoo So et al., (2006)	Korea	Positive	The author used the AHP method to determine the relative weights of the five service quality dimensions (i.e. tangibles, reliability, responsiveness, assurance and empathy) to eventually select the best 3PL service provider.
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	Sabine Limbourg et al., (2016)	Da Nang City	Positive	This research was conducted by using SERVQUAL model with five dimensions: Tangible, reliability, responsiveness, assurance and empathy. The empirical results presented that customer expectations are considerably different from their perception values, which means they are not satisfied with the logistics service quality.
Reliability	Parasuraman et al.(1988), Parasuraman, Berry, and Zeithaml (1991),	The U.S	Positive	This paper provide five dimension of service quality such as: tangible, reliability, responsiveness, assurance and empathy. The SERVQUAL instrument consists of 22 statements for assessing consumer perceptions and expectations regarding the quality of a service
	Cronin and Taylor (1992)	The U.S	Positive	The findings indicate that service quality performance still has five factors (tabibility, reliability, responsiveness, empathy and assurance) and 22 observations of the previous SERVQUAL scale but retaining only customer perception of the product service.
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	Sabine Limbourg et al., (2016)	Da Nang City	Positive	This research was conducted by using SERVQUAL model with five dimensions: Tangible, reliability, responsiveness, assurance and empathy. The empirical results presented that customer expectations are considerably different from their perception values, which means they are not satisfied with the logistics service quality.
Responsive-ness	Parasuraman et al.(1988), Parasuraman, Berry, and Zeithaml (1991),	The U.S	Positive	This paper provide five dimension of service quality such as: tangible, reliability, responsiveness, assurance and empathy. The SERVQUAL instrument consists of 22 statements for assessing consumer perceptions and expectations regarding the quality of a service
	Cronin and Taylor (1992)	The U.S	Positive	The findings indicate that service quality performance still has five factors (tabibility, reliability, responsiveness, empathy and assurance) and 22 observations of the previous SERVQUAL scale but retaining only customer perception of the product service.
	Soon-hoo So et al., (2006)	Korea	Positive (the most importance)	The author used the AHP method to determine the relative weights of the five service quality dimensions (i.e. tangibles, reliability, responsiveness, assurance and empathy) to eventually select the best 3PL service provider.
	Liu et al. (2014)	Changdao	Not affecting	This research through combining between SERVQUAL model and LSQ theoretical model. The highlight of this study is the author had made an empirical assessment this kind of service in Changdao province in China. Five components of the service scale include: reliability, protection, assurance, empathy, and tangibles.
	Sabine Limbourg et al., (2016)	Da Nang City	Positive	This research was conducted by using SERVQUAL model with five dimensions: Tangible, reliability, responsiveness, assurance and empathy. The empirical results presented that customer expectations are considerably different from their perception values, which means they are not satisfied with the logistics service quality.

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Source: The synthesis of the author, 2019

3.5. Scales of measurement

The factors of research model are designed based on the scale of SERVQUAL (Parasuraman et al., 1988, 1991) and it also collaborated with previous researches to be adjusted and completed.

Table 3. Scales of measurement

Variables code	The content of variables
TA	TANGIBLE
TA1	The logistics service provider now has very modern equipment.
TA2	The facilities of the logistics service provider company now look very eye-catching.
TA3	Contract terms, services brochures are clear and attractive
TA4	The employee's uniforms are neat and polite.
RE	RELIABILITY
RE1	Logistics company implements their commitments in the contract correctly at the first time.
RE2	Logistics company always implements exactly their commitments in the contract.
RE3	Logistics company always interest in your problems and complains.
RE4	Logistics company implements correctly the transaction without mistakes.
RE5	Logistics company always informs to you when implementing the service.
RES	RESPONSIVENESS
RES1	Logistics company always solves your problems and complains quickly and satisfactorily.
RES2	Logistics company handles the unforeseen situation flexible and quickly.
RES3	Logistics employees are always ready to advise you on the aftermarket policies, new and specific services according to your needs.
RES4	Logistics employees can communicate well by using the media such as Zalo, Skype, Viber...
RES5	Employee is always ready to support you 24/24
AS	ASSURANCE
AS1	You are assured when using the services of the current logistics service provider.
AS2	You feel the goods are guaranteed during the use of the services of the current logistics service provider.
AS3	The staff of the logistics service provider is always polite, courteous, dedicated to you when consulting the solution to the problem
AS4	The staff of the logistics service company currently has professional knowledge, professional skills in logistics services and related issues
EM	EMPATHY
EM1	The current logistics service provider provides convenient working time for you
EM2	Logistics employee always listens to your contribution comments.
EM3	Logistics employee understands clearly your demands.
EM4	Logistics company has a good customer care policy.
EM5	Your current logistics service provider always puts your interests first when handling problems.
CS	CUSTOMER SATISFACTION
CS1	You are satisfaction with your decision in using logistics service of current company
CS2	You are feeling comfortable in the duration time of using service
CS3	You will continue to trust and using service of current company
CS4	You are confident to introduce your current logistics service provider to other partners.

Source: Parasuraman et al. (1988, 1991), Fragata & Gallego (2009)

4. DATA

4.1. Sample profile

4.1.1. The information about the trait of respondents

The results analysis information about the trait of customers such as position job, type of company, business activity, etc. has shown in table 4. In the position job part, the questionnaire had survey that the job position of customers in HCMC using logistics service. Among 300 responses, the majority of respondents are employees with 144 people (account for 48%). In contrast, a small number of survey respondents are top manager (reach for 20.67% with 62 people). The remaining percentage is middle manager (nearly 31%). From the result, the most customers using logistics services are employees. It means that the employees are the person who directly uses and perceive the logistics services because it is their daily tasks, so these staffs will be the best reflections of customers' perception and expectation as well as represents the satisfaction about logistics service.

Table 4. The result of customer's trait

	Information	Frequency	Percent (%)
Job Position	Employee	144	48.00
	Middle Manager	94	31.33
	Top Manager	62	20.67
Type of company	Manufacturer	85	28.00
	Import-export company	158	53.00
	Trading company	46	15.00
	Others	11	4.00
Company activity	Export	70	23.33
	Import	104	34.67
	Export-Import	85	28.33
	Domestic	41	13.67
Information sources	Website, internet	43	14.33
	Business employee of logistics company	153	51.00
	Introduction from partner	76	25.33
	Others	28	9.34

Source: The synthesis of the author, 2019

Next, in the type of company aspect, the survey collected representatives from 300 companies with different types in order to measure. In particular, import export company are ranked in the highest position (account for 53% with 158 companies). Followed by manufacturer companies reach for 28% with 85 companies and trading companies accounted for 15% with 46 companies. Finally, only 4% of companies are representatives from others. In addition, Business

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activities: Most of the companies in Ho Chi Minh City operate mainly is importing (account for 34.67% with 104 company), followed by operating exporting with 70 company (about 23.33%), 85 company combine both importing and exporting operation (reach for 28.33%) and finally domestic company with 41 company (about 13.67%). The results present that most of the businesses in Ho Chi Minh City activities mainly is importing, so the logistic service providers easier to set up their new targets.

- Source of information: According to the results, customers know that logistics companies through the logistics business staff account for 51% of the total with 153 customers. Followed by the customer was introduced through the partner about 25.33% with 76 customers. Then, through the website and the internet achieving 14.33% equivalent to 43 customers. Finally, through other sources such as newspapers, magazines, etc. is the lowest accounted for 9.34% with 28 customers.

4.1.2. The information of using logistics services

In order to have an overview of the situation of using logistics services, the author has analyzed the information on logistics services experience include the time of using logistics services, types of logistic services and markets that customers frequent export or import. The result presented in table 5. The first aspect is about the time of using logistics service. In the table 5, the results show that respondents who using logistics service have under 1 years accounted for 12% of the total of surveyed respondents with 36 responses; respondents who using logistics service have 1-3 years accounted for 29% with 87 responses; respondents who using logistics service have over 3 years o accounted for 59% with 177 responses. This shows that most respondents are experienced in the logistics industry. Next, the research mentions about logistics services. According to the results, most of the customer in Ho Chi Minh City mainly use logistics service group " Ocean freight, customs clearance and trucking" which mainly accounts for 28.67% with 86. Followed by logistics service group " transportation including ocean, air freight, trucking and customs clearance" with 71 customers, about 23.67%. Next is the logistics service group "air freight, customs clearance and trucking" with 68 customers, reach for 22.67%. Then, the logistics service group "customs clearance and trucking" accounted for 14% with 42 customers. And finally, the logistics service group "transportation including ocean, air freight, trucking, customs clearance and other services such as warehousing" is ranked in the lowest position account for 11% with 33 customers. Finally, the research argues about Import – Export market/area. The table results 5 shows that the most customers in Ho Chi Minh City import-export from Asia market are majority account for 24.67%. Followed by import-export from Europe market and Europe and Asian market account for 19.67%, then import-export from Australia market achieve for 10.33%. Next import-export from America market account for 9.67%, import-export from three countries Europe, Asia and America market accounted for 9.33%. Finally, import-export from another market is lowest achieve for 6.67%. This result showed that companies in Ho Chi Minh City activities import-export from another market different, thereby logistics companies can understand deeper about customer import-export market, based on its logistics providers can establish the strategy business to extend their customer and enhance customer satisfaction.

Table 5. Result of experience logistics services

	Information	Frequency	Percent (%)
Time of using logistics service	Under 1 year	36	12.00
	From 1 to 3 years	87	29.00
	Over 3 years	177	59.00
Logistics services which have been using	“Ocean freight, custom clearance and trucking	86	28.67
	Air freight, custom clearance and trucking	68	22.67
	Custom clearance and trucking	42	14.00
	Transportation including ocean, air freight, trucking and customer clearance	71	23.67
	Transportation including ocean, air freight, trucking, customer clearance and other service such as warehousing”	33	11.00
Import Export market/area	Europe	59	19.67
	Asia	74	24.67
	Australia	31	10.33
	America	29	9.67
	Others	20	6.67
	Europe and Asia	59	19.67
	Europe, Asia and America	28	9.33

Source: The synthesis of the author, 2019

5 RESULTS AND DISCUSSIONS

5.1. Scale reliability results

The table 6 has present summarize the results of the verification of the reliability of the service quality scale and customer satisfaction. In conclusion, the results show that respondents really do consider carefully when answer the questions, just only one variable is removed from reliability test. All other variables are appropriate for factor analysis and ensure the requirement of reliability.

Tangible: Testing results indicate that “Cronbach’s Alpha coefficient” value of the expectation and the perception for factor “Tangible” respectively is 0.727 and 0.803, higher than 0.6. Besides, almost “Corrected Item-total Correlation” for the expectation and perception variables are over 0.3 (vary from 0.494 to 0.766). It means that the current data is suitable for factor analysis, guarantee the requirement of reliability.

Reliability: The table provides that “Corrected Item-total Correlation” index of total variables for expectation and perception are bigger than 0.3 (vary from 0.455 to 0.638). Finally, “Cronbach’s Alpha” index for the expectation of factor “Reliability” is 0.727 and 0.818 for the perception of factor "Reliability". Thus, testing result meets the requirements of reliability.

Responsiveness:

+ First time: In this test, “Cronbach’s Alpha” for expectation and perception of Responsiveness factor is 0.625 and 0.711 in that order. Besides, all the scale is greater than 0.3 exclude “RES5” with the “Corrected Item-Total Correlation” for expectation is $0.06 < 0.3$, and for perception is $0.23 < 0.3$ which do not reach the requirement. So I reject “RES5” and do it again.

+ Second time: The table shows that “Corrected Item-total Correlation” index of the observed variables are appropriated (≥ 0.3). Cronbach's alpha coefficient of expectation and perception equal 0.702 and 0.745 (≥ 0.6), so it meets the requirements of reliability.

Assurance : The table shows that “Corrected Item-total Correlation” index of total variables are greater than 0.3 (fluctuated from 0.37 to 0.706). “Cronbach’s Alpha” index for expectation as well as perception of factor “Assurance” respectively is 0.678 and 0.721. It means that the present data is suitable for factor analysis and ensures the correlation, the required reliability and validity.

Empathy: “Cronbach’s Alpha” for expectation is 0.734 and 0.764 for perception. Besides, the "Cronbach’s Alpha if item deleted" for expectation and perception of factor "Empathy" is vary from 0.636 to 0.739. Moreover, all the “Item-total correlation” of 5 variables of expectation and perception are larger than 0.3 (0.423 to 0.739). Thus, “Empathy” factor is accepted.

Customer Satisfaction: The table reflects that “Cronbach’s Alpha if item deleted” of each variable are larger than 0.6 (fluctuated from 0.744 to 0.784). “Corrected Item-total Correlation” index of total variables are over 0.3. Finally, “Cronbach’s Alpha” of factor “Customer satisfaction” is 0.808. Hence, the present data of the factor “Customer satisfaction” is acceptable for factor analysis and guarantee the correlation, the necessary reliability, and validity.

5.2. Exploratory Factor Analysis (EFA)

In this part, the authors divides the two phases into EFA, including EFA for independent variables and EFA for dependent variables.

From the results of the first EFA, the author in turn eliminates unsatisfactory variables. As a result, the following variables are discarded from the model after EFA analysis: TA1, RE5, TA2, RES1, RE4, RES3, RE1, AS4, AS2, RE3. The final time conducting EFA shows that the KMO = 0.736 (>0.5) and Bartlett sig. = 0.000 (< 0.05). As Eigenvalue is 1.164 (>1), EFA still remains on 4 components for 12 independent variables. The cumulative percent is 59.068% ($>50\%$) which means 59.068% of variance in data is explained by 4 factors. No more variables are rejected. Thus, the result of the fourth EFA analysis is accepted.

These dependent variables of the factor “Customer satisfaction” is reached the proposed standards for the first time test. The results indicate that all “Factor loadings” of 4 dependent variables are larger than 0.50, including “CS1”, “CS2” "CS3” and "CS4". Besides the “Initial cumulative eigenvalue” is 63.811% which is over than 50%. In addition, KMO is 0.797 with sig. = 0.000 (<0.05) which is suitable for the proposed standards. Thus, this factor is accepted. The result is presented in table 7.

Table 7. EFA results of quality of service and its components

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.736		
Bartlett's Test of Sphericity	Approx. Chi-Square	632.743		
	df	66		
	Sig.	.000		
Variables	Component			
	1	2	3	4
EM4	0.753			
EM1	0.703			
EM5	0.700			
EM3	0.689			
EM2	0.663			
TA3		0.795		
TA4		0.773		
RE2			0.799	
RES2			0.691	
RES4				0.688
AS3				0.662
AS1				0.621
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.736		
Bartlett's Test of Sphericity	Approx. Chi-Square	378.915		
	df	6		
	Sig.	.000		
Variables	Component			
	1			
CS1	0.753			
CS2	0.798			
CS3	0.820			
CS4	0.822			

Source: The synthesis of the author, 2019

5.3. Confirmatory Factor Analysis – CFA

This is the first stage in data analysis via the Structural Equation Modeling method to validate the constructs of the model (Hair et al, 2010). In this study, CFA was analysed on 300 samples with four factors.

Table 6. Cronbach's Alpha results of factors' scales

Expectation			Perception		
	Corrected Total	Item-Cronbach's Alpha if Item Deleted		Corrected Total	Item-Cronbach's Alpha if Item Deleted
TA	Cronbach's Alpha= 0.727		TA	Cronbach's Alpha= 0.803	
TA1	0.512	0.668	TA1	0.591	0.766
TA2	0.511	0.669	TA2	0.640	0.743
TA3	0.494	0.679	TA3	0.595	0.764
TA4	0.551	0.648	TA4	0.647	0.740
RE	Cronbach's Alpha= 0.727		RE	Cronbach's Alpha= 0.818	
RE1	0.513	0.671	RE1	0.621	0.778
RE2	0.484	0.684	RE2	0.638	0.773
RE3	0.481	0.683	RE3	0.600	0.785
RE4	0.508	0.673	RE4	0.627	0.777
RE5	0.455	0.693	RE5	0.560	0.796
RES	Cronbach's Alpha= 0.702		RES	Cronbach's Alpha= 0.745	
RES1	0.570	0.585	RES1	0.614	0.643
RES2	0.463	0.655	RES2	0.510	0.709
RES3	0.451	0.661	RES3	0.524	0.696
RES4	0.470	0.650	RES4	0.525	0.698
AS	Cronbach's Alpha= 0.678		AS	Cronbach's Alpha= 0.721	
AS1	0.539	0.556	AS1	0.602	0.601
AS2	0.498	0.587	AS2	0.528	0.650
AS3	0.370	0.669	AS3	0.439	0.706
AS4	0.438	0.626	AS4	0.480	0.677
EM	Cronbach's Alpha= 0.734		EM	Cronbach's Alpha= 0.764	
EM1	0.481	0.694	EM1	0.518	0.726
EM2	0.622	0.636	EM2	0.621	0.689
EM3	0.447	0.706	EM3	0.499	0.733
EM4	0.423	0.715	EM4	0.483	0.739
EM5	0.506	0.684	EM5	0.543	0.718
CS	Cronbach's Alpha= 0.808				
CS1	0.571	0.784			
CS2	0.627	0.757			
CS3	0.657	0.747			
CS4	0.660	0.744			

Source: The synthesis of the author, 2019

The measurement model of four dimension of service quality revealed that the overall data model fit was $\chi^2 = 467.572$ with $p = 0.000$. According to scholars had had previous research, χ^2 is very sensitive to sample size, therefore they advised should the usage of suitable indexes. Besides, CFA analysis will measure the fit of the model with market data. Consequently, the model is considered appropriate when the normed chi-square (CMIN/DF) ≤ 5 (Schumacker & Lomax, 2004), the Comparative Fit Index - CFI > 0.95 (Hu & Bentler, 1999), Root Mean Square Error of Approximation - RMSEA < 0.07 , p-value < 0.05 (Hair et al., 2010).

The table 8 presents the model has $\text{Chi}^2 = 467.572$; $\text{df} = 384$; $\text{Chi}^2 / \text{df} = 2.689 < 5$, $p\text{-value} = 0.000 (<0.05)$; besides, other suitable indices like $\text{TLI} = 0.959 > 0.9$, $\text{CFI}=0.960 > 0.95$, $\text{RMSEA}= 0.065 < 0.07$ are accepted. Therefore, the model is still compatible with market data.

Table 8. Result of the Confirmatory Factor Analysis

Model	Chi ² / df	P-value	TLI	CFI	RMSEA
Cut – off point	<=5	<0.05	>0.9	>0.95	<0.07
CFA	2.689	0.000	0.959	0.960	0.065

Note: TLI: Tucker & Lewis index, CFI: Comparative fit index, RMSEA: Root mean square error of analysis
Source: The synthesis of the author, 2019

5.4. Structural Equation Modeling – SEM

The findings present in table 9 indicate that the model has $\text{Chi}^2 = 545.827$; $\text{df} = 399$; $\text{Chi}^2 / \text{df} = 1.368 < 5$, $p\text{-value} = 0.000 (<0.05)$; besides, other suitable indices such as $\text{TLI} =0.947 > 0.9$, $\text{CFI}=0.952 > 0.95$, $\text{RMSEA}= 0.04 < 0.07$ are accepted. Therefore, this model is still suitable with data collected from the market.

Table 9. Result of the Structural Equation Modeling -SEM

Model	Chi ² / df	P-value	TLI	CFI	RMSEA
Cut – off point	<=5	<0.05	>0.9	>0.95	<0.07
SEM	1.368	0.000	0.947	0.952	0.04

Note: TLI: Tucker & Lewis index, CFI: Comparative fit index, RMSEA: Root mean square error of analysis
Source: The synthesis of the author, 2019

5.5. Hypothesis Testing

Table 10 below will show the results of hypothesis testing when we test all the hypotheses at 5% significant level and level of confidence is 95%.

The results presented in table 10 show that regression analysis has determined a relationship between logistics service quality and customer satisfaction. Specifically, the results of this research presented that there were four components of logistics services quality including reliability, assurance, tangibility, and empathy have the effect on the latent variables customer satisfaction with the Beta value of 0.362, 0.480, 0.274 and 0.378, respectively. Besides that, all research hypotheses are accepted at 5% significant level and a 95% level of confidence because the p-value of all tests is lower than 0.05

5.6. Discussion the data analysis results

This research was initially established to examine five hypotheses, however, after modifying the model to suitable the data from the market, one of the five hypotheses was eventually dropped. The hypothesis was eliminated is hypothesis H3: Responsiveness has the positive effect on

customer satisfaction. It means that responsiveness factor does not influence with customer satisfaction about logistics service in Ho Chi Minh City. Based on the result in table 10, at 5% significant level and 95% level of confidence, logistic service quality includes four dimensions: tangible, reliability, assurance and empathy directly affect customer satisfaction (Hypotheses H1, H2, H4, H5 are accepted). All estimates value of four dimensions is marked (+), meaning that these factors are positively correlated with customer satisfaction and it is meet with the hypotheses in the proposed model. This means that customers using logistics services at Ho Chi Minh will satisfaction with the quality of service when they think that logistics company has good facilities, tangible means; when they highly appreciate the assurance of company when their expectations from logistics company are responsive and when they feel company always shows empathy to them. Moreover, customer satisfaction with logistics services at Ho Chi Minh city is directly affected by the four dimensions of service quality provided by logistics company with 5% significant level and 95% level of confidence.

The weights in the table 10 show the relationship amongst research factors. The standardized regression weights of Empathy, Reliability, Assurance, Tangibles impact on Customer Satisfaction 0.480, 0.378, 0.362, 0.274, respectively. The greater the absolute value of these weights, the more the independent factors impacts on the dependent factors. In particular, the Assurance is the factor that has the strongest impact on Customer satisfaction (standardized regression weights are 0.480), followed by the Empathy and Reliability factor (standardized regression weight are 0.378 and 0.362) has the second strongest impact and finally is the Tangible factor (standardized regression weight is 0.274). This means that when the Assurance factor increases 1 units, Customer satisfaction will increase 0.480 units and the same for the remaining factors.

Table 10. Results of research hypotheses testing

Hs	Relationship			Estimate	S.E.	C.R.	Results
H1	Customer satisfaction	<---	Tangible	.274**	.172	2.602	Support
H2	Customer satisfaction	<---	Reliability	.362***	.163	2.821	Support
H4	Customer satisfaction	<---	Assurance	.480***	.625	3.331	Support
H5	Customer satisfaction	<---	Empathy	.378***	.139	3.903	Support

Note: Level of statistical significance from 0 by *p<0.05, **p<0.025 and ***p< 0.01

Source: The synthesis of the author, 2019

5.7. The analytical results of SERVQUAL gap

The gap analysis was implemented to analyze the difference between expected and perceived service quality. The results exhibit that all the scores of the five SERVQUAL components for customer perception were lower than customer expectation. So that logistics company should improve and develop logistics services quality suitable with demands of the customer as well as enhance customer satisfaction.

The result of the mean perception scores minus with the mean expectation is the overall SERVQUAL gap score. The table 11 shows that the overall service quality for expectations is

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3.934 whereas the overall perception is 2.960. Besides, the overall service quality gap has negative score with the score is -0.976 suggest that the overall perceptions of logistics company services quality in Ho Chi Minh City have large distance with the expectation of customer. In other words, the logistics service quality in Ho Chi Minh City does not reach customer satisfaction and expectation.

The table 12 and the table 13 shows that the service quality distance on each individual item. generally, the distance scores for all the items varied from -0.88 to -1.10. When we examine each item individually, the largest service quality gap is the component assurance of the overall gap score of -1.05. Under the components of assurance, item " Staff is polite, courteous" has the highest negative gap of -1.10 among all 22 items. In empathy components, the service quality gap of items ranges from -1.00 to -1.02, which items "Convenient working time for you" has the large negative service quality gap of -1.02. The responsiveness components obtained a distance score of -0.97. Among the items, the most distances score of -1.01 was "Employees can communicate well by using the media such as Zalo, Skype, Viber...". Followed by reliability components with overall gap score of -0.94. The smallest gap score falls into the tangible dimension which item "Facilities look very eye-catching" (-0.88). This shows that the perception of respondents is near to what they expected.

There is evidence that customer perception of logistics service quality fell short of service expectation on all 5 service dimensions. Overall, the logistics companies appear to have difficulties in meeting customer expectation.

Table 11. Overall service quality

Perception (Mean)	Expectation (Mean)	SERVQUAL gap	t-value	Std deviation
2.960	3.934	-0.976	-100.650***	0.168

Note: Level of statistical significance from zero by *p<0.05, **p<0.025 and ***p< 0.01 for 2-tailed test.

Source: The synthesis of the author, 2019

Table 12: Service quality dimensions gap scores analysis

Dimensions	Perception (mean)	Expectation (mean)	Gap score	t-value	Std deviation
Tangible	3.039	3.940	-0.901**	-56.895	0.274
Reliability	3.027	3.970	-0.943***	-50.064	0.326
Responsiveness	2.978	3.954	-0.976**	-79.878	0.212
Assurance	2.893	3.943	-1.051*	-100.6	0.181
Empathy	2.865	3.872	-1.007**	-95.79	0.182

Note: Level of statistical significance from zero by *p<0.05, **p<0.025 and ***p< 0.01 for 2-tailed test.

Source: The synthesis of the author, 2019

5.8. Results of Importance – Performance analysis (IPA) matrix

The median score for the expectation and perception of service quality dimensions is used to establish the IPA matrix. IPA matrix supports decision makers to see and understand possible portions to enhance service based on customer survey feedback through a customer perception and customer expectation of each aspect of the service. In this research, the IPA matrix provides a guideline for establishing improvement priorities for the four dimension of logistics service quality for company management. Median expectations describe the importance of service priority while median perception describes performance. The ratings were then drawn on a two-dimensional grid using median expectations and median perceptions to identify which improvements were needed for performance and importance.

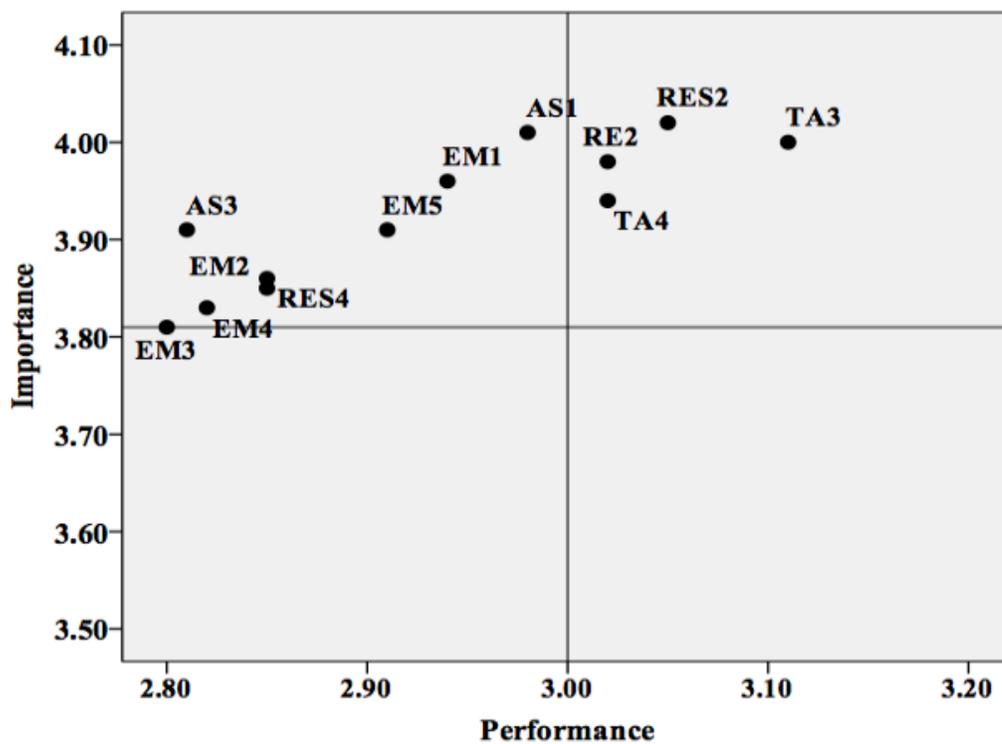


Figure 5. IPA grid for attribute

Source: Survey results of the author

The figure 5 show that four attributes were determined in “keep up the good work” quadrant, eight in the “concentrate here” quadrant, and no attributes was identified in “possible overkill” quadrant and “low priority” quadrant. Specifically, the “concentrate here” quadrant is consisted of four attributes: AS1, AS3, EM1, EM2, EM3, EM4, EM5, RES4. Distributions factors in the quadrant were of high importance to the customer but the performance of the company is low. Therefore, the company needs to step up investment, focusing on improving the quality of service these factors. In addition, Quadrant II “keep up the good work” is included four attributes: RES2,

RE2, TA2, TA4. These factors are valued high importance to the customer and the performance of the company is high. Thus, the company should maintain and promote these strengths.

For the point of view of customer satisfaction dimension, the IPA matrix for the dimension is presented in figure 7. The figure shows that reliability and tangible dimensions which are distributed in quadrant strengths. Besides, priorities for improvement are also needed by the management assurance and empathy dimensions show higher gaps for the customer since the quadrant shows these dimensions as important and have a lower level of performance to the customer compared to the other two dimensions.

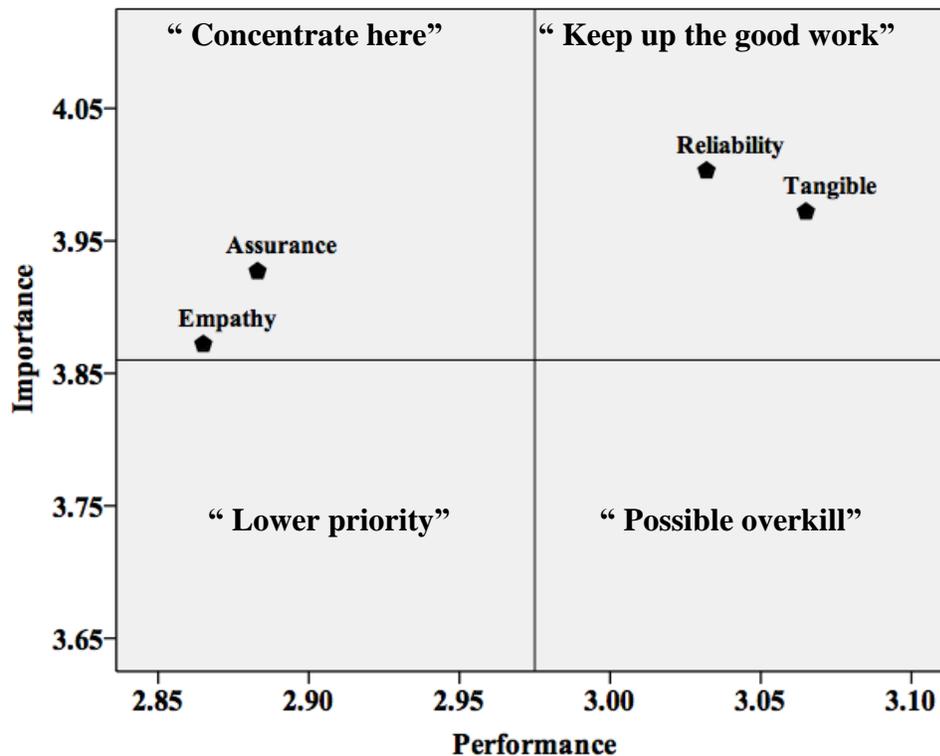


Figure 6. IPA grid for dimension

Source: The synthesis of the author, 2019

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Table 13.SERVQUAL attributes

Dimensions	Q	Attributes	Perception (mean)	Expectation (mean)	Gap score	t-value	Std deviation
Tangible	1	Modern equipment	3.02	3.94	-0.92***	-39.25	0.404
	2	Facilities look very eye-catching	3.00	3.88	-0.88**	-32.91	0.460
	3	Contract terms, services brochures are clear and attractive	3.11	4.00	-0.89**	-41.54	0.374
	4	Neat and polite appearance of staff	3.02	3.94	-0.92***	-40.96	0.388
Reliability	5	Service right the first time	3.07	3.99	-0.92***	-34.97	0.456
	6	Company implemented exactly their commitments in the contract	3.02	3.98	-0.96***	-37.48	0.447
	7	Company interested in your problems and complains.	2.98	3.96	-0.98***	-44.31	0.383
	8	Company implements correctly the transaction without mistakes	3.04	4.00	-0.96***	-45.74	0.364
	9	Company always informs you when implementing the service	2.94	3.92	-0.98***	-47.69	0.356
Responsiveness	10	Company solves your problems and complaints quickly and satisfactorily	2.98	3.94	-0.96***	-45.97	0.364
	11	Company handles the unforeseen situation flexible and quick	3.05	4.02	-0.97**	-48.20	0.351
	12	Employees are always ready to advise you on the aftermarket policies, new and specific services according to your needs.	3.04	3.99	-0.95***	-50.31	0.329
	13	Employees can communicate well by using the media such as Zalo, Skype, Viber, etc.	2.85	3.86	-1.01**	-72.89	0.238
Assurance	14	You are assured when using the services	2.98	4.01	-1.03***	-53.92	0.331
	15	You feel the goods are guaranteed during the use of the services	2.89	3.94	-1.05*	-69.88	0.260
	16	Staff is polite, courteous	2.81	3.91	-1.10***	-57.89	0.328
Empathy	17	Staff has professional knowledge, professional skills	2.89	3.91	-1.02**	-77.39	0.230
	18	Convenient working time for you	2.94	3.96	-1.02**	-81.27	0.216
	19	Staff always listens to your contribution comments	2.85	3.85	-1.00***	-75.41	0.231
	20	Staff understands clearly your demands	2.80	3.81	-1.01**	-73.43	0.238
	21	Company has a good customer care policy	2.82	3.83	-1.01**	-63.12	0.277
	22	Company always puts your interests first when handling problems	2.91	3.91	-1.00**	-56.24	0.306

Note: Level of statistical significance from zero by *p<0.05, **p<0.025 and ***p< 0.01 for two-tailed test.

Source: The synthesis of the author, 2019

6. CONCLUSIONS

6.1. Conclusion

The main objective of this study is to identify the factor of logistics service quality impacting on customer satisfaction in Ho Chi Minh City. Based on previous studies, this study decided to use a modified SERVQUAL model from the Parasuraman et al. (1988) to appraise the service quality dimensions that determine customer satisfaction on logistics services in Ho Chi Minh City.

For the research's purpose, the survey collected 320 samples, after removing the unsatisfactory response and cleaning the data, the sample retains 300 samples. Respondents are almost manufacturers, freight forwarders and trading companies who are existing customers of logistics services in Ho Chi Minh City. Survey results are used for analyzing with its objective to determine the factors that impact on customer satisfaction of logistics service through measure the gap between customer's expectation and customer's perception the reliability test of Cronbach's alpha, factor analysis such as EFA, CFA, SEM and IPA.

In order to increase customer satisfaction, logistics companies need to pay attention to ensure and improve the quality of services, help customers appreciate the quality of logistics services that companies provide, especially companies should focus on four quality service elements.

The results of research are the basis for developing solutions and recommendations to improve the quality of logistics services and customer satisfaction at logistics companies at Ho Chi Minh City. These proposed solutions and recommendations can provide additional information to logistics companies to formulate strategies for long-term development and enhance the competitive as well as the reputation of the company. Besides that logistics companies attract more foreign investments, contribute to the growth of Vietnam's economy.

Besides that, this study has some differs from previous researches, such as Firstly, in this study, the author combines SEM, SERVQUAL gap, and IPA to define customer needs and the most important factors that affect customer satisfaction. Secondly, the results of the study show that an overview of logistics quality service effect customer satisfaction in Ho Chi Minh City. Thirdly, based on the characteristics and potential development of the logistics industry in Ho Chi Minh City, the study has introduced the appropriate management implications for businesses.

Based on the analytical results of the gaps between customer expectation and customer perception, importance – performance analysis as well as results hypothesis testing of the research model. This study continues to analyze related articles to develop appropriate operational strategies to improve the quality of logistics services as well as customer satisfaction. In addition, strategies are developed based on the theory of service quality by Parasuraman et al. (1988) and customer satisfaction by Zeithaml et al. (2000).

In addition, depend on the development potential of logistics services in Ho Chi Minh City. Firstly, Ho Chi Minh City has the geographical position and economics important for the country. Secondly, Ho Chi Minh City has a large scale of economic development. Thirdly, Ho Chi Minh City is a place where high-quality human resource training, thus facilitating the development of the logistics industry. Fourthly, Ho Chi Minh City has many industrial parks, export processing zones and foreign companies to invest in, thus creating the great demand for logistics services.

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From the analysis of the above chapters, the author proposes a number of administrative implications. In this research, the result shows that Assurance is the most important factor but customer satisfaction of this factor not high. To improve the assurance, logistics companies should ensure its supply service capabilities; in particular, company should focus on human resource and enhancing linkages with customers.

In addition to the assurance element, empathy is the second most important element. These two factors affect customer satisfaction on logistics services quality. To enhance empathy to the customer, the company need to improve the skills and knowledge of customer care staff. Next, company should focus on customer care and provide more value-added services to customers.

Reliability component represents the company's reputation for customers. To improve the reliability of the company, the company should focus on the implementation of services to customers. The company should strengthen the company's capacity by expanding its agency and branch network. Finally, to improve the quality, company should pay attention on human resources, and the way to implement services to customers.

Moreover, company should focus on tangible dimension. To improve tangible, company should have a guideline about the material facilities of the company. Secondly, the company needs to unanimous the staff uniform to show the solidarity and professional style of the company. Thirdly, about brand advertising, because in Ho Chi Minh City have more company provide logistics service, but information about the company is less. So, the company to strengthen the advertising work in journals, specialized websites, participation in events, fairs and exhibitions on logistics to introduce new and key services of the company to customers

6.2. Further research

As the same with any study, this study has many limitations. Firstly, the sampling methods are non-probability and surveys just only focus on companies which are using the logistics services in Ho Chi Minh City. Besides, with the number of 300 surveyed of enterprises are using logistics services in Ho Chi Minh City via Google Forms, the sample size is too small. So, the generalization is not high enough to represent the overall natural of the results. Therefore, further studies should be conduct with a bigger sample size and diversify the scope of research to improve the overall view of the problems. Secondly, beyond quality service factor, the price factor and the brand also affect the customer satisfaction but this topic does not mention. There may content some differences when compares to logistics companies in Ho Chi Minh City with other provinces in Vietnam and in other countries. To reduce the bias in participants, future researches should use and combine with other types of data collection methods to reduce the biases. Furthermore, future research can broad this study by containing more potential determinants of customer satisfaction on logistic like price, brand name or prestige. Thirdly, unlike previous research by Parasuraman et al. (1988), the factor of responsiveness does not affect the satisfaction of customer. The reason for this may be due to the inconsistent between the scale and the actual situation in Ho Chi Minh City. Therefore, the questionnaire of those factors in this study should be further modified, supplemented and justified in the studies next.

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**ADVERTISERS, PLEASE PAY ATTENTION TO ADVERTISING
VALUE – THE IMPORTANT BRIDGE IN EXPLAINING WHY
PERSONALIZED SMARTPHONE ADS INFLUENCE USERS’ FLOW
EXPERIENCE: AN EMPIRICAL STUDY ON VIETNAM’S
GENERATION Z**

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ABSTRACT

There were nearly seventy millions of Vietnamese Internet users as of January of 2020. Among them, Generation Z (born from 1998-2010) accounts for fifteen percent with more than ninety-five percent accesses to Internet at least three hours daily. The drastic expansion of the mobile advertising market has forced companies targeting this segment to spend a large budget on digital marketing. Despite the promising effect of advertising on smartphone, the appearance of blocking ad apps have caused money of firm is throwing away. Recently, marketers have focused their attention on how to create users’ flow experience toward mobile advertisements. The study enriches research stream on this field by identifying key antecedents of flow experience through an integrated model of Ducoffe's web advertising and flow theory. Structural Equation Modeling (SEM) is employed to test the research hypotheses on a sample of 621 Vietnamese Generation Z. The results provide empirical evidence of the positive impact of personalized smartphone advertising on perceived credibility, entertainment, mobile design quality, and privacy. Subsequently, perceived credibility, entertainment, and incentive have been found to positively influence on users’ flow experience. Generally speaking, the relationship between personalized smartphone advertising and user’s flow experience is mediated by advertising value. These findings offer valuable theoretical contributions and managerial implications for designing advertising effectiveness.

Keywords: Flow experience, personalized advertising, advertising effectiveness, advertising value.

JEL Classification: O30

1. INTRODUCTION

Mobile commerce (m-commerce) has opened such a huge business opportunity for both devices and services providers thank to the progression of wireless and networks. According to Statista (2020), the current number of smartphone users in the world reaches 3.5 billion, and this means appropriately 45.15% of the world’s population owns a smartphone. This figure is up considerably from 2016 when there were only 2.5 billion users, accounts for 33.58% of that year’s global population. Those figures prove the reality that customers nowadays are much sticky on mobile devices (e.g.: smartphone and tablet PC) since as much as 87% of shoppers engage in online product search before buying. Smartphone advertising is specially cared by marketers given the expectation from Clement (2020) that the world’s m-commerce sales will make up for 53.9% of all e-commerce sales by 2021.

However, statistics from GlobalWebIndex in 2019, 47% of global consumers were blocking ads and roughly 43% blocked on their smartphone. This figure is expected to keep increasing which means that nearly a half of paid advertising messages will never reach their audiences and the most common cause blamed is that there are too many annoying and irrelevant ads (48% and 47%, respectively). Moreover, given the highly competitive market in any business areas, countless smartphone advertisement in today is not significantly different and switching costs are relatively low for users. Thus, question that has received much attention from practitioners is how to attract and retain smartphone users in watching ads.

Research on mobile commerce has put a great effort into Flow theory to uncover people's behavior while using the web (Hoffman & Novak, 2009; Martins et al., 2019) Flow, which refers to the fully immersed state experiencing when people act with total involvement has been believed as one of among key determinants that explain for continuance intentions of smartphone's users. Until now, few academic works have studied flow experience of mobile users in the context of Vietnam market; where there are 40% out of 97 million people used a smartphone (Statista, 2020). Thus, is it critical to find out which stands behind flow experience in the smartphone device. Furthermore, limitations in using mobile networks and devices (e.g., minimal battery power, limited storage and capacity, etc.) affect negatively on the performance of m-commerce applications. As a result, mobile advertisers should take into account when designing advertising messages that meet customer's need. Chen & Hsieh (2012) suggest that the effectiveness of advertising mainly depends on whether it is personalized and qualified or not since personalization will tailor advertising to be better fit with user's oneself and this will lead to higher flow experience. Researches on mobile devices have been extensively and thoroughly analyzed across markets, such as: Korea (Kim & Han, 2014), China (Gao, Waechter & Bai, 2015; Zha, Li & Yan, 2015), Taiwan (Lee & Wu, 2017), Portugal (Martin et al., 2019), US (Tong & Xu, 2020), etc. To the best of our knowledge, no previous studies in Vietnam smartphone mobile have rigorously integrated the relationship among personalization, advertising value and flow experience.

This study aims at identifying antecedents of smartphone flow experience and estimating the influence of personalization and advertising values on flow experience of Gen Z's users. An adaption of the Ducoffe's Web advertising model (1995) on smartphone platform will not only provide a clear understanding on factors contribute to users' flow experience for academics but also recommend practical implications for advertisers to increase their ads' effectiveness in Vietnam digital landscape.

2. LITERATURE REVIEW

2.1. Mobile advertising and smartphone advertising

2.1.1. Mobile advertising

According to Mobile Marketing Association (2011), mobile advertising is defined as: "A form of advertising that is communicated to the consumer/ target via a handset (Billore & Sath, 2015). Mobile marketing operates on two-way wireless media that permit advertisers to send personalized information tailoring to customers' need (Dickinger et al., 2004) and thus, mobile advertising becomes a useful communicational tool to reach users anywhere, anytime (Barutcu, 2007).

2.1.2. Smartphone advertising

Smartphone, belongs to mobile devices, is developed more outstandingly mobile phones in terms of the operating system and other functionalities, have become a perceived indispensability device in any personal and work aspects (Martins et al., 2019). Because of significantly improved in connection capability, advertisement on smartphone is designed more sophisticatedly than ever before and thus it allows marketers to target effectively on their customers.

2.2. Theoretical foundation

2.2.1. Ducoffe's web advertising model

In 1995, Ducoffe has been widely known for building Web advertising model, which is an approach to study the effectiveness of advertising value toward web advertising. Ducoffe's web advertising model provides a framework to explain how advertisements work and what makes an advertisement valuable from a customer's point of view. Ducoffe's model (1995) indicates cognitive and affective factors as proxy of advertising value. The cognitive factors refer to customer's perception of informativeness and deceptiveness while the affective factors refer to customer's perception of entertainment and irritation. However, later on the work in 2000 (Ducoffe & Curlo, 2000), they propose that other features should be taken into account depended on platform which the advertising has been showed. Ducoffe's advertising model has been adopted in many wireless devices including mobile devices such as smartphones and tablet (Kim & Han, 2014). Thus, Ducoffe's advertising model has been adapted from this study smartphone but incorporated other two factors, which include: (1) incentive as in research model of Kim & Han (2014); and (2) design quality as in research model of Martins et al., (2019) to fully uncover contributors of advertising value in Vietnamese GenZ's perspective.

2.2.2 Flow experience theory

Csikszentmihalyi & Csikszentmihalyi (1992) was the first authors mentioned the concept of flow as a holistic experience that one feels when he/she acts with total involvement. As describe, when in the flow state, one becomes absorbed in that activity, such as: narrowing awareness to the activity itself, losing self-consciousness, and feeling in control of their environment (Csikszentmihalyi & LeFevre, 1989). Flow is experienced through the combination of clear goal, feedback, challenges matching skills, concentrations, focus, control, loss of self-consciousness, transformation of time, and the autotelic nature of an activity (Csikszentmihalyi & LeFevre, 1989). Flow is defined by scholars as a multi-dimensional construct that consists of multiple components, such as: perceived enjoyment, concentration, perceived control (Koufaris, 2002), engagement (Hoffman & Novak, 2009) and curiosity (Ho & Kuo, 2010). However, there is still a controversy on dimensions of flow since the concept is kind of board and change accordingly in different context.

Flow experience theory has been widely applied both in the real world and the virtual worlds, such as social commerce (Liu et al., 2016), online gaming (Hsu & Lu, 2004; Huang et al., 2018), and e-purchase (Ozkara, Ozmen & Kim, 2017). Flow experience theory is useful in explaining the behavior of online information acquisition in various contexts (Hoffman & Novak, 2009; Martin et al., 2019). As Kim & Han (2014), in the context of smartphone advertising, they have proposed and empirically confirmed for informativeness, credibility, entertainment, irritation, incentive as key facilitators of flow experience. In addition, in Gao,

Waechter & Bai (2015), they have added one more dimension, which is privacy control in explaining the flow experience.

2.2.3. Personalized smartphone advertising

Xu et al., (2008) has conceived personalized smartphone advertisements as advertising messages on the smartphone devices, and tailored to customer demographics, preference, context, and content. Given the improvement in bandwidth, data transmission is delivered at a higher speed and quality. Wireless networks can contain multimedia, Web browsing, e-business messaging services, and artificial intelligence and that allow marketers design contextual location-based advertising for smartphone users (Chen & Hsieh, 2012). For service providers, it is undeniable to get target customers' satisfaction and it is achieved only if the sellers could provide the buyers exactly what they are looking for. Scholars and experts believe that personalized smartphone advertising could increase users' willingness to purchase and receive information about products and services (Zhang & Shijagurumayum, 2003; Xu et al., 2008). Users feel frustrated and annoyed when they receive abundance irrelevant advertising (GlobalWebIndex, 2019) while feel interested and addicted to advertisings that follow their consumption patterns and habits (Xu, 2006; Chen & Hsieh, 2012).

Given the advent of smartphone, this study build a research model that combines Ducoffe's Web advertising model, personalization, and flow theory to identify key determinants and determine their roles toward flow experience. This combination has also been adapted from Kim & Han (2014) to propose relationship among personalization, advertising value and flow experience in the context of smartphone advertising on Vietnamese Generation Z.

2.3. Research model and Hypotheses development

The research model is adapted and integrated from three theory foundations: (1) Ducoffe's web advertising; (2) Flow experience; and (3) Personalization (Figure 1). The model proposes that flow is experience by users by the value of advertising, which is characterized by privacy, credibility, entertainment, irritation, incentives and design quality. Personalized smartphone advertising is highlighted in this study as a focal antecedent of those mentioned concepts. Furthermore, flow experience has also been improved by perceived personalized smart advertising from users. Each constructs and hypotheses will be defined and developed in detail in the following sections.

2.3.1. Flow experience

Flow as Gao, Waechter, & Bai (2015) has been defined as a temporarily unaware experience when one engages in any activity with joyfulness, focus, and control. An easily recognized consequence of flow is losing sense of time and most Internet users are well aware of this problem (Skadberg & Kimmel, 2004). Given perceived time consuming, flow has been found as a key factor predicting users' behaviors context of information technology (IT) (e.g.: Web surfing, smart TV, game online, and smartphone). Given limitations on previous devices, smartphones integrating functions of both Web and mobile allow advertisers to design such an interactive advertisement than ever before. Handy size, connectivity capability and all-in-one of smartphone cause any owner depend on this device. Smartphone has become one of the most

prioritized bridge to connect with users through personalized application. Niu & Chang (2014) proved that flow experience interacts with the level of Internet addiction will induce consumers to present stronger buying behavior with greater amount of purchases and longer hours spent on the Internet. Thus, getting flow experience is top concern of advertisers in any communication medium (Liu, Huang & Chen, 2016; Lee & Wu, 2017; Leung, 2020).

2.3.2. Advertising value

Advertising value is defined as “a subjective evaluation of the relative worth or utility of advertising to consumers” (Ducoffe, 1995). In other words, advertising value could be seen as an overall representation and evaluation of the worth of advertising (Zha & Yan, 2015). Consumers only perceive advertising is value if it provides them something worth rather cost. Ducoffe (1996) and other notable scholars on this area (Tsang, Ho & Liang, 2004; Haghirian, Madlberger & Tanuskova, 2005; Kim & Han, 2014) recommend features such as: privacy, credibility, entertainment, irritation, incentives and design quality would act as proxies for a valued advertising. Since an advertisement has been perceived worth, users will pay greater attention and spend more time on watching it. Thus, identifying factors contributing to value of advertising will support practitioners to develop a more effective communication tool.

2.3.2.1. Privacy

Privacy refers to “the ability to control and limit physical, interactional, psychological, and informational access to the self or one’s group” (Burgoon et al., 1989). Users prioritize much on the loss of control toward personal information when online because of its burdensome bringing. Four key issues about privacy have been concerned most include: data collection, unauthorized access, unauthorized secondary use and data accuracy (Nyhiem et al., 2015). When a consumer perceives any concern toward privacy might occur in receiving advertising, he or she would stop watching it or in some most extent, quit the app as soon as possible (Zhou, 2013b). Thus, we propose:

H1-a: Perceived privacy concerns negatively contributed to flow experience of smartphone advertising.

2.3.2.2. Credibility

Credibility of advertising has been defined by MacKenzie and Lutz (1989) as the extent to which consumers feel that content in the advertising to be truthful and believable (Zha & Yan, 2015). Consumers spend time on watching an advertising to obtain information about products/ services before making a purchase and thus that action is only worth if they think messages on advertising are reliable. Credibility of advertising is often evaluated by corporate credibility (or the holder of the message of the advertising) (Choi & Rifon, 2002). Consumer will pay more attention toward advertising if he/she perceives it is trustworthy and the level is likely higher with familiar brand name or experienced ones (Martin et al., 2019). Previous studies on advertising value support for the positive influence of this feature on keeping consumers watching the adverting (Kim & Han, 2014; Zha & Yan, 2015; Martin et al., 2019). Thus, we propose:

H1-b: Perceived credibility positively contributed to flow experience of smartphone advertising.

2.3.2.3 Entertainment

Entertainment of an advertising is the ability its ability to fulfill audience needs for escapism, diversion, aesthetic enjoyment, or emotional release (McQuail, 1983, as cited in Ducoffe, 1995). In the advertising context, a high level of enjoyment and happiness will light up consumer's mood and that could lead to the positive attitude toward the advertising as well as continuance watching behavior. As a result, a great deal of empirical researches has found for the support of entertainment on creating an effective advertising that makes consumers to enjoy seeing (Kim & Han, 2014; Zha & Yan, 2015; Martin et al., 2019). However, the extent how much advertising is perceived playfully or not varies on different segments. Thus, we propose:

H1-c: *Perceived entertainment positively contributed to flow experience of smartphone advertising.*

2.3.2.4 Irritation

Irritation has been described as a feeling of annoyance, offending, or overly manipulation (Yang et al., 2013). Theory of psychological reactance proposes that anything that creates such negative feelings on people will make them react adversely (Ducoffe, 1995). Advertising could be perceived as irritation if it is irrelevant, distracting and overwhelming. Irritation leads to negative attitude toward advertising as well as the flow that one consumer will experience. The influence has been confirmed in many studies on advertising value and the extent of negative feeling would be different depending on groups of consumers (Kim & Han, 2014; Gao & Bai, 2015; Martin et al., 2019). Thus, we propose:

H1-d: *Perceived irritation negatively contributed to flow experience of smartphone advertising.*

2.3.2.5 Design quality

Design factors are mentioned by Martin et al., (2019), composed of: (1) size of the advertisement, (2) use of color, (3) music effects, (4) presence of animation, and (5) the length of the commercial. These factors are classified as among key focus by advertisers because they will more or less affect flow experienced by consumers. If advertising is too small or too long to watch, one would refuse to expose since there is thousands of alternative ones. Kim & Niehm (2009) have confirmed for the positive influence of design quality on consumer's perception regarding the presence of information on it. However, the quality of design is also evaluated varying on different consumers' profiles. Thus, we propose:

H1-e: *Perceived design quality positively contributed to flow experience of smartphone advertising.*

2.3.2.6 Incentive

Incentives are among few factors that call consumers for action within time periods (Armstrong et al., 2014) Monetary benefits from marketing programs such as discounts, coupons, gifts, and non-monetary benefits together with appropriate messages would be successful recipe for effectiveness advertising (Varnali et al., 2012). Consumers seek information about products/ services based on reliable message but would make immediately

decision based on whether the incentive is appealing or not. In some extent, consumer could receive due to incentives included not because of information contained in advertising. Prior studies have supported for the positive influence of incentives on making an advertising attractive and encouraging consumers to watch it (Varnali et al., 2012; Kim & Han, 2014; Martin et al., 2019). Thus, we propose:

H1-f: Perceived incentives positively contributed to flow experience of smartphone advertising.

2.3.3. Personalization

The ubiquity of mobile devices has opened the era of interactive marketing strategies. With the development of smartphone, marketers could be able to track down customers' online behaviors and target them with promotional mixes at a perfect time (Tong et al., 2020). Experts believe that designing a personalized advertising boosts the performance of both traditional and virtual communication campaign. Xu et al., (2008) propose that users' preference, context, and content are the three main components of personalization. Personalized advertising smartphone allows marketers to provide better experience to consumers by tailoring value of advertising suitably with different segments and this conclusion has been found in many empirical studies (Chen & Hsieh, 2012; Kim & Han, 2014; Nyheim et al., 2015).

Personalization allows marketers can more accurately predict customer behaviors and uncover insightful patterns that could not be explored in the past based on artificial intelligence (AI) and learning algorithms (Tong & Xu, 2020). Customers' data become among of important source for personalized smartphone devices to understand customers' cross-channel shopping behaviors. The more data obtained from customers, the more exact suggestions that personalization could prewise from that segment. Thus, customers have reasons to be afraid of personalized smartphone advertising and might prevent to receive it. Thus, we propose:

H2-a: Personalized smartphone advertising positively influences the perceived privacy concerns.

In the context of smartphone advertising, customers expect to receive relevant and reliable information, which means that messages should meet what they are interested and come from trustworthy companies. Personalization allows advertisers to enhance the quality of advertising through improving its content (Kim & Han, 2014; Barutcu, 2017). Thus, we propose:

H2-b: Personalized smartphone advertising positively influences the perceived credibility.

Personalization helps advertisers to design advertising that appeal to customers by its likability and joyfulness. Since personalized smartphone advertising contains useful information and helps customers to satisfy their needs, the level of positive feeling would possibly increase and vice versa for the level of negative feeling (Trifts & Aghakhani 2019). Thus, we propose:

H2-c: Personalized smartphone advertising positively influences the perceived entertainment.

H2-d: Personalized smartphone advertising negatively influences the perceived irritation.

Personalized smartphone advertising not only attracts customers by its content but also its design factors. When factors of advertising such as: appealing appearance, clear layout, effective navigation, and up-to-date information, etc., are modified in accordance with consumers, they will evaluate high design quality (Zviran et al., 2006). Thus, we propose:

H2-e: *Personalized smartphone advertising positively influences the design quality.*

Personalized smartphone advertising is getting higher focus than mass ones (Chen & Hsieh, 2012; Barutcu et al., 2017) because it reflects what kinds of product consumers are looking, where they are using the devices, on what time, and how they could purchase. Thus, personalization has improved the flow of experience during the time of using (Kim & Han, 2014; Tong et al., 2020). Personalization recommends users topics that they are interested at the moment based on the ability to track down consumers' behavior and thus and kept them continue to surf and watch regardless of time. Thus, we propose:

H2-f: *Personalized smartphone advertising positively influences flow experience.*

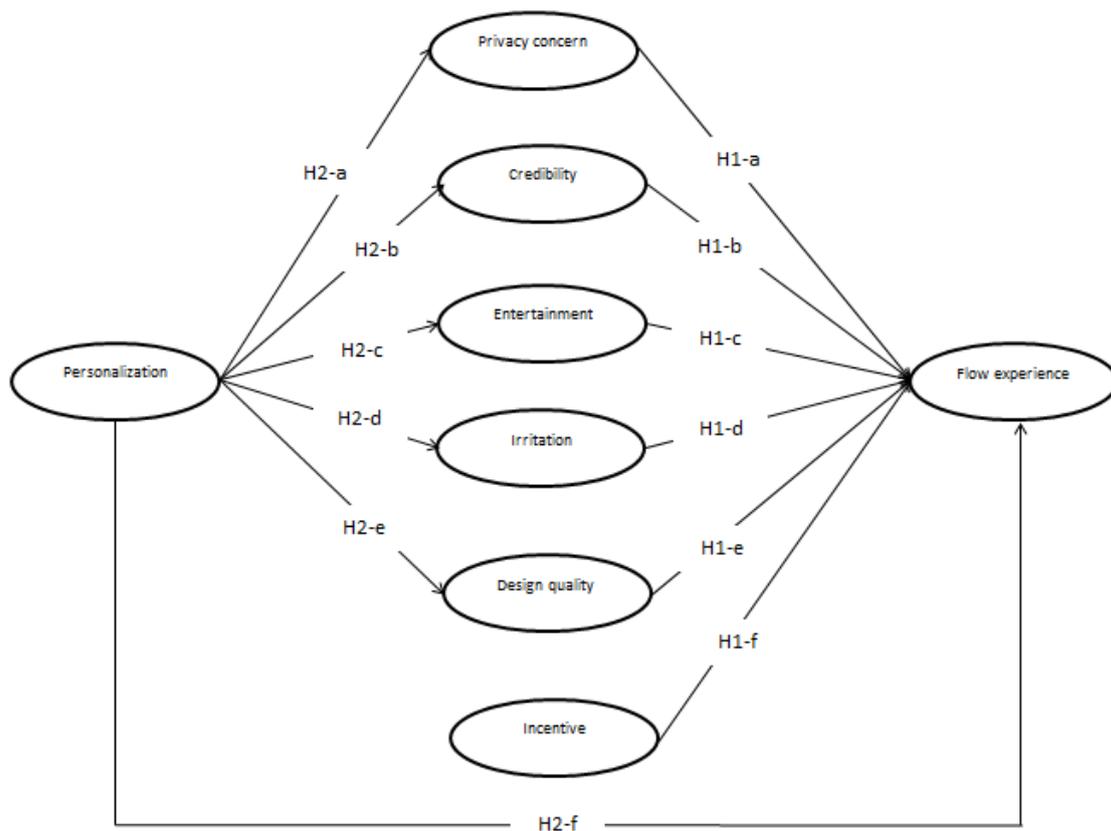


Figure 1. Conceptual model

3. METHODOLOGY

3.1. Sample and Data collection

This study conducted a survey of Vietnam Generation Z's smartphone users with the objective to uncover antecedents of flow experience. Gen Z (or Gen Next) are the demographic cohort after Gen Y's and X's and were born from 1991 and after (PrakashYadav & Rai, 2017). The most distinctive feature of Gen Z is the feeling of comfortable with technology and nearly all spend a large portion of time fund during a day (appropriately 3 hours) to interact on social media through their personal mobile devices. Accounting for one seventh of the country's population, the number of GenZ in Vietnam is expected to rise up to 15 million (Vietnam Briefing, 2019). This segment makes a perfect sample for studies on smartphone behavior (Persada et al., 2019). Quota convenience sampling was applied to approach target respondent

with the three criteria, included: (1) students in colleges/universities; (2) using smartphone; and (3) living and working in Ho Chi Minh City. Pilot test has been conducted with 10 respondents (5 female and 5 male) to detect any error or misunderstanding might occur before widely distributed. The survey has been designed on Google form and sent directly to respondents by mail or social media.

3.2. Instrument development

Reflective measurement scales are adapted to conceptualize factors developed from hypothesis. However, each construct was slightly modified and filtered to get the most appropriate with the specific context. 5-points Likert scale anchors from 1 = strongly disagree to 5 = strongly agree was used to measure respondent's level of each item. Questionnaire is originally developed in English and back-translate into Vietnamese by two native academic lecturers to ensure the validity between the two versions (Sinaiko & Brislin, 1973). Personalized smartphone advertising composed of 6 items is modified from Xu et al., (2008) and Ünal et al., (2011). Privacy concern composed of 7 items is modified from Malhotra et al., (2004) and Okazaki et al., (2009). Credibility composed of 4 items is modified from Sinkovics et al., (2012) and Yang et al., (2013). Entertainment composed of 4 items is modified from Wang & Sun (2010), Yang et al., (2013), and Ünal et al., (2011). Irritation composed of 5 items is modified from Varnali et al., (2012), and Yang et al., (2013). Incentive composed of 3 items is modified from Ünal et al., (2011). Flow experience composed of 7 items from Chang (2013), Novak et al., (2003), and Martins et al., (2019).

Structural Equation Modeling (SEM) was performed followed two-stage process suggested by Hair et al., (2009) using AMOS 20 software. Reliability and validity of constructs were examined by Cronbach's Alpha, Exploratory Factoring Analysis (EFA), and Confirmatory Factoring Analysis (CFA) test. Standardized coefficients were calculated through SEM. Model fit criteria of this study have been followed by Hu & Bent (1999).

4. DATA

There were 1000 surveys distributed, but the usable ones were only 621, achieved the response rate at 62.1%. Descriptive results about demographic and usage's habits have been shown in Table 1.

5. RESULTS AND DISCUSSIONS

5.1. Results

Firstly, Cronbach's Alpha has been assessed to check the internal consistency of items in measurement scales. The recommended cut-off value is 0.7 (Hair et al., 2009) and all the constructs achieved high ones, ranging from 0.822 to 0.926. EFA test has been employed afterward to explore underlying structure among the variables. There were eight constructs extracted as literature review, included: personalization, privacy concern, credibility, entertainment, irritation, incentive, design quality, and flow experience. Some items were excluded if factor loadings were lower than 0.5.

CFA was employed to examine the measurement model. The common model fit criteria has shown good values: (1) Chi-square/df = 1.87 (<3); (2) GFI = 0.917 (>0.9); (3) AGFI = 0.901 (>0.9); (4) IFI = 0.963 (>0.9); (5) CFI = 0.963 (>0.9); (6) TLI = 0.958 (>0.9); and (7)

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RMSEA = 0.037 (<0.08). The study evaluated the psychometric properties of all constructs in the research model in term of: (1) Composite Reliability (CR > 0.7) for ensuring the reliability; (2) Average Variance Extracted (AVE > 0.5) for ensuring the convergent validity; and (3) Maximum Shared Variance (MSV < AVE) for ensuring the discriminant validity. The results in Table 2 confirmed for the reliability and validity of all constructs.

Table 1. Sample Description

N = 621		n	(%)
Gender	Male	292	47.0
	Female	329	53.0
Age range	From 1991 to 1997	0	0
	From 1997 to 2001	618	99.5
	After 2001	3	0.5
Monthly spending	Below 2 million VND	101	16.3
	From 2 - 4 million VND	388	62.5
	From 4 - 6 million VND	105	16.9
	From 6 - 8 million VND	20	3.2
	Above 8 million VND	7	1.1
Daily Internet usage time (using a smartphone)	Never	0	0
	Less than 1 hour	14	2.3
	About 1 - 2 hours	39	6.3
	About 2 - 3 hours	83	13.4
	About 3 - 4 hours	119	19.2
	About 4 - 5 hours	131	21.1
	More than 5 hours	235	37.8
Frequency of reading or viewing of an advertisement on a smartphone	Very much	294	47.3
	Much	263	42.4
	Less	41	6.6
	Very less	18	2.9
	Never	5	0.8
Products purchased from smartphone advertising	Usually	52	8.4
	Often	71	11.4
	Sometimes	233	37.5
	Hardly	154	24.8
	Never	111	17.9
How much times purchase products on smartphone	1 - 2 times/month	228	36.7
	3 - 4 times/month	137	22.1
	5 - 6 times/month	42	6.8
	More than 6 times/month	37	6.0
	Hardly	177	28.5

Table 2. Constructs measurement

	CR	AVE	MSV	MaxR(H)	CRE	FLE	PER	PRC	IRR	DEQ	INC	ENT
CRE	0.829	0.550	0.476	0.839	0.741							
FLE	0.926	0.643	0.476	0.932	0.690	0.802						
PER	0.863	0.558	0.350	0.864	0.592	0.533	0.747					
PRC	0.875	0.585	0.187	0.883	0.081	0.043	0.150	0.765				
IRR	0.845	0.527	0.187	0.878	0.008	-0.041	0.016	0.432	0.726			
DEQ	0.837	0.632	0.263	0.838	0.513	0.376	0.313	0.337	0.071	0.795		
INC	0.854	0.662	0.444	0.859	0.664	0.666	0.498	0.121	0.016	0.442	0.813	
ENT	0.863	0.677	0.458	0.863	0.632	0.677	0.517	0.095	-0.127	0.475	0.601	0.823

Note: CRE: Credibility; FLE: Flow experience; PER: Personality; PRC: Perceived concern; IRR: Irritation; DEQ: Design quality; INC: Incentive; ENT: Entertainment

To confirm and estimate the effect magnitude among constructs, SEM has been conducted with the similar set of fit criteria for the structural model. The results provided an acceptant fit with: (1) Chi-square/df = 3.032 (<5); (2) GFI = 0.864; (3) AGFI = 0.843; (4) IFI = 0.912 (>0.9); (5) CFI = 0.903 (>0.9); (6) TLI = 0.911 (>0.9); and (7) RMSEA = 0.057 (<0.08). The Table 3 has displayed the standardized path coefficients and p-values of each hypothesis.

Table 3. Hypothesis Conclusions

Hs	Direction	Standardize coefficients	Conclusion
H1-a	Privacy concern negatively → Flow experience	$\beta=-0.056, p=0.110$	Not supported
H1-b	Credibility positively → Flow experience	$\beta=0.339, p<0.001$	Supported
H1-c	Entertainment positively → Flow experience	$\beta=0.374, p<0.001$	Supported
H1-d	Irritation negatively → Flow experience	$\beta=0.006, p=0.865$	Not supported
H1-e	Design quality positively → Flow experience	$\beta=-0.024, p=0.545$	Not supported
H1-f	Incentive positively → Flow experience	$\beta=0.330, p<0.001$	Supported
H2-a	Personalization positively → Privacy concern	$\beta=0.163, p<0.001$	Supported
H2-b	Personalization positively → Credibility	$\beta=0.637, p<0.001$	Supported
H2-c	Personalization positively → Entertainment	$\beta=0.571, p<0.001$	Supported
H2-d	Personalization negatively → Irritation	$\beta=0.014, p=0.761$	Not supported
H2-e	Personalization positively → Design quality	$\beta=0.381, p<0.001$	Supported
H2-f	Personalization positively → Flow experience	$\beta=0.078, p=0.202$	Not supported

In summary, out of a total of 12 hypotheses in the model, 7 are supported and 5 are not. Specially, among features of advertising value, there are three out of six positively contributing to the flow experience of smartphone users, included: (1) Credibility ($\beta=0.339, p<0.001$); (2) Entertainment ($\beta=0.374, p<0.001$); and (3) Incentive ($\beta=0.330, p<0.001$). In covering the influence of personalization on features of advertising value as well on flow experience, this study has found for the positive correlation between personalization and privacy concern, credibility, entertainment, and design quality. Finally, personalization has not directly influence flow experience but the relationship is confirmed through the mediation of credibility and entertainment of the smartphone advertising.

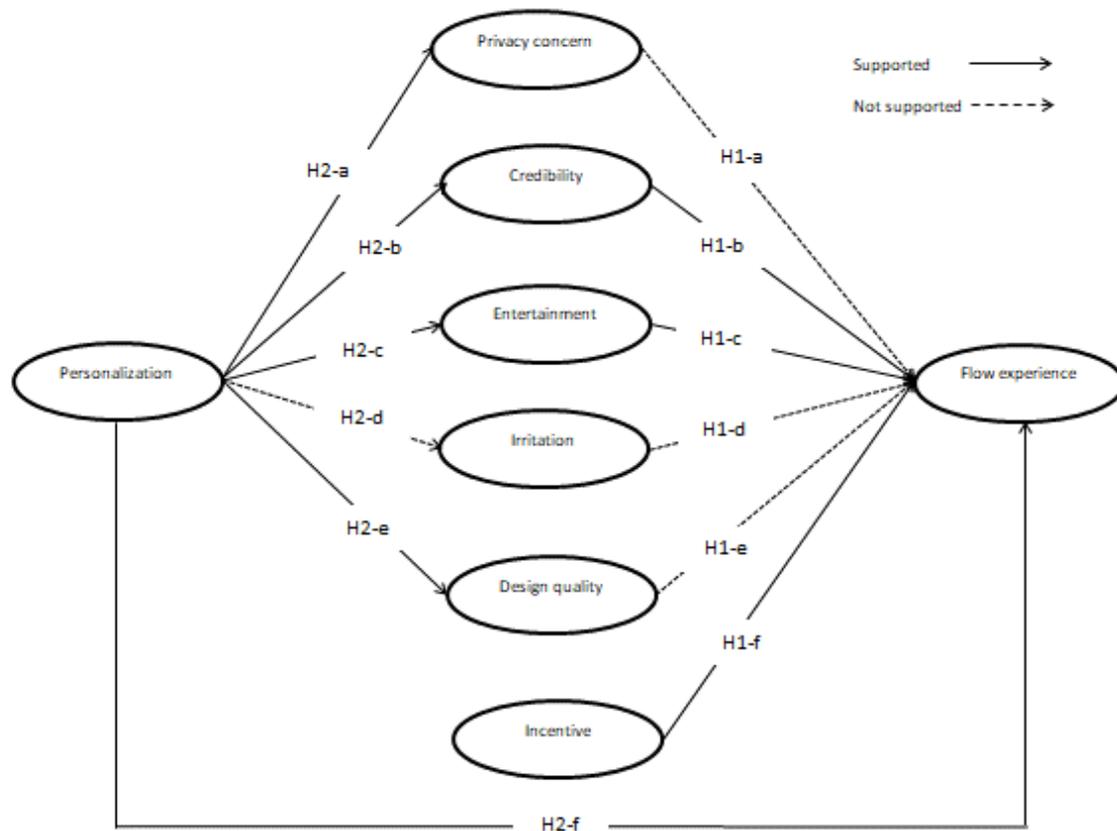


Figure 2. Structural model results

5.2. Discussions

5.2.1. Theoretical implications

This study has contributed to academics on how personalized smartphone advertising influence flow experience of consumers. Based on the large sample on Vietnamese Gen Z, there are three theoretical implications. Firstly, credibility, entertainment, and incentives of advertising has been perceived by consumers will positively contribute to the flow experience. The three features have shown nearly equal impact on flow experience. These findings are consistent with previous empirical studies (Kim & Han., 2014; Gao & Bai, 2015; Martin et al., 2019). Other mentioned features such as: privacy concern, irritation, and design quality have not significantly affected the users' flow experience in this context. Unlike other studies on the similar fields, perceived privacy and irritation reduce the experience of flow while using smartphone since they bring troublesome to the users.

Secondly, personalization is proven to be an antecedent for adding privacy concern, credibility, entertainment, and design quality perceived by consumers toward advertising. Irritation has not found any relationship with personalization even the advertising is tailored to consumer's needs and interest. Credibility and entertainment were being influenced the most, followed by design quality and privacy concern. This conclusion supports for the effect of personalization on perceived value of the advertising.

Finally, as Kim & Han (2014), personalization has been found no significant direct relationship with flow experience. Personalization positively support flow experience only through the mediation role of perceived credibility and entertainment of the advertising. Slightly different from Kim & Han (2014), they found this connotation also work for perceived irritation with the opposite direction.

5.2.2. Managerial implications

Results from data analysis have suggested some practical implications for marketers and advertisers focusing on this segment.

The first recommendation is credited on which features that make the advertising is worth to target consumer. The value of the advertising perceived by Vietnamese Gen Z has been assessed by three features, which are credibility, entertainment, and incentive. Discussed about credibility, given information is the main goals of advertising, customers prefer to get the one which is trustworthy and reliable. In the world with advertising overwhelming, communication message is useless if it is perceived fallacy. Thus, marketers and advertisers should take into consideration the credibility of their advertisings by ensuring the validity of both claims and also reliable sources. Discussed about entertainment, users are actually addicted to watch advertising if it brings happiness and enjoyment. Marketers could create such the advertising by leveraging emotional tactics such as: cartoon characters, music, celebrities, sense of humor, and catchy speech, etc., Discussed about incentive, Vietnamese Gen Z is provably attracted by economic factors contained in advertising (e.g.: discounts, coupon, gift attached, etc.). Perceived incentive helps consumers feel valuable spending on engaging with the advertising and making actual decisions.

The second recommendation is lying on explaining how personalization could improve the value of advertising on smartphone. Personalization enhances perception of credibility, design quality, and entertainments of advertising while credibility and entertainment are part of advertising's quality that make it get consumers' attention. However, this study has uncovered side effect of personalization, which is the higher perceived personalization, the higher perceived privacy concerns in users. When one feels concerned about his/her privacy, they also feel loss of their controls over personal information, and likely quit or skip the advertising. Given that, perceived privacy concern is not significantly negative affect user's flow experience, and it is considered as an interesting point of this study. Reason has been justified on the extent how much Vietnamese Gen Z do care about their privacy concern. Nearly all of 621 respondents are students and have not entered officially their full-time working. As a result, perceived leakage of personal information and unauthorized access are not seemed to be serious problems compared with other segments, especially those have gained higher status or position in the society.

The third recommendation is falling down on the relationship between personalization and flow experience. Contrast to this study's expectation, personalization did not show any significantly impact on flow experience. This relationship is realized through the mediation role of credibility and entertainment perceived from advertising on smartphone by consumers. Thus, personalized smartphone advertising is confirmed an effective mean of modern communication to Gen Z's consumers because it helps to promote features that keep users watching and engaging with advertising.

5.2.3. Limitations and future research

This study still exists some recognized limitations that would guide future researches on similar fields. The first one relates with generalization of the research results. Since the sample of study only focuses on Vietnamese Gen Z in Ho Chi Minh city and specially on student segment, other Gen Z and segments might result in different conclusions. Later research, as wisdom recommended by scholars, consumer's behaviors should be conducted case by case, and product by product. The second one relates with selected features classified as parts of advertising value but not all key ones. Future research should put more effort on examining other features besides this study, such as: informativeness, interactivity, friendliness, etc., to depict a full picture on what make an advertising worth. Furthermore, this study has also not estimated the magnitude contribution of each perceived feature on advertising value as a whole. Lastly, the conceptual research has been stopped at flow experience and thus later research might base on this study as foundation to extend studying on other consumer' behaviors (e.g.: continuous search, purchase intention, etc.,).

6. CONCLUSIONS

The study contributes to a theoretical understanding of the antecedents of advertising's flow experience on smartphone in the context of Vietnam Gen Z users. Integrated from the three foundations theories, namely: (1) Ducoffe's web advertising; (2) Flow experience; and (3) Personalization, this study has provided empirical support for relationship among personalization, advertising value and flow experience. Based on the sample of 621 respondents, we found that perceived credibility, entertainment, and incentive are facilitators of flow experience while personalization is facilitators of some advertising values' features (e.g.: creditability, privacy concern, entertainment, and design quality). It is concluded that personalization has only partial influence on flow experience through the mediation of advertising value. Therefore, this study recommends marketers and advertiser please pay attention on credibility and entertainment because these are important bridges to keep Vietnam Gen Z's users experience the flow while viewing personalized smartphone advertisings.

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A STUDY OF FACTORS AFFECTING THE INTENTION TO USE E5 BIO-GASOLINE OF PEOPLE IN HO CHI MINH CITY, VIETNAM

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ABSTRACT

Bio-gasoline is considered to be the fuel of the future which is of interest to the whole world. However, consumption volume is decreasing in Vietnam. This study was conducted to find out the factors affecting the intention to use E5 bio-gasoline of people in Ho Chi Minh City area. The paper surveyed 489 people living in Ho Chi Minh City, used Cronbach's Alpha testing methods and exploratory factor analysis (EFA) to test and build measurement scales. In addition, multiple linear regression method was used to find out the influence on people's intention to use E5 bio-gasoline. Research results show that there are 04 factors affecting the intention of using E5 bio-gasoline of Ho Chi Minh City people: The role of the government; Attitudes towards using E5 gasoline; Perceived values and Subjective Norm. In particular, the role of the government has the most influence on the intention of using E5 bio-gasoline of Ho Chi Minh City people.

Keywords: Bio-gasoline; E5; Global business advancement; Hochiminh city; intention to use, pollution level; Vietnam.

JEL Classification: M10, M38, Q48

1. INTRODUCTION

Pollution levels in Vietnam's major cities have been at an alarming level. The Airvisua's air quality index table shows that Hanoi and Ho Chi Minh City are two of the six most polluted cities in the world (Khả Minh, 2019). Since January 1, 2018, E5 gasoline has officially replaced RON 92 in the market, E5 is one of the bioethanol mixers and the world has a lot of gasoline - alcohol mixing ratios which have had long existence in the world. Using E5 bio-gasoline contributes to environmental protection, because E5 bio-gasoline engine generates very little CO and HC emissions, much less than common gasoline like A92 and A95 to 20%. In addition to significantly reducing CO and HC components, the acceleration of the car is also better for E5 bio-gasoline. The combustion process in E5 bio-gasoline engines was improved by a more uniform mixture of air and fuel due to the good evaporation of E5 bio-gasoline. The new generation of cars now have the waste gas treatment unit, combined with the use of E5 bio-gasoline, the amount of toxic gas discharged into the environment will be significantly reduced. In addition, increasing the use of bio-gasoline E5 is not only about protecting the environment but also contributing to a positive transformation for the lives of people in remote areas of the country, by using Ethanol for production E5 gasoline production is produced from sliced cassava, which is growing quite a lot in Vietnam. In addition, the development of E5 bio-gasoline on the basis of utilizing huge biomass resources, produced from renewable sources of raw materials will truly be a priority option in terms of ensuring energy security issues for countries (Diệu Thùy, 2017).

After the implementation of stopping the sale of RON 92, instead of E5 gasoline, consumers generally welcome this new product positively. In 2018, E5 RON92 gasoline consumed 3,118 million m³, equivalent to about 42% of gasoline consumption nationwide. However, from the beginning of 2019 until now, the rate of E5 consumption is decreasing. In fact, many retail stores are not interested in selling E5 gasoline. There are even agents to completely remove pump cylinders selling E5 gasoline and switch to selling A95 minerals. Ho Chi Minh City Petroleum Company (Saigon Petro) recently sent a document to the Ministry of Industry and Trade and the Ministry of Finance regarding the business and use of E5 bio-gasoline. The document stated that E5 gasoline had not developed in accordance with the requirements and the purpose was to replace the A92 gasoline that has stopped its business since early 2018. "The company's average E5 gasoline ratio in 2018 is 30.06%, while March 2016 decreased to only 19.76%. This is a very alarming figure, showing that the proportion of E5 gasoline tends to decrease in the coming time"- Saigon Petro cited. (Lương Bằng, 2019).

Stemming from the above problems, this study focused on clarifying the factors affecting the intention of using bio-gasoline E5 of people in Ho Chi Minh City area. The results of the study will contribute positively to promoting E5 bio-gasoline consumption in Vietnam market in general and Ho Chi Minh City area in particular, so that bio-gasoline does not face "premature death". The research is divided into 05 sections. First, the authors presented theoreticak basis and research model after the introduction part. Second, the methodology applied in the research is presented. Third, the findings from a survey of 489 people in Ho Chi Minh City are provided. Finally, this paper concludes with a discussion and highlights paths for future research.

2. THEORETICAL BASIS AND RESEARCH MODEL

2.1. Attitude and the relationship with E5 bio-gasoline intentions

Theory of Reasoned Action - TRA was built by Fishbein and Ajzen in the late 60s of the 20th century. TRA model shows that the behavior is determined by the intention to implement that behavior. The relationship between intention and behavior has been raised and empirically verified in many studies in many fields (Fishben & Ajzen, 1980; Canary & Seibold, 1984; Ajzen, 1991), whereby the intention to implement the behavior is expressed through the tendency to implement the behavior. The intention is the state of awareness immediately before the act is committed; is a factor that leads to behavior. According to TRA theory of Fishbein and Ajzen, Behavior Intention (BI) is the most important factor predicting behavior. The intention of behavior is influenced by two factors: Attitude Toward Behavior – AB and Subjective Norm. Later, in 1991 Ajzen developed Theory of Plan Behavior basing on TRA. Accordingly, the third factor that Ajzen considers affecting people's intentions is the behavioral awareness factor. This theory holds that attitudes toward behavior, subjective norm and perceived behavioral control, all constitute the intention to perform human behavior and behavior.

For E5 bio-gasoline use, Attitude Towards Behavior is an individual element that expresses a positive or negative belief, consensus or consumer objection to E5 gasoline products or measured by belief and appreciation for the results of its use. If the belief is extreme and conclusive, the use of E5 bio-gasoline will increase and vice versa, when negative beliefs and objections are found, consumers will not intend to consume E5 gasoline. Therefore, the author hypothesizes the following:

H1: Attitude is positively related to the intention to use E5 bio-gasoline.

2.2. Subjective Norms and the relationship with E5 bio-gasoline intentions

Ajzen (1991) defines subjective Norms (social effects) as perceptions and thoughts of influencers (closely related to those who intend to conduct acts such as relatives in family, friends, colleagues) or social factors that affect consumers (government, media ...) that a person should or should not perform an act. When Lu (2014) researched and evaluated variables affecting the intention of green consumption, he also affirmed the intention of consumption affected from society. The stronger the degree of intimacy of the concerned people is for consumers, the greater their influence on the intention of using E5 gasoline is. The greater the confidence of consumers in social factors is, the greater their intention to use is. Therefore, the author hypothesizes the following:

H2: Subjective norm is positively related to the intention to use E5 bio-gasoline.

2.3. Perceived Value and the relationship with E5 bio-gasoline intentions

According to Zeithaml (1988): "Perceived value is the overall consumer appreciation of the utility of a product or service based on their perceptions of what is received and what must be spent." Zeithaml evaluates as a comparison between the two "received" and "spent" components of products and services. According to Sheth et al. (1991), the perceived value includes 5 components: functional value, knowledge value, social value, emotional value, conditioned value. The test results of Sheth et al. (1991) show that perceived value components are also factors affecting customer choices. Grewal et al. (1998) also affirmed: Customer value is a good factor for predicting repeated purchases and loyalty. High value for customers will increase their willingness to buy and reduce their search intention.

Additionally, customer perceived value is a reliable predictor of buying intention and consumer behavior (Shaharudin et al., 2011). Besides, Gallarza and Saura (2006) also argued that there was a relationship between perceived value and customer satisfaction as well as between customer satisfaction and customer acquisition intention, in which the intention to buy back is the most important factor in the intention of customer behavior. In this view, scientists around the world have researched and determined that there exists a relationship between the perceived value element and the buying intention of customers (Ali, 2007). This is also the customer's choice. In the study of the role of green perceived value, green perceived risks and green beliefs (Chen & Chang, 2012), empirical study of intentions to buy green products (Rizwan et al., 2014), the authors also affirmed that the perceived value affects the intention to use products. Therefore, the author hypothesizes the following:

H3: Perceived value is positively related to the intention to use E5 bio-gasoline

2.4. Perceived Risk and the relationship with E5 bio-gasoline intentions

The perceived risk mentions consumer perceptions about the uncertainty and consequences of participating in a particular activity (Dowling & Staelin, 1994). Bauer (1960) argued that perceived risks were related to uncertainty and consequences related to consumer actions, a major factor in consumer behavior. The perceived risk associated with products or services represents a customer's concern with loss of functionality, financial loss, time consuming, loss of opportunity when using products/services. Cox and Rich (1964) referred perceived risk to the sum of uncertain perceptions by consumers in a specific purchase situation. Consumer perceived risks are divided into 6 types of risks: social, psychological,

time, financial, performance and money-free. According to the planned behavioral theory (TPB), perceived risk can reduce the control of consumer behavior that is uncertain and will have a negative impact on their behavioral decisions. In Vietnam, perceived risks are also found to have a positive effect on attitudes and behaviors towards sustainable consumption (Vũ Anh Dũng et al., 2012). In this study, the risk that consumers may encounter when using green products is that the product does not meet expectations, it takes a lot of time and money without green products, or they face psychological pressure when buying existing products. Therefore, the author hypothesizes the following:

H4: Perceived risks is negatively related to the intention to use E5 bio-gasoline.

2.5. Role of Government and the relationship with E5 bio-gasoline intentions

According to Nguyễn Văn Thức (2008), that role of the government focuses on: 1) Building a favorable legal environment for the activities of social life; 2) Developing and ensuring the implementation of social policies; 3) Managing and operating a socialist-oriented market economy; 4) Ensuring the provision of public services to society; 5) Implementing distribution of resources and benefits fairly; 6) Representing the country to actively participate in regional and world general activities. When studying and evaluating variables affecting green consumption intention, besides Social Influence variable, Lu (2014) also affirmed that consumer intention was affected by the main Role of Government. The government builds a legal environment and ensures the implementation of favorable policies for the consumption and use of E5 bio-fuels, consumers will use more and more. Therefore, the author hypothesizes the following:

H5: Role of Government is positively related to the intention to use E5 bio-gasoline

2.6. Personal traits and the relationship with E5 bio-gasoline intentions

In 2016, Nguyễn Thế Khải and Nguyễn Thị Lan Anh (2016) studied the intention of consumers to consume green in Ho Chi Minh City, the two authors found differences in green consumption intentions of consumer groups who were classified basing on income and education. Therefore, the author hypothesizes the following:

H6: There are differences in the intention of using E5 bio-gasoline by people in Ho Chi Minh City

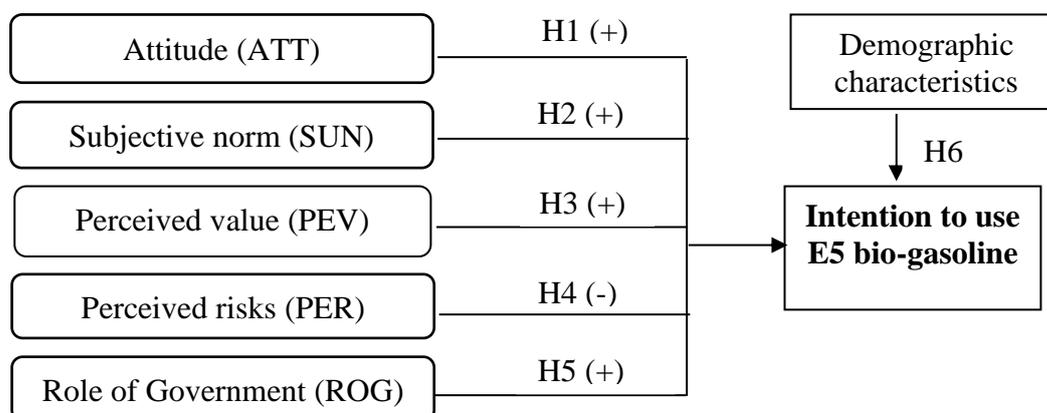


Figure 1. Model of factors affecting the intention of using E5 bio-gasoline of people in Ho Chi Minh City area

3. METHODOLOGY

3.1. Surveyed Object

In order to serve the topic, the object of data collection is the people in Ho Chi Minh City. Subjects were surveyed on different information such as gender (male and female); marital status (married or single); career (students, students, officials and employees), ages (from 16 to 22, from 23 to 35, from 36 to 45, over 45 years); education level (middle school, high school, professional / college, university and university level); monthly income (less than 5 million VND / month, from 5 million VND to 15 million VND/month and over 15 million VND/month) and most frequently used vehicles (motorcycles, bicycles, cars, vehicles) public facilities.

3.2. Research methods

The study was carried out through the following steps: (1) The research utilized secondary data from the theoretical basis, research models related to the intention to use bio-fuel to form a scale for preliminary research. (2) The author interviewed face-to-face with 10 people who used E5 bio-gasoline to ensure the accuracy of the scale. After that, the scale modified from preliminary research was used as an official scale. (3) Formal research by quantitative research method using primary data was collected by questionnaire online survey designed and developed from previous research results.

Research data after the survey were cleaned and analyzed by SPSS software 20. The exploratory factor method (EFA) was used to shorten the measurement variables, then the regression analysis method was used to determine the influence of factors on the intention of using E5 bio-gasoline of people in Ho Chi Minh City area.

3.3. Measurement scale

The scale in this study is based on the theoretical and qualitative research results. At the same time, it has been adjusted to suit the factors affecting the intention of using E5 bio-

gasoline of people in Ho Chi Minh City area. The observed variables measured by the Likert scale of 5 points with 1 is completely disagree and 5 is fully agree. Specifically, 5 independent factors: Attitudes towards using E5 gasoline are measured by 4 observed variables, Subjective norm are measured by 5 observed variables, Perceived values are measured by 4 observed variables, Perceived risk is measured by 4 observed variables and Role of Government role is measured by 4 observed variables. The intention of using E5 bio-gasoline of the people in Ho Chi Minh City area, is a dependent factor, measured by 4 observed variables.

4. FINDINGS

4.1. Sample size

According to Tabachnick and Fidell (1996), the sample size according to the formula $n = 50 + 8m$ (m: number of independent variables). Thus, the minimum sample $\geq 50 + 8 * 21 = 218$. In this study, the authors collected 493 responses, including 4 invalid replies and 489 valid ones used for next steps.

Respondents include male (36.8%), female (63.2%); married (44.2%), single (55.8%); students (34.8%), officials (34.6%), employees (14.9%); the ages are from 16 to 22 years (33.5%), from 23 to 35 years (38%), from 36 to 45 years (16.2%), over 45 years (12.3%); Middle school, high school accounted for 34.6%, junior college / high school accounted for 9%, university and postgraduate accounted for 56.4%; the monthly income less than 5 million VND/month (41.9%), from 5 million VND to 15 million VND/month (41.5%) and over 15 million VND/month (16.6%); the most frequently used vehicles are motorcycles (84.7 %), cars (5.5%), public transport (7.8%)

4.2. Results of scale tests

The scale was assessed through methods of evaluating reliability and exploratory factor analysis. The verification of the scale was done by using Cronbach Alpha reliability coefficient to verify the correlation between observed variables. If any observed variable has a corrected item-total correlation less than 0.3 will be eliminated (Hair et al, 2009)

Cronbach's Alpha analysis results of Attitude towards using E5 gasoline, Role of Government, Perceived risks, Perceived value and Intention to use E5 gasoline show that all scales achieve Cronbach's Alpha reliability coefficient requirement which will be used in model analysis.

Table 1. Cronbach's alpha reliability analysis results

Factor	Cronbach's Alpha		N of Items		Item Deleted
	First analysis	Second analysis	First analysis	Second analysis	
Attitudes towards using E5 bio-gasoline (ATT)	0.761		4		
Role of Government (ROG)	0.767		4		
Perceived risk (PER)	0.817		4		
Perceived value (PEV)	0.855		4		
Subjective norm (SUN)	0.704	0.874	5	4	SUN4
The intention of using E5 bio-gasoline (INT)	0.744		4		

Source: Analysis of the authors in June 2019

For SUN4 variable, its corrected item-total correlation less than 0.3 should be eliminated. After eliminating SUN4, Cronbach's Alpha coefficient increased to 0.874, so it is possible to continue using the remaining variables in the model analysis.

4.3. Exploratory factor analysis and regression analysis results

First time exploratory factor analysis (EFA) with 20 independent variables (SUN4 variable excluded) extracts 5 factors according to the original proposed model. KMO coefficient after the first EFA is 0.819 with a statistical significance of 0.000, indicating that the exploratory factor analysis of the independent components is appropriate, the total variance extracted is 66.190%.

Table 2. Rotated component matrix of independent variables

tem	Component				
	1	2	3	4	5
PEV1	0.840				
PEV3	0.834				
PEV2	0.818				
PEV4	0.757				
SUN1		0.843			
SUN2		0.835			
SUN3		0.760			
SUN5		0.718			
PER4			0.817		
PER3			0.810		
PER2			0.777		
PER1			0.717		
ROG1				0.839	
ROG2				0.826	
ROG3				0.735	
ROG4				0.564	
ATT3					0.739
ATT4					0.729
ATT1					0.720
ATT2					0.645
KMO Measure of Sampling Adequacy			0.819		
Eigenvalue			1.309		
Cumulative % of variance			66.190		
Bartlett's Test of Sphericity		Df	190		
		Sig	0.000		

EFA with 04 dependent variables results in 1 dependent variable according to the original proposed model. KMO coefficient after analyzing EFA is 0.712 with a statistical significance level of 0.000, showing that the exploratory factor analysis of the dependent components is appropriate, the total variance extracted is 57.288%.

Table 3. Rotated component matrix of dependent variable

Variables	Factor	
	1	
INT2	0.870	
INT4	0.813	
INT3	0.697	
INT1	0.623	
KMO Measure of Sampling Adequacy	0.712	
Eigenvalue	2.292	
Cumulative % of variance	57.288	
Bartlett's Test of Sphericity	Df	6
	Sig	0.000

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.572 ^a	0.328	0.326	0.36052	
2	0.668 ^b	0.446	0.444	0.32754	
3	0.703 ^c	0.494	0.491	0.31344	
4	0.718 ^d	0.515	0.511	0.30719	1.815

Table 5. Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
4 (Constant)	0.902	0.134		6.746	0.000		
ATT	0.242	0.031	0.299	7.895	0.000	0.697	1.435
ROG	0.254	0.026	0.336	9.736	0.000	0.841	1.189
PEV	0.146	0.025	0.206	5.921	0.000	0.832	1.202
SUN	0.127	0.028	0.166	4.574	0.000	0.764	1.310

Table 5 shows that the most powerful ROG factor affects the intention of using E5 bio-gasoline, the second is the ATT factor, the third is the PEV factor, and finally the SUN factor

In Table 4, R² (R Square) = 0.515 means that 51.5% variation of E5 Bio-gasoline Usage Intention is explained by the linear relationship with 4 factors ATT, ROG, PEV and SUN, while the remaining percentage is because other factors have not been mentioned.

At the same time, in Table 4, ATT, ROG, PEV and SUN all have significant statistical significance. <0.05 so we don't eliminate any factor.

Table 5 shows that the most powerful factor affecting the intention to use E5 bio-gasoline is ROG, the second is the ATT factor, the third is the PEV factor, and finally the SUN factor.

Based on the standardized coefficient (Table 5), the author decided to choose the model and give the linear regression equation as follows:

$$INT = 0.902 + 0.336ROG + 0.299ATT + 0.206PEV + 0.166SUN + \varepsilon_i$$

- When the ROG increases by 1 unit, the intention to use E5 bio-gasoline increases by an average of 0.336 units, provided that other factors remained unchanged.

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- When the ATT increases by 1 unit, the intention to use E5 bio-gasoline increases by an average of 0.299 units, provided that other factors remained unchanged.

- When the PEV increases by 1 unit, the intention to use E5 bio-gasoline increases by an average of 0.206 units, provided that other factors remained unchanged.

- When the SUN increases by 1 unit, the intention to use E5 bio-gasoline increases by an average of 0.166 units, provided that other factors remained unchanged

4.4. Analysis of the relationship between Intention to use E5 bio-gasoline and demographic characteristics

- The results of Independent Samples Test comparing the intention to use bio-fuel E5 by gender and marital status show that Gender and Marital status do not affect the intention to use E5 bio-gasoline as well as the research model.

- ANOVA test results show that Age and Education level do not affect the intention to use E5 bio-gasoline as well as the research model.

- The results of the KRUSKAL - WALLIS test show that there is no difference among Occupations, among Income levels and among means of transport towards the Intention to use E5 bio-gasoline.

5. CONCLUSION AND RECOMMENDATIONS

Through the research results presented above, there are 4 main factors affecting the intention to use E5 bio-gasoline by people in Ho Chi Minh City area, which is the role of the government; Attitudes towards using E5 gasoline; Perceived value and Subjective norm. In particular, the role of the government is the most influential, then the Attitude, the perceived value and finally the Subjective norm. Since then, the authors proposed some recommendations to promote E5 bio-gasoline use by people in Ho Chi Minh City area as follows:

Firstly, there is a need of other appropriate solutions and policies to create a reasonable difference in price between two types of gasoline A95 and E5 to encourage consumers to use. In order to save bio-gasoline, it is possible to consider reducing the E5 gasoline protection tax in absolute terms appropriately and without calculating E5 gasoline environmental protection tax in proportion to ethanol. Currently, the environmental protection tax for mineral gasoline is VND 4,000/liter, while E5 gasoline is VND 3,800/liter, which discourages consumers to choose E5 gasoline. Therefore, the goal is to create retail price differences between gasoline E5 and A95 at least over VND 3,000 per liter to enable consumption.

Secondly, it is important to actively change consumer attitudes towards E5 bio-gasoline use through promotion of E5 bio-gasoline. Most customers still do not fully understand this type of gas, especially the benefits of E5 brought about in the problem of reducing environmental pollution. Consumers do not have sufficient information on technical characteristics, so when using E5 g bio-gasoline, they often feel insecure. Many people still don't trust this type of gas. Once having a clear understanding, the vehicle owners, and people will feel more secure in using E5 bio-gasoline.

Thirdly, it is necessary to enhance responsibility and coordination among related parties. Vehicle producers, salemen and distributors using E5 gasoline-consuming engines

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may participate in supporting the implementation of the Government's policy by using E5 bio-gasoline. For engines that are incompatible with bio-gasoline. For vehicles that use incompatible engines, they should provide more convenient integrated parts for the use of bio-gasoline. At the same time, the vehicle manufacturers and traders made recommendations, widely inform what kind of vehicles could use E5 bio-gasoline. In addition, it is also necessary to increase attractive discounts for agents and distributors to actively sell bio-gasoline.

Fourthly, inspection and management of E5 gasoline business should be strengthened publicly and regularly. Local authorities strengthen inspection and supervision of petroleum business in all retail stores in the area; actively take gasoline samples to check quality regularly; ensure the process of petroleum business in accordance with national standards; combat trade fraud; and create confidence for consumers to develop E5 gasoline in the market.

Although the study has practical significance, it cannot avoid its limitations either, which can be solved in future researches.

Firstly, the study sample size was developed basing on the measurement scale, so it may not represent the population. Thus, further studies into the sample size are highly attentive.

Secondly, the study model was quite simple. Therefore, it may be a very interesting research to create additional models for the topic.

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ON THE LINKAGE BETWEEN GREEN EXPERIENCE PRACTICES OF SERVICE ENTERPRISES AND GREEN BRAND EQUITY

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ABSTRACT

In pursuit of bettering achievement of Sustainable Development Goal (SDG), nations increasingly encourage and support organizations to execute practices for fostering customer green consumption, and accordingly green consumption has received growing interests from academicians. Nevertheless, research of green consumption remain dispersed with a lack of a compelling theoretical framework for enterprises to confidently apply in practices. Also, scholarly evidence of effectiveness of green marketing practices in service sectors is rather scare while service organizations favourably adopt the concept of green marketing in business operations recently. This study attempts to rigorously review the extant literature of green consumption, based on which to propose a comprehensive theoretical framework for effective implementation of green marketing practices for service companies. This study discusses the relationship between dimensions of green service experience practices and green brand equity. It also addresses the mediating role of green experiential value and the moderating role of green brand loyalty program. Specifically, the study elaborates the influences of green service scape, green employee service, green core service, green service innovation, and green service delivery process on customer green brand equity. With the discussion on the relevance of experiential marketing, the study hypothesizes that green experiential values with four dimensions of utilitarian value, emotional value, social value, and altruistic value serve as mechanisms for green brand equity. Additionally, reflecting the relevance of relationship marketing that service firms increasingly pursue, the study proposes for the moderating role of green brand loyalty programs in the effect of green service experience practices by service firms and green brand equity. The study concludes with a new theoretical framework, based on which service firms may have considerations for practices and operations of green business.

Keywords: Green brand equity, green service experience practices, green experiential value, green brand loyalty programs

JEL Classification: M31

1. INTRODUCTION

Green marketing practices of enterprises have increasingly been stressed in a prompt response to demand of markets and societies for sustainable consumption (Singh & Pandey, 2012). With a quick extension of service sectors, the number of service firms has also been growing considerably. Parallel to the trend of sustainable marketing in markets, service firms also need to pursue green marketing for achieving effectiveness and profitability in business (Mishra & Gupta, 2018). As service has differential characteristics from products (Kotler & Armstrong, 2018), service firms necessarily adopt a set of practices that can be service-featured and more closely relevant to service industries. Regrettably, there existed little empirical evidence of effects of green service practices for positive outcomes of service firms, like customer-based brand equity – an aggregate evaluation of customer for brand. Precisely, most

of the existing studies are dedicated to the influences of green marketing practices on customers' behaviors for green consumption. In the mean time, due to the increasing awareness of customers paid to green consumption (Kang & Hur, 2012), firms strive to execute green practices both to gain profits and to win customers' preferences for brands. If service firms apply green practices to entail customers' positive evaluations towards brands, it is necessary to address the relevance of green practices to customer brand equity as customer-based brand equity is a comprehensive measure to reflect customers' evaluations towards brand (Kang & Hur, 2012).

In addition, in the contemporary business world, experiential marketing and relationship marketing have been widely pursued by service firms for achieving business effectiveness (Chou, 2009). According to Chou (2009), nowadays customers pay much attention to experiential consumption, and become willing to spend money for a good experience. From another angle, relationship marketing with a focus on building and sustaining relationships with customers has been popularly executed by service firms, and accordingly relationship marketing tools such as loyalty programs have been commonly applied (Macharia et al., 2017). For firms with a pursuit of green marketing, uses of loyalty programs become more paramount as customers' purchase of green products/ services are still in early stage in a variety of contexts due to challenging aspects arisen from green components like incurred costs (Kang & Hur, 2012). However, as loyalty programs are appreciated by customers, it is expected that availability and effective application of loyalty programs for green services/ products will influence the customers' evaluation of green practices of service firms and the triggered customer-based brand equity (Kang & Hur, 2012) – the aggregate evaluation of a brand from a customer.

While service firms growingly execute green marketing in business operations, they are attentive to experiential marketing and relationship marketing as timely responses or reactions to the demands of customers in the contemporary business world (Kotler & Armstrong, 2018). With the recognition of the integration of experiential marketing and relationship marketing, the study aims to address the relevance of experiential marketing as well as relationship marketing to application of green marketing in service firms. Specifically, the study discusses customer perceived green experiential values as the mechanisms for customer based green brand equity. It also purposefully addresses the moderating role of green loyalty programs in the influence of practices for green service experience on customer-based brand equity.

2. THEORETICAL BACKGROUND AND RESEARCH MODEL

Green brand equity

Brand equity has been popularly known as the incremental utility for a brand compared with its counterparts (Keller, 2003). From the customer's perspective, brand equity is a utility or differentiated image for a brand. According to Aaker (1991), brand equity is an aggregate variable with five components of brand assets including brand awareness, brand association, perceived quality, brand loyalty, and other proprietary assets. Brand awareness entails how strong a brand's presence in consumers' minds is - an important component of brand equity. It reflects whether potential buyer can recognize and recall a brand as a member of a certain product category or not. Brand association reflects the link in customer's memory to a brand. According to Chen (2001), brand association has two typologies including product associations and organizational associations. Perceived quality refers to consumer's subjective evaluation of the product, and it is not the actual quality of the product (Zeithaml, 1988). Brand loyalty is

a key component of brand equity reflecting how likely a customer is to switch to another brand. Yasin et al. (2007) revealed that brand equity portrays the preference, attitude, and purchase behaviors of customers for a brand. Yoo and Donthu (2001) later tested the model of brand equity with cross-cultural data and confirmed that brand equity consists of brand loyalty, perceived quality, and brand awareness/associations. As for green brand equity, the customer evaluation may be slightly different with an addition of customer concerns for green components akin to product or service per se. Chunling et al. (2008) stressed that customer-based brand equity is achieved when customers are familiar with the brand and hold a favourable, strong, and unique association with the brand in the memory. Marketing practices purposefully executed by enterprises are necessary for creating and strengthening brand equity, including green brands. Nonetheless, few studies have been found to specifically examine the relationship between green practices and green brand equity. Kang and Hur (2012) is a welcomed empirical study to evaluate the effect of green loyalty programs on brand equity and the study found the significant positive influence. Brand equity embodies the preferences, attitudes, and purchase behavior of customers for a brand (Yasin et al., 2007).

Green service experience practices

According to prior research, in the service contexts, practices for service experience includes service scape, employee service (Mishra & Gupta, 2018), core service, service innovation (Dotzel & Shankar, 2019), and service delivery process (Macharia et al., 2017). Green service scape entails the physical evidence with green components such as decorations with green trees and recycled materials, the usage of environmental friendly furniture and equipment, and the ambient condition which is nature-like (Mishra & Gupta, 2018). Green employee refers to the service staff with knowledge of environment and environmental aspects of products/ services and behaviors that are environmentally-friendly. Green core service entails the key service that customers receive is environmentally-friendly, safe to human as well as safe to the environment. Green service innovation refers to firm's applications of advanced tools and materials that are environmentally friendly in comparison with general competitors in the industry. For example, firm that uses paper bottle for coffee compared to plastic bottles used by most competitors in the industry. Green service delivery process involves developing and executing service operation processes that reduce or eliminate wastes, reduce energy consumption, improve material utilization efficiency, and improve operational safety (Lin et al., 2001). Evidence from prior studies showed that customers are sceptical about the industry's green initiatives (Kang et al., 2012), partly due to lack of knowledge about the contribution of specific service attributes to environmental conservation and partly because of lack of firm's commitment to invest in such services (Suki & Suki, 2015). This suggests that customers pay much attention to green practices of enterprises. Prior studies have shown a relation between green practices of enterprises on customer's evaluation of service brand. For instance, Mishra and Gupta (2018) indicated the influence of components of service scape on customer perceived value pertaining to the service received. Lin et al. (2001) reckoned that green service delivery process is associated with customer's positive attitude and preferences for the brand. Macharia et al. (2017) indicated that green process is positively related to an enhanced customer satisfaction and loyalty towards brand. An increasing number of customers with high environmental values prefer to choose a green facility. The study proposes:

H1: Green service experience practices (i. green service scape; ii. Green staff; iii. Green core service; iv. Green service innovation; v. green service delivery process) positively affect green brand equity.

Green experiential values

Green experiential value refers to customer's perception of interactions pertaining to direct usage of green services or appreciation of green services (Mishra & Gupta, 2018). Operationally, green experiential value includes four elements, known as green utilitarian value, green social value, green emotional value, and green altruistic value. Green utilitarian value entails the monetary benefits of environmental preservation. This can be both short-term and long-term benefits such as health advantages and savings on future costs (Hartmann & Ibanez, 2012; Papista & Krystallies, 2013). Green social value represents the perceived social benefit of engaging in behaviors in accordance with defined norms for environmentally friendly activities (Papista & Krystallis, 2013). Green emotional value is defined as the pleasure triggered from consumption of environmentally friendly products. Finally, green altruistic value refers to the psychological benefit resulted from the feeling of helping others through environmental preservation as well as protection by purchasing and consuming green products (Bhattacharya et al., 2009).

Experiential marketing has recently been accentuated to be central to service marketing industries (Chou, 2009). In the meantime, marketing activities have been also more value-oriented, which leads to a more concern for customer perception of values (Kotler & Armstrong, 2018). Aligned with these foci, perceived experiential values by customers turn out to be the prominent factor in customer evaluation of marketing activities as well as values provided by firms. Leighton (2007) presented that experiential marketing is the nexus for developing effective and potential survival strategies. Pine and Gilmore (1998) showed that the experiential value left with the customers will be hard to forget. Zeithaml (1998) and Holbrook (1999) agreed that experiential value is the key component that customers evaluate when having consumption of services. If green experience practices of enterprises are expected to be effective, they should trigger customer green experiential values for that service which in turn leads to more positive customer evaluation for brand. Differential practices of green experiences of service may be variously relevant to specific components of green experiential values which then catalyze brand equity as customers may place differential emphasis on various perceived values (Mishra & Gupta, 2018). In addition, Social cognitive theory (Bandura, 1986) postulates that environmental factors affect person's evaluation which then influences his or her behaviors. This tenet suggests the mediating role of customer's perceived experiential values in the relationship between green service experience practices (i.e. environmental factors) by service firms and customer-based brand equity (i.e. customers' responses). As such, the study proposes:

H2: Green experiential values (a. green utilitarian value; b. green emotional value; c. green social value; d. green altruistic value) significantly mediate the relationship between green service experience practices (i. green service scape; ii. Green staff; iii. Green core service; iv. Green service innovation; v. green service delivery process) and brand equity.

Green loyalty program

Loyalty program refers to structured marketing efforts which reward and encourage loyal behavior of customers to brand (Sharp & Sharp, 1997). To promote customers to engage more in green consumption behaviors, firms increasingly green loyalty programs which are rewards

and promotions for customers' purchase or usage of environmentally friendly products. Green loyalty programs that enterprises carry out may include discounts for first purchase and/or repurchase of green products, special treatment for membership of green brand communities. Magatef and Tomalieh (2015) introduced a wide range of types of loyalty programs known as point system, tier system, charge an upfront fee for VIP benefits, non-monetary program around customer's values, partners with another to provide all-inclusive offers, loyalty card program, frequent buyer program, gift card or certificate, return policy for loyal customers, payback money to loyal customers, discount overtime or volumes of goods, and bundle goods. As loyalty programs, loyalty programs for green purchases by customers are influential to foster customers' preferences for the green brand and products as well as positive loyal behaviors towards green brand (Liu & Mattila, 2016) – subcomponents of brand equity.

Practices of enterprises with an orientation to green experiences may be conducive to an enhanced customer's overall evaluation of value for the green brand or customer-based brand equity. In the service contexts with execution of loyalty programs for green products, the effect may be more robust because customers may exhibit a more positive evaluation for firm's green marketing efforts like activities for customer experience of green components, therefore improving customer's perception of values for brand and fostering likelihoods for customers to remember brands. According to Chou (2009), such efforts are identified as tools of relationship marketing which has been found to be relevant to customer perceived values for brand and enhancing customers' positive evaluations for brand. Maity and Gupta (2016) disclosed that usage of green loyalty program catalyzes customer's brand loyalty. Kang and Hur (2012) showed that green loyalty programs are influential tools to influence customer brand equity. Hence, the study proposes:

H3: Green brand loyalty program positively moderates the effect of service experience practices (i. green service scape; ii. Green staff; iii. Green core service; iv. Green service innovation; v. green service delivery process) on brand equity.

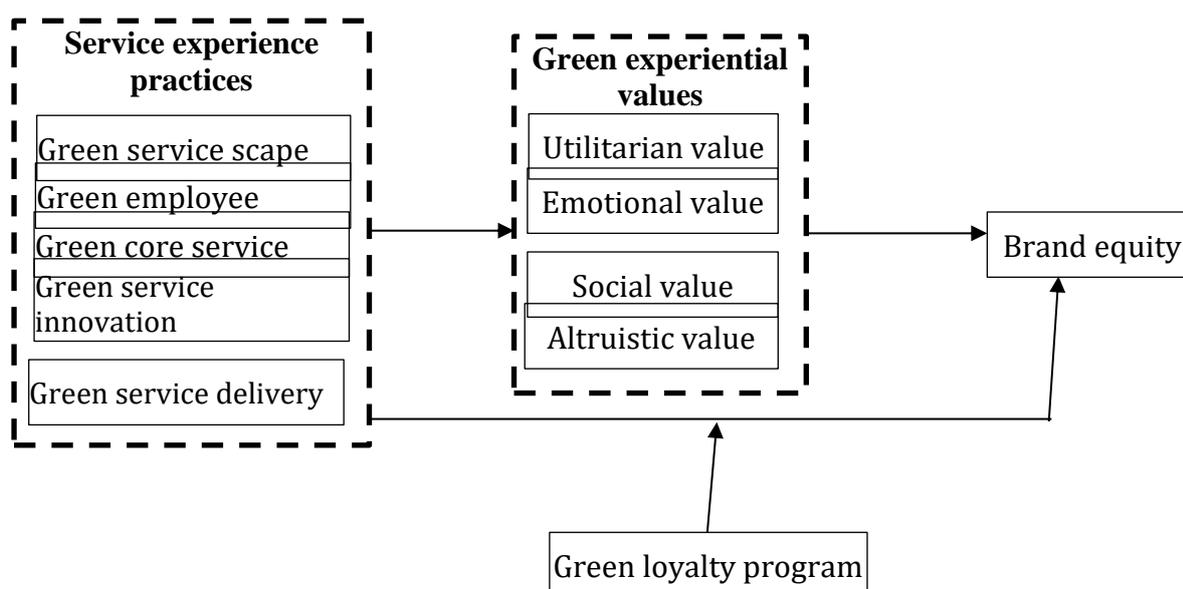


Figure 1. The proposed research model

3. DISCUSSIONS

While service firms increasingly emphasize green practices and may probably be aware of applications of practices for experiential marketing (Mishra & Gupta, 2018), the awareness for green service experience practices are still insufficient with little evidence found. This research discusses the relevance of specific set of practices for service firms to create green experiences for customers. Precisely, firms can consider the influence of green service scape, green employee, green core service, green service innovation, and green service delivery process. This category may provide a novel, different view for evaluation of green practices in comparison with the commonly-used set of practices associated with 7Ps for service quality, namely green product, green price, green distribution, green promotion, green physical evidence, green process, and green people (Eneizan & Wahab, 2016). The selected practices for evaluation of green service experience practices are also not the same as those six components proposed by for green marketing including green product, green price, green place, green promotion, green brand positioning, and green process (Macharia et al., 2017). The current study's set of practices proposed is more oriented to experiential marketing and keenly focuses experiences during service interactions. Its five dimensions are also more comprehensive than Voss's and Zomerdijk's (2007) evaluation of three experience design areas for front stage including physical evidence, service employees, and service delivery process, especially when green core service and green service innovation are two core elements that enterprises in the contemporary business world should not ignore. With the discussion on the relationship between green service experience practices and customer-based brand equity, the study captures the prominent phenomenon of green marketing for enterprises which is an impetus for branding of green service as many firms are still in the starting stage of business with green elements. This attempt is interesting such that it reflects a more comprehensive and relevant evaluation of customers toward green brand compared to the prior research's focus on green purchase intention and/or behavior.

Apart from the study of Mishra and Gupta (2018) that evaluated the direct effects of green marketing practices on components of customer green experiential values, by including the mediating roles of differential components of experiential values, the study raises awareness of these mediators as differentiated mechanisms for green brand equity. This means that four components of green experiential values including green utilitarian value, green emotional value, green social value, and green altruistic (Mishra & Gupta, 2018) value may be four differential paths for driving customer-based brand equity. Identification of these paths is valuable such that it allows enterprises to channel their resources and investment for marketing communications appropriately. For instance, some practices for green experience of firm may make customers perceive joys or pleasure from the experience (i.e. emotional value) which allows them to be aware of the green brand or become loyal to the green brand. While an increasing number of marketing communications either emphasize utilitarian aspect (i.e. utilitarian value) or hedonic aspect (i.e. emotional value) (Suh & Yi, 2012), an evaluation on the relevance of the four separate mechanisms of the current study will offer an insight into the concerns and preferences of customers for effective marketing communications of service firms.

Moreover, with a consideration of green loyalty programs in the model, the present study raises the issue of whether, to what degree, and how effective should experiential marketing practices and relationship marketing tools be applied simultaneously. With the trend that service firms increasingly use loyalty programs as the tools to boost green purchase (Magatef & Tomalieh, 2015), the study's evaluation of green loyalty programs as the moderator sheds some lights for firms to consider the time or frequency for using the loyalty programs. It is also

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more advanced to the extant studies which merely attended to the direct effect of green loyalty programs on customer-based brand equity (Kang & Hur, 2012).

4. CONCLUSIONS

The study addresses the relevance of five practices for green service experiences including green service scape, green staff, green core service, green service innovation, and green service delivery process to customer based brand equity. Besides, it discusses the mediating roles of four types of customer perceived experiential values known as utilitarian value, emotional value, social value, and altruistic value in the relationship between green service experience practices and customer-based brand equity. Then, the study elaborates the moderating role of green loyalty programs on the effect of green service experience practices on customer-based brand equity. The study's proposed model is novel in that it integrate sustainable marketing, experiential marketing, and relationship marketing for learning about customer insights, specifically about customer aggregate evaluation of brand (i.e. customer based brand equity). The selected set of green service experience practices, the category of experiential values studied, and the moderating role of green loyalty program are novel to explore. The framework suggested offers more lights for managers of service firms to consider in application of green marketing. However, the study has a limitation of lacking validation of the model with empirical evidence. Desirably, future research should empirically test the framework with cross-cultural and across-industries data.

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EXTENDED UTAUT2 IN FOOD DELIVERY APPLICATIONS DURING THE PERIOD OF COVID-19 PANDEMIC IN VIETNAM: AN EMPIRICAL STUDY

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ABSTRACT

The Coronavirus disease 2019 (COVID 19) pandemic has globally affected on the whole economic, especially on the food industry. This empirical study aims to examine the effects of the COVID 19 on Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model which determines the key factors affecting the users' continuous intention for food delivery applications during pandemic in Vietnamese sampling context. Data is gathered by using questionnaire survey with 360 users in Ho Chi Minh City. This study contributes to theory by constructing a conceptual framework that integrates various constructs in performance expectancy, social influence, price value, habit and situational influence to predict the continuous use intention of consumers. In addition, performance expectancy is the mediating variable of information quality performance expectancy and the intention to continuous using of consumers. These findings would be recommended for key stakeholders (e.g.: marketers as well as food delivery applications designers) to enhance the quality of their applications and develop effectively their marketing campaigns.

Keywords: COVID-19, food delivery applications, UTAUT2, continuous user's intention, food delivery services

JEL Classification: O30

1. INTRODUCTION

Coronavirus disease 2019 (Covid-19) pandemic has affected on the whole economy especially the food industry. Due to measures of social distancing, food business including restaurants and bar have been temporarily closed down and people' dining- out demand is unexpectedly decreasing. The resulting changes have a large impact on the food purchase and need for food online delivery. With the complex development of Covid-19, many governments are prohibiting food and beverage business from opening their doors to dine-in guests, customer are enjoying the convenience of door -to-door deliveries made within hours off placing online orders thanks to the great abundance of mobile apps. According to a recent survey conducted by Nielsen Vietnam and in focus Mekong Mobile Panel, the Covid-19 pandemic has a strong impact on Vietnamese consumer trend. About 50% of Vietnamese people have reduce the frequency of visiting traditional stores and supermarkets, 45% increase their food stocks at home, and 25% reduce their out-of-home consumption occasions. In the Covid-19 social distancing period, many people use food delivery services for the first time, and others significantly increase purchase frequency. A market research firm Euromonitor estimated that Vietnam's food delivery market is \$38 million in 2020 and that an annual growth rate of the market is at 11 percent. Growth after the pandemic could be greater with more consumers opting for safety and convenience. The potential of food delivery services remains

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strong. According to a recent survey of 600 food delivery app users by a local market research firm GCOMM, 99 percent of them ordered food online 2-3 times a month (Vnexpress, 2020).

In Vietnam, the potential food delivery market where majors online shopping platforms such as Grab, Lazada, Shopee, Tiki, Big C, Lotte, franchise food business and restaurants have intensified focus on food items with a fast delivery commitment during the Covid-19 times. Lazada, for instance, has launched its two -hour delivery service for fresh vegetables, frozen food, or ready -to-cook dishes etc to attract customers; and supermarket such as Big C also offers free delivery within 10 km. From coffee chains such as Highland, Starbucks, The Coffee Houses to large restaurant chains such as Golden Gate or Red Sun, most of them have shifted their business operations to online platforms as a part of their business strategy. Saigon Co.op has received more than 20,000 orders through online shopping service, of which more than 50% through Zalo and Viber. Lotte Mart (South Korean retailer) and VinMart also reported increasing orders for most-in-demand items such as vegetables, fruits, rice, noodles, cooking oil, bottled water, and toilet paper. BigC reported that its stores in the south have 3,000 orders in March (Vnexpress, 2020). According to the statistics about the most popular delivery application in Vnexpress 2020, GrabFood is proved to be the most popular delivery application in Vietnam. Next is followed by Now, Go Food, Baemin and Loship. The potential of food delivery services remains strong and develops rapidly especially in Covid-19

Even before the ominous Covid-19, online food delivery has spreader globally together with the rapid growth of e-commerce. Busy users are provided with speed and convenience by the food delivery apps on mobile devices (Lee et al, 2017). By connecting to food delivery apps, the orders of restaurants in Los Angeles, California., added about 200 - 250 orders per week and its revenues has grown by 3-35% (Cho et al, 2019). In fact, the changes in using the online food delivery have been spread across the world. Maimaiti et al assert that more than one fifth of the China populations use a food delivery app. Notably, Jeon and Choi (states that from the restaurant owners and managers' perspective, small-scale restaurants in Korea, for instance, have proactively adopted the online food ordering apps to promote their products and contact with customers because it offers a low - cost. To users who use mobile apps for food ordering, the information quality, performance expectancy, habit, and social influences are examined as key determinants affecting on their intentions of using delivery apps service (Suk et al, 2019).

This study aims to add to literature by investigating the impact of the Covid-19 pandemic and consumers' intentions on food delivery Apps. In particular, it focuses on Vietnam market. The findings of this study will focus on consumer behaviors in food e-commerce in Vietnam that could contribute to marketing implications for delivery service providers and food & beverage businesses. Therefore, this study is conducted to find out the factors that have effected to continuous intentions to use the food applications, especially in the Covid-19.

2. LITERATURE REVIEW

2.1. Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

The Technology Acceptance Model (TAM), based on the theory of reasoned action (TRA) in the field of social psychology, has been applicationslied in many researches to explore the acceptance of technology (Pavlou, 2003). The unified theory of acceptance and use of technology (UTAUT) is the development of The TAM. The unified theory of acceptance and use of technology (UTAUT) is the result of integration from eight theoretical models of technology use by Venkatesh et al., (2003), namely: (1) Innovation Diffusion Theory (IDT) by

Moore and Benbasat (1991); (2) Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975); (3) Theory of Planned Behaviour (TPB) by Ajzen (1991); (4) Decomposed Theory of Planned Behavior (DTPB) by Taylor and Todd (1995); (5) Technology Acceptance Model (TAM) by Davis (1989); (6) Model of PC Utilization (MPCU) by Thompson et al., (1991); (7) Motivational Model (MM) of computer in workplace adopted by Davis et al., (1992); and (8) Social Cognitive Theory (SCT) of computer utilization adopted by Compeau and Higgins (1995). The UTAUT has been employed UTAUT to explain individual acceptance of information technology. However, according to the author, the first UTAUT model is developed to analyze employee behaviors, and thus is not applicationsropriate for consumer technologies (Venkatesh, Thong, & Xu, 2012). Therefore, UTAUT2 has been modified to applicationsly for consumer contexts, and additional factors have been added. The UTAUT2 model uses seven core determinants of consumers' usage and intention (e.g.: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit) alongside with four moderators (gender, age, experience and voluntariness of use). Moreover, the Covid-19 pandemic has pushed a tremendous effect on consumer's behaviors in change from offline activities to online ones. Thus, this study will account for an additional named situational influences in the conceptual model and depict in Figure 1 below.

2.2. Theoretical definitions and Hypothesis developments

2.2.1. Information quality

Information quality has been referred to “*the value, validity, and usability of information that is the output of an information system as well as the quality of that output*” (Negash, Ryan, & Igbaria, 2003). If the information is irrelevant, inaccurate or out-of-date, consumers will not only feel meaningless but also even annoyed. Information quality is believed to be a crucial factor of a website's quality and this has been found in many empirical studies (Ranganathan & Ganapathy, 2002; Lee, Sung & Jeon, 2019). Thus, information quality would elicit enjoyment and positive behavioral intention in users.

Previous researchers have established the relationship between information quality and performance expectancy (perceived usefulness), effort expectancy (perceived ease of use), and behavioral intention in multiple contexts. In the work of Rai, Lang, & Welker (2002) and Kulkarni, Ravindran, & Freeze (2006) confirmed that information quality significant influences on perceived usefulness. Better information quality would lead to higher perceived usefulness in users. However, this subjective evaluation is depended on different segments. In another work, Shih (2004) found that perceived information quality in Internet shopping enhances perceived ease of use and usefulness. Furthermore, information quality provided by social network-based communities was proved to play a significant role in the intention to actively participate in those communities (Zhao, 2019). Thus, we propose:

H1: The information quality of delivery applications significantly influences performance expectancy.

H2: The information quality of delivery applications significantly influences effort expectancy.

H3: The information quality of delivery applications significantly influences continuous intention.

2.2.2. Performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit

Performance expectancy refers to the extent of users' beliefs that the *"use of a system would prove helpful in improving task or job performance"*. The belief would lead to the higher intention to use that technological platform (Venkatesh, Thong & Xu, 2012). Effort expectancy refers to the ease of use of a system and users would increase their continuous behaviors if they feel ease in using that system (Lee, Sung & Jeon, 2019). Social influence reflects the fact that *"the use of a system or technology is influenced by the views or pressure of peers"* (Venkatesh et al., 2003). The stronger peers' perception of the use of a new technology, system, or service to be important could increase the likelihood of an individual to follow along. Facilitating conditions are defined as *"the extent of individual beliefs in the existence of organized technical support for the use of a system"* (San Martín & Herrero, 2012). This includes a belief that there will be access to guide, train, and support while attempting to acquire a technology (Shao & Siponen, 2011). Users those perceive facilitating conditions to be adequate are less likely switch to using a new platform, and as a result enhancing their use intentions.

Hedonic motivation refers as the *"enjoyment derived from the use of technology and plays an important role in technology acceptance and use"* (Brown & Venkatesh, 2005). Perceived joyfulness would attract consumers' attention, consequently keep them continuously use. Price value is defined as the *"perceived benefits of using an applications versus the monetary costs incurred using the applications"* (Dodds et al., 1991). Price value exerts positive effect on intention to use when the benefits from technology use are perceived to outweigh the monetary costs (Venkatesh, Thong & Xu, 2012). Price value is considered to have an influence on consumer intentions to use a system. Habit is defined as tendencies that are performed automatically through learning (Limayem, Hirt & Cheung, 2007). Prior experience use is argued as a prerequisite for habit to influence technology use and that habit was a key factor in future acceptance of technology (Lee, Sung & Jeon, 2019).

Based on the UTAUT2 theoretical model and previous studies on the similar field, this study proposes those following hypotheses:

H4: The performance expectancy of delivery applications significantly influences continuous intention.

H5: The effort expectancy of delivery applications significantly influence continuous intention.

H6: The social influence regarding delivery applications significantly influences continuous intention.

H7: The facilitating conditions regarding delivery applications significantly influences continuous intention.

H8: The hedonic motivation regarding delivery applications significantly influences continuous intention.

H9: The price value of delivery applications significantly influences continuous intention.

H10: Habit regarding delivery applications significantly influences continuous intention

2.2.3 Situational influences

Situational factors are defined as factors that do not relate to the decision maker belong to individual such as: personality and physical characteristics or to products/services designed by firms (Ross & Robertson, 2003) play a key role in influencing online buying motivations (Hand et al., 2009). Situational factors have been confirmed as a consistent predictor for online purchase in across studies (Gehrt & Yan, 2004; Hand et al., 2009; Yazdanparast & Spears, 2013). Despite of the determinant of these factors, studies that account for situational influences on online shopping is scarce (Nguyen et al., 2020). Furthermore, the Covid-19 pandemic creates a situational factor that pushes consumer behavior toward using delivery applications. Thus, in this study, besides applying UTAUT2 model, we employ situational factor to explain users' intention toward delivery food applications in the Covid-19 pandemic. Thus, we propose:

H11: Situational influences regarding delivery applications significantly influences continuous intention

2.2.4. The mediating role of information quality

Information quality has been found as a determinant for use intention through the mediating role of usefulness and ease of use (Ahn, Ryu, & Han, 2004). In addition, the role of the quality of on-site content as a mediator on the relationship between consumer trust, information usefulness, and continuous use of e-commerce has also been confirmed in an empirical study of Liao, Palvia & Lin (2006). Thus, we propose:

H12: The performance expectancy of delivery applications plays a mediating role between information quality and continuous intention.

H13: The effort expectancy of delivery applications plays a mediating role between information quality and continuous intention.

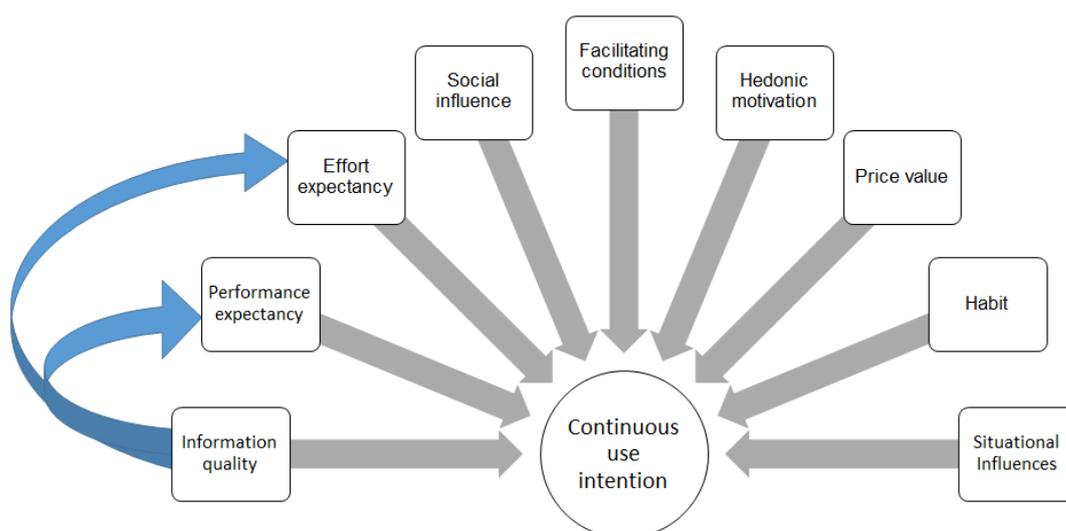


Figure 1. Theoretical framework

3. METHODOLOGY

3.1. Measurement Scale

These measurement items were adopted from previous studies and researches in regarding to reliability and validity. All constructs in this study have been adapted and modified to get the most applicationsropriate with the sample. Reflective scale has been employed to measure the study's factors. Nine factors of the UTAUT2 are adopted from Venkatesh et al. (2018) and Suk Won Lee et al. (2019). We adapted from Venkatesh et al., (2020), San Martín and Herrero (2012), Escobar-Rodriguez and Carvajal-Trujillo (2013), and Singh and Matsui (2017) to measure performance expectancy with four items, effort expectancy with four items, social influence with three items, facilitating conditions with four items, hedonic motivation with three items, price value with three items, habit with four items, and behavioral intention with four items. Furthermore, information quality with four items has been followed Barnes and Vidgen (2002) and Zhao (2019). To measure **situational influences, five items of the Covid-19 are adapted from** Hoang Viet Nguyen et al. (2020). All of these measurement scales are developed in English, then are translated into Vietnamese and adjusted according to the study's objectives and the demographic characteristics of the respondents. All of questionnaire items are measured based on a 5-point Likert scale (1= Strongly Dissagree, 2=Disagree, 3=Neutral, 4= Agree, and 5= Strongly Agree).

3.2. Analytical Methods

The main method to analyze collected data is SPSS and AMOS software. The demographic information of the the respondents is tested on SPSS software. To assess the reliability and construct validity, Confirmatory Factor Analysis with SPSS and AMOS is conducted. Next, the structural equation model (SEM) is presented to evaluate the relationship between each of the factors and examine the hypotheses. The research model and the proposed hypotheses are assessed by the structural equation model (SEM) including direct and mediating effect. The analysis tool used in this study is AMOS 22.0.

4. DATA

The main methods of collecting data are online and offline survey. After the survey collection, the total of samples are 388 responses. However, there are only 360 samples are valid. The 28 invalid samples cannot be used and are deleted in the main data for analysis. The data which collected is the main target response for the study and acceptable for the analysis requirement. Respondents are applicationsroached by Google form by email or social media. Pilot study has also been employed with 10 participants to minimize any error or misunderstanding occurred before widely distributed. For the respondents demographic information, there are six categories: gender, age, marital status, educational level, income and occupation. The frequency test is used to provide the percentage of each categories to gain the understanding about the characteristics from the respondents. The demographic profile of this sample is conducted as mentioned below.

Table 1. Demographic information.

Demographic Characteristics		Frequency	Percentage (N=360)
Gender	Male	172	47.8
	Female	188	52.2
Age	18-29 years old	134	37.2
	30-39 years old	120	33.3
	40-49 years old	66	18.3
	50-59 years old	25	6.9
	About 60 years old	15	4.2
Marital status	Single	245	68.1
	Married	115	31.9
Educational level	High school	106	29.4
	College/University degree	164	45.6
	Postgraduate Degree and higher	75	20.8
	Others	15	4.2
Annual income	Under 10,000,000 VND	53	14.7
	10,000,000-under 20,000,000 VND	109	30.3
	20,000,000-under 30,000,000 VND	112	31.1
	30,000,000 VND		
	30,000,000 VND or above	86	23.9
Occupation	Student	84	0.23
	Office worker	50	0.14
	Sales & Services	43	0.12
	Government employee	30	0.08
	Professional job	44	0.12
	Self-employed	40	0.11
	House wife	35	0.10
	Other	34	0.09
Frequency of use for 1 month	1-4 times	80	22.2
	5- 8 times	95	26.4
	9-12 times	94	26.1
	Above12 times	91	25.3

5. RESULTS AND DISCUSSIONS

5.1. Measurement Model

To test the measurement model fit, all variables in each dimension need to be verified by Confirmatory Factor Analysis. According to Hair et al. (2016), the criteria to evaluate the measurement model fit are Chi-square/df ≤ 5 , GFI > 0.90 , RMSEA < 0.08 , TLI > 0.9 , and CFI > 0.9 .

Table 2. Measurement model fit

Variable and Item	Standardized Loading	CR	AVE
Information quality ($\alpha=0.780$)			
IQ1	.682	0.847	0.581
IQ2	.777		
IQ3	.695		
IQ4	.570		
Performance expectancy ($\alpha=0.914$)			
PE1	.847	0.914	0.727
PE2	.867		
PE3	.869		
PE4	.827		
Effort expectancy ($\alpha = 0.773$)			
EE1	.678	0.772	0.461
EE2	.702		
EE3	.764		
EE4	.563		
Social influence ($\alpha = 0.775$)			
SO1	.730	0.782	0.550
SO2	.611		
SO3	.861		
Facilitating conditions ($\alpha = 0.745$)			
FC1	.778	0.744	0.593
FC2	.763		
Hedonic motivation ($\alpha = 0.747$)			
HM1	.747	0.752	0.503
HM2	.692		
HM3	.688		
Price value ($\alpha = 0.874$)			
PV1	.620	0.759	0.621
PV2	.922		
Habit ($\alpha = 0.902$)			
HB1	.881	0.903	0.699
HB2	.801		
HB3	.798		
HB4	.861		
Situational Influences ($\alpha = 0.875$)			
SI1	.761	0.875	0.583
SI2	.767		
SI3	.754		
SI4	.759		
SI5	.778		
Continuous intention ($\alpha = 0.846$)			
CI1	.794	0.783	0.477
CI2	.768		
CI3	.758		
CI4	.679		
Information quality ($\alpha=0.780$)			
IQ1	.682	0.847	0.581
IQ2	.777		

Based on Table 2, the results show that the data fit of the model is suitable with Chi-square=877.456; df =515; Chi – square/df = 1.704; IFI = 0.917; TLI = 0.93; CFI = 0.94. Hence, the model fit is well satisfied with the data collected. The measurement model fit is examined based on the criteria of reliability, convergent validity, and discriminant validity. Reliability is tested based on the composite reliability (CR) values. According to Table 2, the composite reliability values for all variables are above 0.7. Thus, as inferred from the result, all factors in the table has sufficient reliability (Hair et al. ,2010). All of the average variance extracted (AVE) values are greater than the 0.5 which means that all the variables correlate well with each other. To examine the discriminant validity of factors, we compared the square root of AVE against the inter-construct correlations coefficients. All of the square root of AVE values are greater than the correlation coefficients.

Table 3: Correlation analysis between the variables.

	MSV	MaxR(H)	CI	PE	EE	SO	FC	HM	PV	HB	SI	IQ
CI	0.372	0.852	0.762									
PE	0.138	0.916	0.371	0.853								
EE	0.324	0.784	0.474	0.303	0.679							
SO	0.235	0.824	0.485	0.275	0.469	0.741						
FC	0.278	0.745	0.387	0.280	0.425	0.320	0.770					
HM	0.099	0.754	0.265	0.055	0.274	0.259	0.295	0.709				
PV	0.233	0.874	0.483	0.169	0.380	0.415	0.203	0.305	0.788			
HB	0.366	0.908	0.565	0.301	0.569	0.408	0.413	0.272	0.407	0.836		
SI	0.372	0.875	0.610	0.285	0.567	0.407	0.527	0.315	0.426	0.605	0.764	
IQ	0.092	0.800	0.153	0.270	0.189	0.238	0.303	0.109	0.253	0.190	0.158	0.691

As we can see from Table 3, MSV values of each scale are smaller than the AVE values. Moreover, it is obvious that all the square root of AVE values are in the range of 0.679 to 0.853 and are higher than the squared correlation coefficients range from 0.109 to 0.610. The “equivalent meaning of that is square root of AVE greater than inter-construct correlations. Therefore, it ensures the discriminant validity among constructs.

5.2. Structural Model

Structural Equation Model includes many application such as path analysis, confirmatory factor analysis, regression model, covariance structure model, correlation structure model. Firstly, it is need to check the model’s goodness-of-fit for the variables. After running the SEM with model, the results show that data fit model well with Chi – square = 1042.858; df = 528, p=0.000; Chi – square/df = 1.975; TLI = 0.903; CFI = 0.914; RMSEA = 0.043,IFI = .915. Thus, model fit is well satisfied.

Table 4. Regression Weights

		Estimate	S.E.	C.R.	Beta	P	Decision
H1	IQ -->PE	0.641	0.136	4.717	0.310	***	Accepted
H2	IQ --> EE	0.263	0.073	3.582	0.258	***	Accepted
H3	IQ --> CI	-0.094	0.070	-1.341	-0.087	0.18	ejected
H4	PE --> CI	0.093	0.027	3.438	0.178	***	Accepted
H5	EE -> CI	0.039	0.057	0.688	0.037	0.492	Rejected
H6	SO --> CI	0.139	0.052	2.707	0.172	0.007	Accepted
H7	FC --> CI	0.037	0.066	0.552	0.040	0.581	Rejected
H8	HM --> CI	0.005	0.044	0.112	0.007	0.911	Rejected
H9	PV--> CI	0.151	0.052	2.891	0.201	0.004	Accepted
H10	HB --> CI	0.167	0.058	2.869	0.194	0.004	Accepted
H11	SI --> CI	0.257	0.070	3.656	0.289	***	Accepted

According to the SEM result, information quality has a positive influence on performance expectancy with $\beta = 0.31$, and the $p = 0.000$ and effort expectancy with $\beta = 0.258$, and the $p = 0.000$. Thus, the hypothesis H1 and H2 are accepted. Additionally, as indicated in the table 4, performance expectancy, social influence, price value, habit and situational influence have a significantly positive influence on continuous use intention of consumers with the β value at 0.178, 0.172, 0.201, 0.194, 0.289 and respectively. Therefore, Hypothesis H4, H6, H9, H10 and H11 are supported. Likewise, information quality ($\beta = -0.087$, $p = 0.18$), effort expectancy ($\beta = 0.037$, $p = 0.492$), facilitating conditions ($\beta = 0.04$, $p = 0.581$), and hedonic motivation ($\beta = 0.007$, $p = 0.911$), are not found a critical influence on continuous use intention of consumers. Hence, H3, H5, H7, and H8 are rejected.

5.3. Multi Mediating Effect

According to the SEM result, information quality has a positive influence on performance expectancy, effort expectancy and continuous use intention. The indirect effects of information quality on continuous use intention via performance expectancy has a significant influence with $\beta = 0.178$. Therefore, H12 is supported. The indirect effects of information quality on continuous use intention via effort expectancy has not found a critical influence with $\beta = 0.037$, thus H13 is rejected.

Hypotheses	Total Effect	Direct Effect	Indirect Effect	Decision
H12: IQ -> PE -> CI	-	-	0.178	Accepted
H13: IQ -> EE -> CI	-	-	0.037	Rejected

6. CONCLUSIONS

6.1. Conclusion

The research focuses on the study about the main factors influencing continuous use intention for food delivery application in a time of Covid-19 pandemic. From the data, the results prove that performance expectancy, social influence, price value, habit and situational influence have a positive affected on the continuous use intention of consumers. Moreover,

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performance expectancy is the mediating variable of information quality performance expectancy and the intention to continuous using of consumers. So that, the continuous intention to order food by using an applications not only depends on the performance expectancy, social influence, price value, habit and situational influence but also the user's perceived information quality.

The finding shows that the critical factor with the intention to continuous using food delivery applications is performance expectancy and information quality plays a determinant role in increasing the influence of performance expectancy. Providing accurate and believable information via a food application make consumers feel confident with applications. When the right level of detail and perceive the benefits of an application, consumers increase continuous intention. As a result, food delivery applications need to present the information in an appropriate format and familiar with the customers (Okumus et al., 2018). Without applications, consumers need to take a long time to find out the food, find out the food online store, compare the price, etc. However, with applications, consumers can save time, increase the speed of conducting a transaction; take care of an order, and the diversity of purchase opportunities. Therefore, by recognize the useful of food delivery applications in the daily life; customers have more intention to use those applications. Besides that, the influence of socialization also effects intention of consumer. The review, recommendation and evaluation from important people liked peer, family, or others people in the food delivery applications is very helpful and influence intention of consumers. Hence, food delivery applications should focus on this part to increase the continuous intention to use applications. On the other hand, this finding contrasts with those of Suk Won Lee et al. (2019) and mentions that the perceive of price value also affect the consumer intention.

In Vietnam, food delivery applications are so new and just recently developed so they use many promotions to encourage customers to use food delivery applications. As the results, consumers can save their money via food delivery applications for purchasing foods by comparing the prices offered by different online stores or buying direction in the food stores. Consumers like to seek for cheap deals or special promotions at different online stores when I purchase foods through food delivery application. Next, with the convention of food delivery application, those become the habit of many consumers. Customers always use food delivery application for purchasing food. Consumers are addicted to using food delivery application and those become natural to consumers. Especially, the finding shows that the critical factor with the strongest affected on the intention to continuous using food delivery applications is situational influences.

This study is among the first attempts to examine the impact of the Covid-19 pandemic on consumer continuous intention to use food delivery applications. A reason for that is the anxiety of consumers about the Covid-19 pandemic situation. It should be mentioned that the effect of the Covid-19 outburst associated with the closure of food stores, health risks, shopping trend, and additional marketing efforts and promotion from food delivery application during the pandemic. During the Covid-19 pandemic, people are encouraged to stay home to protect yourselves and your community (Hoang Viet Nguyen et al., 2020). There are critical health ventures associated with going to physical food stores during the Covid-19 pandemic. Besides that, many physical food stores are closed and switched to sell take away during the Covid-19 pandemic. Additional, food delivery application offer more sales promotions during the Covid-19 pandemic. Therefore, using food delivery application is a trend during the Covid-19 pandemic. So, food stores should not only sell physical but also extend their product via food delivery application. Likewise, food delivery application should pay more attention on

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marketing and promotion to increase the ability to reach potential customers. All these factors advance consumer likelihood to buy foods through delivery application.

Otherwise, the finding reveals that effort expectancy, facilitating conditions, and hedonic motivation are not crucial factors determining the continuous intention of using delivery application. With the development of technology, smartphone and information and communication technology are become similar to consumers but it does not mean that the implementation in food delivery application is easy to use for consumers (Suk Won Lee et al., 2019). With the large amount of information, the food delivery application makes consumers confuse and face many difficulties in using them. The result mentions that the effect of hedonic motivation on consumer intention is positive but insignificant. Ordering food through photos is not as exciting as going directly to the store to see and smell it. Additionally, with a short time in ordering food make the consumer less enjoyment. Moreover, information quality does not have a direct influence on consumer intention. It means that the propriety and preciseness of information has no affect if consumers are not perceived their usefulness.

The objective of this study is to investigate the determinants of consumer continuous intention to use food delivery application and the degree of effect of each determinant. This is also the first study to investigate the impact of the Covid-19 pandemic in Vietnamese sampling context. This study contributes to theory by constructing a conceptual framework that integrates various constructs in performance expectancy, social influence, price value, habit and situational influence to predict the continuous use intention of consumers. Moreover, performance expectancy is the mediating variable of information quality performance expectancy and the intention to continuous using of consumers. The empirical analysis reveals that the extended UTAUT2 model augmented with information quality can explain consumers' intentions to continually order their food via delivery application. Thus, it has enriched the body of literature and empirical studies in the topic.

In practical, it is essential to know the significant of factors like as performance expectancy, social influence, price value, habit and situational influence to effect continuous use intention of consumers on food delivery application. Furthermore, performance expectancy is the mediating variable of information quality performance expectancy and the intention to continuous using of consumers. Providing accurate and believable information advances performance expectancy of consumer. When the right level of detail and perceive the benefits of an application, consumers increase continuous intention. As a result, food delivery application should be providing information in suitable way to accordance with the needs of users. To do this, delivery applications operators and the food suppliers need to have a strong linkage with each other to ensure the exactly and promptly of information. Food supplier must update menus, prices and promotions information to remove consumer discomfort. Furthermore, delivery applications operators can reduce user dissatisfaction and complaints by enhance users trust through regularly updated the information and presenting exactly of information in detail. With the large number of information and data, food application design need to pay attention in the arrangement and performance of information. They can arrangement based on the kind of foods, preferred menu, old orders or high rankings to make it useful for users. Additionally, to increase performance expectancy, food application should provide users many different kinds of foods.

Comparison of foods between stores should be conveniently facilitated to accelerate user decision-making. To reduce users from converting to another one, food delivery application need to provide various benefits to users. Consumers like to seek for cheap deals or special promotions from different online stores when purchasing foods via food delivery application.

Consumers can save money by using food delivery application for purchasing foods by comparing the prices from different online stores. Therefore, food delivery application need to do many advertisings and sales promotions like flash deals, special price, combo sales, coupons and free shipping to attract attention of the consumers.

In additionally, the influence of socialization also effects intention of consumer. User are affected by social liked peers, family, or reviewers when deciding to using application. Hence, food delivery application should focus on word-of-mouth marketing and increase ranking to enhance the continuous intention to use application. From the data, the results prove that the Covid-19 pandemic have a positive affected on the continuous use intention of consumers on food delivery application. Because of the scare of the Covid-19 pandemic, food stores need to switch to sell take away and expand their products on food delivery application. Food delivery applications are more influenced by the positive intentions to use and pleasant emotions. Besides, marketing programs should emphasize that food delivery is safe for consumers' health in the Covid-19 pandemic need to be deployment.

6.2. Limitations and Future Research

Several limitations are presented in this study. More research should be conducted in the future to expand or validate the findings in this study. First, the data are collected in Ho Chi Minh City by convenience method so our data may content a bias. Thus the result could not be generalized to the whole population of Vietnamese. Therefore, future research should be conduct with a bigger sample size to increase the overall natural of the results. Secondly, the study uses an online survey method which tends to easier approach younger consumer and knowledgeable people. To reduce the bias in participants, future researches should use and combine with other types of data collection methods to reduce the biases. Furthermore, future research can broad this study by containing more potential determinants of consumer continuous intention on food delivery application like personal, local attributes and cultural values. Finally, future research can be analyzed the differences between the time during the pandemic and others.

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ONLINE BRAND EXPERIENCE: CREATING COMMUNITY ENGAGEMENT AND PERCEIVED TRUST TO ENHANCE CUSTOMER'S INTENTION FORWARD ONLINE BRAND GENERATED CONTENT

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ABSTRACT

Given the profound technological change in the fast food industry, this study explores the mediating roles of online brand community engagement (OBCE) and perceived trust of Facebook community page (PTCP) in the relationship between customer online brand experience (COBE) and intention to forward online brand generated content (IFBC). Adopting the conceptual framework of Yasin et al. (2020) and using a sample of 553 Vietnamese online customers from Facebook network, this study finds a sustainable positive effect of OBCE and PTCP on the relationship between COBE and IFBC. Accordingly, this study discusses relevant managerial implications for brand managers in the fast food industry.

Keywords: Online brand community engagement, perceived trust, customer online brand experience, Facebook, fast food industry

JEL Classification: O30

1. INTRODUCTION

Advance in technology and industrialization makes consumers more interested in fast foods in Vietnam as customers have less time for having a meal while handling a huge amount of daily routines. We have witnessed amazing growth of fast food industry lately, especially in urban areas. KFC, Lotteria, and Mc Donald's are top brands in the fast food industry in Vietnam. There are fierce competitions among them not only on each outlet but also on forums about food and social networks such as Facebook, where customers give comments and personal opinions about their beloved brands. In addition, the global pandemic (e.g., Covid-19) has also triggered a sudden increase in using online platforms by Vietnamese customers for eating, entertaining, and obtaining travelling information (NielsenVietnam, 2020). Customers have now adopted many food applications and social networking sites (e.g., Facebook) to order foods online, which is more convenient and time-saving. For example, 85% of Vietnam customers use electronic devices with internet connection while more than one-third of its population are active social networkers (eMarketer, 2016). This practice challenges brand managers to adapt online platforms effectively to interact and improve customer online experience. Customer online brand experience (COBE) plays an important role in business activities as COBE is the key to winning the hearts and minds of customers (Bilgihan, 2016). Yu *et al.* (2020) indicated that the consistency of brand experience can improve customer's beliefs across online environment and generate positive responses from customer sensations, feelings, cognitions, and behaviors. For example, 506 million consumers do online shopping through cell phones in China's fast food industry after they receive positive online interactions and review (Akram *et al.*, 2020).

Given the increasingly crucial role of social online platforms in the fast food industry, this study investigates how COBE and online brand community engagement (OBCE) and perceived trust of Facebook community page (PTCP) engage, if at all, in affecting online brand generated content (IFBC). In exploring this relationship, we adapt the logic of Yasin et al. (2020) by examining the impact of COBE on OBCE and PTCP and then assessing the impact of COBE and PTCP on IFBC. In summary, we present a framework that synthesizes the knowledge of online brand experience and brand literature to understand the path to IFBC in the context of Vietnam's (an emerging economy) fast food industry.

2. THEORY AND HYPOTHESIS

2.1. Customer online brand experience (COBE)

COBE refers to the experience derived from online stimuli (Simon *et al.*, 2013) and generated by various online touch points, including brand websites or social media pages. For example, brand websites or social media pages (Facebook) are powerful tools to create an online brand experience which helps to create customer relationships, acting as alternatives to real experience. COBE is formed by the page design and contents, and the ease of use while OBCE is measured by some factors such as the time that a customer is willing to visit, the way he is satisfied with using the page, and the frequency of thinking about the page occurs (Yasin *et al.*, 2020). When a customer has a satisfactory experience with the brand's online platforms, he or she will be more engaged with the brand's online community (Yasin *et al.*, 2020). This suggests that COBE brings positive reactions because consumers are likely to feel more comfortable in searching and reaching product and service information (Martínez-López *et al.*, 2017, Tran and Huang, 2018). Also, it is necessary to point out that if customers are not satisfied with online brand experience, they may have negative reactions to the brand and the community page. It will be troublesome in case someone leaves negative comments on the page, as his feedback will go viral quickly on online environment (Tran and Huang, 2018). Therefore, it is important for the fast food restaurants to allocate their efforts in improving the customer experience to safeguard engagement with the brand's online community. As such, the hypothesis is shown below,

H1: COBE has a positive impact on online brand community engagement

Perceived trust of Facebook community page (PTCP) is measured by the information quality from the online members being perceived authentically and reliably (Hsu *et al.*, 2016). According to Akkucuk and Turan (2015), if we can maintain customers' trust of the brand community page, we can increase potential for purchase intention and gain market share. Thus, gaining PTCP is also crucial to business operations. When customers have good online brand experience, they will put more trust on the page (Martínez-López *et al.*, 2017, Tran and Huang, 2018) because customers can get up-to-date information, interested in the photos and writing content, and feel satisfied with the page. Therefore,

H2: COBE has a positive impact on PTCP.

2.2. Online brand community engagement

OBCE describes the interaction among consumer and brand, which closely links the buyer and seller via sharing and liking contents (Yuan *et al.*, 2020). This pertains to the indication of community members that are willing to share information, loving and being

enthusiastic towards the brand (Le *et al.*, 2018). As such, social networks (Facebook) will encourage customers to have discussions or conversations with employees to create a strong level of consumer interaction thereby reinforcing the online brand experience (Chan, 2016). In addition, engaged customers can contribute significantly in improving business performance by propagating the brand identity to a more inclusive customers (Brodie *et al.*, 2011). Companies usually put much effort on engaging customers with community pages to influence them not only in making purchasing decisions, but also in encouraging them to forward the page content to make their brand more popular. Yasin *et al.* (2020) indicate that intention to forward online brand generated content (IFBC) is often measured by customers' willingness to share information on the Facebook fan page and their keenness to recommend other people to share the information, which can be photos, stories, songs, trending news, and funny quotes. IFBC contains the action of sharing contents of page when consumers feel that they have a certain interest in a brand, from these actions the consumers help to spread the brand information online (see Fig. 1). A good brand experience will encourage consumers to keep loyalty to the brand and ready to share company-generated online content. When they believe that the content is useful and trustworthy, they are pleased and proud to forward the information to their connections. Therefore, we assume that OBCE will exerts its positive effects on IFBC that encourages consumers to share posts, thereby becoming one of the effective ways to make the fan page and brand go viral.

H3: *OBCE has a positive impact on IFBC.*

2.3. Perceived trust of Facebook community page

Content posted on brand community pages should be trustworthy and accurate, which is an indispensable element in building relationships with customers through online channels. Reliable online brand community pages will help companies to win their customers' trust as it plays the main role for the successful outcome of a branding campaign (Lee *et al.*, 2014). The trust of customers in the online brand community will help to increase their intention to purchase from which to increase the company's market share (Adjei *et al.*, 2010). As a matter of fact, customers usually have an initial trust in brand generated content because their knowledge and information about the brand is limited, while companies own all the brand's information. However, customers also believe that companies can manage the released information by emphasizing the positive aspects of the brand while hiding its imperfections. Thus, the companies should prove that they are presenting balanced and reliable information. Gaining customers' trust need a certain time and commitment. The fast food restaurants need to be truthful when communicating their brand identity by providing full and trustworthy information (Namin, 2017). Then the customers feel comfortable and confident to share the information of the page to other pages and communities. Moreover, they are also willing to recommend other people to share the information of the page. In fact, sharing information is a popular habit of Facebook users. The most important thing is that the shared information should be trustworthy and from authentic sources. Therefore, we assume that PTCP has a positive impact on IFBC as brand managers should pay much attention to the quality and authenticity of their posts if they want to encourage people to forward the information to other pages and platforms. Thus:

H4: *PTCP has a positive impact on IFBC.*

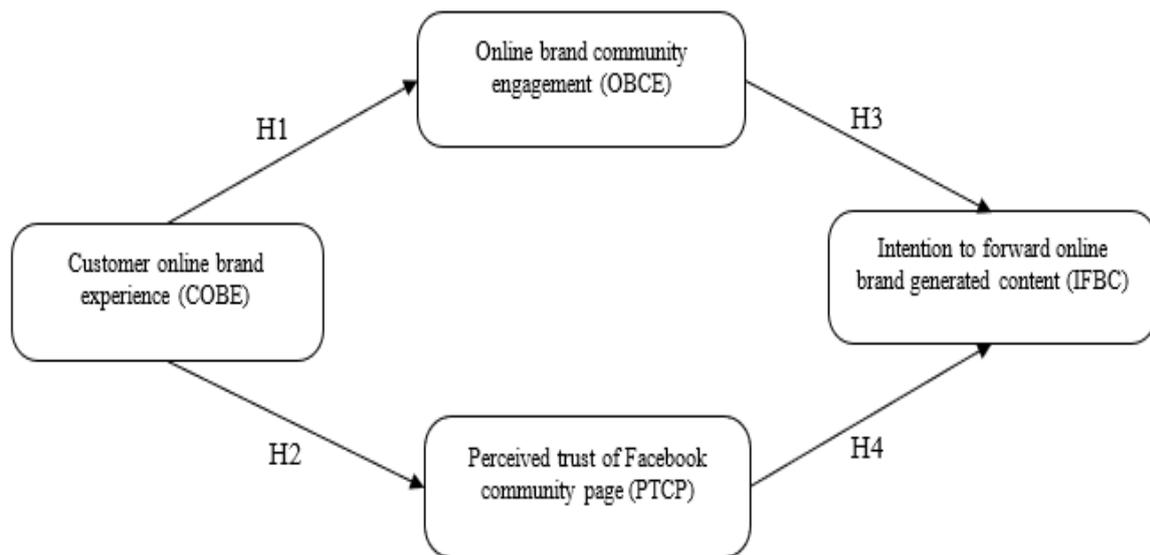


Figure. 1. Research model

3 METHOD

3.1. Data collection and sampling

The sample consists of 553 online customers in Ho Chi Minh city who had at least one social network account (e.g., Facebook) and followed/liked at least one credited Facebook fan page of one fast food restaurant. The reason of this sampling strategy is because Ho Chi Minh is considered as the center of food service industry in Vietnam, thereby providing great potentials for brand managers to enhance customer online brand experience. We administered the survey by using online questionnaire due to the social distancing caused by the Covid-19 pandemic.

There were more female (61.7%) taking part in this survey than male (38.3%). With regards to ages, respondents from 20 years old and below occupied about 48.8%, following by the group of age at 21-30 (37.1%). This means that young people account for main portion of respondents. In terms of educational level, 11.6% of respondents held a college degree and below, 71.1% held a bachelor's degree, and 17.4% held a master's degree and above. In addition, the basic monthly income levels of the respondents were 15 million dong and below (52.6%), 15 to 20 million dong (12.5%), 20 to 25 million dong (14.1%), and over 25 million dong (20.9%). Finally, it is noticed that 30.4% of respondents spend 1 to 2 hours per day using Facebook, while 28.4% of them spend over 4 hours and 23.1% of them spend 2 to 4 hours daily for Facebook. Table 1 describes the details of sample characteristics.

Table 1. Demographic information (n=553).

Items	Categories	Frequency	Percent
Gender	Male	212	38.3
	Female	341	61.7
Age	20 years old and below	270	48.8
	21-30 years old	205	37.1
	31-40 years old	58	10.5
	41-50 years old	11	2.0
	Above 50 years old	9	1.6
Education	College and below	64	11.6
	Bachelor	393	71.1
	Master or above	96	17.4
Monthly income in Vietnamese Dong	15 million and below	291	52.6
	15-20 million	69	12.5
	20-25 million	78	14.1
	25-30 million	49	8.9
	30-35 million	22	4.0
	Above 35 million	44	8.0
Average time using Facebook per day (hours)	0-0.5	39	7.1
	0.5-1	61	11.0
	1-2	168	30.4
	2-4	128	23.1
	Above 4	157	28.4

3.2. Measures

As most constructs in our study have been validated in the existing literature, we adapted them to our research context. To ensure content validity, we submitted the adapted items to a panel of two professors who are recognized authorities on marketing strategy and brand management. We pretested the questionnaire with 30 online customers in the fast food industry and recorded their responses on a 7-point Likert scale. Table 2 provides the measured items with their sources.

4. RESULT

4.1. Measurement quality

First, we measure the reliability and validity of the variable. As shown in Table 2, the value of α , Composite Reliability, and average variance extracted of all research constructs were above the thresholds of 0.70, 0.70, and 0.50 respectively (Hair *et al.*, 2011). The factor loading ranging from 0.81 to 0.91 was also higher than the cut-off of 0.70 (Hair *et al.*, 2011). As a result, there is a strong support for convergent validity and consistency reliability in this study. The result of Fornell- Larcker criterion in Table 3 indicates that the square root of the AVEs of their constructs was higher than that of other constructs' correlations (Hair *et al.*, 2011), confirming discriminant validity. Furthermore, the mean value of OBCE is 5.28, which is the greatest among the 4 variables ($5.28 > 5.08 > 5.06 > 4.99$), depicting the importance of experience online in online environment.

Table 2. Measured items

Constructs and items	
Customer online brand experience (COBE) (Morgan-Thomas and Veloutsou, 2013)	
COBE1	The layout of the page is attractive.
COBE2	It is easy to find the restaurant's page.
COBE3	Results are always returned quickly when browsing the restaurant's page.
COBE4	Information on the page is always updated.
COBE5	Results are always returned accurately when browsing the restaurant's page.
Online brand community engagement with customers (OBCE) (Hollebeek <i>et al.</i> , 2014)	
OBCE1	Using (OBC on Facebook) makes me think more about fast food restaurants.
OBCE2	I think about OBC on Facebook more when using these restaurants.
OBCE3	The OBC on Facebook stimulates me to learn more about fast food restaurants.
OBCE4	I enjoy using OBC on Facebook
OBCE5	Using OBC on Facebook makes me feel happy.
OBCE6	I feel good when using OBC on Facebook.
OBCE7	I feel proud to participate in the online brand community on Facebook.
OBCE8	I spend a lot of time with these communities and comparing with other online brand communities.
Perceived trust of Facebook community page (PTCP) (Yasin <i>et al.</i> , 2020)	
PTCP1	There are differences of information from members of Facebook fan page.
PTCP2	Information from members of Facebook fan page is authentic.
PTCP3	Information from members of Facebook fan page is reliable.
PTCP4	I trust the quality of information from members of the fan page.
Intention to forward online brand generated content (IFBC) (Yasin <i>et al.</i> , 2020)	
IFBC1	I will continue sharing the information posted on the Facebook fan page of fast food restaurants.
IFBC2	I intend to start or continue sharing the information posted on the Facebook fan page of fast food restaurants.
IFBC3	I will often share the information posted on the Facebook fan page of fast food restaurants.
IFBC4	I will recommend to other people to share the information posted on the Facebook fan page of fast food restaurants.

Table 3. Factor loading, AVE, and reliability

Variable	Item codes	Factor loading	Average variance extracted (AVE)	Composite Reliability	α
COBE	COBE1	0.85	0.73	0.96	0.95
	COBE2	0.86			
	COBE3	0.87			
	COBE4	0.87			
	COBE5	0.88			
OBCE	OBCE1	0.84	0.78	0.93	0.90
	OBCE2	0.86			
	OBCE3	0.86			
	OBCE4	0.84			
	OBCE5	0.87			
	OBCE6	0.87			
	OBCE7	0.86			
	OBCE8	0.81			
PTCP	PTCP1	0.83	0.76	0.94	0.92
	PTCP2	0.89			
	PTCP3	0.89			
	PTCP4	0.89			
IFBC	IFBC1	0.89	0.81	0.95	0.92
	IFBC2	0.90			
	IFBC3	0.91			
	IFBC4	0.89			

Table 4. Descriptive statistics of the research constructs

Variable	Mean	SD	OBCE	PTCP	COBE	IFBC
OBCE	5.28	1.15	0.85			
PTCP	5.08	1.17	0.8169	0.88		
COBE	5.06	1.25	0.8163	0.7388	0.87	
IFBC	4.99	1.32	0.7763	0.7765	0.6479	0.90

4.2. Hypothesis testing results

We used PLS technique for data (Hair et al., 2011) by assessing the path significance at a 95% confidence interval or more via the PLS algorithm and bootstrap statistics. Table 5 provides hypothesis testing results. The model can explain 66.6% on OBCE (online brand community engagement), 54.6% on PTCP, 66.4% on IFBC. For H1, we hypothesize that customer online brand experience has a positive impact on online brand community engagement ($\beta = 0.819$, $t = 14.70$, $p = <.01$), which is accepted. For H2, we hypothesize that customer online brand experience has a positive impact on perceived trust of Facebook community page ($\beta = 0.739$, $t = 10.42$, $p = <.01$). For H3, we hypothesize that online brand community engagement has a positive impact on intention to forward online brand generated content ($\beta = 0.427$, $t = 2.58$, $p = <.01$). For H4, we hypothesize that perceived trust of Facebook community page has a positive impact on intention to forward online brand generated content ($\beta = 0.428$, $t = 2.42$, $p = <.05$).

Table 5. Summary of the hypothesis testing results

Paths	β	t-value	p-value
H1: COBE → OBCE	0.816	14.70	<.01
H2: COBE → PTCP	0.739	10.42	<.01
H3: OBCE → IFBC	0.427	2.58	<.01
H4: PTCP → IFBC	0.428	2.42	<.05
<i>R-squares</i>			
OBCE	66.6%		
PTCP	54.6%		
IFBC	66.4%		

5. CONCLUSIONS

The purpose of this current research is to explore the impact of customer online brand experience (COBE) on enhancing intention to forward online brand generated content (IFBC). The result reveals that perceived trust of Facebook community page (PTCP) and online brand community engagement (OBCE) are the intermediate factors between COBE and IFBC. The findings confirm that customer online brand experience has a positive impact on perceived trust of Facebook community page, and also has a positive impact on online brand community engagement, which in turn affects the intention to forward online brand generated content.

Theoretically, customer online brand experience is an important and essential factor for the development of online brand community (Yasin et al., 2020). It has a cohesive relationship with intention to forward online brand generated content. Because of its crucial role in today marketing activities, especially in digital marketing, customer online brand experience has been investigated in many earlier studies. In this study, however, the theory is applied in Vietnam – a developing country, and applied in a different field compared to previous studies, which is the fast food industry. The contribution of this study is to identify the factors related to customer online brand experience. In particular, customer online brand experience has a positive impact on perceived trust of Facebook community page and online brand community engagement (Morgan-Thomas and Veloutsou, 2013). In comparison with previous studies, we have added 5 dimensions in a process of online brand experience, namely sensory, affective, cognitive, relational and engagement. Actually, brand concept itself is quite complicated because it is a compound of various intangible and tangible elements. Therefore, online brand experience is even more complicated process that needs to be measured by different dimensions. This can be a principle that helps to build the online brand community in a right direction. Through the theoretical model, we want to explore the positive impact of 2 intermediate variables, called OBCE and PTCP on online brand community. Last, but not least, because online brand experience uses electronic devices to function as alternatives for real-life experience, it has limited stimuli. Thus, a combination of online experience and real-life experience will deliver best results.

For brand managers, our empirical findings suggest that COBE enables brand to enhance the effectiveness of customer online brand experience by developing more attractive page layout, ease to use, and especially quick searching functions when browsing the restaurant's page. It is agreed that photos and videos are more appealing than writing content only. Brand managers should also focus on the informativeness of the page to provide accurate information and support for online customers. Trending topics and up-to-date news will certainly get more

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attention from them. Besides, brand managers should understand their targeted customers so that they could create appropriate content that the customers are interested. With the findings, online brand community engagement appears to positively influence IFBC. We suggest brand managers can offer promotional or discount activities to encourage their customers to joining their online brand community. In addition, they can organize mini games or quizzes to motivate customers to like, comment and share the post, which will significantly increase the interaction and engagement of the page. Also, a small gift or discount voucher with nice wishes on special days (such as customers' birthday) can contribute surprisingly results. This will bring lots of excitement to customers that stimulate them to learn more about the restaurants, making them feel prouder and happier in life. Besides, we recommend that the pages' managers should pay more attention on building qualified content to gain customers' trust, from which customers will have positive attitudes towards the brands. Specifically, qualified content is not only useful, up-to-date and accurate but also traceable information. For content that are copied from other sources, the reference should be stated clearly. Finally, this study has provided guidance by survey questions on which managers can base to build qualified online brand community pages.

Our study also remains some limitations. To reach our research goals, we mainly focus on Facebook community, leaving other social networks such as YouTube or Foody. Also, we set the research context in the fast food industry while other industries (e.g., fields cosmetics, fashion and supermarkets) are increasing the use of social media in their operations. Future study can consider comparing the consumer behavior and attitudes from different social media platforms and in different industries. In our study, although online brand experience can bring positive interactions between consumers and brand, this remains the absence of real-life experience. Therefore, online brand experience is needed to combine real-life brand experience and best results. Future studies on food should address the relationship between online experience and real-life experience. Lastly, with the limitation of time and resource, we have not evaluated the culture discrepancy of different areas, which may impact on customer's behaviors. However, it is agreed that for online shopping activities, customers in any culture share similar behaviors such as being influenced by online communities, need information and experience before making buying decision (customers will get reference and review about food, restaurants before they make the choice). This shortage will be explored in future studies.

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THE MOTIVATIONS BEHIND USING ONLINE SHOPPING CART ON SHOPEE

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ABSTRACT

The research paper explores "The motivations behind using online shopping cart on Shopee". This study collected data using online sampling, surveyed consumers using a Google form questionnaire and obtained 289 valid responses. The team used SPSS and SAS software to test proposed hypotheses and test their reliability with Cronbach's Alpha's scale. In addition to keeping goods (current shopping purposes), such assumptions which can affect the frequency of online shopping carts are: online pricing promotions, more data on certain items, shopping and entertainment organization. Based on research, it will help retailers, administrators to seriously consider solutions and fix gaps that make customers hesitate to buy, and promote what customers feel satisfied in the process of their shopping behavior. Above all, aiming for the end result is to increase the conversion rate from shopping to shopping with payments (window shopping- to - paying).

Keywords: Online shopping cart, put products, motivations

JEL Classification: O30

1. INTRODUCTION

According to the Vietnam Internet Association, when the Internet was officially published in 2003, the Internet usage rate accounted for 4% of the population. However, according to figures from the Vietnam Internet Centre, up to 1/5/2019, the level of Internet usage had reached 66%. Statista, the world's biggest online statistics database, estimated that E-commerce 's contribution to Vietnam 's overall retail market in 2017 was around 5.5% of Vietnam's total retail value, which is expected to reach 8.1% in 2020. In comparison, according to Statista, the overall sales of E-Commerce firms in Vietnam is US\$ 2.26 billion, expands almost 30% relative to 2017 and a number of customers on E-commerce pages have been recorded by Statistic: in 2017, 48.5 million people were customers on E-commerce pages, and after just two years, this amount exceeded 51.1 million people in 2019. This figure would undoubtedly have contributed considerable revenue to the e-commerce industry. Along with the growth of total revenue and the amount of customers in the industry, Vietnam also noted an increase in a number of online shopping participants. Specifically, the 2018 online shopping participants were 39.9 million, with an increase of 6.3 million compared to the year 2017. The survey of the involvement in e-commerce in the society published at Sach Trang in 2019 reveals that the proportion in Internet consumers participating in online shopping at least once a year has increased slightly from 67% in 2017 to 70% in 2018.

It is clear from the above figures that Ecommerce plays a key role today. The background has rapidly changed from the distribution of goods to customer behaviors. The Vietnamese customers are getting used to making online transactions, and online shopping has also become

a phenomenon for the Vietnamese. According to the latest Nielsen survey, up to 72% of Vietnamese customers believe that online shopping with virtual shopping carts is quite convenient compared to traditional shopping. Because of the explosion of online shopping, more and more problems come with it. That is the appearance of many e-commerce shopping channels, many products and services with many forms of counterfeit, fake, poor quality, misleading information services as well as other weaknesses in the management of consumer processes. That creates a feeling of hesitation before placing the items in the cart and paying for it. In reality, e-commerce, although very common, has not been clarified or completely developed in Vietnam. According to the latest Q & Me report, Shopee ranked No. 1 in the top of "Vietnam's most popular e-commerce sites" in 2018. Through the strategy Shopee is following, it can be seen that Shopee has success by continually developing its e-commerce channel closer to customers, such as the Baby Shark promotional advertisement on YouTube or the "Shopping Fair 4.0" and attractive support services. On the other hand, Shopee can not avoid the problems of consumer concerns as mentioned above. It can be seen that electronic shopping carts have had a great support for our online shopping process. Nevertheless, the issues and concerns listed above have partly made the potential exploitation of electronic carts not really effective. The research team then decided to select the shopping cart of e-commerce channel Shopee for analysis in order to support businesses evolve as a model and contribute the database to the Community Source.

Like traditional shopping carts that are real and directly provided to customers by retailers to assist them in storing items for immediate purchase, an electronic shopping cart is a virtual space that exists on Shopping websites and allows customers to store items for subsequent purchases during the shopping session. Here Shopee online shopping channel uses the term "your shopping cart" and it will keep a diary or history of what you want to buy previously or even track when you are interested in them. Unlike thegoididong.com, the website tends to automatically leave the cart empty when consumers close the browser, making consumers have to search the product information again on the next purchase. While the relatively practical reason for consumers to use a shopping cart is to keep items in their hands, the reason and motivation for placing products in an online shopping cart before being abandoned payment is still being investigated, although the use of online shopping carts by consumers is almost evident in all e-commerce transactions.

In 2019, the Baymark Research Institute reported that 69.57% of shopping carts have been abandoned and not finished worldwide. There is also another figure in Invesp's Infographics demonstrating the reason why consumers are quitting the shopping cart, such as: high delivery prices (44 per cent), not ready to spend (41 per cent), choose to hang on until the next order (24 per cent) and other reasons... For these reasons, it can be seen that if the customers actually put the items in the cart for the purpose of buying them, they will continue to the stage of payment, but in many cases they still want to place the items in the shopping cart with the desired search for some of incentives so they will not pay in the current shopping session. Therefore, in order to attract customers, retailers need to deeply understand the motivations behind online shopping carts to improve and develop their virtual shopping cart to satisfy consumer demands, and if they use the cart, they always intend to buy and pay for it immediately in that shopping session. Although there have been several hypotheses and study models around the world explaining the factors influencing online shopping motivation behind virtual shopping carts, there have been few studies answering questions regarding the main factors that influence this online shopping intent in our country. While managers suppose that their clients use the shopping cart as a storage space before buying an item online, we see many factors that inspire shoppers to use the electronic shopping cart. Moreover, due to unique

economic, cultural and social circumstances, the adaptation of a hypothetical model in the world to the situation in Vietnam might not be appropriate. As a consequence, the implementation of a research model is focused on domestic and international research papers to create a model appropriate to Vietnam's circumstances, offering solutions to encourage buyers using the Web to buy products online, and boosting retail sales is essential.

Therefore, we want to carry out a research project with the topic: "THE MOTIVATIONS BEHIND USING ONLINE SHOPPING CART ON SHOPEE" to offer solutions to help Shopee overcome gaps in the aspects of making customers unwilling to buy, and promoting the things, the preferences that customers feel satisfied in the process of customer shopping behavior. The main goal of this article is to explore the motivation behind placing products in virtual carts on Shopee's online shopping platforms. And from thence, it provides a model of theory, in particular the motivation of online shoppers to put products in an electronic shopping cart, based on an analysis of the frequency of the usage of virtual shopping carts, to see the interaction between online cart use and buying online. This model helps not only Shopee but also other online shopping channels to design an online shopping cart that is suitable for Vietnamese consumer behavior.

The article "THE MOTIVATION BEHIND USING ONLINE SHOPPING CART ON SHOPEE" answers the following questions:

- What factors motivate customers to use the online shopping cart on the online shopping channel Shopee?
- So much do these considerations affect consumers' usage of electronic shopping carts on online shopping channels?
- Through these effects, providing suggestions and steps to create an electronic shopping cart to satisfy the needs of consumers.

2. LITERATURE REVIEW

Consumer approval of electronic shopping is a requirement for online shopping cart adoption. Beyond accessibility and ease of use (Ha and Stoel, 2009), consumer attitudes, perceived congruity of e-commerce websites (Wang, Beatty, and Mothersbaugh, 2009) and website personalities (Poddar, Donthu, and Wei, 2009) are crucial reasons to embrace online shopping. E-commerce, marketing and retail literature often consider hedonic and practical reasons for online shopping and buying (Arnold and Reynolds, 2003; Bridges and Florsheim, 2008). Similarly, there are practical and hedonic factors for using the Internet, such as interpersonal use, search for information, convenience, and entertainment (Papacharissi and Rubin, 2000). Many of these explanations may also apply to more complex activity in online carts. This will explain what causes users to use their carts by using practical and hedonic influences, both for internet usage as well as online shopping. Utilitarian considerations are a specific evaluation of practical benefits and sacrifices (Overby and Lee 2006). Utilized Internet shopping motivations can include purchasing online shopping wishes and financial incentives for discounts by online deals. Similarly, utilities can be targeted and task-oriented with the virtual use of carts, since electronic shopping carts are naturally a housing stock before purchase. It helps put the items in the cart to buy or save money and time online instead of walking in a retail shop. Hedonic shopping motivations are defined by the shopper's judgment of the experience based on fun and enjoyment of the shopping experience (Babin, Darden, and Griffin, 1994). A type of entertainment shopping recognizes that shoppers are finding sensory

pleasure when shopping for escape, relaxation, and adventure. Gratification shopping also helps shoppers resolve poor moods, alleviate pain, or engage in self-giving or personal indulgence. Idea shopping means searching to discover the newest fashions, and trends — usually to collect knowledge rather than just items. Last but not least, worth shopping involves the excitement and benefits of having a deal and purchasing a good on sale (Arnold and Reynolds, 2003). To further it down, the theory in this research will be explained further and divided per variable that the author used:

Shopping and current online purchase intent

Purchasing intent is a state of consciousness that is reflected in the purchase plan of the consumer for a specified time period (Howard and Sheth, 1969). Applying consumer behavior to online shopping transactions plays a huge role in showing the implications of customer behavior about how to use online shopping carts and what habits they follow. From this research, the intention of purchasing is understood as the purpose of the consumer to utilize the virtual shopping cart as a place to store items before the completion of the payment. In particular, the use of online shopping carts is like consumers choosing products on shelves and putting them in payment baskets, which are usually found in shopping carts in supermarkets and shops. At this time, the online shopping cart has only one main function, namely the temporary storage place for goods to be paid or to complete the purchase procedure. The use of online shopping carts is because consumers had the intention of buying them when they put them in the cart. With this current purchase intention, increasing the frequency of consumers using a virtual shopping cart means completing the payment with an increasing purchase intention and increasing sales to retailers. Some businesses have taken advantage of online transactions instead of traditional sales to minimize shipping costs, space, facilities and reduce the distance between buyers and sellers.

Price promotions

Sellers cannot be sure that their website frequenters use their carts to purchase a product in that session, while, on the other hand, shopping carts are used for other reasons that make them search for online price promotions. For some consumers, buying value means seeking discounts (buy 1 get 1), sales (10% off for combos) , or hunting for price promotions (Arnold and Reynolds, 2003). Such price incentives enable consumers to save money and have better financial control and thus perform significantly positively correlated with Internet use (Charney and Greenberg, 2001; Flanagin and Metzger, 2001; Wolin and Korgaonkar, 2003). According to the research by Kukar-Kinney & Close, 2010, the use of price promotion carts involves the level to which shoppers use electronic shopping carts in order to hunt or take advantage of retail offers that minimize purchasing cost, such as sales, discounts and freeship. Discounting the item over a certain period of time or providing a more favorable price type when entering a code that motivates the consumers to decide to put the item in their cart. Furthermore, online shoppers expect to receive better prices from online e-tailers than from offline retailers. (Maxwell and Maxwell, 2001); At the same time, consumers also use shopping carts to be able to compare prices in different stores, which drives more use of online shopping carts. Online sellers can take advantage of this to refer to the competitor's advantages on promotional products, promotions. However, surcharges such as delivery or storage charges also allow a customer to focus on the order (Lueker, 2003; Magill, 2005). So, free shipment and refunds at no additional cost are another price-related promotion. In addition , online price promotions make a good first impression on the consumer experience when shopping at the web (Menon and Kahn, 2002). Summary, online price promotions motivate placing items in virtual cart and should thus increase frequency of using the shopping cart.

Entertainment purpose

Entertainment is an essential need to respond to the needs of human development mentally and physically. In today's Vietnamese society, the higher the need for quality of life and work is accompanied by great pressure, the need for entertainment becomes more important. According to a survey by Criteo (2017), a unit in the commercial marketing field, shopping is the most common way to kill time when users are free. According to the same survey, up to 60% of respondents say they kill their free time online by online shopping. The reason for choosing this entertainment method is the accessibility, convenience and deals that online shopping has brought. Entertainment is a type of constitutive, offering user pleasure when shopping online (Lin, 1999, Luo, 2002; Wolfenbarger and Gilly, 2001), giving consumers a way to avoid their boredom, obtain amusement and experience enjoyment (Wolfenbarger and Gilly, 2001). Entertainment is a form of constitutive, giving consumer satisfaction while shopping online (Lin, 1999, Luo, 2002; Wolfenbarger and Gilly, 2001), giving consumers a way to escape from their boredom, gain entertainment and experience the satisfaction of it (Wolfenbarger and Gilly, 2001). A positive relationship among virtual carts that are used for entertainment purposes and the consequent is cart abandon. Entertainment increases consumer satisfaction and gives them a positive attitude about the website (Luo, 2002). More specifically, if you use a website that helps online shoppers release their boredom and give them a higher level of entertainment experience, the overall online experience will be considered more effective (Luo, 2002). Entertainment fulfills the needs of consumers about aesthetic enjoyment and releasing their feelings, emotions (McQuail, 1987). Meanwhile, excitement and enjoyment are 2 aspects of online shopping that can help enhance marketing effectiveness even before using their carts (Menon and Kahn, 2002). An exciting online experience will enhance the joy then leads consumers to discover new products and makes them respond more quickly to promotional offers (Menon and Kahn, 2002). Because many shoppers often use the web for entertainment purposes (Mathwick 2001), some of them may find it very comfortable to do online shopping or put items in their shopping carts. For those who prefer to purchase online, but can not afford to buy or plan to buy at the moment, putting the items which they desire in their own online shopping cart will offer an fascinating alternative. Doing so, putting an item in a shopping cart seems to be more of an experience than just a means of shopping for a good or service (Wolfenbarger and Gilly, 2001). Therefore, the usage of the entertainment cart lets users find fun or actually get rid of boredom. That's why they'll use the cart more frequently, placing more things that they become more interested in the cart so they get more enjoyment.

Online shopping carts as a shopping organization tool

During the shopping process, the shopping cart is a powerful aid to help us save the desired products in the present or in the future. Based on the unique shopping style of a part of online customers in Vietnam that we have surveyed, it can be said that online shopping carts as a shopping organizational tool always exist and tend to increase to serve the needs of human use. Online shopping cart is considered to be a shopping organization tool that consumers use as a shopping cart instead of a shopping wish list, namely as a place to temporarily store or view important items of interest to buyers in the future. The nature of an online shopping cart is a place that displays the price of goods, colors , sizes and quantities, and allows customers to use it as an organizational tool in the shopping process. In addition to selling shopping carts, some online retailers, such as Amazon.com or Bestbuy.com, often have listings of products that might be of value to particular customers or appropriate goods as gifts. However, many e-tailers do not support this function, as consumers may have the hassle of moving items and cause hesitation during the final shopping session. Other consumers are interested in putting

this list of interesting items in this cart because it helps them narrow the range of products and does not distract them from alternative products. Finally, when some retailers offer fixed shopping carts (the shopping cart can not be empty when customers leave the shopping channel), buyers need only log in to own a personal shopping cart and free to place favorite items in a shopping cart, they will stay there without requiring consumers search again at the next login. These examples show that an online shopping cart is a shopping organizer. Moreover, the larger the organization uses the consumer cart, the more frequently products are placed online in the cart.

Shopping research and information search

Information is another important element in customers' choice to use the Internet (Luo, 2002). In addition to using the shopping cart as an organization intent, online shoppers may also use the cart for search purposes, such as a purposeful ongoing search (Bloch et al., 1986). A recent study shows that the ability to search easily is the primary motivation for online shopping. (Punjand and Moore, 2009). The reason for this is that consumers use the cart as a means of gathering information and as a shopping research tool. Specifically, in the online shopping cart of shopee, consumers can easily see the necessary information about the product such as product name, total amount, even the number of remaining products, distribution product types, promotions, and shipping rates for different stores. All information about the items that consumers are interested in are summarized and easy to see in their shopping cart, since this information will help them easily make purchasing decisions like when to buy, Should buy more money to get deals, you can choose to buy from which seller will bring the most benefits. This motivation therefore relates to the degree to which customers use the online shopping cart to collect and analyze information about items of interest in potential transactions. The greater the purpose to look for analysis and knowledge, the more frequent the shopping cart would be in general use.

Determinants of conversion rate from online shopping to online buying

Online purchases are determined when customers actually buy an item at the end of a shopping session and here is defined to increase the frequency of online purchases. This is the ultimate goal of online retailers. However, shopping for entertainment, finding or collecting product information on e-commerce sites does not necessarily lead to online purchases. So the motivations for online shopping and buying online are quite different. Similarly, the frequency of using shopping carts can be understood that customers are "shopping" online. They use shopping carts that may be used for shopping purposes and may also be used to take advantage of promotions, entertainment, search or product information, not purely for purchase purposes. Thus, the motivation to increase the frequency of use of shopping carts does not necessarily increase the frequency of use shopping online. According to the SaleCycle 2018 Report, the worldwide shopping cart abandonment rate is as high as 75%, in particular, the abandonment of shopping carts on e-commerce channels from Shopee is for many reasons such as high shipping costs, or no promotion. This is also a piece of concrete evidence showing the motivations that increase the frequency of shopping carts does not really increase the frequency of online shopping. About online shopping, the motivation for consumers to shop is that it is convenient instead of going to the store (Rohm and Swaminathan, 2004; Seiders et al . , 2000; Wolfenbarger and Gilly, 2001) and that retailers always create a pleasant and safe environment for attracting customers (Bridges and Florsheim, 2008). According to Bridges and Florsheim, in 2008, there is no evidence that pleasure factors influence online shopping instead of pragmatic factors that increase the rate of online shopping. The pragmatic factor here is when customers visit the shopping channel, they intend to buy and will definitely buy in that session.

This will contribute to a spike in the amount of internet transactions. In addition, retailers are asking consumers to place items in their shopping carts online and to complete the purchase, the more people they use the shopping cart, the more likely they are to purchase.

3. METHODOLOGY

3.1 Measurement scales

Table 1 presents measurement scale used for analysis, including: 3 items for Current purchase intent, 3 items for Take advantage of price promotion, 4 items for Entertainment purpose, 4 items for Organizational intent, 4 items for Research and information search, 1 item for Frequency of online shopping cart use , 3 items of Frequency of online buying.

Table 1. Measurement scale

Structure	Measurement scale items
Current purchase intent (YDMH)	
YDMH1	I shop online with intent to purchase during that session.
YDMH2	I place items in the online shopping cart with intent to purchase them immediately.
YDMH3	Of the times you visit Internet stores, what percentage of the times do you visit with an intention to buy immediately?
Take advantage of price promotion (KM)	
KM1	I place items in the shopping cart because they are on sale.
KM2	I place items in the cart because the Internet retailer offers free shipping.
KM3	I place items in the cart because there is a special promotion going on.
Entertainment purpose (GT)	
GT1	I select and place items in the shopping cart when I am bored.
GT2	I select and place items in the shopping cart to entertain myself.
GT3	I find placing items in the shopping cart enjoyable.
GT4	I select and place items in the shopping cart for fun.
Organizational intent (TCMS)	
TCMS1	I use the shopping cart as a “wishlist” for myself.
TCMS2	I place an item in the shopping cart so that next time I am at the website I do not have to search for it again.
TCMS3	I place items in the shopping cart so I can more easily evaluate a narrowed-down set of options.
TCMS4	I use the shopping cart to “bookmark” the items I like for a possible purchase in the future.
Research and information search(TT)	
TT1	I use the shopping cart as a form of information gathering.
TT2	I use the shopping cart to get more information on the product.
TT3	I use the shopping cart as a shopping research tool.
TT4	I place items in the cart because I am curious about the price.
Frequency of online shopping cart use (TSSD)	
TSSD1	Of the times you visit Internet stores, what percentage of the times do you place items in your online shopping cart (with or without buying)?
Frequency of online buying(TSMH)	
TSMH1	When I shop online, I usually buy something in the same Internet session.
TSMH2	Of the times you visit Internet stores, what percentage of the times do you actually buy something?
TSMH3	When I place an item in shopping cart, I usually buy it during the same Internet session.

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Except for some items of Current purchase intent, Frequency of online shopping cart use, Frequency of online buying were open-ended and could take values from 0-100%, all measures use Likert-type ratings ranging from “1= never” to “7= always”. The measure was developed by Near and Kukar-Kinney on the basis of the theoretical framework of Anderson and Gerbing, 1988.

3.2. Quantitative Approach

The survey includes a number of question groups. First, there are questions about individuals and demographics in the questionnaire. The question then concerns the usage of the Internet in general, as well as shopping habits and online shopping. Finally, there are questions about the purpose of online shopping.

This is a research analysed in Ho Chi Minh City, Vietnam. This research collects information from feedback from customers utilizing the Shopee e-commerce channel.

The research would choose an online survey tool for gathering data on the relationship with customers using electronic shopping carts for ordering and purchasing. Online and offline questionnaires were distributed to alumni of Ton Duc Thang University and employees working at the offices building in Ho Chi Minh City. As a result, all valid "n" responses were collected for analysis. SPSS and SAS are then used for data analysis and SEM is applied to test hypotheses.

After data collection, if the questionnaire's answer is the same for all questions or the questionnaire has 10% unanswered per all questions (Gilbert, 2004), it will be discarded. Then, applying the data to run the SPSS software using a statistical procedure that includes statistical analysis of sample description and reliability testing using the Cronbach's Alpha scale.

3.3. Pilot test

The pilot test was created to convert the original scale from previous research into an easy-to-understand scale for consumers using online shopping cart services. Before reaching the survey subjects, the questionnaire will be answered by 30 regular customers using online shopping services to check the feasibility, time, cost and issues relating to achieving successful results. The questionnaire is divided into two sections, focused on research concepts and related documents. Content involving demographic information of the consumer and psychological factors while using a shopping cart. Testing helps researchers to find the problems that arise during the survey that need to be addressed as ambiguous, confusing, and unclear. According to Johanson and Brooks (2010), the number of samples to be tested must be at least 30 samples for the preliminary assessment of the survey. All comments were collected to help authors update translations, refine query formats and complete this survey.

4. DATA

4.1. Overview of analytical sample survey results

Based on the requirements and research designs carried out in the previous chapters, we performed surveys of people using Shopee within 2 weeks. Once the analysis has been carried out, the findings of the 289/300 surveys (satisfactory to the total number of votes collected) are adequate to evaluate statistically relevant data on this study topic. Below are the comparative

graphs of respondents examined according to demographic information:

Based on a study of 289 samples, our results revealed very specific details of 69.65 % female, 29.06% male and 1.03% others. So that we can see why more female consumers are more involved in shopping online than males.

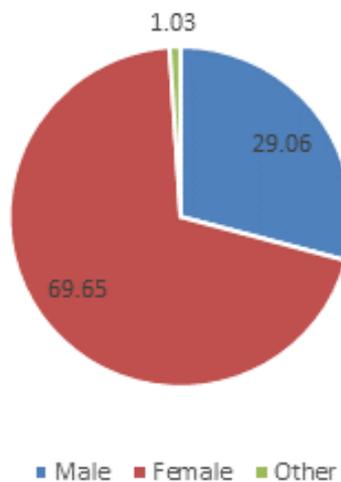


Figure 1. Gender demographic

Source: Own data group by surveying

The age demographic is 72% between the ages of 18-20, 23% between the ages of 21-30, while the rest is divided in negligible amounts as described in the graph. However, in Vietnam, people between the ages of 18 and 24 are the most regular shoppers, with 94% of people at this age able to pay money to purchase online (according to the Financial Magazine of October 2, 2018). Therefore, the data collected from the majority age in this study (18-30) will bring more realistic results for administrators.

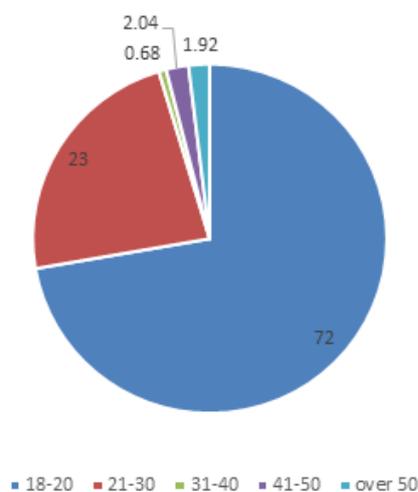


Figure 2. Age demographic

Source: Own data group by surveying

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According to statistics, the survey subjects at university and college level are the most dominant with 88%, high school accounting for 11% and the rest are at the graduate level.

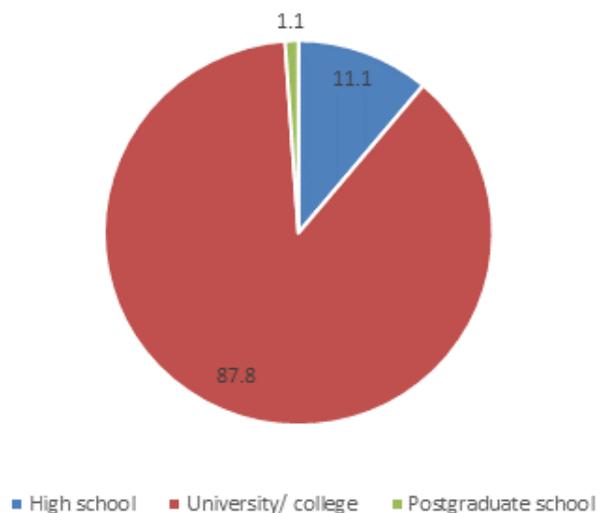


Figure 3. Literacy

Source: Own data group by surveying

Students accounted for the majority of our survey with 91% and 4% for office workers, 3% for housewives and 2% for teachers respectively. This also helps the group's survey to get the most realistic, intimate and objective results for Shopee shopping cart usage.

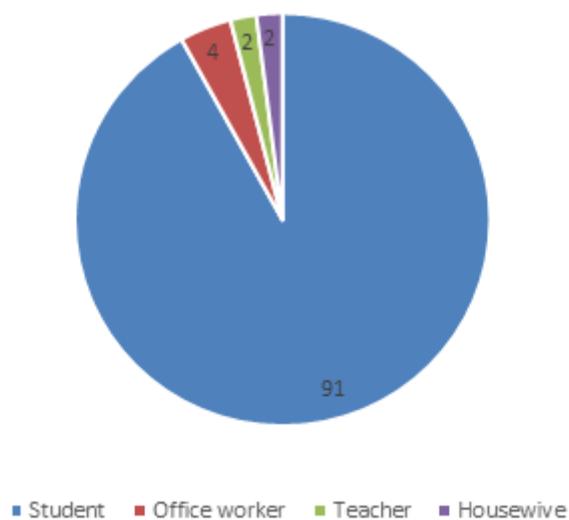


Figure 4. Job

Source: Own data group by surveying

According to statistics, income in the range of less than 5 million is the highest with 81.06%, from 5 to 10 million accounting for 11.41%, 4% under 20 million and 3% with the income of over 20 million.

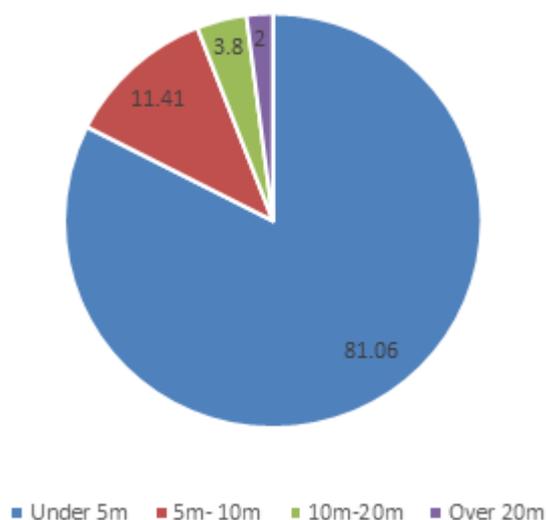


Figure 5. Average income

Source: Own data group by surveying

According to the survey, the duration of internet experience is from 5 to 10 years (67%). Under 5 years, it accounts for 16%, from 10 to 15 years it is 16%. Although the majority of the experience time ranges from 5 to 10 years on average, it also shows that the longer the experience, the more customers are interested in using an online shopping cart.

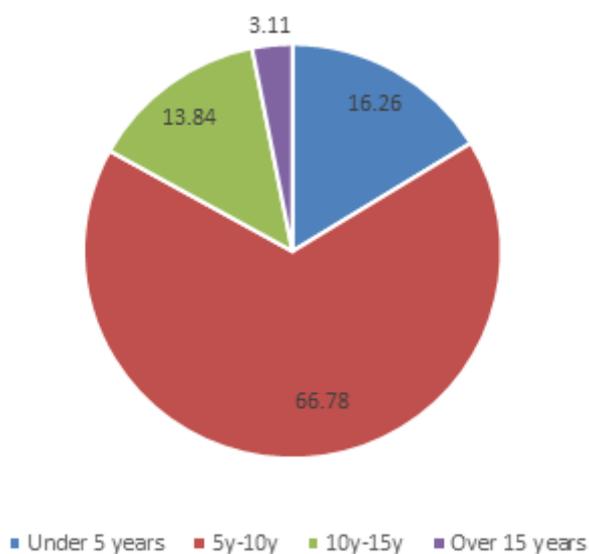


Figure 6. Frequency of using Internet

Source: Own data group by surveying

When we conducted a survey on how often we shop online, our team collected the results with the highest rate every 42.9% monthly, followed by every 3 months 40.8%. The frequency of once a week is 15.57% on the total number of surveys and the lowest rate is once daily

0.69%. This means that the demand for shopping and use of Shopee shopping cart of people in Ho Chi Minh City at an average level is neither too frequent nor rare.

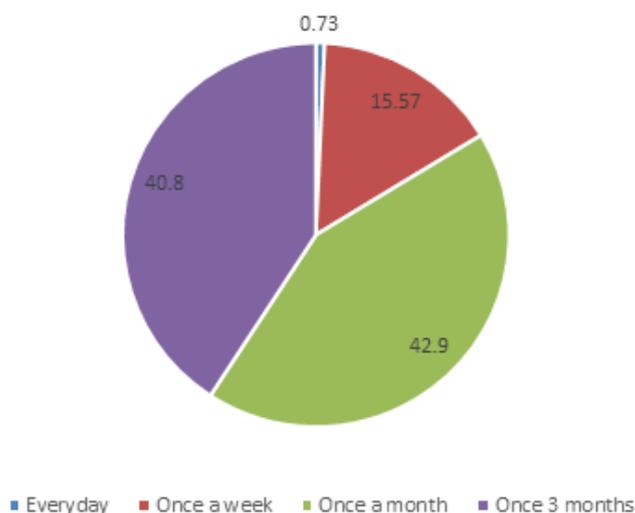


Figure 7. Frequency of online buying

Source: Own data group by surveying

This can be noticed that Shopee's online shopping cart is no stranger to most of our survey participants. With the results, just 3.11% of the total feel unfamiliar with the online shopping cart, 44.01% feel usual with the online shopping cart, 32.7% feel familiar with the online shopping cart and at the end. The same is true for 21% of the overall sample, which seems really familiar with this shopping method.

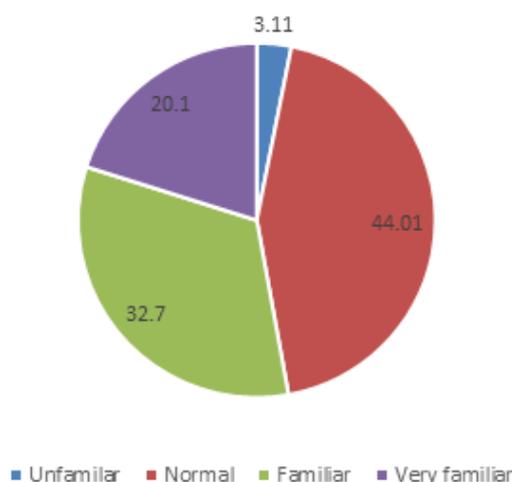


Figure 8. Level of familiarity with online shopping

Source: Own data group by surveying

We performed a study of frequently purchased products on the customer network and received the following results: 41% of respondents preferred to purchase clothes and jewelry and that is the largest number in total, 23.87% chose to buy cosmetics, followed by 12.8%

chose to buy food and drinks, 13.8% bought appliances and 8.25% chose to buy books through the consumer network.

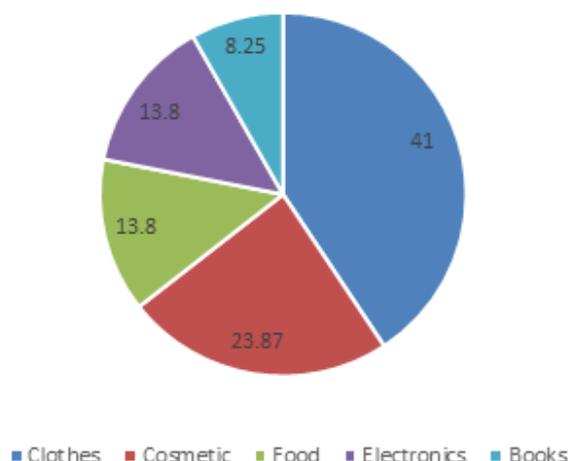


Figure 9. Types of products

Source: Own data group by surveying

4.2. Descriptive statistics

Mean

In terms of Current purchase intent (YDMH), the average mean of 2 items YDMH1, YDMH2 is 4.5 and item YDMH3 above 50% shows that most respondents agree with the trend of Current purchase intent. Furthermore, all variables of Current purchase intent have Std. Deviation greater than 1. This shows that respondents have different judgments for each variable and they mostly agree.

In terms of Price promotions (KM), the average mean is 5.2267 and all 3 variables in this section are above 4 indicating that most respondents agree with the trend of Price promotions. The Std. Deviation in this variable is also more than 1, indicating that respondents have different statements about each variable and they mostly agree.

In terms of Entertainment purpose (GT), the average mean is 3.615 and none of the 4 items above 4, indicating that most respondents disagree with the trend of Entertainment purpose.

In terms of Organizational intent, the average mean is 5.205 and all variables are above 4 and The Std. Deviation in this variable is also more than 1 indicating that most respondents agree with the trend of Price promotions.

In terms of research and information search, the average mean is 4.7775 and all variables in this section are above 4 indicating that most respondents agree with the trend of Price promotions. The Std. Deviation in this variable is greater than 1.

Frequency

In terms of online shopping cart use. This variable is directly measured due to no component factor scales. The average mean is 66.54% showing most respondents agree with the trend of Frequency of online shopping cart use.

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In terms of online buying. The average mean of 2 items TSMH1, TSMH3 is 4.525, none of items under 4 and item TSMH2 above 50% indicates that most respondents agree with the trend of Frequency of online buying.

Table 2. Descriptive statistics

	Mean	Std. Deviation	N
YDMH1	4.54	1.356	289
YDMH2	4.46	1.416	289
YDMH3	58.02	22.126	289
KM1	5.14	1.317	289
KM2	5.26	1.349	289
KM3	5.28	1.364	289
KM1	5.14	1.317	289
GT1	3.67	1.918	289
GT2	3.37	1.864	289
GT3	3.84	1.895	289
GT4	3.57	1.905	289
TCMS1	5.17	1.424	289
TCMS2	5.26	1.412	289
TCMS3	5.07	1.35	289
TCMS4	5.32	1.43	289
TT1	4.94	1.439	289
TT2	4.76	1.461	289
TT3	4.77	1.45	289
TT4	4.64	1.514	289
TSMH1	4.61	1.41	289
TSMH2	57.38	20.348	289
TSMH3	4.44	1.452	289

Source: Own data group by surveying

4.3. Reliability Test

Cronbach's Alpha is a tool that helps examine whether the observed variables of a factor are reliable and good or not. This test reflects the close correlation between observed variables in the same factor. Cronbach (1951) provides a scale reliability coefficient. If a variable measures the correlation coefficient, then the variable is satisfactory (Nunnally, 1978; George & Mallery 2003; DeVellis 2003; Zikmund 2010). In Corrected Item - Total Correlation less than 0.3 means that the variable does not show the character of the factor, so it will be removed from the scale. The value of Cronbach's Alpha coefficient is measured as follows:

- From 0.8 to nearly 1: The scale is very good
- From 0.7 to nearly 0.8: The scale is good
- From 0.6 or more: Qualified scale
- Less than 0.6: The scale does not meet conditions.

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The reliability test by Cronbach's Alpha to ensure the factors qualify for exploratory factor analysis (EFA). The reliability test for each construct includes Current purchase intent, Price promotions, Entertainment purpose, Organizational intent, Research and information search, Frequency of online buying. The results then are summary in table as below:

Table 3. Result of reliability test

Construct	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Current purchase intent				
YDMH1			0.773	0.173
YDMH2	0.243	0.901	0.755	0.17
YDMH3			0.805	0.858
Price promotions				
KM1			0.746	0.822
KM2	0.87	0.87	0.747	0.821
KM3			0.762	0.807
Entertainment purpose				
GT1			0.83	0.93
GT2	0.94	0.94	0.882	0.913
GT3			0.828	0.93
GT4			0.887	0.911
Organizational intent				
TCMS1			0.786	0.878
TCMS2	0.905	0.905	0.797	0.874
TCMS3			0.774	0.882
TCMS4			0.791	0.876
Research and information search				
TT1			0.675	0.868
TT2	0.878	0.879	0.806	0.817
TT3			0.783	0.826
TT4			0.691	0.863
Frequency of online buying				
TSMH1			0.66	0.181
TSMH2	0.244	0.87	0.721	0.845
TSMH3			0.718	0.163

Source: Own data group by surveying

From table above, about the construct Current purchase intent, Cronbach's Alpha is 0,243 and Cronbach's Alpha Based on Standardized Items is 0,901 as YDMH1, YDMH2 used 1-7 Likert-type scale and YDMH3 used directly measurement scale 0%-100% so Cronbach 'Alpha of this construct was accepted with a value is 0.901. The reliability of this edge is considered to be very good. In addition, items YDMH1, YDMH2 and YDMH3 with values greater than 0.3 should be preserved. In terms of Price promotions, Cronbach's Alpha of this construct is accepted with a value of 0.870. In Corrected Item-Total Correlation, the values of this aspect are greater than 0.3 so the items are preserved. In terms of Entertainment purpose, Cronbach's Alpha of this construct is accepted with a value of 0.940. Of which, Corrected Item-Total Correlation of items is 0.830, 0.882, 0.828 and 0.887 are all greater than 0.3. In terms of Organizational intent, 0.905 is the Cronbach 'Alpha value of this construct. This value indicates that the scale has good reliability. Corrected Item-Total Correlation of this construct is greater than 0.3. In terms of Research and information search, 0.879 is the Cronbach 'Alpha value of this construct. This value indicates that the scale has good reliability. Corrected Item-Total Correlation of this construct is greater than 0.3. Similar to Current purchase intent, Frequency of online buying is measured in two types of scales so determined based on Cronbach's Alpha Based on standardization is 0.870. Corrected Item-Total Correlation of this construct is greater than 0.3. In general, all items in the aspects will remain the same because of the level of reliability testing required.

4.4. Exploratory Factor Analysis (EFA)

The exploratory factor analysis, referred to as EFA, is used to shorten the set of observed variables into a set F (With $F < k$) more significant factors. According to Lam et al in 2014, EFA is widely applied in research with the aim of to examine the factor structure or the correlation model between variables. The EFA examines the relationship between variables in all different groups to discover the observed variables uploaded, many factors or observed variables that are misaligned from the original. The criteria required in the EFA are KMO coefficients (Kaiser-MeyerOlkin) that need to be greater than or equal to 0.5 (Hair, Anderson, Tatham & Black. 1995). Second, Bartlett's test of sphericity should be less than 0.05 (Tabachnick & Fidell. 2007). Third, Total Variance Explained needs to be greater than or equal to 50%. And last but not least, Factor Loading is greater than or equal to 0.5.

According to the table, KMO data is 0.866, higher than 0.5. Bartlett's Test of Sphericity data is 0.000, under 0.05. The Product Percentage is 80.664%, greater than 50%, which satisfies the conditions of Discovery Factor Analysis (DFA).

Table 4 shows that the variable TT1 has coefficients, respectively, 0.581 and 0.552, which are less than 0.7 and shown in the two columns of the TCMS and TT variables. This indicates that the TT1 scale makes the surveyor misunderstand the definition of TT and TCMS variables. Therefore, the TT1 range is not suitable and we eliminate it. Table 5 show EFA analysis result after eliminating TT1. All the criteria are then satisfactory.

Table 4. Explanatory factor analysis results 1

	Component					
	1	2	3	4	5	6
TCMS2	0.852					
TCMS4	0.837					
TCMS1	0.828					
TCMS3	0.793					
TT1	0.581		0.552			
GT2		0.906				
GT4		0.884				
GT1		0.871				
GT3		0.852				
TT4			0.811			
TT3			0.805			
TT2			0.788			
YDMH3				0.874		
YDMH1				0.874		
YDMH2				0.866		
TSMH3					0.867	
TSMH1					0.859	
TSMH2					0.85	
KM3						0.847
KM2						0.838
KM1						0.822
KMO of Sampling Adequacy.				0.866		
Bartlett's Test of Sphericity (sig.)				4517.766 (0.000)		
Initial Eigenvalues				1.125		
Cumulative %				80.664		

Note: Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.^a

Source: Own data group by surveying

Table 4. Explanatory factor analysis results 2

	Component					
	1	2	3	4	5	6
TCMS2	0.86					
TCMS4	0.837					
TCMS1	0.825					
TCMS3	0.796					
GT2		0.909				
GT4		0.886				
GT1		0.874				
GT3		0.853				
TT4			0.831			
TT3			0.799			
TT2			0.78			
YDMH3				0.874		
YDMH1				0.874		
YDMH2				0.866		
TSMH3					0.867	
TSMH1					0.859	
TSMH2					0.85	
KM3						0.849
KM2						0.838
KM1						0.824

Note: Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.^a

Source: Own data group by surveying

4.5. Confirmatory Factor Analysis (CFA)

Table 6 presents some results from CFA analysis

Table 5. Confirmatory Factor Analysis (CFA)

Absolute Index	Fit Function	1.3291
	Chi-Square	381.4553
	Chi-Square DF	165
	Pr > Chi-Square	<.0001
	Z-Test of Wilson & Hilferty	8.8182
	Hoelter Critical N	148
	Root Mean Square Residual (RMR)	0.1103
	Standardized RMR (SRMR)	0.0495
	Goodness of Fit Index (GFI)	0.8804

Source: Own data group by surveying

The coefficients of the YDMH3 and TSMH2 scales are respectively 0.0576 and 0.0649, which are less than 0.5, so they are removed. The rest have coefficients greater than 0.5, and the p-value is (**), indicating a value <0.05 is accepted.

Table 6. Covariance Structure Analysis: Maximum Likelihood Estimation Standardized Results for Linear Equations

Items	Results
YDMH1	= 0.8626 (**) F1 + 1.0000 e1
YDMH2	= 0.8487 (**) F1 + 1.0000 e2
YDMH3	= 0.7404 (**) F1 + 1.0000 e3
KM1	= 0.8356 (**) F2 + 1.0000 e4
KM2	= 0.8240 (**) F2 + 1.0000 e5
KM3	= 0.8324 (**) F2 + 1.0000 e6
GT1	= 0.8652 (**) F3 + 1.0000 e7
GT2	= 0.9066 (**) F3 + 1.0000 e8
GT3	= 0.8789 (**) F3 + 1.0000 e9
GT4	= 0.9250 (**) F3 + 1.0000 e10
TCMS	= 0.8287 (**) F4 + 1.0000 e11
TCMS2	= 0.8355 (**) F4 + 1.0000 e12
TCMS3	= 0.8471 (**) F4 + 1.0000 e13
TCMS4	= 0.8432 (**) F4 + 1.0000 e14
TT2	= 0.8454 (**) F5 + 1.0000 e15
TT3	= 0.8484 (**) F5 + 1.0000 e16
TT4	= 0.8007 (**) F5 + 1.0000 e17
TSMH1	= 0.8105 (**) F6 + 1.0000 e18
TSMH2	= 0.7515 (**) F6 + 1.0000 e19
TSMH3	= 0.8359 (**) F6 + 1.0000 e20

Source: Own data group by surveying

5. RESULTS AND DISCUSSIONS

5.1. Implications of management

This analysis has realistic consequences for online sellers. The reason for online buyers to put the goods in their shopping carts on Shopee is to explain the frequency of using virtual shopping carts and show the connection between online shopping carts and purchases of goods with payment. Five factors affecting customers' use of online shopping carts on Shopee: Intention to purchase, price promotion, entertainment purpose, intention to organize shopping, research, and find for information. To create online sales revenue, must convert window

shopping to purchase, administrators and retailers need to know how these factors affect the frequency of using online shopping carts, and purchase. To achieve that, it is essential to note the following:

Shopping and current online purchase intent

According to statistics, consumers often intend to buy goods in that session and put them in the cart with intending to buy immediately. At this time, the online shopping cart carries out the function it was initially designed to store. This shows that administrators and retailers must ensure the safety in payment.

Price promotions

Most consumers agree that the price promotion is the motivation for them to put the items they want in the shopping cart online. Many online consumers expect retailers to offer lower or lower price promotions than direct retailers in the market. Another driving force in prices that promotes online shopping carts is free shipping, shipping, or refund fees. Therefore, retailers need to grasp consumers' psychology to come up with pricing strategies that suit their sales or market requirements. The promotion strategy or promotional price combos should be applied because online consumers are often excited by "promotion".

Entertainment purpose

Consumers do not think window shopping, placing items in their shopping carts as a means of their entertainment. However, if shopping helps consumers relieve boredom, or feel interesting, they will have a higher appreciation of that shopping experience.

Online shopping cart as a organization tool

For many consumers, an online shopping cart is a list that stores all items they want to buy in the future, or in other words, that is a place to keep the items they are interested in. With this tool of online shopping cart, consumers hope not to search for the items for the next time because some items they want to buy in the future. Therefore, the online shopping cart should not be refreshed. Retailers can stimulate consumers to buy the products when they come back at the next purchase by offering additional promotions.

Shopping research and information search

In fact, the online shopping cart is also a tool for consumers to find information related to products. Retailers should provide completely, accurately the information so that potential customers can capture the information, as well as create trust for the product, thereby increasing the percentage of purchasing.

5.2. Limitations of the research

In the process of planning and carrying out the research, this paper still has some practical limitations: At first, the database of surveys was mainly of Ton Duc Thang University students. This results in the study not yet comprehensive evaluation of all factors from the age and income level affecting the use of shopping carts. Second, these surveys only get results mainly from online shoppers. The study will be more valuable if there is a comparison between the data on "frequency of product selection" from consumers, buying behavior and reports from online retailers. This led to the study only at the level of researching the behavior of shoppers when using online shopping carts without mentioning how this affects the "frequency of product selection" and sales. Third, these surveys are only conducted at a time, so there are no results consistent with the research phase, past and future periods can be affected by many factors such as the customer decision. Contemporary, due to the limited level of knowledge

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and expertise, this research project has not focused on each influencing factor. Some customers answer the questionnaire based on their feelings but have not really given their feelings about what they want when using an online shopping cart. This affects the survey results of this project.

6. CONCLUSIONS

These limitations in this research can be improved in the future in many ways. In future research, qualitative and quantitative research can reproduce and adapt the model. It may be more compelling if there are any motivations for interactivity relevant to virtual cart behavior, including the study of interactivities, socioeconomic and developing mobile commercial contexts. There are two distinct forms of interactivity in online shopping for the consumer: First of all, an online buyer can interact with a message sent by the e-tailer. Secondly, in human-human interaction, the online shopper may chat with a live agent or other customers (Ko et al. 2005). The things in the shopping cart will be a potential route as shoppers connect to the e-tailer or other online shoppers to discover as they use the online shopping cart. At the same time, a further analysis of demographics, such as sex and age of demographics, as online carts predictors are of concern to us and may also be paired with a sample of forms of cart use across various product categories. We urge researchers to carry on the virtual use of cart by consumers — a popular, but overlooked online customer behavior.

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THE IMPACT OF EWOM REFERRAL, CELEBRITY ENDORSEMENT AND INFORMATION QUALITY ON PURCHASE DECISION OF FASHION PRODUCTS VIA INSTAGRAM: CASE STUDY ON TON DUC THANG UNIVERSITY STUDENTS

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ABSTRACT

This study aims to explore the factors that influence purchasing decisions on social commerce, it's Instagram social media. Therefore, some specific aspects of EWOM Referral, celebrity endorsement, information quality, brand satisfaction, brand trust and brand attachment are identified and tested. This study used SEM method. Data were collected using a questionnaire via Google form with a Likert scale. Results from 350 student of Ton Duc Thang University, district 7, Ho Chi Minh City showed that a significant positive correlation exists between information quality and brand trust, purchase intention. Simultaneously, the research results show a negative correlation exists between EWOM referral and purchase intention.

Keywords: EWOM; Celebrity endorsement; Information quality; Brand satisfaction ; Brand trust; brand attachment

1. INTRODUCTION

Nowadays, the development of technology has dramatically effected all over the world. The ever-increasing use of technology, especially expanding the internet has transformed many aspects of life. Internet is not only a media communication but also a global mean for business transactions. Along with the development of science and technology, especially the development of the internet, e-commerce was born and developed rapidly. Currently, e-commerce is growing rapidly in many Asian countries, including Vietnam. And it is considered the inevitable development of the digital economy and information society.

The Internet and social media opens wide opportunities for consumers to engage in social interaction on the Internet as well as for trading companies to conduct a new way of marketing. Social media has drawn attention to the marketer as an effective communication media to interact with the consumers (Anderson, Knight, Pookulangara, & Josiam, 2014; Fatanti & Suyadnya, 2015). One of the fast-growing social media globally is Instagram, which enables its users to upload a photo or video as well as to share it on the other platform (Business Insider, 2010; Instagram, 2016; Wagner, 2015). According to Lisa Pomerantz, senior vice president of global communications and marketing Michael Kors, Instagram can connect companies with fans and inspire fans with nice pictures with a message in it.

The use of social media by consumers is anxiously followed by marketers, but not much is known about how it influences the consumers' decision-making. A purchase decision is a problem-solving process that consists of analyzing the needs and desires, information search, selection sources appraisal towards purchase alternatives, purchase decisions, and post-purchase behavior. Previous researches were not yet able to demonstrate the effects of social

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media on the different phases of consumers' decision processes, especially Instagram from more than one aspect, on the purchase decision. On the other hand, aware of a new business direction in the future in Vietnam in general and Ho Chi Minh City in particular, our team decided to choose the topic: "The impact of EWOM referral, celebrity endorsement, and information quality on purchase decision of fashion products via Instagram of Ton Duc Thang University students in district 7 - Ho Chi Minh City".

The research content will focus on answering the questions mentioned below:

- What main factors affect online customers when they consider and make purchases over the Internet? Do these factors positively or negatively influence customers' buying behavior?
- How do these factors impact on customers when purchasing online?
- Are there any aspects needed to be improved in online shopping to attract more customers?

This study focused on factors that influence online purchase intention of fashion products via Instagram of Ton Duc Thang University students in District 7, Ho Chi Minh City over a 3-month period, from mid-February 2020 to mid-May 2020. Where the data model performance is using data collected for 2.5 months. The remaining 0.5 months are used to compare factors that influence purchasing behavior and draw conclusions.

This research is conducted to discover the impact of EWOM referral, celebrity endorsement and information quality on purchase decisions of fashion products via Instagram. Hence, the findings of this study will help the online business owners understand more about customer insight and enhance the performance of the online business in Vietnam in the future. It is also a good implication for companies to get feedback from consumers to propose reasonable policies to improve customer awareness, enhancing their products and services. From that, increasing the willingness of prospective customers to shop in a relatively new environment for online shopping in Vietnam. Last but not least, the experience gained in the research process is the basis for the completion of research activities in the future on the same topics about customer's online purchase decisions.

2. LITERATURE REVIEW

2.1. Concept and theoretical basis

2.1.1. *EWOM Referral and Its Connection Consumer Behaviour*

Henthe Thureau, Gwinner, Walsh et al. (2004) conceptualized Electronic Word of Mouth (EWOM) as positive or negative statements of potential, current or former customers. , in terms of products or companies over the Internet, while Bronner and Hoog (2010) define that online word of mouth or electronic (EWOM) is a form of WOM where internet users provide reviews and ratings for all. Types of products, brands and services on review sites. In this study, the author analyzed according to the theory of (Henthe Thureau, Gwinner, Walsh et al., 2004).

EWOM can be disseminated in many ways, on social media platforms or comment sections on e-commerce sites; and disseminated information is rarely available through company-led marketing communications. Content created by internet users, who are also consumers, is often considered independent of commercial influences (Bronner and Hoog, 2010). According to Chevalier and Mayzlin (2003), they propose that the EWOM message is an important means for consumers to have information about product quality and service

quality. This trust enables consumers to access forums, blogs and other unbiased social media sources to inform purchasing decisions (Powers et al., 2012). Furthermore, the EWOM message can also effectively reduce the risk and uncertainty consumers perceive when buying a product or service, which means that EWOM can influence purchasing decisions of consumers (Chattereeje, 2001). Since then, product reviews that consumers write on the Internet have been EWOM's most important form of communication. For specific information about a product, consumers tend to search reviews on the Internet to better understand that product. Finding reviews online will ultimately generate interest in buying (Jalilvand & Samiei, 2012) and consumer interaction in eWOM via social media captured in three vi, including opinion seeking, commenting and passing opinions (Flynn et al., 1996; Themba & Mulala, 2012).

Therefore, EWOM is a useful media, correlated with consumer behavior in seeking opinions of other consumers to receive more information about the product and get advice from these consumers to make purchasing decisions (chu & kim, 2011) and give reviews after using the product.

H1: EWOM referral influences on purchase intention.

H2: EWOM referral influences on purchase decision.

2.1.2. Celebrity Endorsement and Its Connection to Brand Relationship and Consumer Behaviour

A celebrity advocate is defined as "any individual recognized by the public and using this recognition on behalf of consumer goods by appearing with it in an advertisement" (McCracken, 1989, page 310). Meanwhile, according to Carroll (2008), Celebrity endorsement is recognized as a potential medium in brand communication, where celebrities are considered to have greater power than anonymous models. In this study, to further analyze aspects of celebrity endorsement, the author follows Carroll's theory (2008).

Upgrade to Debiprased Mukherjee (2009), one of the winning formulas in marketing and branding is celebrity endorsement. Marketers believe that celebrity use influences the effectiveness of marketing, brand acquisitions and identity, and even consumer buying intent and actions (Spry, Pappu and Cornwell, 2009). Celebrity can be seen as a valuable and useful asset in a marketer's business strategy. Based on previous research, Chan, Ng and Luk (2013) discussed celebrity-related aspects in their research. (Blackwell et al., 2006) suggest that a celebrity can present evidence of benefits when a consumer uses certain products or services, or that a supporting product or service is the spokesperson for certified products for a long time. Marketers often choose celebrities who are charismatic, trustworthy and have expertise related to brand image. Because celebrities who are renowned and have a good skill will make many consumers have purchase intent the advertised brand (Hakimi et al, 2011); (Ohanian, 1991). According to Shimp (2003), an artist, entertainer, athlete, or celebrity recognized by people for their skills or expertise in an area that can support his / her promotion, can become endorsement celebrities.

Overall, endorsement celebrities that they promote a product of a brand with a positive, supportive attitude through social media. Consumers will have to consider purchasing decisions and have a more satisfying attitude when the product is endorsed by a celebrity. Moreover, they can buy that product in the future (Shimp, 2003).

H3: Celebrity endorsement influences on brand satisfaction.

H4: Celebrity endorsement influences purchase intention.

H5: Celebrity endorsement influences purchase decision.

2.1.3. Information Quality and Its Connection to Brand Relationship and Consumer Behaviour

Park & Kim (2003) gave a definition: “Information quality is the consumer's perception of the quality of information from a product provided by an e-commerce website”. Perception can be understood as a process of accepting, choosing, organizing and giving meaning to the stimuli received. There are three factors that influence perception: limits, goals, and situations. The characteristics of an observed target can be written down by what the target perceives in relation to the movement, sound, size or other attributes the target possesses that will shape its perspective (Pareek, 1983; Milton, 1981; Maskuri, 2010); (Robbins, 1991).

In general, depending on the circumstances, the requirements of consumers about the products which they want to buy to evaluate the amount of information they receive from the brand is good or not. From there, consumers make purchasing decisions based on their beliefs and attitudes about the products offered by that brand.

H6: Information quality influences on brand satisfaction.

H7: Information quality influence on brand trust.

H8: Information quality influence on purchase decision.

2.1.4. Brand Relationship and Its Connection to Consumer Behaviour

Brand is the differentiation between products. Under the Law of the Republic of Indonesia, No. 15 of 2001 on Trademarks, Chapter 1, Article 1, Paragraph 1, a mark is a sign in the form of an image, name, word, letter, number, color composition, or combinations of forms that can distinguish one product from those used in business activities. Trademarks are also used by companies to provide evidence in the form of fixed standards, especially for companies that do not have the opportunity to develop a continuous connection with customers (Palmer, 2001 in Rizki, 2011) . According to Kotler (2003) on Rizki (2011), brands play an important role for manufacturers as means of identification to facilitate product handling or tracking; protection means geared toward unique features or aspects of the product; means of identification for satisfied customers to buy back; means to create associations and unique meanings that distinguish products from competitors; competitive advantage through legal protection, customer loyalty and unique image; Source of financial profit especially revenue in the future. Satisfaction is defined as a psychological response of customers as a result of a comparison between expectation and perceived reality after consuming a product (Kotler, 2000).

When consumers are satisfied with a brand and the brand meets their expectations, the consumer will make a subjective assessment of brand satisfaction (Engel (1990) in Sreejesh (2014). According to Lacoeuilhe (2000) in Louis and Lombart (2010), Brand attachment is a psychological variable that expresses an affective relationship to the brand that is durable; it states the relationship of psychological closeness to the brand. Customers often have a long-term attachment to a brand product because they are satisfied with the brand's product and intend to continue to buy it in the future.

For a business, getting trust which is often called brand trust from customers is very important. Brand trust is consumers' tendency to believe that the brand can keep the promise with respect to its performance (Fuller et al, 2008 at Yana and Siti, 2011). Regarding to Chaudhuri and Holbrook (2001), brand trust is the desire of consumers in general who believe in a brand because it can meet the requirements and have the necessary skills to function. Meanwhile, according to Lau and Lee (1999) in Lesmana (2012), brand trust is the desire of consumers who rely on the brand, in a situation of risk, as they have expectations that the brand brings positive things. Moreover, this can help the brand to have more customers attached to the brand and may impact the purchase intent of many people.

H9: Brand satisfaction influences brand attachment.

H10: Brand satisfaction influences purchase intention.

H11: Brand trust influences brand attachment.

H12: Brand trust influences purchase intention.

H13: Brand attachment influences purchase decision.

2.1.5. Connection between Consumer Attitude and Behaviour

Buying intent is also one of the most fundamental aspects of consumer behavior. For Keller (2013), a consumer's buying intent can be considered probabilities of whether a consumer will buy a product from one brand or switch from one brand to another. Besides, buying intent by targeted consumers will appear after they find the product information they need. , WLife consumers are exploration oriented, their purchase intentions are unplanned or are impulsive (Moe, 2003). Another study suggests that the purchase rate is a function of currency consideration, not just behavior (Rizwan, Qayyum, Qadeer and Javed, 2014). Therefore, buying intent is not only based on consumer needs but also affects affordability.H14: Purchase intention influences purchase decision.

H14: Purchase intention influences purchase decision.

2.2. Prior studies

2.2.1. Research by Randy Danniswara, Puspa Sandhyaduhita, and Qorib Munajat (2017)

The goal of this study is to explore the factors that influence purchasing decisions on social media, Instagram. By investigating EWOM's referral and its relationship to consumer behavior, celebrity endorsement and its relationship to brand affinity and consumer behavior, Quality information and its relationship with brands, Relationship and behavior of consumers, Relationship between consumer attitudes and behavior with the consumer's decision to buy or not to buy on Instagram.

Research tools include: Application of questionnaires to measure the impact of EWOM, Celebrity Testimonials, quality information on purchasing decisions. The questionnaire included 8 dimensions (EWOM introduction, celebrity endorsement, information quality, brand satisfaction, brand trust, brand attachment, buying intent, buying decision) with 35 sentences in total. All indicators in this study, each of which should be scored by respondents for their consent. For each statement, a Likert scale from 1 (strongly disagree) to 5 (strongly agree) is given to rank each indicator. Ultimately, including demographics and other platform-related questions will allow for a more thorough analysis of the data.

This study uses LISREL 8.80 application and SEM structure model. This method of multivariate statistical analysis can explore theoreticalized relationships in an integrated way. The survey results show a substantial positive correlation exists between eWOM referral and purchase intention, information quality, and brand satisfaction, information quality, and brand trust, brand satisfaction and brand attachment, brand satisfaction and purchase intention, brand trust, and purchase intention, brand attachment, and purchase decision, and also between purchase intention and purchase decision.

However, the subject also exists that some limitations are not able to get the list of Instagram users who have watched at least one online store account. The authors only have an estimate of Instagram users in Indonesia and convenient sampling is not able to generalize the search in templates towards the population.

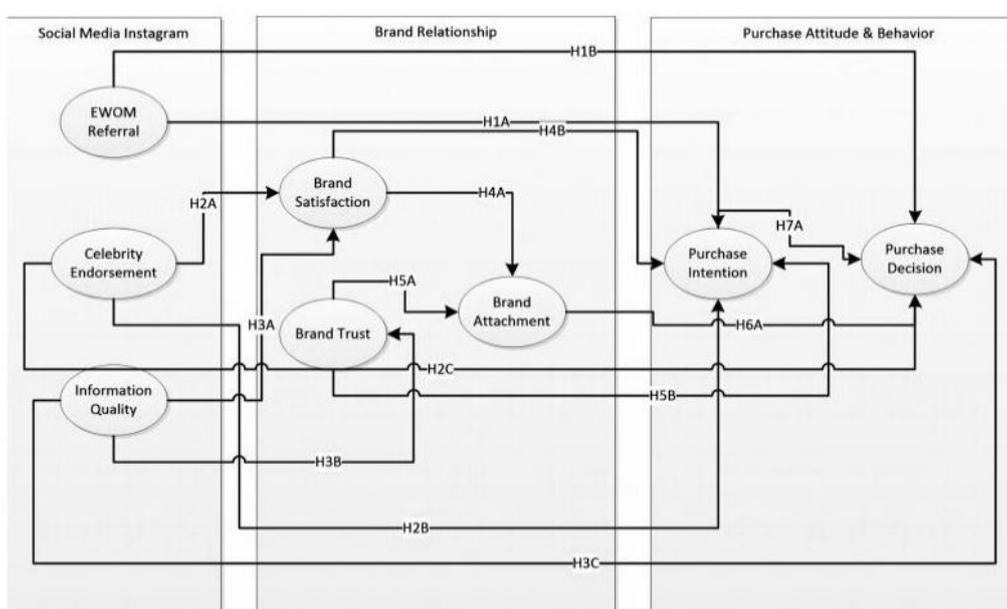


Figure 1. Model research

Source: Randy Danniswara, Puspa Sandhyaduhita, and Qorib Munajat, University of Indonesia, Depok, Indonesia, 2017

2.2.2. Research by Santiraningrum Soebandhi, Randy Angga Kusuma, Hamzah Denny Subagyo, Agus Sukoco1, Dani Hermanto, and Abdul Talib Bin Bon (2019)

This study aims to analyze the relationship between shopping, utilitarian and hedonic motivation on consumers' intention to search the information or to do shopping on Instagram.

Methods used to implement research projects include samples, measurement tools, reliability, and validity of the measurement instrument, the data collection process, data analysis techniques.

The survey's final questionnaire includes 27 items with the number of samples using a 5:1 ratio (Joe F. Hair, Black, Babin, & Anderson, 2010), using a Likert scale of 5 points. The questionnaire was divided into two parts. The first part was designed to identify the Respondents' profile allows for more thorough data analysis and the second part contained the

questions related to the construct being studied with the figure was processed using SEM-PLS as the analysis tool.

The result demonstrates hedonic motivation does not stimulate the Consumers search for information on Instagram. In addition, utilitarian motivation and search information are not as a predictor of online purchasing.

However, the large number of respondents is limited and they have not yet answered specifically for certain products. Therefore, the research has not fully described online behavior.

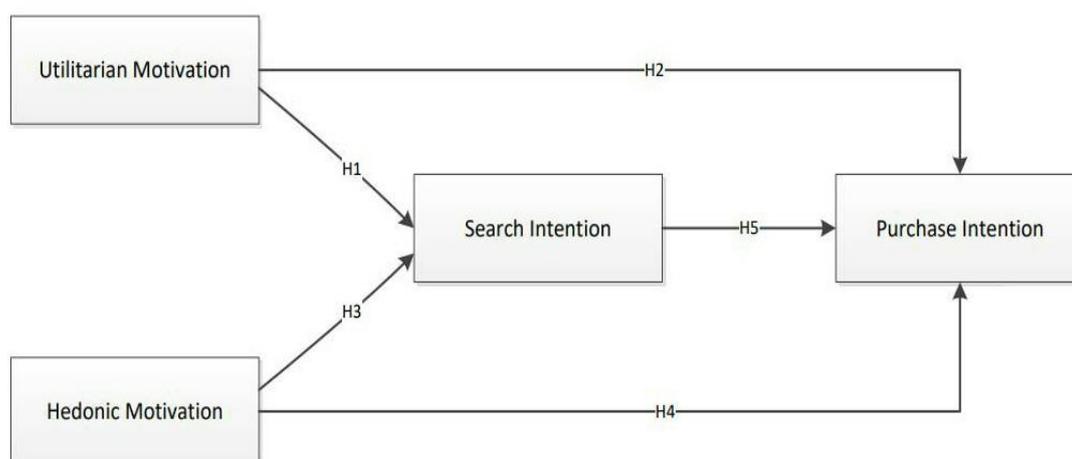


Figure 2. Model research

Source: Santirianingrum Soebandhi, Randy Angga Kusuma, Hamzah Denny Subagyo, Agus Sukoco1, Dani Hermanto, Abdul Talib Bin Bon, 2019

2.3. Proposed research model

Based on the theoretical basis and previous studies mentioned above, the author decided to choose the research model of Randy Danniswara, Puspa Sandhyaduhita, and Qorib Munajat (2017) as shown in Figure 3.

In particular, the hypotheses used in the study are:

- Hypothesis 1: EWOM referral influences on purchase intention.
- Hypothesis 2: EWOM referral influences on purchase decision.
- Hypothesis 3: Celebrity endorsement influences on brand satisfaction.
- Hypothesis 4: Celebrity endorsement influences purchase intention.
- Hypothesis 5: Celebrity endorsement influences purchase decision.
- Hypothesis 6: Information quality influences on brand satisfaction.
- Hypothesis 7: Information quality influence on brand trust.
- Hypothesis 8: Information quality influence on purchase decision.
- Hypothesis 9: Brand satisfaction influences brand attachment.
- Hypothesis 10: Brand satisfaction influences purchase intention.

- Hypothesis 11: Brand trust influences brand attachment.
- Hypothesis 12: Brand trust influences purchase intention.
- Hypothesis 13: Brand attachment influences purchase decision.
- Hypothesis 14: Purchase intention influences purchase decision.

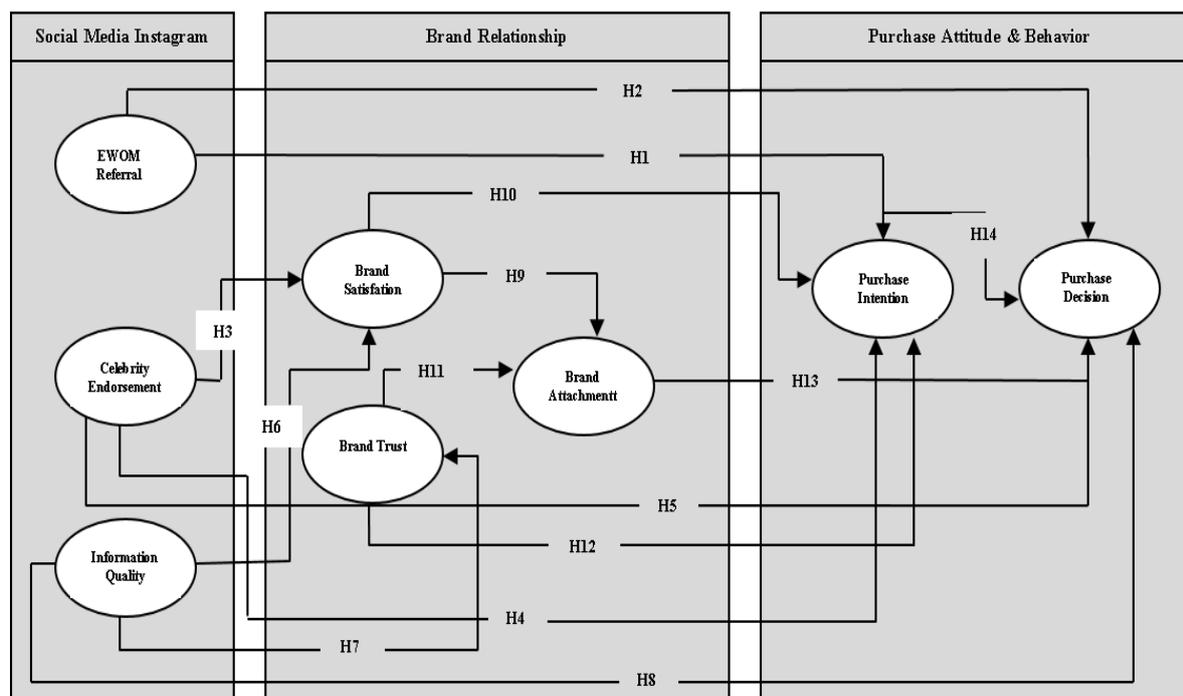


Figure 3. Conceptual Model

3. METHODOLOGY

3.1. Research process

After synthesizing the theoretical basis from the studies referenced, drafting the draft scale, the author drafted the questionnaire and presented the questionnaire prepared for the survey process to collect primary data directly. After the survey questionnaire has been repaired and completed, the survey will be conducted to collect data for the purpose of further analysis. The primary data collection survey is estimated to be conducted in 2.5 months, conducted by sending the online survey link (Google form) to the survey subjects. The data collected from the survey is processed by SPSS and AMOS software to test Cronbach's Alpha to determine the accuracy of the questions, thereby giving the factor of EFA discovery and false test theory by regression analysis.

3.2. Quantitative approach

Information collected is processed by SPSS and AMOS software, Cronbach's Alpha reliability analysis, EFA discovery factor analysis, multiple regression analysis used to test research hypotheses, and find relationships among factors in the proposed research model.

The number of research observation is 350, excluding the error and invalid questionnaires, the number of questionnaires that meet the survey will be further processed and included in the survey process. The sampling method used in the study was a convenient and random sampling method. Although, the model generalization of this method is not high, but due to the limited time and money, the author accepts risks and places this issue in the restricted part of the topic. The study was conducted through data collected from the survey subjects who are students of Ton Duc Thang University at Tan Phong campus, Ho Chi Minh City. After being collected, the data will be checked and discarded invalid questionnaires, coded, named the imported variables, and finally analyzed the data with SPSS 20.0 and AMOS 20.0 software.

3.3. Instruments

The tool in the questionnaire has 8 elements with a total of 35 sentences containing all of the indicators in this study, each question should be dotted by respondents to their agreements. For each statement, the Likert scale from 1 to 5 is provided for each index rating. Scale 1 is used to express “strongly disagree”, scale 2 is used to express “disagree”, scale 3 is used to express “neutral”, scale 4 is used to express “agree”, and scale 5 is used to express “strongly agree”.

Table 1. Measures

Indicator	Code	Description
EWOM REFERRAL		
Get concern from others (Sari, 2012)	ER1	Consumer receives forms of care, pride and satisfaction from other consumers about a product of a brand.
Get positive feeling (Sari, 2012)	ER2	Consumer receives positive feelings expressed by other consumers for a product of a brand.
Economic incentive (Sari, 2012)	ER3	Consumer receives an amount of information—related to discounts, promotions, and other information related to economic incentive—about a product of a brand that is expressed by other consumers.
Platform assistance (Sari, 2012)	ER4	EWOM is suitable as a medium for the implementation of social commerce and social media marketing of a product of a brand.
CELEBRITY ENDORSEMENT		
Visibility (Dyah, 2014)	CE1	Celebrity who becomes the brand model in the product image posted by a brand is popular.
Credibility (Dyah, 2014)	CE2	Consumer is confident of the celebrity who becomes the model of a product of a brand in the image posted by a brand.
Attractiveness (Dyah, 2014)	CE3	Celebrity who becomes the model of a product of a brand in the image posted by a brand is appealing.
Product match up (Dyah, 2014)	CE4	Celebrity’s profile who becomes the model of a product of a brand matches the profile of the endorsed product.
INFORMATION QUALITY		
Completeness (DeLone and McLean, 2003)	IQ1	Good information quality is provided so that product description in the caption of an image posted by a brand is complete
Conciseness (DeLone and McLean, 2003)	IQ2	Good information quality is provided so that product description in the caption of an image posted by a brand is concise

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Accuracy (DeLone and McLean, 2003)	IQ3	Good information quality is provided so that hashtag used to complement the description of a product in an image posted by a brand is accurate
Undestandbility (DeLone and McLean, 2003)	IQ4	Good information quality is provided so that image posted by a brand to promote its product or brand image is easily understood
Relevance (DeLone and McLean, 2003)	IQ5	Good information quality is provided so that brand's product description written in the image's caption is highly relevant to the image posted by a brand
Currency (DeLone and McLean, 2003)	IQ6	Good information quality is provided so that the brand frequently posts images in one day
BRAND SATISFACTION		
Decision (Lesmana, 2012)	BS1	Consumer is satisfied with the decision taken related to a brand
Experience (Lesmana, 2012)	BS2	Consumer has satisfying experience related to a brand
Function (Lesmana, 2012)	BS3	Consumer is satisfied with the utilization of media to promote the brand
Service (Lesmana, 2012)	BS4	Consumer is satisfied with the services provided by a brand
BRAND TRUST		
Delivery (Lesmana, 2012)	BT1	Consumer trusts the information delivered by a brand
Statement (Lesmana, 2012)	BT2	Consumer trusts the statement given by a brand
Action (Lesmana, 2012)	BT3	Consumer trusts a brand's action
Benefit (Lesmana, 2012)	BT4	Consumer trusts that the brand gives benefits to consumers
BRAND ATTACHMENT		
Brand self-connection: Bond (Lesmana, 2012)	BA1	There is a bond between consumer and brand
Brand self-connection: Emotional (Lesmana, 2012)	BA2	There is emotional bond between consumer and brand
Brand prominence: Mind (Lesmana, 2012)	BA3	The brand is prominent in consumer's mind
Brand prominence: Feel (Lesmana, 2012)	BA4	The brand is prominent in consumer's feeling
Brand prominence: Memory (Lesmana, 2012)	BA5	The brand is prominent in consumer's memory
PURCHASE INTENTION		
Information seeking (Sandrakh, 2013)	PI1	Consumer wants to find more information about a product of a brand as he/ she has intention to buy the product
Intention to understand (Sandrakh, 2013)	PI2	Consumer wants to understand more about a product of a brand as he/she has intention to buy the product
Intention to try (Sandrakh, 2013)	PI3	Consumer wants to try a product of a brand as he/she has intention to buy the product
Intention to buy (Sandrakh, 2013)	PI4	Consumer wants to buy a product of a brand
PURCHASE DECISION		
Think (Palagan, 2012)	PD1	Consumer thinks deeply about his/her decision of buying a product of a brand
Feel (Palagan, 2012)	PD2	Consumer develops an emotional feeling in buying a product of a brand
Distinguish (Palagan, 2012)	PD3	Consumer distinguishes a product of a brand from other brands in his/her decision of buying the product
Choose (Palagan, 2012)	PD4	Consumer chooses a product of a brand from other brands in his/her decision of buying the product

4. DATA

In this chapter, the results from the data analysis process are explained and commented. These results include demographic, descriptive statistics, reliability test, exploratory factor analysis, correlation test and multiple regression analysis. The implication drawn from these results will answer the research questions set at the beginning of this study.

4.1. Demographics of sample

Based on the requirements of research subjects and research design set out in the previous chapters, the author conducted a survey with students of Ton Duc Thang University, Tan Phong Campus, Ho Chi Minh City. The result of obtaining 350 responses (out of a total of 379 responses and eliminating the answers that did not meet the research requirement) was sufficient for analyzing scientifically meaningful data in this research topic.

Table 2. Respondent demographics

Gender	Respondents	Salary	Respondents
Male	157	<1 millions	136
Female	193	>1 millions	214
Age	Respondents	Instagram Experience	Respondents
19	62	<1 year	76
20	175	1-3 years	166
21	67	>3 years	108
22	32	Following Online Shop	Respondents
>22	14	1-5	152
		6-10	89
		>10	109

General statistics on the information of surveyed people show that the percentage of men and women is quite similar, about 45% are male and 55% are female. In general, the sample received satisfies the requirement of a balanced number of male and female surveys, as well as the understanding of the respondents in this area. This is very important in the author's research topic because it directly affects the process of analyzing data and establishing research models.

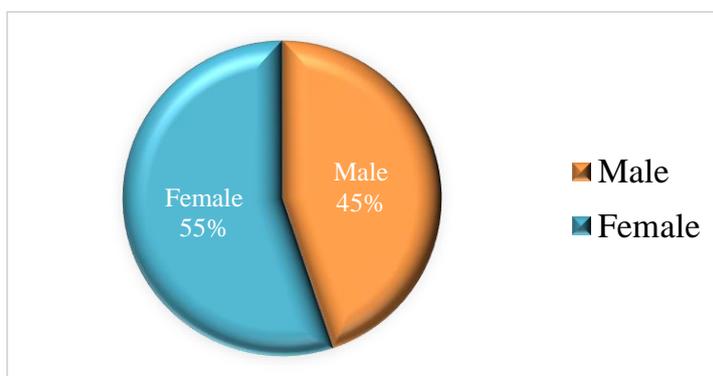


Figure 4. Gender structure in research sample

Source: Data analysis using SPSS software

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In particular, the majority of people surveyed at the age of 19 accounted for about 18%, the age group 20 accounted for the highest proportion of 50%, the age group 21 and the age group 22 accounted for the lower proportion respectively 19% and 9%, Finally, the age group above 22 accounted for the lowest rate of only 4%.

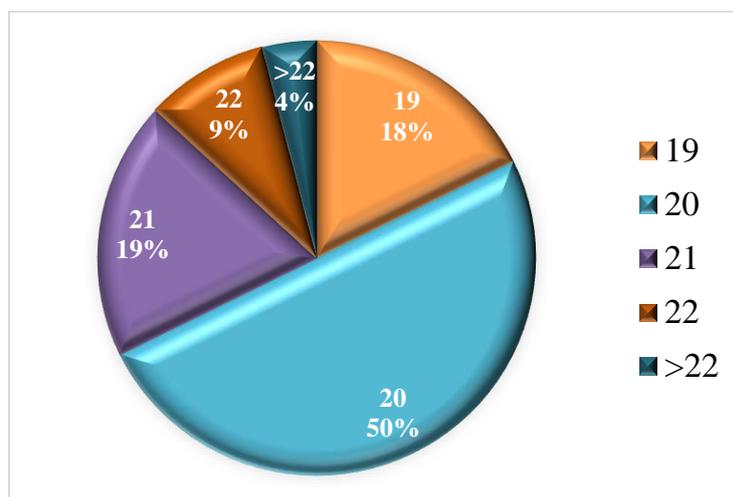


Figure 5. Age structure in research sample

Source: Data analysis using SPSS software

In addition, the statistics also show that the monthly income of students under 1 million accounts for about 39%, the monthly income of students over 1 million accounts for 61%.

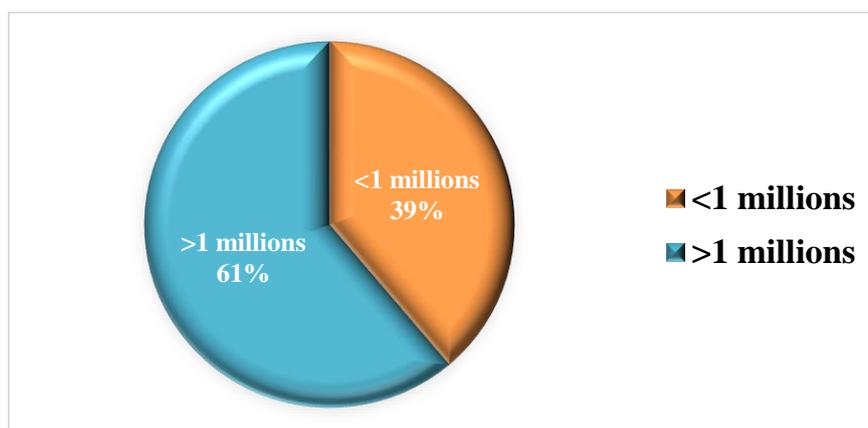


Figure 6. Monthly income of student structure in research sample

Source: Data analysis using SPSS software

The research subjects mentioned in the research are Instagram students, of which Instagram experience less than 22% for 1 year, Instagram Experience for 1 to 3 years, the highest rate is about 47% and Instagram Experience on 3 years accounted for 31%.

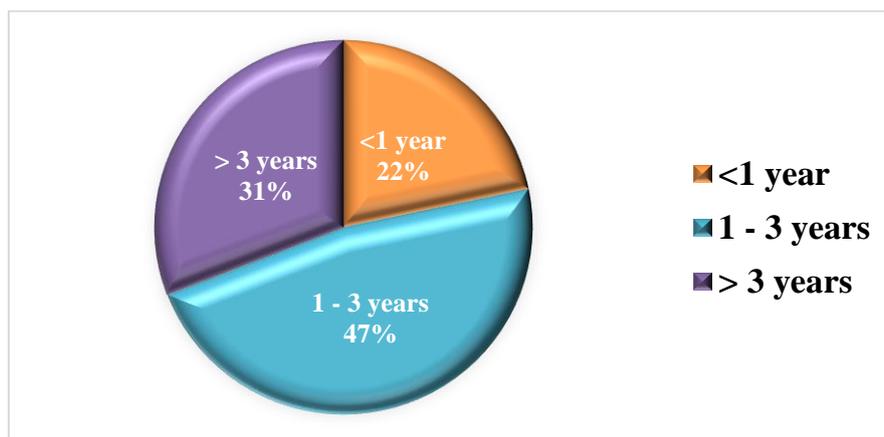


Figure 7. Instagram experience structure in research sample

Source: Data analysis using SPSS software

In the study samples, with students using Instagram, the number of students following online shops from 1 to 5 stores accounted for the highest rate of about 44%, followed from 6 to 10 stores. about 25%, and tracking over 10 stores accounted for 31%.

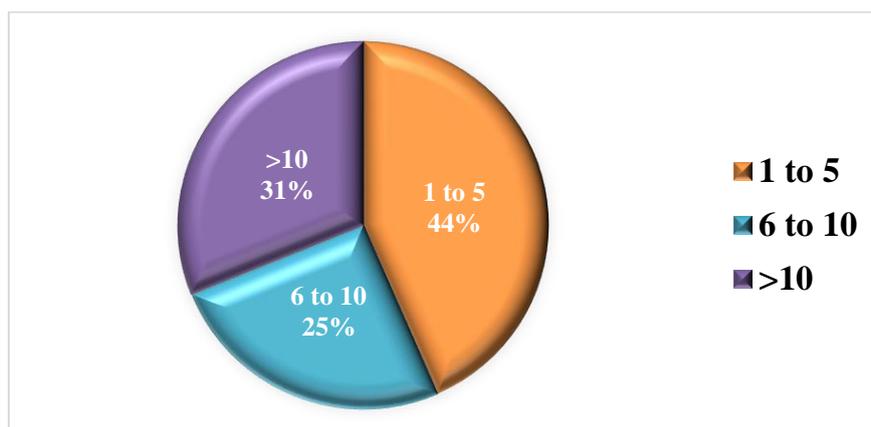


Figure 8. Following Online Shop structure in research sample

Source: Data analysis using SPSS software

5. RESULTS AND DISCUSSIONS

5.1. Reliability analysis

Table 3 presents some results for reliability analysis of the measurement scales used for analysis in this research.

The “Celebrity Endorsement” scale is measured by 4 observed variables. This factor has a Cronbach’s Alpha coefficient of 0.686 (>0.6); And, the Corrected Item - total correlation is greater than the allowed standard (0.30) so no observed variables are excluded. In which, the smallest is 0.434 (CE3) and the largest is 0.504 (CE4). These variables are used to explain in the scale that is appropriate. Therefore, these component measurement variables are all used in the next EFA analysis.

Table 3. Reliability check

	Scale Mean if item Deleted	Scale Variance if Item Deleted	Corrected Item - Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
ER1	11.9429	5.384	0.689	0.814	0.853
ER2	12.0057	5.393	0.722	0.801	
ER3	12.1314	5.392	0.692	0.813	
ER4	12.2286	5.438	0.67	0.822	
CE1	8.8514	4.694	0.442	0.637	0.853
CE2	9.0514	4.496	0.495	0.604	
CE3	8.8829	4.648	0.434	0.643	
CE4	8.8714	4.319	0.504	0.597	
IQ1	19.62	7.348	0.386	0.689	0.711
IQ2	19.6314	7.328	0.401	0.684	
IQ3	19.7343	7.302	0.406	0.683	
IQ4	19.6429	6.643	0.526	0.644	
IQ5	19.68	7.061	0.449	0.67	
IQ6	19.7771	6.938	0.494	0.658	
BS1	10.2029	6.34	0.839	0.867	0.909
BS2	10.1771	6.668	0.811	0.877	
BS3	10.1314	6.642	0.835	0.868	
BS4	10.1	7.987	0.714	0.912	
BT1	11.2114	4.523	0.62	0.679	0.765
BT2	11.1286	4.869	0.585	0.699	
BT3	11.0571	5.458	0.495	0.745	
BT4	11.1914	4.791	0.565	0.71	
BA1	15.74	10.984	0.777	0.879	0.904
BA2	15.7943	11.023	0.739	0.887	
BA3	15.9943	10.991	0.771	0.88	
BA4	15.82	11.397	0.772	0.892	
BA5	15.7486	10.882	0.798	0.874	
PI1	10.5914	4.409	0.491	0.708	0.742
PI2	10.3829	4.438	0.56	0.669	
PI3	10.64	4.563	0.482	0.712	
PI4	10.6429	4.219	0.61	0.639	
PD1	11.9714	5.804	0.691	0.837	0.865
PD2	11.9514	5.427	0.685	0.844	
PD3	11.98	5.882	0.72	0.828	
PD4	12.0114	5.816	0.777	0.808	

Source: Data analysis using SPSS software

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The “Celebrity Endorsement” scale is measured by 6 observed variables. This factor has a Cronbach’s Alpha coefficient of 0.711 (>0.6); the Corrected Item - total correlation is greater than the allowed standard (0.30) so no observed variables are excluded. In which, the smallest is 0.386 (IQ1) and the largest is 0.526 (IQ4). These variables are used to explain in the scale that is appropriate. Therefore, these component measurement variables are all used in the next EFA analysis.

The “Brand Satisfaction” scale is measured by 4 observed variables. This factor has a Cronbach’s Alpha coefficient of 0.909 (>0.6); And, the Corrected Item - total correlation is greater than the allowed standard (0.30) so no observed variables are excluded. In which, the smallest is 0.811 (BS2) and the largest is 0.839 (BS1). These variables are used to explain in the scale that is appropriate. Therefore, these component measurement variables are all used in the next EFA analysis.

The “Brand Trust” scale is measured by 4 observed variables. This factor has a Cronbach’s Alpha coefficient of 0.765 (>0.6); the Corrected Item - total correlation is greater than the allowed standard (0.30) so no observed variables are excluded. In which, the smallest is 0.495 (BT3) and the largest is 0.620 (BT1). These variables are used to explain in the scale that is appropriate. Therefore, these component measurement variables are all used in the next EFA analysis.

The “Brand Attachment” scale is measured by 5 observed variables. This factor has a Cronbach’s Alpha coefficient of 0.904 (>0.6); the Corrected Item - total correlation is greater than the allowed standard (0.30) so no observed variables are excluded. In which, the smallest is 0.712 (BA4) and the largest is 0.798 (BA5). These variables are used to explain in the scale that is appropriate. Therefore, these component measurement variables are all used in the next EFA analysis.

The “Purchase Intention” scale is measured by 4 observed variables. This factor has a Cronbach’s Alpha coefficient of 0.742 (>0.6); the Corrected Item - total correlation is greater than the allowed standard (0.30) so no observed variables are excluded. In which, the smallest is 0.482 (PI3) and the largest is 0.610 (PI4). These variables are used to explain in the scale that is appropriate. Therefore, these component measurement variables are all used in the next EFA analysis.

The “Purchase Decision” scale is measured by 4 observed variables. This factor has a Cronbach’s Alpha coefficient of 0.865 (>0.6); And, the Corrected Item - total correlation is greater than the allowed standard (0.30) so no observed variables are excluded. In which, the smallest is 0.685 (PD2) and the largest is 0.777 (PD4). These variables are used to explain in the scale that is appropriate. Therefore, these component measurement variables are all used in the next EFA analysis.

5.2. Exploratory Factor Analysis – EFA

There are 5 conditions must be satisfied with EFA analysis:

(1) KMO coefficient (Kaiser-Meyer-Olkin) is an index used to consider the suitability of an EFA factor. KMO value must reach the value of 0.5 or higher and an appropriate EFA is: $0,5 \leq KMO \leq 1$. If this value is less than 0.5, the factor analysis may not be appropriate for the research data (Pham Loc, 2018). Bartlett's Test considers the hypothesis of correlation between

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observed variables, if this test is statistically significant ($\text{sig} \leq 0.05$) then the correlation with each other in the whole (Hoang Trong; Chu Nguyen Mong Ngoc 2005, page 262).

(2) Factor Loading > 0.5 for generating converged value (Hair and CTG 1998, page 111). This value indicates the correlation between the observed variable and the factor. Factor loading > 0.3 is considered to be at a minimum; > 0.4 is considered important; > 0.5 is considered to have practical significance (Hair và Ctg (2006))

(3) The scale is acceptable when the total variance explained is $\geq 50\%$. (Hair and CTG, 1998 and Gerbing & Anderson, 1988)

(4) Eigenvalue coefficient > 1 (Anderson & Gerbing, 1988). Only when factors meet these criteria will be retained in the analysis model

(5) Difference factor load factor of an observed variable between factors must be ≥ 0.3 to ensure value distinguishing between factors (Jabnoun & Al-Tamimi, 2003).

The initial research model consisted of eight factors groups with 35 factors that influence the purchasing decisions on Instagram of Ton Duc Thang University students. After analyzing Cronbach's Alpha, the results of the factors are accepted, so a total of 35 factors will be analyzed. The author brings all 35 criteria into EFA discovery factor analysis with the Extraction Method: Principal Axis Factoring and Rotation Method: Promax with Kaiser Normalization and Rotation converged in 6 iterations, KMO and Barlett test methods to measure the compatibility of observed variables factor loading reaches at least 0.5 to ensure the correlation between observed variables and factor groups. The first EFA analysis results are as follows:

The KMO value in this case is $0.782 > 0.5$, which suggests that the data is suitable for factor analysis. Sig. of Bartlett's Test of Sphericity = $0.000 < 0.05$, it shows that the variables are correlated with each other and satisfy factor analysis.

When running EFA 1, we see that the bad variables are IQ2, IQ1, IQ3 with Factor Loading smaller than the standard Factor loading (0.5) and IQ2 has the lowest loading factor (= 0.437) compared to the other two variables, so it should be eliminated first. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

The process of running EFA 2, 3 shows that there are still 2 bad variables, IQ1 and IQ3. We proceed to eliminate both variables in the order of first IQ1, then remove IQ3 (due to loading factor of IQ1 $< IQ3 < 0.5$). Finally, the author proceeds to run the data until there are no worse variables.

Lastly, after running EFA for the fourth time, the author found that the analysis did not appear to have a bad variable. EFA factor analysis results in Table 4.14 shows that 32 observed variables are divided into 8 groups. Total variance explained value = $54,940\% > 50\%$: satisfactory, then it can be said that these 8 factors explain 54,940% of data variation. The Eigenvalues coefficient value of all factors is high (> 1), the 8th factor has the lowest Eigenvalues coefficient is $1.205 > 1$. Therefore, observed variables are retained in the model.

KMO value in this case reaches 0.775, which suggests that the data is suitable for factor analysis. Sig. of Bartlett's Test of Sphericity = $0.000 < 0.05$, it shows that the variables are correlated with each other and satisfy factor analysis.

Table 4. The first test results of EFA

	Factors							
	1	2	3	4	5	6	7	8
BA5	0.852							
BA3	0.825							
BA1	0.822							
BA2	0.791							
BA4	0.754							
BS1		0.894						
BS2		0.787						
BS4		0.776						
PD4		0.756						
PD3			0.800					
PD1			0.772					
PD2			0.763					
ER2			0.747					
ER3				0.686				
ER1				0.655				
ER4				0.514				
IQ4				0.460				
IQ6				0.442				
IQ5				0.437				
IQ3					0.751			
IQ1					0.689			
IQ2					0.585			
PI4					0.58			
PI2						0.854		
PI1						0.787		
PI3						0.778		
BT2						0.756		
BT1							0.762	
BT4							0.717	
BT3							0.551	
CE4							0.539	0.644
CE2								0.64
CE1								0.564
CE3								0.542
Initial Eigenvalues					1.318			
Cumulative %					52.163			
KMO Measure of Sampling Adequacy					0.782			
Bartlett's Test (sig.)					4988.280 (0.000)			

Source: Data analysis using SPSS software

Table 5. The first test results of EFA

	Factors							
	1	2	3	4	5	6	7	8
BA5	0.852							
BA3	0.824							
BA1	0.822							
BA2	0.792							
BA4	0.752							
BS3		0.894						
BS1		0.892						
BS2		0.858						
BS4		0.750						
PD4			0.852					
PD3			0.786					
PD1			0.773					
PD2			0.761					
ER2				0.799				
ER3				0.776				
ER1				0.762				
ER4				0.749				
PI4					0.751			
PI2					0.689			
PI1					0.582			
PI3					0.580			
BT2						0.771		
BT1						0.725		
BT4						0.576		
BT3						0.556		
CE4							0.656	
CE2							0.622	
CE1							0.564	
CE3							0.547	
IQ6								0.720
IQ4								0.560
IQ5								0.519
InitialEigenvalues					1.205			
Cumulative %					54.940			
KMO Measure of Sampling Adequacy					0.775			
Bartlett's Test (sig.)					4740.058	(0.000)		

Source: Data analysis using SPSS software

The results showed that 8 groups were drawn:

- Factor 1 consists of 5 observed variables: BA1, BA2, BA3, BA4, BA5
- Factor 2 consists of 4 observed variables: BS1, BS2, BS3, BS4
- Factor 3 consists of 4 observed variables: PD1, PD2, PD3, PD4
- Factor 4 consists of 4 observed variables: ER1, ER2, ER3, ER4
- Factor 5 consists of 4 observed variables: BT1, BT2, BT3, BT4
- Factor 6 consists of 4 observed variables: PI1, PI2, PI3, PI4
- Factor 7 consists of 4 observed variables: CE1, CE2, CE3, CE4
- Factor 8 consists of 3 observed variables: IQ4, IQ5, IQ6

The final EFA results of the scales in the research model affecting the purchasing decision scale of Ton Duc Thang University students. It was shown $0.5 < \text{KMO} < 1$. Eigenvalues coefficient > 1 , total variance explained $> 50\%$. Therefore, observed variables have practical significance, independent factors affecting dependent factors.

5.3. Confirmatory Factor Analysis - CFA

The variables and criteria have been preliminary assessed through EFA and Cronbach's Alpha. This section reviews the scales using CFA confirmatory factor analysis.

According to Hair et al. (2010), the indicators to be considered for Model Fit evaluation include:

Table 6. Model fit standards

Indicator	Standard
Chi-Square/df (χ^2/df)	< 3
CFI	> 0.9
GFI	> 0.9
RMSEA	< 0.05

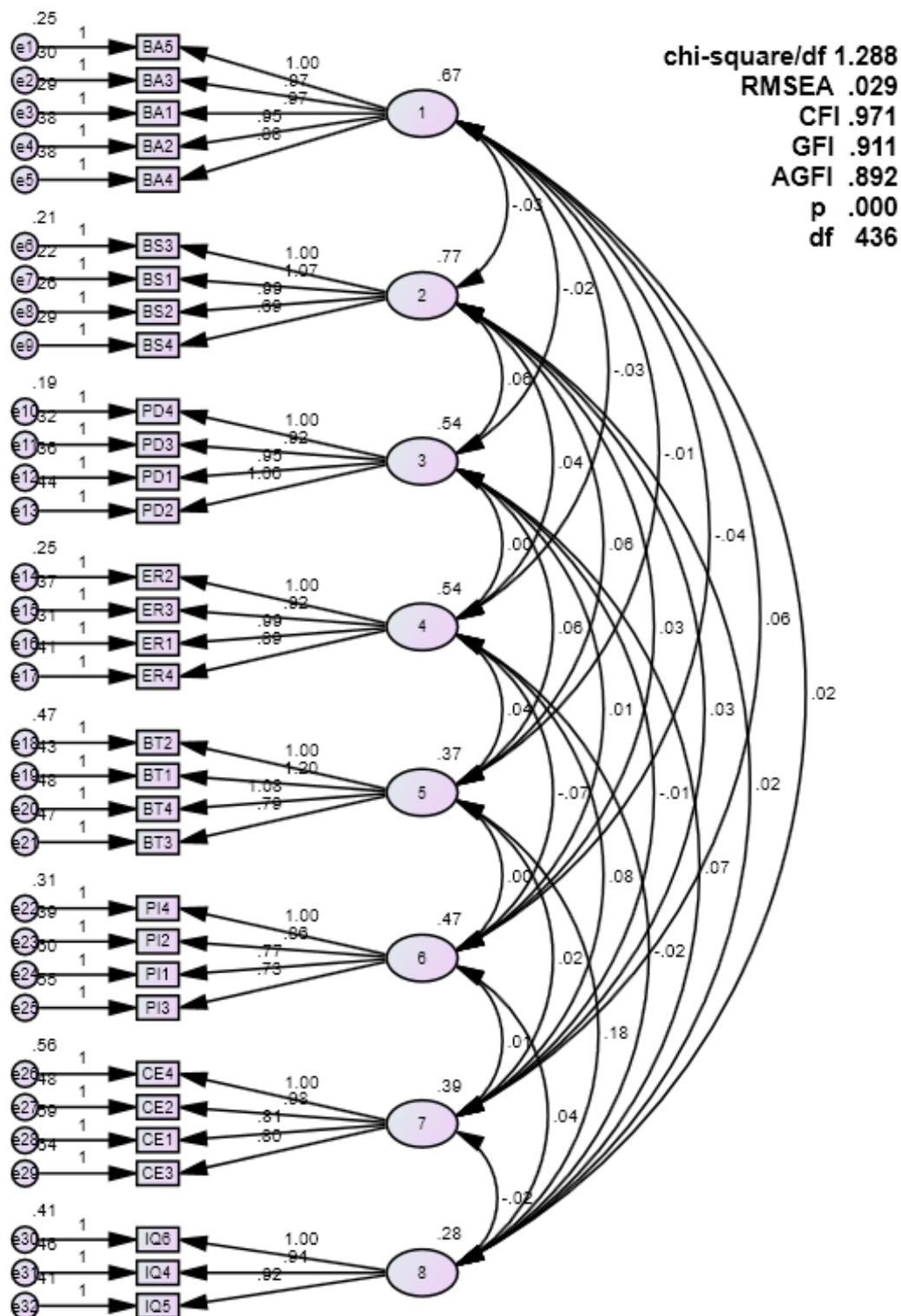


Figure 9. CFA analysis results

Source: Data analysis using SPSS software

The Standardized Regression Weights > 0.5 and the non-standardized weights are statistically significant, so the concepts are convergent.

5.5. Results of testing the SEM model (Structural Equation Modeling) and research hypotheses

In testing hypotheses and research models, SEM linear structure models have more advantages than traditional multivariate analysis methods such as the SEM linear structure model allows us to combine underlying concepts with the measurement of them and may consider partial measurements or combine them with the theoretical model at the same time. ie, the SEM model allows simultaneous analysis between measurement model and structural model and simultaneously combined with measurement error analysis technique in the same model because research concepts can not be directly observed but must be measuring them through indicator variables and measurement processes often have errors. Moreover, this model also allows the improvement of less suitable models by making flexible use of the MI adjustment (Modification Indices). Because of these internal advantages, SEM analysis is used very popular in research and practice in the social sciences in recent years.

To measure the relevance of the model to market data, this research uses four main indicators, the chi-square, the appropriate index comparing CFI (Comparative Fit Index), GFI (Goodness of Fit Index), and RMSEA (Root Mean Square Error Approximation). If a model receives a GFI value and CFI from 0.9 to 1, RMSEA is <0.08, the model is considered suitable for market data.

5.5.1. Results of testing the conformity of the research model

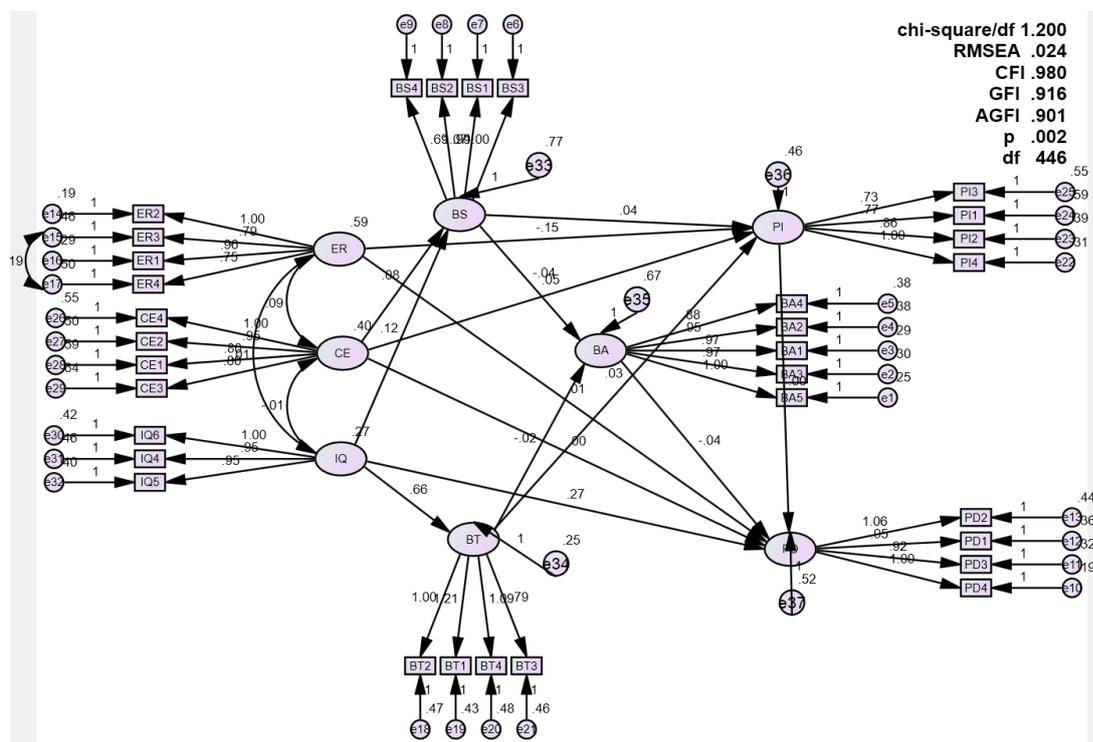


Figure 10. The results of SEM analysis of the theoretical research model

Source: Data analysis using AMOS software

The above results can see chi-square / df = 1.200; GFI = 0.916; CFI = 0.980; RMSEA = 0.024 < 0.08. From this result, it can be confirmed that the research model is suitable with market data.

SEM analysis of linear structure model has the test results in Figure 4.18.

Table 7. Model test results

	Estimate	S.E.	C.R.	P
BS <--- CE	.081	.093	.863	.388
BS <--- IQ	.124	.114	1.088	.276
BT <--- IQ	.656	.110	5.978	***
PI <--- ER	-.147	.060	- 2.433	.015
PI <--- CE	.047	.081	.575	.565
BA <--- BS	-.040	.054	-.731	.465
PI <--- BS	.043	.049	.864	.388
BA<--- BT	-.018	.085	-.209	.834
PI <--- BT	.031	.077	.400	.689
PD <--- ER	.005	.061	.086	.932
PD <--- CE	.002	.082	.029	.977
PD <--- IQ	.275	.100	2.746	.006
PD <--- BA	-.036	.054	-.668	.504
PD <--- PI	-.002	.070	-.027	.979

Note: P: significance level; *** = p < 0.001

Source: Data analysis using AMOS software

Thus, the above results show that the Celebrity Endorsement (CE) factor and the Information Quality (IQ) factor have no significant relationship with the Brand Satisfaction (BS) factor because they have a value of $p > 0.05$. Similarly, the factors of EWOM Referral (ER), Celebrity Endorsement (CE), Brand Attachment (BA), Purchase Intention (PI) have no meaningful relationship with Purchase Decision (PD) because of their $p \text{ value} > 0.05$. Next, the Brand Trust (BT) factor, and the Brand Satisfaction (BS) factor have no significant relationship with the Brand Attachment (BA) factor; Celebrity Endorsement (CE) factor, Brand Satisfaction (BS), Brand Trust (BT) factors also have no significant relationship with the Purchase Intention factor because the general reason is their $p \text{ value} > 0.05$. Contrary to the relationship of the factors just explained, 3 relationships are statistically significant: the relationship between EWOM Referral (ER) and Purchase Intention (PI), Information Quality (IQ) and Brand Trust (BT), Information Quality (IQ) and Purchase Decision (PD). In relationships, the impact of Information Quality with Brand Trust is most powerful (0.656). Further, the impact of Information Quality with Purchase Decision is 0.275. In contrast, EWOM Referral impacts against the Purchase Intention (-0.150).

5.5.2. Auditing of research theories from H1 to H14

After performing research hypotheses from H1 to H14 using linear structure model (SEM), the author can see:

- H1: EWOM referral has a contrast relationship with purchase intention of Ton Duc Thang University student at Tan Phong campus ($\beta = -0.147$; $p < 0.05$), so the hypothesis

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1 is accepted.

- H2: EWOM referral have a negative influence on purchase decision of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 2 is rejected.
- H3: Celebrity endorsement have a negative influence on brand satisfaction of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 3 is rejected.
- H4: Celebrity endorsement have a negative influence on purchase intention of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 4 is rejected.
- H5: Celebrity endorsement have a negative influence on purchase decision of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 5 is rejected.
- H6: Information quality have a negative influence on brand satisfaction of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 6 is rejected.
- H7: Information quality has a positive relationship with brand trust of Ton Duc Thang University student at Tan Phong campus ($\beta = 0.656.$; $p < 0.05$), so the hypothesis 7 is accepted.
- H8: Information quality has a positive relationship with purchase decision of Ton Duc Thang University student at Tan Phong campus ($\beta = 0.275.$; $p < 0.05$), so the hypothesis 8 is accepted.
- H9: Brand satisfaction have a negative influence on brand attachment of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 9 is rejected.
- H10: Brand satisfaction have a negative influence on purchase intention of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 10 is rejected.
- H11: Brand trust have a negative influence on brand attachment of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 11 is rejected.
- H12: Brand trust influences have a negative influence on purchase intention of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 12 is rejected.
- H13: Brand attachment have a negative influence on purchase decision of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 13 is rejected.
- H14: Purchase intention have a negative influence on purchase decision of Ton Duc Thang University student at Tan Phong campus. Because $p > 0.05$, the hypothesis 14 is rejected.

From the above hypothesis test results will be the basis for making comments, conclusions, policy implications to increase the online shopping decision on Instagram of Ton Duc Thang University students at Tan Phong Campus.

Table 8. Synthesis of the test results of hypotheses

Hypothesis	Content	Conclusion
H1	EWOM referral has a contrast relationship with purchase intention of Ton Duc Thang University student at Tan Phong campus	Accepted
H2	EWOM referral have a negative influence on purchase decision of Ton Duc Thang University student at Tan Phong campus.	Rejected
H3	Celebrity endorsement have a negative influence on brand satisfaction of Ton Duc Thang University student at Tan Phong campus.	Rejected
H4	Celebrity endorsement have a negative influence on purchase intention of Ton Duc Thang University student at Tan Phong campus.	Rejected
H5	Celebrity endorsement have a negative influence on purchase decision of Ton Duc Thang University student at Tan Phong campus.	Rejected
H6	Information quality have a negative influence on brand satisfaction of Ton Duc Thang University student at Tan Phong campus.	Rejected
H7	Information quality has a positive relationship with brand trust of Ton Duc Thang University student at Tan Phong campus.	Accepted
H8	Information quality has a positive relationship with purchase decision of Ton Duc Thang University student at Tan Phong campus accepted.	Accepted
H9	Brand satisfaction have a negative influence on brand attachment of Ton Duc Thang University student at Tan Phong campus.	Rejected
H10	Brand satisfaction have a negative influence on purchase intention of Ton Duc Thang University student at Tan Phong campus.	Rejected
H11	Brand trust have a negative influence on brand attachment of Ton Duc Thang University student at Tan Phong campus.	Rejected
H12	Brand trust influences have a negative influence on purchase intention of Ton Duc Thang University student at Tan Phong campus.	Rejected
H13	Brand attachment have a negative influence on purchase decision of Ton Duc Thang University student at Tan Phong campus.	Rejected
H14	Purchase intention have a negative influence on purchase decision of Ton Duc Thang University student at Tan Phong campus.	Rejected

Source: Synthesis of the authors

6. CONCLUSIONS

6.1. Summary

This research aims to examine the impact of Instagram social media as a marketing media towards purchase decision. From 14 hypotheses, 3 were accepted and 11 were rejected. Research results show that there is a correlation between "Information quality" and "Brand trust". In addition, the study also demonstrated a correlation between "Information quality" and "Purchase decision". These two correlations are all positive. That means, when "Information quality" increases, "Brand trust" increases and "Purchase Decision" also increases. Simultaneously, the research results show a negative correlation between "EWOM referral" and "Purchase Intention". This finding shows that — for student of Ton Duc Thang University, district 7, Ho Chi Minh City, EWOM referral from 'comment' and 'tag people' feature on Instagram has a negative influence on customer purchase intention via Instagram. And, interestingly, celebrity endorsement is found not having an impact on purchase decisions either positive or negative. It also has no relation to any brand relationship or purchase intention.

The research results presented above will form the basis for forming solutions to help online business companies on Instagram in improving existing problems to attract customers and increasing profit.

6.2. Recommendations

The analysis results show that the quality of product information not only positively affects brand trust but also positively affects purchasing intention. Therefore, the authors make a few recommendations to attract customers for online businesses, especially businesses through Instagram:

Firstly, improve the product information channel. Online businesses, especially businesses through Instagram, need to focus on product descriptions. Investing a little time to detail products will give businesses the opportunity to find more potential customers and consolidate brand trust. The product descriptions are not necessarily too long but full of information that customers care about. And, they can become very monotonous and unattractive without images. Images will help customers have better information about the product, making it feel like they are shopping in real space. In addition, videos are also a great way to introduce products and make shoppers feel like they are being directly introduced by you.

Second, businesses need to promote product reviews to build trust and increase the opportunity to convert from regular viewers into real customers.

Finally, relating to EWOM referral and the customer's purchase intention. Research results show that EWOM referral has a negative impact on customers' buying intent. This means, when EWOM referral increases, the customer's purchase intention will decrease and vice versa. For example, information about a fast food restaurant is unhygienic. It just only takes 15 minutes for millions of people to know about this information, they will quickly be shared in social media, enough for people to boycott the restaurant immediately. Therefore, businesses need to strictly manage negative feedback or comments about the product before it becomes a "disaster".

6.3. Limitations

This study tries to cover properly all aspects of the problem. However, it may encounter some obstacles due to limited time, lack of human resources, as well as experience, research capabilities, and geographical limitations. Therefore, this paper just focuses on Instagram users in Ton Duc Thang University in district 7, Ho Chi Minh City for convenience and simplify the research. In the future, researchers should choose various samples in different places to diversify the research result.

Time for conducting this research is quite limited, so when going into analyzing each aspect of the topic, it still has not fully solved the inadequacies of each aspect.

The solutions we propose are general in nature, only applied in the short term and depend greatly on the development of telecommunications infrastructure in the city as well as people's awareness.

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A STUDY OF CONSUMER BEHAVIOURAL INTENTION IN B2C E-COMMERCE BASED ON EXTENSION TECHNOLOGY ACCEPTANCE MODEL (TAM)

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ABSTRACT

Along with the high growth of development of e-commerce in Vietnam, there is still a lack of research insight about consumer toward online shopping. The purpose of this paper is investigate the rerelationship factors affect behavioral intention of Vietnamese consumers for online shopping. The author extended the research model is based on extended Technology Acceptance Model with integrating four new factors: perceived enjoyment, perceived compatilby, perceived information security and perceiced social pressure. Data of the study were collected ehrough quantative research was conducted through structured questionnaires from 300 respondens in major urban areas to clarify the impact of factors on consumer behavior within the context of online shopping. The analysis results shows that there is an interaction between perceived usefulness and perceived ease of use, perceived compatibility and perceived enjoyment on behaviourial intention toward online shopping.

Keywords: B2C E-commerce, Technology acceptance model (TAM), Customer behavioral intention, Vietnamese consumer.

JEL Classification: M1, M31

1. INTRODUCTION

In the digital age, B2C e-commerce market has evolved into a new business trend in the world and especially in developing countries. According to the report on Vietnam's E-commerce index (VETICA, 2018), in the past few years, the online retail model in Vietnam has the largest growth rate with 35% in the ecommerce business. Specifically, coupled with the boom of the internet and the growing number of people using smartphone is a good opportunity to help e-commercial business develop faster. In recent years, the number of domestic and foreign e-commerce enterprises have been growing rapidly in Vietnam market. In the recent years, a number of e-commerce websites are operating quite well in Vietnam market such as Lazada, Zalora, Tiki, Shopee, Sendo, Adayroi. E-commerce companies in the Vietnamese market, especially the trio of Shopee, Lazada and Tiki, are competing fiercely for market share and establishing a leading position in the market. Although, there are some limitations, E-commerce is becoming an inevitable trend in the context of industrial revolution 4.0, when Vietnam is one of the six countries with a high growing of Internet and digital economics in South East Asia. Besides the advantages of e-commerce, there are still many barries for online retailers such as: the fierce competition from another competitors; consumer confidence when shopping online is low; delivery service and order fulfillment have not kept pace with demand. Currently, research on e-commerce in Vietnam mainly focus on assessing the level of customer's satisfaction, the quality of online business services, and no in-depth research on the relationship between consumer's attitude towards online shopping. In order to support online businesses exploit the advantages of B2C e-commerce business environment, the research

paper focuses on studying the factors affecting Vietnamese consumer behaviour of online shopping to take advantage of e-commerce and create buyers' confidence in e-commerce.

2. RESEARCH MODEL AND HYPOTHESIS

In the marketing field, there are a various of existing research discussed the influence factors on online consumer behaviours and purchase intention. The research were conducted to identify the main factors affecting customer shopping behavior for online shopping. Therefore, this study extend prior studies and propose an integrated model which explain the factors influence directly on consumers' intention toward online shopping.

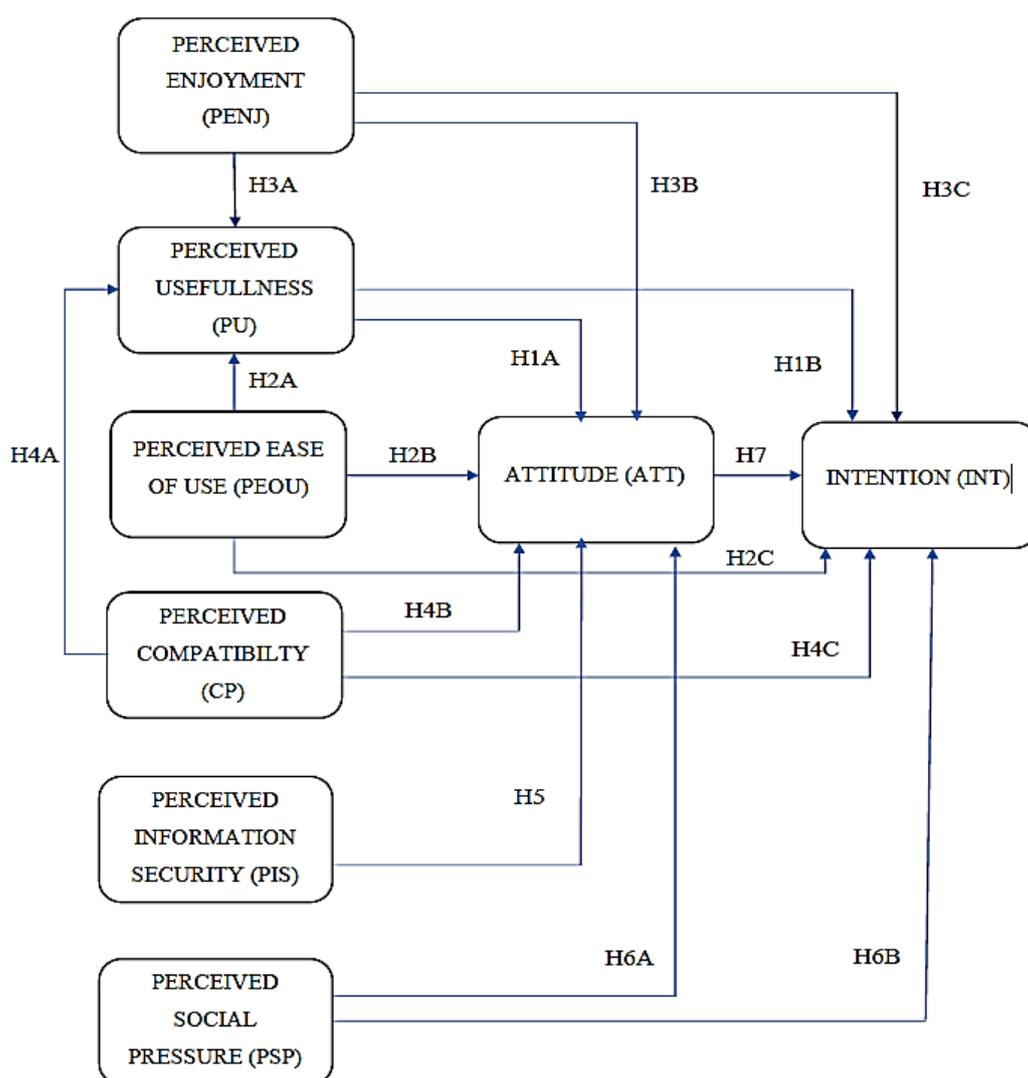


Figure 1. Proposed research model

Davis et al., (1989) proposed the research model named Technology Acceptance Model (TAM) which use to model several factors influence on user's adoption of the new technology. TAM has been widely accepted and widely used in marketing studies with the purpose of

predicting individuals' specific intentions and behaviors for using new technology (Mun et al., 2006). In the TAM model, the "attitude" factor is measured with two variables that accept the new technology as "perceived usefulness" and "perceived ease of use". In the existing research conducted by Do et al. (2019) found that some important factors influence on Vietnamese consumer purchase intention for online shopping including perceived usefulness, perceived ease of use, perceived transaction security and other demographic factors (age and income). In consumer behaviour research about online shopping, many previous studies used TAM as an effective theoretical framework to explain the adoption of e-commerce (Lim & Ting, 2012; Changchit et al., 2018; However, Venkatesh & Davis (2020) states that TAM should be supplemented and extended with other constructs to be more comprehensive. Hence, the study extent there construct into the research framework to better explain consumer attitudes and purchase intention related to online shopping in an emerging market like Vietnam. The proposed research model is presented in Figure 1.

3. LITERATURE REVIEW

Perceived usefulness (PU) and perceived ease of use (PEOU)

In recent decades, marketing researchers and marketer used a number of theoretical models to explain the relationship between attitude and behavioral intention within context of online shopping included Theory of Reasoned Action (Fishbein & Ajzen, 1975), Theory of Planned Behaviour (Ajzen, 1991) and Technology Acceptance Model (Davis, 1989). After that, Davis et al. (1989) developed TAM into a popular research model by determining that individual's behavioral intention has two main factors included perceived usefulness and perceived ease of use. The TAM has been widely proven in prior studies of user adoption for new technology, especially in the field of information technology such as mobile banking, e-commerce. According to Davis et al., (1989), perceived usefulness was defined as "the degree to which a person believes that using a particular system enhances their work-focused performance". Otherwise, perceived ease of use denotes "the degree to which an individual considers using a particular device easily and effortlessly". Consumer will develop the positive attitudes for online shopping when they perceive that the online platform are easy to use. In a number of existing studies the consumer behaviour for online shopping (Venkatesh & Bala, 2008; Ha & Stoel, 2009; Çelik & Veysel, 2011), it reveals that there is a significant relationship between perception of usefulness and perceived ease of use in e-commerce. According to the TAM, the intention to use new technology is formed when the application is effective for the user, then the attitude no longer plays a dominant role in the model (Davis et al., 1989). In other words, even if the user have a negative attitude with a new technology, but still intends to use it because the user believes that the application is effective for their work. Thus, the authors proposed the hypotheses for this paper will be:

H1: Perceived usefulness (PU) positively influences consumer attitude (H1A); intention for online shopping (H2A).

H2: Perceived ease of use (PEOU) positively influences PU (H2A), consumer attitude (H2B), and intention for online shopping (H2C).

Perceived Enjoyment

In recent technology adoption studies, it show that the new technology not only improving functionality and efficiency, but also serves as a source of customer satisfaction and

pleasure. The study of Natarajan et al. (2017) confirmed that perceived enjoyment has a direct relationship on buying intentions of customers of mobile platforms. Perceived enjoyment was defined as the individual perception that by adopting new system or technology he/she will have pleasure (Cheema et al. 2013). Elsedí (2018) found that the consumer will have positive attitudes when they enjoy online shopping. Therefore, when customers feel interested while watching products online, they will contribute to increase the ability to purchase that product.

H3: Perceived enjoyment (PENJ) has a positive related to PU (H3A), attitude (H3B) and intention for online shopping (H3C)

Perceived Compatibility

According to the study by Vijayasathy's (2000), the author defines compatibility with online shopping refers to “the degree to which consumers believe the online purchasing is matched with their lifestyle and needs, and their shopping preference as well”. Wu & Wang (2015) states that the compatibility of online shopping has effects on customer intention to use through perceived usefulness because it was assumed that the adoption process will be easier if consumers find out that the online purchase does not conflict with their preferences and lifestyle

H4: Perceived compatibility (CP) positively influences on PU (H4A), consumer attitude (H4B) and intention for online shopping (H4C).

Perceived Information Security

In the digital age, when the majority of traditional transactions can be done remotely via electronic devices connected to the Internet, the privacy of personal information is claimed to be an important factor affecting the level of accepting new products and services. Many studies have proven that information security is the biggest barrier for customers to shop online (Ariffin et al., 2018; George, 2004; Lian & Lin, 2008). Perceived information security proposed as barriers to the acceptance of using e-commerce. Because the uncertainty associated with online transactions creates a lot of different risks for customers. Customers are concerned that their personal information will be exposed in the internet and used for different purposes (Wang et al., 1998). Information security is a top priority for online retailers because it greatly affects consumers' worries and purchasing decisions when shopping online. The following hypotheses are presented as below:

H5: Perceived information security (PIS) positively influences consumer attitude

Perceived Social Pressure

Venkatesh et al., (2003) define social influence is the degree to which influencers (family, friends, colleagues ...) and mass media think that customers should conduct online shopping. Nobably, if people who have a close relationship with customers are using e-commerce sites can lead to the consumer's intention to purchase product. The following hypotheses are presented as below:

H6: Perceived social pressure (PSP) positively influences consumer attitude (H6A); intention for online shopping (H6B).

Consumer attitude and intention

Based on the finding of TRA model, intentions are cause of attitudes (Fishbein & Ajzen, 1975). Schlosser (2003) defined attitude for online shopping as a consumer's positive or negative feeling about performing the purchasing behaviors on the internet. Within the context of online shopping, a number of past marketing literature concluded that the positive attitude lead to higher intention for purchase through e-commerce (Dwivedi et al., 2017; O. Wang & Somogyi, 2018). Therefore, a consumer who has a positive attitude toward online shopping will prefer to purchase more than traditional method.

H7: Consumer attitude positive effect on intention for online shopping

3. RESEARCH DATA AND METHODOLOGY

3.1. Data

In this study, the authors apply the quantative research method to collect important data. The questionnaire is built based on this paper's research overview and adapted to measure of Vietnamese consumer intention toward e-commerce. The content of the measurement scales inherited from previous studies and has also adjusted the language of the contents of questionnaires to suit the research subjects in Vietnam. The items to measure for this study were adapted from the validated scales found in the prior studies by Huseynov et al., (2019). Furthermore, measurement scale of questionnaire is a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) was used. Before extending the investigation on a large scale, the pre-test was conducted and distributed among 60 undergraduate students to ensure the final questionnaire is usable and validity for this research. The official research is the period of collecting data using a online questionnaire with a planned sample size of 300. Convenient sampling methods are used for survey respondents who use the internet regularly and have visited e-commerce website in major urban city before. There were 315 returned results, in which 16 items were invalid due to lack of information or non-target respondents. Therefore, the volume of official valid replies in use for analysis was 299.

3.2. Data analysis

The author uses SPSS software to perform analysis for descriptive statistics and SmartPLS software for processing linear measurement equation structure, as well as testing research hypotheses among variables. Then, Cronbach Alpha coefficients are used to assess the reliability of the scale. The research hypotheses were tested with a multigroup structural equation modeling (SEM) analysis.

4. FINDING AND DISCUSSION

In this study, the official questionnaires sample information is summarized table below. In general, the demographic data shows that the number of males is 55.5% and females is 44.5%. Due to the target group is undergraduate student with online shopping experiences hence the majority of the respondents are young within 82.9.6% representing the age group 18–22 years. As for the monthly income, most of the respondents is rather high with 69.6% of the respondents have income under 10 million VND.

Table 1. General information of respondents.

Characteristic		Frequency	Percentages (%)
Gender	Male	133	55.5
	Female	166	44.5
Age	Under 18	22	7.4
	18 - 22	248	82.9
	Over 22	29	9.7
Academic level	Undergraduate	252	84.3
	Postgraduate	47	15.7
Income	Under 10 million VND	208	69.6
	10 – 20 million VND	74	24.7
	Over 20 million VND	17	5.7

Scale Realibility Analysis

In order to examine the scale reliability of research, the authors use Cronbach's Alpha for each constructs of study. After analyzing, the analysis results demonstrates that all variable factors have reliability with Cronbach's Alpha coefficient greater than 0.7, specifically ranging from 0.891 - 0.959. The combined reliability (CR) of all factors is satisfactory with a coefficient greater than 0.7 and in the range of 0.924 - 0.964. Finally, the total coefficients of variance (AVE) of the factors are greater than 0.5, which meet the testing requirements (Hair et al., 2014). The structural equation model (SEM) was used for testing the hypotheses relationship of research model. The authors uses bootstrap techniques with a sample number of 500 and 5 per cent significance. The summary of hypothesis testing are shown in table 4.

Table 2. Sale reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
ATT	0.918	0.919	0.942	0.803
CP	0.938	0.939	0.951	0.764
INT_	0.959	0.96	0.964	0.729
PENJ	0.901	0.902	0.931	0.771
PEOU	0.931	0.932	0.945	0.709
PIS	0.937	0.94	0.952	0.800
PSP	0.891	0.891	0.924	0.753
PU	0.934	0.935	0.947	0.718

	R Square	R Square Adjusted
ATT	0.742	0.738
INT_	0.774	0.768
PU	0.721	0.718

From the statistical table of analysis of regression coefficients from SEM model indicated that the research model has all the relationships that are supported based on the results from the regression analysis. The table present the outcome of hypothesis test. The perceived information security for the relationship with attitude which is not significant because the p value = 0.541 greater than 0.05. It is important to note that perceived ease of use had a significant and positive effect on perceived usefulness ($\beta = 0.000$, $p < 0.05$). Hence H2A is

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accepted. PU ($\beta = 0.002$, $p < 0.05$), and PENJ ($\beta = 0.017$, $p < 0.05$), PSP ($\beta = 0.012$, $p < 0.05$) significantly positively affected attitude consumer attitude, in support of H1, H4, H6.

Table 3. Structural Equation Model (SEM)

	ATT	CP	INT_	PENJ	PEOU	PIS	PSP	PU
PIS1						0.884		
PIS2						0.905		
PIS3						0.904		
PIS4						0.884		
PIS5						0.894		
PEOU2					0.814			
PEOU3					0.849			
PEOU4					0.843			
PEOU5					0.819			
PEOU6					0.861			
PEOU7					0.855			
PU1								0.865
PU2								0.867
PU3								0.855
PU4								0.88
PU5								0.841
PU6								0.837
PU7								0.785
INT1			0.877					
INT10			0.861					
INT2			0.869					
INT3			0.843					
INT4			0.852					
INT5			0.861					
INT6			0.823					
INT7			0.88					
INT8			0.866					
INT9			0.802					
CP1		0.878						
CP2		0.872						
CP3		0.869						
CP4		0.885						
CP5		0.872						
CP6		0.868						
PENJ1				0.874				
PENJ2				0.872				
PENJ3				0.876				
PENJ4				0.89				
ATT1	0.902							
ATT2	0.902							
ATT3	0.893							
ATT4	0.888							
PSP1							0.885	
PSP2							0.855	
PSP3							0.857	
PSP4							0.874	
PEOU1					0.852			

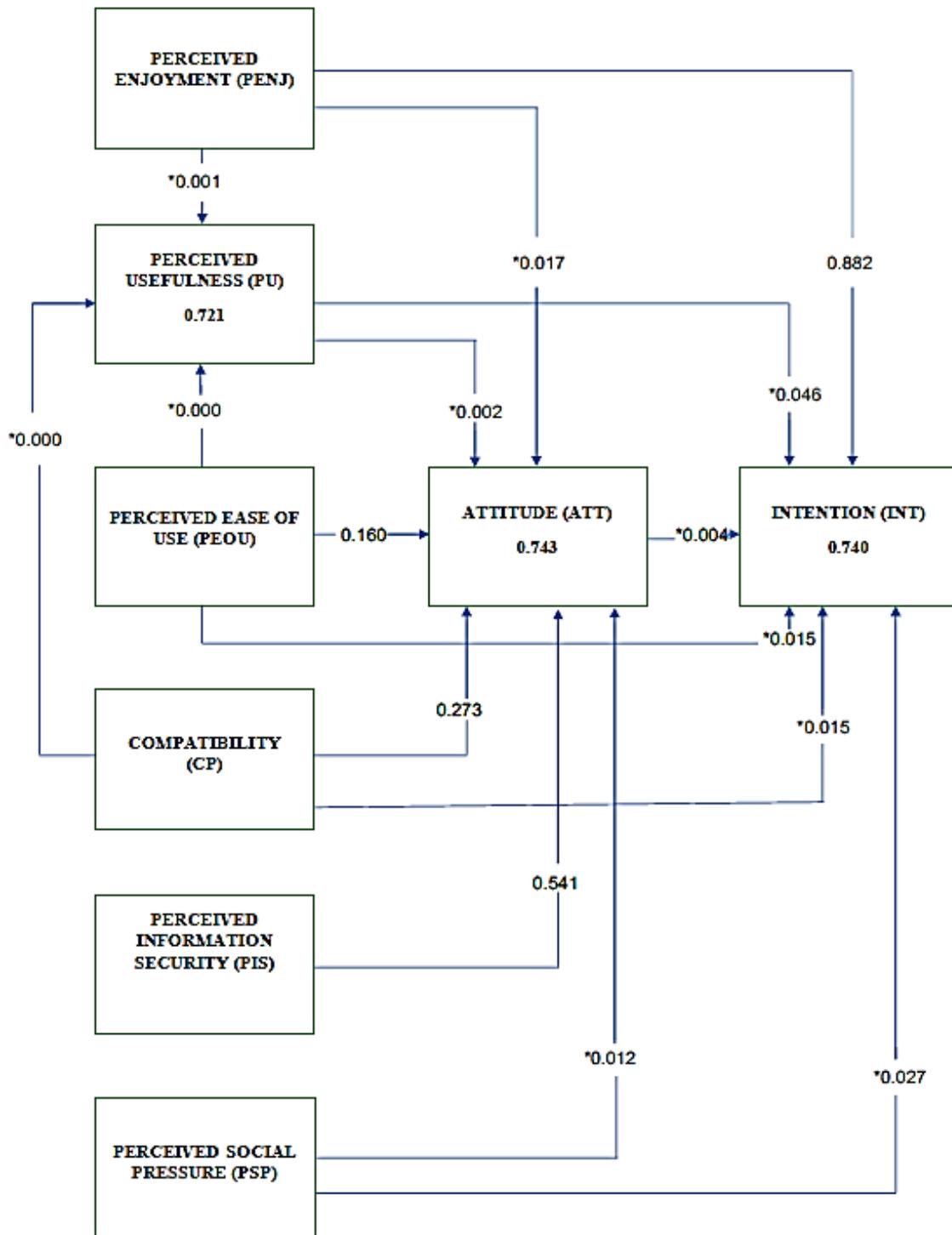


Figure 2. Results of path analysis

Table 4. Hypothesis testing

	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Hypotheses
ATT -> INT_	0.107	2.968	0.003	Supported
CP -> ATT	0.071	2.555	0.011	Supported
CP -> INT_	0.081	3.972	0.000	Supported
CP -> PU	0.071	4.980	0.000	Supported
PENJ -> ATT	0.108	3.147	0.002	Supported
PENJ -> INT_	0.089	2.033	0.043	Supported
PENJ -> PU	0.086	3.290	0.001	Supported
PEOU -> ATT	0.068	3.191	0.002	Supported
PEOU -> INT_	0.087	4.177	0.000	Supported
PEOU -> PU	0.075	4.291	0.000	Supported
PIS -> ATT	0.043	0.583	0.560	Not Supported
PIS -> INT_	0.015	0.523	0.601	Not Supported
PSP -> ATT	0.082	2.599	0.010	Supported
PSP -> INT_	0.046	1.450	0.148	Not Supported
PU -> ATT	0.104	3.028	0.003	Supported
PU -> INT_	0.098	3.111	0.002	Supported

5. DISCUSSION

Through the analysis and synthesis of data, the research has obtained a number of results. This research model not only identifies the main factors that influence on online shopping intention but also shows the degree of interaction between the factors related to customers attitude. Based on the table of outcome of hypotheses tested, the study suggest a number of governance implications are discussed in order to provide company operating in the e-commerce sector, some necessary information about the factors that influence their intentions.

Besides, these finding of study consistent with a number of prior studies which highlight that perceived usefulness (PU) are the key determinant of users' acceptance of IT and different with many prior studies that studied and examined TAM model either in the information system or the online shopping context (Wang, 2011; Yuliharsi et al., 2011; Hsieh and Liao, 2011; Lim and Ting, 2012;). From the above research results, it can be seen that, apart from the factors of reasonable price and good quality, the time saving and ease of transactions are the factors affecting consumer shopping behavior. It can be explained that Vietnamese consumer consider online shopping as a convenient way in order to purchase a wide range of high quality product at anytime and anywhere. From this point, e-retailers should develop the effective communication programs in order to improve consumers' shopping experience and interaction. Thus, online retailer should providing the detailed tracking of order shipment which reduces the risk and anxiety among customer.

However perceived usefulness has the most effect on attitude rather than the perceived ease of use. The study finds out that the PEOU has no direct influence on attitude (p value = $0.160 > 0.05$). Furthermore, the results of study also revealed that perceived ease of use has a directly and significantly effect on consumer intention. Recent marketing studies states that PEOU has a direct influence on consumers intention to adopt online shopping (Akturan & Tezcan, 2012; Wang et al., 2006). This direct effect is explained by the fact that consumers will has minium effort to purchase product online with the support of technology. Recent studies of E-commerce have demonstrated the positive impact of perceived ease of use on

perceived usefulness and behavioral intention to purchase through retailer's websites. Additionally, the majority of respondent was university student who can get more easier to use online shopping than older age group. Therefore, this suggest for online retailer should improve personal customer service to handle the queries from customer such as live customer support. It is important to notes that a well-design platform will attract consumer to u (Chen et al., 2018). Thus, the online websites designed which easy to operate and and use for example the main products or best seller need to be placed on top of product categories, in order to attract the attention of online consumer. The e-retailer encourage to design simple interface of website because it makes customer use the online platform as easy as can be.

The perceived enjoyment which has a high standardization factor ($\beta = 0.280$). The results of study obtained that the enjoyment has a great influence on consumer intention to shop online. Consumer with high level of enjoyment are more likely to develop intention to purchase on the internet. Thus it is a direct relationship between enjoyment and consumer intention to engage in online shopping. Today's, customers not only focus on product characteristics and quality, but also pay more attention to the shopping experience. E-retailer could creates opportunities to attract the consumer to find product's information and discover new things on the online platform. Therefore, in order to enhance the customer experience, it suggest that online retailers should provide diversify products on the website to help customers easily select products. In addition, the e-retailer should ensure the high quality product in order to build trust from consumer. The content of information on the product needs to be accurate and complete so that customers understand and feel more clearly about the product to avoid the difference between customer perception from advertising information on the website and the practical products.

On the other hand, the research also contributes to explore the uncleared relationship between perceived information security, perceived social pressure and consumer behavioral intention from prior marketing research. In the global internet era, the security of personal information becomes a growing concern of customers, especially in business transactions on e-commerce. Furthermore, it is necessary for e-retailer should develop the safety electronic payments to become familiar for Vietnamese consumer. E-commerce companies can improve the quality and performance of e-commerce platforms by developing policies for the benefit of customers and the security of personal information. These things can help customers trust to be able to shop online. Lastly, the result of study proposed that consumer attitude has a significant relationship with intention for shopping online. It is supported that the positive consumer attitude will lead more intention to shop online. As more and more people are aware of the convenience and benefits of e-commerce, the intention to buy online will be increased. The study proposes a number of solutions that can help e-retailer and other SMEs enterprise to attract new customers and increase customer satisfaction.

6. CONCLUSION

In conclusion, the study emphasized that the consumer attitude is the important factor which effect on intention for shopping online among Vietnamese people. Based on the final result, the study has expanded the TAM model with the focus on looking for a broader and more complete view suitable to the modern context of e-commerce. It is important to highlights the contribution of consumer attitude towards online shopping during the investigation. Besides theoretical significance, this result of study can be useful for companies operating in the e-commerce field to have the most comprehensive view of customers shopping via online platform. The findings and discussions in this study can be used as managerial implications for e-retailer and marketers to improve their performance and increase market share.

Besides the above findings, the study still has a number of limitations need to require in future research. The first limitation of study is the limited sample of respondents due the main respondents is people have a high experience of online shopping. Thus, the target respondent in the next research should focus on different demographic and lifestyle. Besides, the future studies need to expand the scope of research to create more coverage for the topic, find out many new insights in online shopping intentions. Hence, future studies should extend our research by exploring the different between more consumer group with different demographic. On the other hand, it is possible to identify the barrier factors affects the customer shopping behaviours in the online plattform.

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BUSINESS, ECONOMICS AND FINANCE

BOARD COMPOSITION AND FIRM FINANCIAL PERFORMANCE: EMPIRICAL EVIDENCE FROM VIETNAMESE LISTED FIRMS

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ABSTRACT

Board composition is mentioned as an essential role in governance mechanisms. However, the regarded research in emerging countries is still restricted, and little is known to focus on composition measurement. Therefore, this study aims to provide practical evidences of the linkage between of board characteristics and financial performance in emerging market, specifically in the context of Vietnam. Indeed, this study analyzes two key components of board composition that are represented by board size and gender diversity in boardrooms. Thus, our final results reveal that the more significant number of directors and appropriation of women in boardrooms enhance firm's accountability. Besides, the higher growth opportunity is on firms with more directors in the boardroom, indicating the vital role of diverse backgrounds to improve effective strategic decision-making.

Keywords: Firm performance, corporate governance, Two-stage least square (2SLS), endogeneity problems.

JEL Classification: G30, G32, M16

1. INTRODUCTION

Today, the firms need to improve its business to against the pressures from their competitors, not only from domestic but also from international markets. It addresses the fact that firms need to learn how to innovate their business and improve competitive advantages effectively. In line with that viewpoint, corporate governance (CG) mechanisms play a critical role in sustaining firm's business growth and secure the stability of financial system. In particular, Andrieş and Nistor (2016) present that weak internal governance mechanisms certainly caused the recent financial crisis due to increased agency cost. It means that the better CG mechanisms are intended to increase the accountability of firms and avoid massive disasters before they occur. Thus good corporate governance is recommended to improve firm performance, lower default risk, and secure financial system (Erken, Hung, & Matos, 2012; Tran et al., 2020). Furthermore, board composition is one of key components of internal CG mechanisms that are intended to ensure the interest alignment between shareholders and managers and to alleviate or remove ineffective management team (Bambart, Marr, & Rosenstein, 1994). Indeed, it is mentioned that the efficiency of board composition to its basic functions such as supervising and monitoring, avoiding self-interest behavior amongst executives, and recommending advice to leaders will improve the management of the business (Martin & Herrero, 2018). Moreover, Abatecola et al. (2014) indicate the importance of board composition in improving corporate governance leading to effective final decision-making in boardrooms. Indeed, the effectiveness of the ways which the boards performs its functions would improve the firm performance and the trust from investors to firm's stock. Thus, the good corporate governance is pointed to improve not only firm business but also capital market.

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In addition, although the importance of corporate governance mechanisms is widely recognized, the findings of the linkage between board composition and firm financial performance has been still debated in academic research. These are two main arguments about the role of board composition, both supported and declined perspectives are considered. In particular, the board composition is represented by board size (Fauzi & Locke, 2012), and gender diversity (Adams et al., 2015) has a positive impact on firm performance. These research agree that the greater board size and appropriation of female directors lead to alleviate communication problems in boardrooms and provide better advice to final decision-makers. On the contrary, Dobbin and Jung (2011) indicate that the appearance of women in boardrooms, even the greater board size have a negative influence on firm performance. In line with that view, the bias of decision-making in boardrooms is exacerbated if these are many decision-makers among executives instead of taking advantage of diverse backgrounds. On the other hand, in that given situation, female directors are associated with higher communication problems among executives. Moreover, there are very few papers that have significant paid attention to emerging or transitional markets. Vo and Nguyen (2014) indicate that the lack of governance codes, guidance and regulations alleviate the role of corporate governance in protecting shareholders and improving the efficiency of capital market. Thus, these lead to the requirement of special attentions to the studies of corporate governance in this region.

Different from previous studies, this study analyzes the influence of CG mechanisms on firm performance in Vietnam market, where has recently changed its regimes and economic to market orientation since 1986. Indeed, that economic reform alleviated the central role of state-owned enterprises by issuing the Company Act and the Private Enterprise Act in 1990. These two documents are the important premise to push and encourage the development of private sector along alleviate the domination of state-owned sector which causes to the limitation of whole economic. Besides, Vietnamese stock markets were initiated in 2000, with only two stocks trading on the Ho Chi Minh Stock Exchange (HOSE) at that time. That number has significantly increased over the last decade. Until the end of September 2020, there are 388 firms listing in HOSE, with a total market capitalization of 142.84 billion USD and accounting for 54.4% of the country's gross domestic production (GDP)¹⁷. Despite the rapid dynamic of the economy, Vietnam has still been marked as an emerging country¹⁸. Therefore, the effectiveness of CG mechanisms is necessary to improve not only business performance at the company level but also the disclosure of the capital market at the country level to attract the foreign investment.

Furthermore, in order to deal with the endogeneity concern that may exist because of the unobserved variables affecting both firm performance and board composition, according to Huang and Kisgen (2013), we employ the two-stage least square (2SLS) approach with several instrumental variables to control such that concern. Thus, the firm age and average ownership percentage are used as the external instrument for ownership ratio. These ratios can be the instrument as consistent with Poletti-Hughes and Briano-Turrent (2019).

Eventually, this paper aims to provide a main objective. Since the findings of CG and firm financial performance have been still debated, this study contributes to the relevant literature by providing critical evidences to the role of two key components of board compositions as board size and gender diversity in boardrooms in the context of emerging market, specifically in Vietnam. Thus, the rest of this paper will focus on reviewing the

¹⁷ See more details at [https:// www.ssc.gov.vn](https://www.ssc.gov.vn)

¹⁸ See more details at [https://https://www.worldbank.org/](https://www.worldbank.org/)

previous studies and clarifying the influence of board size and gender diversity in boardrooms on firm financial performance.

2. LITERATURE REVIEW

Corporate governance is the process and regulations which is controlled by the firm management to drive the firm to main objectives (Berle & Means, 1932). It is mentioned that poor management, inadequate information, and lack of transparency are some of the primary reasons leading to the financial crisis (Erkens et al., 2012). Thus, it is obviously recognized that the good CG may benefits firms by the transparence of decisions allocation leading to control rights better than the others. Thus, Cremers and Nair (2003) and Ammann et al. (2011) indicate that the good CG will effective the internal and external business activities that increase firm's value. In the context of this paper, the role of board size and gender diversity in boardrooms will represent for CG mechanisms and their previous studies will be discussed in the next following sections.

2.1. The linkage between gender diversity in boardroom and firm financial performance

Board diversity is defined as the appearance of women on board to equilibrate the gender among the executive members in boardroom (Gordini & Rancati, 2017). Adams and Ferreira (2009) and Haslam et al. (2009) pointed out the negative relation between the number of female participation on boards and firm profitability due to the over-monitoring in boardroom by female directors. In addition, Kochan et al. (2003) explain that the more involvement of women on boards increases the cost-decision making and possibility of conflict in executive team, which may weaken firm performance. Du Rietz and Henrekson (2000) took the firm's execution and female leaders on board in Swedish firms into account and concluded that if not controlling for firm size and areas, firms with women on the board appear to fail to meet firm's expectations. Joecks (2013) showed that firm performance might be decreased if boards reach more than 30 percent of female directors. Dobbin and Jung (2011) demonstrated the relationship between female directors and US firm performance with the negative relation between board diversity and market-based performance, whereas female directors make no influences on accounting-based performance.

On the contrary, several studies provide evidence that the appearance of female directors would lead to an increase in firm performance. According to Campbell and Mínguez-Vera (2008), the variety can be estimated by several dimensions, such as age, gender, ethnicity, nationality and educational background. In particular, there are several research which are interested in the issue of board gender diversity in recent year. The review of gender structure explicitly alludes to the number of female executives on boards (Bear et al., 2010). The expanded weight for board assorted variety is probably going to improve an organizations' notoriety and board viability (Brammer, Millington, & Pavelin, 2009; Adams et al., 2015). Based on the data of United State and perspective on the contributions of women to board decision-making, Cook and Glass (2014) explore the role of women in the boardroom to firm performance and whether companies with more women outperform the others, which fewer involvements of women on boards. In the context of the European market, gender diversity is encouraged by the European Commission to improve corporate governance mechanisms to deal with the negative consequence of the recent crisis and secure the financial system (Harjoto & Laksmana, 2015; Jourova, 2016).

From the perspective that gender diversity might decrease the cost of decision-making and over-monitoring in boardroom which may strengthen firm financial performance (Cook and Glass, 2014), specifically in the financial sector. We then propose the positive effect between gender diversity in boardrooms and financial performance that leads to the hypotheses as follows:

H1a: Proportion of female directors has a significant positive impact on accounting-based performance

H1b: Proportion of female directors has a significant positive impact on market-based performance

2.2. The linkage between board size and firm financial performance

As mentioned in agency theory, the number of directors can influence board decision-making, which might affect firm's strategy (Jensen, 1993). In addition, Jensen (1993) indicate that the number of directors would significantly affect the communication and coordination between executives in boardrooms. In particular, they present that the smaller number of directors increase the quality of information and reduce the bias of conversations between committee members leading to effective final decision-making, which enhance a board's efficiency and productivity. In line with that perspective, Eisenberg, Sundgren, and Wells (1998) indicate that the firms with higher member of directors have less corporate governance than the one with smaller corporate boards. Conversely, De Andres et al. (2005) argue that the larger board size may increase the human capital that directly affects a firm's business. In that such situation, firms could gain the benefits from the diverse backgrounds of directors, thus the firm would response rapidly with the changes of internal and external environment. In addition, De Andres and Vallelado (2008) suggest that the number of board composition should not exceed to the independent board to keep the effectiveness of management functions as well as create more value.

Although the role of board size within corporate governance theory is certainly undenied, the connection between board size and firm's performance is still inconclusive (Kalsie & Shrivastav, 2016). Both negative and positive effects are observed from academic research. In particular, these are the number of studies that support the negative significance due to the increasing of symbolic roles when the number of directors is increase. In that such context, the directors may not perform their primary functions such as monitoring or supervising role but focusing on holding their position and delivering their duties on firm's managers (Weisbach, 2001). Jensen (1998) indicate the increase of directors would make the CEO difficulty to control the strategy since the board size may go beyond their primary functions. In line with that viewpoint, Yermack (1996) confirm the negative effect between greater board size and firm performance in the context of developed countries such as United State. These findings are consistent with Ghosh (2006) when the increase of directors reduce firm performance that is measured by accountability and growth opportunities. Furthermore, the negative association between board size and firm performance is also mentioned by several studies (Garg, 2007; Boone et al., 2007; Guo & Kga, 2012). Bennedsen, Kongsted, and Nielsen (2008) show the compelling evidence that firms would increase their benefits if the number of directors is fixed below six. Thus, the firms need to find the matched point between the proportion of directors serving in boardrooms and cost arising from self-benefits behavior among the executives to find an optimal board.

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Conversely, Coles et al (2008) indicate that firms would gain more benefits from a larger board that bring more directors from diverse backgrounds possessing different skill sets. Thus, the firms could gain more competitive advantage than the others since they can employ the specific knowledge and relationship from boards to optimize decision-making. Thus, firms may improve their business and sustain their position in future. In addition, the positive significance between board size and firm performance was also found in study of Fauzi and Locke (2012). Pearce and Zahra (1992) show that the larger board increases firm's ability to understand and respond to stakeholders rather than boards with fewer directors. Furthermore, it is also recognized that the investors would believe in firms with greater board governing financial structure better than smaller boards, thus it makes the firm's stock price much transparency and reduce the borrowing cost (Anderson, Mansi, & Reeb, 2004).

Thus, in line with the perspective that the higher number of directors will bring more diverse backgrounds and specific knowledge to support the firms leading to an increase of effectiveness of decision-making, strategic planning, and monitoring function in the boardroom (Coles et al., 2008), we then propose the next hypotheses as follows:

H2a: The total number of board of directors has a significant positive impact on accounting-based performance

H2b: The total number of board of directors has a significant positive impact on market-based performance

3. METHODOLOGY

3.1. Data

To analyze the relationship between board size, gender diversity and firm performance, we use a dataset of 178 non-financial firms from Osiris database which are listed in Vietnamese equity market. The final sample includes 1,424 firm year observations from 2010 to 2017. As we mention above, Vietnam has just reformed its economic since 1986 with the law of enterprise was revised from 2014 that highly stated the role of private instead of state-owned sectors. Besides, the Vietnamese stock exchange has been established since 2000 leading to the greatly facility for the firms could asset to the low borrowing cost from capital market. It therefore requires the firm paid more attention on CG mechanisms to attach the investors. Thus, Vietnam has the adequately unique characteristics as an emerging market that is interesting venue for governance research (Abbot & Tarp, 2013; Abbot & Tarp, 2013; Tran & Le, 2020)

3.2. Econometric model

This study applies the two-stage analysis to analyze the relationship between CG mechanisms and firm performance. In the first step, the influence of board composition towards firm performance is estimated by panel analysis approach that is widely used in the context of board composition (Carline, Linn, & Yadav, 2002; Fairchild & Li, 2005, Ionascu et al., 2018). In particular, random and fixed-effects will be applied. Then, the selected results will be validated after running the Hausman test to estimate whether there are any systematic differences between two of these model coefficients.

However, Carter et al. (2010) acknowledge that the least square regression is not efficient or consistent to deal with the endogenous concern. Therefore, in second step, the Two-stage least squares (2SLS) method is applied, as it corrects for the potential endogeneity problems

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(Gordini & Rancati, 2017). Following to Poletti-Hughes and Briano-Turrent (2019), we use the logarithm of firm age (Age), and ownership concentrate (Aown) are two instrumental variables for ownership. According to Stulz (2005), the higher concentration of ownership drivers to low investor protection. Finally, we apply the Cragg-Donald Wald F-statistic and Stock and Yogo tests for estimating the weak instruments that are used in the model.

Given the long-standing financial system and previous studies acknowledging the positive impact of board composition on financial performance, we suggest that even in a transitional economy such as Vietnam, board composition also plays an essential role in enhancing the optimization of board decision-making and thus, it motivates to increase firm performance. Therefore, the higher of firm financial performance is driven by the effectiveness of board composition. The study's hypotheses are tested by running the following model:

$$Performance_{i,t} = \beta_0 + \sum \beta_j Composition_{j,i,t} + \sum \beta_j Firm_{j,i,t} + \Phi_t + \Psi_i + \varepsilon_{i,t} \quad (1)$$

Where performance denotes for firm accountability (which is represented by Return on assets), and firm growth opportunities (which is represented by Tobin's Q ratio); Composition denotes the two alternative variables including Board size (Board), and board diversity (Gender); whereas Firm denotes the firm's characteristics as control variables, Φ controls time effects, and Ψ denotes for unobservable heterogeneity.

Table 1. Variable descriptions

Variables	Meaning	Description
Board composition		
The size of board of directors	Board	The number of total board of directors.
Gender diversity in boardroom	Gender	The proportion of female executive directors in boardroom in board of directors.
Firm financial performance		
Accounting-based performance	ROA	The ratio of net income to total assets.
Market-based performance	Tobin's Q	The ratio of market value of a company divided by its assets' replacement cost.
Control variables		
Firm size	Size	The natural logarithm of total assets.
Cash flow ratio	Cash	The natural logarithm of market capability.
Book equity ratio	Bea	The ratio of book equity to total assets.
Tangible assets	Tang	The ratio of tangible assets to total assets.
Firm leverage	Lev	The ratio of total debt to total assets.
Firm market ratio	MB	The ratio of the market capability to book value.
Ownership	Own	The ratio of shareholder equity to total assets.

4. EMPIRICAL RESULTS

4.1. Descriptive data

Table 2 shows that the value of ROA and Tobin's Q ratios are approximately 9 and 0.75, respectively which indicate that most of listed firms have the profits and gain high growth opportunities in future during the period 2010 to 2017. In different meaning, it implies that the Vietnamese market has turned into economic recovery from the negative consequence of the recent financial crisis in 2008. The percentage of companies with at least one woman as the executive member is 22%, and most firms have nine directors attending on boards. Furthermore, the sample present that the percentage of stock holding from insider ownerships is about 59% (Own), and firms employ 27.4% debt to leverage their business.

Table 2. Data descriptive

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	1,424	8.682	8.700	-36.14	99.380
Tobin's Q	1,424	0.750	4.791	0.020	179.911
Board (Number)	1,424	8.601	3.087	4.000	25.000
Gender	1,424	0.220	0.167	0.000	0.750
Size	1,424	20.406	1.364	16.859	24.695
Cash	1,424	0.101	0.252	0.000	8.466
Bea	1,424	0.395	0.202	-0.481	0.959
Tang	1,424	0.268	0.190	0.002	0.853
Lev	1,424	0.274	0.197	0.000	0.869
MB	1,424	3.090	7.813	-79.386	96.047
Own	1,424	0.589	0.196	0.124	0.997

4.2. Primary analysis

Panel data analysis

Table 3 presents the panel regression outcomes of the relationship between board composition and firm performance. The results indicate that the size of boards has a positive significance to firm financial performance, which market-based is represented by Tobin's Q (column 5-8), and ROA represents for accounting-based (column 1-4). It means the firms with greater boards show the effectiveness in boards decision-making and strategic planning than smaller companies. These results confirm **H2a** supporting that the higher number of directors drive to increase the firm accountability (illustrated by ROA). On the contrary, the board size has no significant influence on market-based performance (represented by Tobin's Q ratio). Tobin's Q ratio estimates the market value of the firm with the replacement cost of its assets, which is relevant to future value. Thus, the non-significance effect of board size and Tobin's Q indicates that the number of boards does not reflect firm's growth opportunities.

Besides, the appearance of women in the boardroom has a positive significance with accounting-based performance, and no-significant is found with market-based, which only supports **H1a**. Also, the Hausman test rejects the null hypothesis in all cases, it shows that FEMs are in favor rather than REM models.

Among control variables, we found that the firm size (Fsize) has no-significance with firm performance, both accounting and market-based were considered, which is inconsistent

with Hasan et al. (2014). Besides, the cash flow (Cash) and market capability (MB) positively influence to firm financial performance. Thus, higher firm incomes lead to more opportunities for financial firms to enhance their value and improve the appreciation of market participants. In addition, the high leverage ratio (Lev) drives to decrease firm's accountant-based, whereas increasing market-based performance. These results imply the ineffectiveness of leverage capital utilizing on firm's assets, but it highly supports firm's growth opportunities (illustrated by the positive impact of leverage and Tobin's Q ratio) (Ibhagui & Olokoyo, 2018).

Table 3. Panel data regression results.

	ROA				Tobin's Q			
	(1-RE)	(2-FE)	(3-RE)	(4-FE)	(5-RE)	(6-FE)	(7-RE)	(8-FE)
Board	0.328*** (0.000)	0.321*** (0.000)	0.318*** (0.000)	0.311*** (0.000)	0.029 (0.146)	0.029 (0.133)	0.028 (0.157)	0.029 (0.143)
Gender	-	-	2.138* (0.07)	2.155* (0.068)	-	-	0.143 (0.673)	0.141 (0.676)
Fsize	0.171 (0.311)	0.216 (0.204)	0.183 (0.279)	0.228 (0.180)	0.007 (0.893)	0.000 (0.994)	0.007 (0.881)	0.001 (0.981)
Cash	2.104** (0.008)	1.983** (0.012)	2.079*** (0.009)	1.958** (0.013)	17.140*** (0.000)	17.158*** (0.000)	17.138*** (0.000)	17.156*** (0.000)
Bea	-3.884*** (0.003)	-3.854*** (0.003)	-3.736*** (0.004)	-3.706*** (0.004)	-0.355 (0.336)	-0.354 (0.337)	-0.345 (0.351)	-0.345 (0.352)
Tang	-0.614 (0.607)	-0.677 (0.570)	-0.508 (0.671)	-0.570 (0.633)	-1.130*** (0.000)	-1.109*** (0.001)	-1.123*** (0.001)	-1.102*** (0.001)
Lev	-16.601*** (0.000)	- 16.706*** (0.000)	-16.730*** (0.000)	-16.835*** (0.000)	1.462*** (0.000)	1.476*** (0.000)	1.453*** (0.000)	1.468*** (0.000)
MB	0.140*** (0.000)	0.141*** (0.000)	0.141*** (0.000)	0.142*** (0.000)	0.014* (0.085)	0.013* (0.095)	0.014* (0.084)	0.013* (0.094)
Constants	7.968** (0.014)	7.163** (0.027)	7.295** (0.025)	6.483** (0.046)	-1.367 (0.140)	-1.260 (0.175)	-1.412 (0.130)	-1.304 (0.163)
R-squared	0.108	0.269	0.102	0.270	0.666	0.803	0.666	0.803
Hausman		0.078		0.076		0.368		0.369

Note: Model (1), (3), (5), (7) present the random-effects, whereas model (2), (4), (6), (8) describe the results from fixed-effects panel data regression of the relationship between board size, gender diversity and firm performance (illustrated by ROA and Tobin's Q ratios). T statistics in parentheses. * p < 0.1; ** p < 0.05; *** p < 0.01. Hausman denotes the p-value of Hausman test with the null hypothesis of "No systematic difference in random and fixed effects coefficients".

Two-stage least squares (2SLS)

As discussed above, we use the 2SLS approach to deal with the endogeneity concern and robust the results from regression stage (Adams, 2009; Carter et al., 2010). Indeed, some unobservable characteristics may influence both board composition choice and firm's performance and lead to statistical problems. Thus, we apply 2SLS to deal with endogeneity concerns and robust the results from OLS regression. We use firm age (Age) and the average of ownership (Aveown) as two external instruments for ownership (Own) in model regression.

Table 4 provides 2SLS estimators for the three components of board composition and firm performance. Results obtained in the 2SLS which confirm our hypotheses, including the positive relationship between gender diversity in boardroom and accounting-based performance; the positive/negative significances found in the regression stage are still remained. These outcomes validate **H1a**, which is confirmed by (Campbell & Mínguez-Vera,

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2008; Brammer et al., 2009; Adams et al., 2015), whereas **H2a** is consistent with (Jensen, 1998; Coles et al., 2008; Fauzi & Locke, 2012). In particular, for the Vietnamese listed financial firms, the appearance of women in the boardroom increase firm's value in accounting-based performance. It indicates that female directors are emphasized to increase firm benefits in scrutinizing board performance, reducing information asymmetries, and increase the effectiveness of boards' decision-making, even involvement in firm' strategy planning (Hillman et al., 2007). Indeed, our positive effect between the proportion of women in boardroom and firm's value is mentioned in prior studies (Campbell & Vera, 2010; Gordini & Rancati, 2017).

In addition, the size of boards positively affects firm's financial performance in both accountability and growth opportunities performance. These outcomes imply that firms with greater boards would perform better due to specific knowledge and relationship from diverse backgrounds (Coles et al., 2008). In the context of emerging countries with poor governance mechanisms, the high attendance of directors on boards is emphasized as an advantage, increasing firm's ability to quickly respond to the internal and external environment in business and gained more beliefs from investors (Pearce & Zahra, 1992; Mansi & Reeb, 2004).

Table 4. Two-stage least squares (2SLS) results.

	ROA		Tobin's Q	
	(1)	(2)	(3)	(4)
Board	0.259*** (0.000)	0.249*** (0.001)	0.030 (0.157)	0.029 (0.168)
Gender	-	2.152* (0.062)	-	0.144 (0.671)
Fsize	-0.134 (0.457)	-0.1224 (0.496)	0.026 (0.623)	0.027 (0.613)
Cash	2.212*** (0.004)	2.188*** (0.004)	17.113*** (0.000)	17.112*** (0.000)
Bea	-4.319*** (0.001)	-4.173*** (0.001)	-0.339 (0.360)	-0.329 (0.375)
Tang	0.368 (0.759)	0.476 (0.691)	-1.200*** (0.001)	-1.193*** (0.000)
Lev	-13.752*** (0.000)	-13.877*** (0.000)	1.331*** (0.005)	1.323*** (0.005)
MB	0.136*** (0.000)	0.137*** (0.000)	0.014* (0.070)	0.014* (0.069)
Own	-8.371*** (0.003)	-9.383*** (0.003)	0.331 (0.686)	0.331 (0.687)
Constants	18.844*** (0.000)	18.185*** (0.000)	-1.924 (0.140)	-1.969 (0.132)
R-squared	0.312	0.3137	0.802	0.803

Note: This table presents 2SLS regressions with robust standard errors clustered by firms where ownership is instrumented with the female on board concentration of other companies of the same year and with the logarithm of the firm's age. T-statistics in parentheses. * p < 0.1; ** p < 0.05; *** p < 0.01.

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Regarding control variables, we find the positive significant between firm market size (MB) and both accounting-based and market-based performance, whereas the no-significance on firm size (Fsize). Generally, the effect of market size on firm performance is likely to be positive as larger firms are expected to use better equity capital which is reported in different contexts (Hart & Oulton, 1996; Vafaei, Ahmed, & Mather, 2015). The positive association between firm ownership and financial performance indicates that a firm with higher ownership might enhance the firm value which is based on the entrenchment effect (Villalonga & Amit, 2006). Additionally, as mentioned by Ibhagui and Olokoyo (2018), the negative impact of leverage on accountant-based performance is explained by the dynamic significant on firm size, and that of a negative effect reduces growth opportunities.

Eventually, to confirm the validity of model regression and deal with endogeneity problems, Cragg-Donald and Stock and Yogo tests are applied after running 2SLS regressions. These two tests present that null hypothesis of weak instrument is rejected (not reported in this study), indicating the validity of all models and the goodness-of-fit of two instrumental variables. Therefore, we conclude the validity of the positive relationship between board size, gender diversity, and firm accountability in Vietnamese listed firms.

5. CONCLUSIONS

Corporate governance and board composition, in particular play an essential role in developing the transparency and effectiveness of boards driving to increase firm performance. In coherence with our theoretical predictions and providing the answer to our research question, we acknowledge the positive impact of two critical components of board composition in Vietnamese non-financial companies on financial performance.

In particular, we find the significant negative impact of gender diversity in boardroom to accounting-based performance represented by return on assets (ROA), which indicate that the presence of women in top executive such as boards would increase the effectiveness of board decision-making and strategic planning. In another meaning, if greater the gender diversity suggests a higher correlation among the information sets of board members, which reduces coordination and communication problems to increase a board's decision-making process and have a positive effect between board decisions and firm performance. Thus, it is consistent with (Campbell & Mínguez-Vera, 2008; Brammer et al., 2009; Adams et al., 2015).

Furthermore, we find that firm's financial performance is increased significantly by the greater size of boards. That positive significance is probably explained by diverse background possessing different skill sets from directors enhancing the effective decision-making and strategic planning (Coles et al., 2008). In sum, our results are significant since these are taken into the context of emerging countries such as Vietnam with poor corporate governance mechanisms environment.

Collectively, our study fulfills the relevant literature of board composition by providing empirical evidences of the role of two components such as board size, board gender diversity toward to firm financial performance in Vietnam market. However, there are several limitations that might be improved in future work. First, the currently estimated variables are still narrow and might not show all statistical problems and different aspects of board composition perspectives. Future research may consider different econometric approaches or verify the role of board composition in alternative managerial levels. Second, future studies may include other emerging countries or regions to expand current findings. Finally, our study consists of the period of the economic recovery of Vietnam from 2010 to 2017. The different time frames

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would be selected to compare and explore whether the role of board composition would be depended on time.

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DEPRESSION, ANXIETY, AND SMARTPHONE ADDICTION IN UNIVERSITY STUDENTS: AN EMPIRICAL STUDY FROM VIETNAM

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ABSTRACT

The research investigated the relationship between depression, anxiety, and smartphone addiction among university students. A field study was conducted with a sample of 495 university students. Data obtained were analyzed by using a series of ANOVA tests and multivariate linear regression. The findings showed that depression and anxiety had positive correlations with smartphone addiction. Further, research's results also indicated that gender, average hours spending on smartphone, and personality type positively impacted smartphone addiction. Implications for academic and business settings were discussed.

Keywords: anxiety, depression, smartphone addiction, university students

JEL Classification:

1 INTRODUCTION

Smart phones have become indispensable in modern life, worldwide. A smartphone is defined in Oxford dictionary as a mobile phone that performs many of a computer's function including a number of useful features and applications. Particularly, with the internet connection, a smart phone provides integrated services from communication, computing, and mobiles sectors (Kalyani, Reddi, Ampalam, Kishore, & Elluru, 2019). Despite of its importance, people have soon realized that smartphone overuse leads to negative effects on their daily lives, safety, health, and physical health-related problems (Cazzulino, Burke, Muller, Arbogast, Upperman, 2014; Cheever, Rosen, Carrier, Chavez, 2014; Demirci, Akgonul, Akpinar, 2015). Unfortunately, the high rates of smartphone addiction have been found in university students globally (e.g., American, Chinese, Korean, Lebanese, and Turkish) who should spend more time for study and social life (Matar Boumosleh, & Jaalouk, 2017). Therefore, it is important to identify determinants of smartphone addiction in university students.

Literature has shown that among various factors impacting the level of smartphone addiction, depression and anxiety were relatively common causes (Matar Boumosleh & Jaalouk, 2017; Kim & Koh, 2018; Kim, Cho, & Kim, 2017). Additionally, some demographic characteristics and personality have been found to have positive associations with smartphone addiction (Matar Boumosleh & Jaalouk, 2017). Vietnam is the home of more than two millions university students (ASEAN, 2019) and is in the top 15 among countries using smartphones the most in the world (Adsota, 2020). Nevertheless, there has been no prior study examining smartphone addiction among university students in Vietnam, causing difficulties for making implications for both business practitioners and educational policy makers. Thus, the current research, which investigated some key factors leading to smartphone addiction among university students, was developed to fulfill such gap.

2 .LITERATURE REVIEW

There is no official diagnostic standard yet to define smartphone addiction. Nowadays, smartphone is upgraded, innovated to access the Internet easily. Consequently, smartphone addicts also has the same behaviors of Internet addicts (Oreilly, 1996). However, smartphone addiction is the abuse of smartphones to the point of disrupting daily life (Duke & Montag, 2017). According to the American Psychiatric Association, depression is defined as a medical state that negatively impacts your feelings, perspectives, and actions. Depression causes feelings of sadness and/or loss of interest in activities. The American Psychological Association defined anxiety as an emotional phenomenon characterized by feelings of stress and anxious conditions. Anxiety disorders differ from normal feelings of nervousness or anxiousness, and involved excessive fear or anxiety. Anxiety disorder in this research was defined as: The presence of generalized, persistent anxiety (continuous for a period of at least 1 month) as manifested by symptoms from at least three of four categories: (1) motor tension (e.g., muscle aches, restlessness); (2) autonomic hyperactivity (e.g., sweating, dizziness, accelerated heart rate); (3) apprehensive expectation (e.g., anxiety, worry, fear); and (4) vigilance and scanning (e.g., concentration difficulties, irritability) (American Psychiatric Association, 1980).

The association between depression/ anxiety and smartphone addiction has been addressed in the literature. Research has shown that depression and anxiety impacted the level of smartphone addiction across different samples, such as, American, Chinese, Korean, Lebanese, and Turkish (Matar Boumosleh & Jaalouk, 2017; Kim & Koh, 2018; Kim, Cho, & Kim, 2017). Attachment theory explains the correlation between depression and anxiety and smartphone addiction (Bowlby, 1979). Accordingly, those who have insecure attachment style and difficulties in emotional regulation are more likely to be addicted, and being addicted is an alternative to overcome such difficulties. Being depressed or anxious indicates that the ability to deal with emotional problems is not so high (Catanzaro & Mearns, 1990). Depressed and anxious people, therefore are more prone to being smartphone addiction, as using mobile phone may be a way to help them release the stress. Thus, the hypotheses were proposed:

Hypothesis 1: Depression and smartphone addiction have a positive correlation

Hypothesis 2: Anxiety and smartphone addiction have a positive correlation

3. METHODOLOGY

Sample: The sample included 495 university students (32.65% male, mean age = 19.97, SD = 0.69). The students were studying at various universities in Hochiminh City, Vietnam. They were from different majors: business and management, information technology, science technology, electronics and engineering, finance and accounting, and other social sciences. Those who do not have a smartphone were excluded from this study.

Procedure: Data were collected via online self-administered questionnaire. Before the main survey, a pilot had been conducted. The questionnaire was improved and revised, accordingly, to make sure that it was easy to understand and be answered. Then, the link to our online questionnaire was posted on students's pages of several universities with a cover letter to ask for respondents' participation. All the respondents received and returned an online consent indicating that their participation in the survey was voluntary.

Measures: Smartphone addiction was measured by 26-item Smartphone Addiction Inventory (SPAII) Scale rated on a 4-point Likert scale, developed by Lin, Chang, Lee, Tseng,

Kuo, and Chen (2014). The SPAI included four subscales, namely compulsive behavior, functional impairment, tolerance, and withdrawal. The total SPAI score ranged from 26 to 104. Following Matar Boumosleh and Jaalouk (2017), a cutoff point of 5 hours on a weekday is indicated as the overuse of smartphones. Depression was measured by two items of the Patient Health Questionnaire-9, and anxiety was assessed by two items of the Generalized Anxiety Disorder-7 instrument (Kroenke, Spitzer, Williams, 2003; Kroenke, Spitzer, Williams, LoÈwe, 2010; Kroenke, Spitzer, Williams, Monahan, LoÈwe, 2007). Each item was rated from 0 to 3, leading to a total score for depression and anxiety ranged from 0 to 6. Similar to the study of Matar Boumosleh and Jaalouk (2017), if the respondents got 3.0 points or greater, it meant that they were experiencing depression or anxiety (Kroenke, Spitzer, & Williams, 2003). We controlled for some demographic characteristics, such as, gender, age, major of respondents, and whether they drink alcohol and smoke. Personality was also controlled. Specifically, type A describes those who are aggressive, competitive, angry, cynical, and mistrustful and type B describes those who are easy-going, laid-back/ more relaxed.

Analytic Technique: Data were analyzed by analysis of variance (ANOVA) tests. Further, to check hypotheses regarding the association between depression and anxiety and smartphone addiction level, multivariate linear regression was used.

4. DATA

Table 1 below depicts demographic information of the sample. Notably, the number of female respondents doubled that of males. Most of the respondents were at the second year and studying business administration and different types of sciences. People who claimed that they were more similar to type B of personality accounted for 71.1% of the total participants involved in this study. Most of the respondents drank (67.3%), whereas a small fraction of them smoked (7.5%). About smartphone using habits, there was nearly a half of the total respondents reported that they used smartphone more than 5 hours on a daily basis. Moreover, among various reasons for smartphone using, entertainment, texting, and study-related purposes topped the list with 98.4%, 85.7%, and 81.8%, respectively. Detailed information is demonstrated in the table 1. Table 2 reports reliability indexes of four aspects of smartphone addiction: compulsive behavior, functional impairment, withdrawal, and tolerance. Accordingly, all the cronbach's alpha were greater than 0.7, implying that four aspects of smartphone addiction were reliable, and could be used for final analysis. Table 3 shows results from a series of ANOVA tests to check whether differences in studied variables affected smartphone addiction. Accordingly, SPAI scores were different among males and females, among different majors of students, and among different purposes for using smartphone. Besides, there were significant difference in SPAI scores between two types of personality. Average time of smartphone using, depression, and anxiety also made difference in SPAI scores. Therefore, those aforementioned variables were included in linear regression on smartphone addiction.

Table 1. Demographic Characteristics of respondents.

Demographic Characteristics	Mean ± SD Or n (% of N)	
	N = 495	
Age	19.97 ± 0.69	
Gender		
Male	161	(32.5)
Female	329	(66.5)
Participants who do not want to disclose information	5	(1)
Major		
Business Administration	212	(42.8)
Information Technology	30	(6.1)
Science Technology	12	(2.4)
Electrical & Electronics Engineering	17	(3.4)
Foreign Language	47	(9.5)
Accounting and Finance	21	(4.2)
Other social sciences	156	(31.5)
Class		
Freshman	90	(18.2)
Sophomore	334	(67.5)
Junior	60	(12.1)
Senior	10	(2.0)
Participants who do not want to disclose information	1	(0.2)
Personality type		
Type A	143	(28.9)
Type B	352	(71.1)
Smoking		
Yes	37	(7.5)
No	458	(92.5)
Alcohol drinking		
Yes	333	(67.3)
No	162	(32.7)
Average time of smartphone use a day		
Less than 2 hours	15	(3.0)
2-3 hours	53	(10.7)
3-4 hours	101	(20.4)
4-5 hours	101	(20.4)
More than 5 hours	217	(43.8)
Participants who do not want to disclose information	8	(1.6)
Reasons for using smartphone		
Study-related purposes	405	(81.8)
Calling relatives	279	(56.4)
Calling friends	249	(50.3)
Texting	424	(85.7)
Entertainment	487	(98.4)
Reading news	363	(73.3)
Working	3	(0.6)
Others	7	(1.4)
Total SPAI Score	65.0586 ± 12.89	
Number of participants having depressed symptoms	223	(45.1)
Number of participants having anxiety disorders	243	(49.1)

Table 2. Scales Reliability

Variable	Reliability Statistics		
	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Compulsive Behavior	0.757	0.763	9
Functional Impairment	0.777	0.778	8
Withdrawal	0.797	0.798	6
Tolerance	0.706	0.714	3

Table 3. ANOVA checking for differences in variables on smartphone addiction

Variables	Addiction on Score: Mean \pm SD (n)		P values
Gender			0.001
Male	62.19 \pm 13.82 (161)		
Female	66.35 \pm 12.13 (329)		
Major			0.014
Business Administration	66.83 \pm 13.32 (212)		
Information Technology	59.77 \pm 11.25 (30)		
Science Technology	68 \pm 16.37 (12)		
Electrical & Electronics Engineering	66.29 \pm 13.70 (17)		
Foreign Language	67.02 \pm 10.89 (47)		
Accounting and Finance	62.53 \pm 12.09 (21)		
Other social sciences	65.05 \pm 12.09 (156)		
Class			0.254
Freshman	64.27 \pm 10.37 (90)		
Sophomore	65.99 \pm 12.94 (334)		
Junior	61.75 \pm 13.23 (60)		
Senior	59.6 \pm 23.54 (10)		
Average time of smartphone use a day			0.000
Less than 2 hours	54.27 \pm 14.46 (15)		
2-3 hours	60.22 \pm 12.27 (53)		
3-4 hours	63.80 \pm 11.84 (101)		
4-5 hours	63.17 \pm 11.52 (101)		
More than 5 hours	68.30 \pm 13.09 (217)		
Personality type			0.001
Type A	68.0909 \pm 11.70 (143)		
Type B	63.82 \pm 13.15 (352)		
Smoking			0.481
Yes	63.62 \pm 12.63 (37)		
No	65.17 \pm 12.91 (458)		
Alcohol drinking			0.540
Yes	65.30 \pm 12.36		
No	64.54 \pm 13.92		
Reasons for using smartphone	Yes	No	
Study-related purposes	65.59 \pm 12.47 (405)	62.67 \pm 14.46 (90)	0.052
Calling relatives	65.31 \pm 12.57 (279)	64.72 \pm 13.31 (216)	0.165
Calling friends	65.21 \pm 12.72 (249)	64.91 \pm 13.08 (246)	0.794
Texting	65.19 \pm 12.37 (424)	64.25 \pm 15.68 (71)	0.570
Entertainment	65.21 \pm 12.65 (487)	56.0 \pm 22.55 (8)	0.045
Reading news	65.20 \pm 12.92 (363)	64.66 \pm 12.84 (132)	0.684
Being depressed	70.26 \pm 11.65 (223)		0.000
Being anxious	68.94 \pm 12.16 (243)		0.000
N = 495			

Tables 4 and 5 described information about linear regression on smartphone addiction (the total SPAI scores). Both depression and anxiety impacted smartphone addiction in university students. The coefficients were 9.47 and 2.55, with standard errors were 1.08 and 0.30, with both p-value were smaller than 0.001, corespondingly for depression-SPAI scores and anxiety-SPAI scores paths. In the next step, demographic characteristics were added as control variables: age, gender, personality, and major of students. The coefficients decreased to 3.28 and 2.31, for depression and anxiety, respectively, and those results were significant at less than 1%.

However, the variance explained in total SPAI increased from 13.4% to 22% and from 13% to 16.1% for the models used depression and anxiety as main independent variables, respectively. Finally, smartphone using habits were controlled along with demographic information, both depression and anxiety showed positive associations with smartphone addiction. More detailed results were reported in tables 4 and 5.

Table 4. Multiple regression of the relationship between depression and smartphone addiction

	Unstandardized β	S.E.	P-value	95% CI for unstandardized β		R ²
				Lower Bound	Upper Bound	
Model 1:						0.134
Depression Score	9.466	1.085	0.000	7.335	11.597	
Model 2:						0.220
Gender	2.849	1.072	0.008	0.742	4.955	
Age	-0.594	0.739	0.422	-2.046	0.857	
Personality type	-2.645	1.154	0.022	-4.911	-0.378	
Faculty	-0.257	0.195	0.187	-0.640	0.126	
Depression Score	3.282	0.327	0.000	2.640	3.924	
Model 3:						0.258
Gender	-0.156	0.743	0.833	-1.616	1.304	
Age	-2.388	1.139	0.037	-4.625	-0.150	
Personality type	-0.314	0.193	0.103	-0.693	0.064	
Faculty	1.215	1.114	0.276	-0.974	3.403	
Average time of smartphone use a day	1.933	0.450	0.000	1.049	2.817	
Calling relatives	1.600	1.142	0.162	-0.644	3.845	
Entertainment	6.744	4.243	0.113	-1.593	15.081	
Texting	-1.634	1.664	0.327	-4.904	1.637	
Study-related purposes	1.895	1.552	0.223	-1.154	4.945	
Reading news	-1.075	1.309	0.412	-3.647	1.497	
Depression Score	3.181	0.325	0.000	2.543	3.819	

Table 5: Multiple regression of the relationship between depression and smartphone addiction

Models	Unstandardized β	S.E.	P-value	95% CI for unstandardized β		R ²
				Lower Bound	Upper Bound	
Model 1:						0.130
Anxiety Score	2.545	0.297	0	1.962	3.127	
Model 2:						0.161
Gender	3.122	1.112	0.005	0.937	5.307	
Age	-0.095	0.77	0.902	-1.607	1.418	
Personality type	-2.927	1.197	0.015	-5.279	-0.575	
Major	-0.363	0.202	0.072	-0.759	0.033	
Anxiety Score	2.309	0.299	0.000	1.721	2.898	
Model 3:						0.205
Gender	0.39	0.772	0.614	-1.128	1.907	
Age	-2.548	1.181	0.031	-4.868	-0.229	
Personality type	-0.423	0.199	0.034	-0.813	-0.032	
Major	1.415	1.153	0.22	-0.851	3.681	
Average time of smartphone use a day	2.133	0.465	0.000	1.22	3.046	
Calling relatives	0.561	1.174	0.633	-1.746	2.868	
Entertainment	8.411	4.387	0.056	-0.209	17.03	
Texting	-0.513	1.728	0.767	-3.908	2.882	
Study-related purposes	1.679	1.609	0.297	-1.483	4.841	
Reading news	-0.878	1.355	0.517	-3.54	1.784	
Anxiety Score	2.235	0.295	0.000	1.655	2.814	

5. RESULTS AND DISCUSSIONS

Smartphone addiction among university students in this study was significant and alarming. Among the participants, nearly 70% admitted that excessive smartphone use led to a decrease in sleep quality and other health problems, especially aches and soreness in the back and eyes. Moreover, 70.9% of confessed that smartphone was the first thing which they had touched first before waking up. More seriously, 69.1% told that even though they felt exhausted because of using smartphone, they kept using it, and the time of use did not reduce. Research found a positive relationship between smartphone overuse and sleep disturbance and daytime dysfunction (Chen, Liu, Ding, Ying, Wang, & Wen, 2017; Demirci, Akgönül, & Akpınar, 2015). Although the current study could not show evidence about negative effects of smartphone addiction on health related problems, a vast number of respondents reported health issues were worth to consider for further research.

Similar to literature, our research showed that age, personality, and duration of daily use affected the level of smartphone addiction. Nevertheless, it is noteworthy that we covered limited range of university's age. Therefore, the findings may not be surprising when senior students spent more time on smartphone than junior students. The senior, perhaps were busier with their studies and job hunting, particularly when using smartphone for study was among

top reasons for smartphone overuse. Their social networks might be broader, as well, thus, they used smartphone for interaction more than the juniors did. This is also consistent with the fact that 85.7% among respondents reported that they used smartphones for texting.

Related to the effects of demographic characteristics on smartphone addiction, there was one interesting finding that female were more addicted than males, which was contradictory with findings from Chen et al. (2017) and Matar Boumosleh and Jaalouk (2017). Chen et al. (2017) stated that male students are more likely to use game apps while females use multimedia applications and social network services. However, after getting the results, we randomly contacted 40 male students to confirm that possibility and acknowledged that they preferred playing games on computers rather than on smartphones. Perhaps, that was also the possible reason to explain why entertainment purpose was not related to smartphone addiction in the general sample. Besides, Van Deursen, Bolle, Hegner, and Kommers (2015) suggested that people who usually on their smartphones for online socialization will form a habit of using smartphone faster, which can lead to smartphone addiction, and males may not spend so much time using their smartphone to socialize, which may explain why female students were more addicted than male students.

More importantly, as hypothesized, both depression and anxiety showed positive associations with smartphone addiction, even after controlling for demographic characteristics and smartphone using habits. The results were consistent with the literature, for example, studies of Enez Darcin, Kose, Noyan, Nurmedov, Yilmaz, and Dilbaz (2016); Lemola, Perkinson-Gloor, Brand, Dewald-Kaufmann, and Grob (2015); Kalyani et al. (2019); Kim, Cho, & Kim (2017); and Matar Boumosleh and Jaalouk (2017). However, there was research indicating that it is the smartphone addiction which caused depression (Alhassan, Alqadhib, Taha, Alahmari, Salam, & Almutairi, 2018). Such a bidirectional relationship would cause difficulties for practical implications, thus further research with more advanced method, which can draw a causal relationship, is needed.

6. CONCLUSIONS

6.1. Theoretical Implications

The research addressed the relationship between depression and anxiety and smartphone addiction, controlling for demographics and smartphone using habits. Based on data of 495 university students, the research tested successfully hypotheses indicating that depression and anxiety affected depression, even after eliminating effects from biographic information and some key phone using habits. The findings are helpful to be used in meta-analysis to synthesize the literature. Further, research also showed that female university students are more addicted to smartphones than the males, contributing to the knowledge of gender differences in smartphone addiction.

6.2. Practical Implications

The research's findings have two main implications for practice. First, depression and anxiety showed positive correlations with smartphone addiction, which impacted several health problems (Cazzulino et al., 2014; Cheever et al., 2014; Demirci et al., 2015). Hence, people with depression and anxiety disorders should not use smartphones too much. Instead, they should work out or enjoy outdoor activities. Second, smartphones and software businesses may consider to make joint efforts to develop applications to help the depressed and anxious to

control the total time of using smartphones or even relieve their stress when using smartphones. Such technological improvements may make changes to the game.

6.3. Limitations and Future Direction

The research has several limitations. First, data were collected via self-reported questionnaire, and this is the cross-sectional study, thus it limits the conclusion about causal relationship among studied variables. Future research should consider more advanced methods, such as experiments to have more concise conclusions. Second, participants were from a specific region (Hochiminh City, Vietnam), combined with the fact that they all were university students, therefore, findings from this research could not be generalized and might not replicate in different contexts. Future researchers should recruit more diverse sample to get comprehensive results. Third, two types of description (type A and type B) were used as proxies for personality variables which might have caused social desirability bias in this research. It means that people tend to choose the type of people that they think preferred by the general society. Future studies may apply more valid instruments to capture effects from personality on smartphone addiction.

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INNOVATION AND PERFORMANCE: EVIDENCE FROM THE SMALL AND MEDIUM-SIZED ENTERPRISES IN VIETNAM

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ABSTRACT

Our paper aims to examine the role of innovation in enhancing firm performance. Using panel data from small and medium-sized enterprises in Vietnam, we estimated the effects of innovation on various firm performance indicators. In order to control for potential endogeneity, we used instrumental variable (IV) two-stage least squares (2SLS) approach. The results from IV/2SLS found that innovation significantly increases including ratio of total value added over total assets, total revenue growth rate, and ratio of total gross profit over total assets

Keywords: innovation; firm performance; SMEs, Vietnam

JEL Classification: D22; L25; M20; O33

1. INTRODUCTION

Small and medium-sized enterprises (SMEs) have been playing a vital role in fostering economic growth in not only developed but also developing economies (Ayyagari et al. 2011; Love and Roper 2015; OECD 2018). In developing countries, SMEs constitute over 90% of all companies outside the agricultural sector, which generates a major source of employment, contributes domestic and export earnings and overall value added (Love and Roper 2015).

Similarly in Vietnam, SMEs also accounted for 98% of all enterprises, 40% of gross domestic products (GDP), and 50% of employment¹⁹ in 2016 as well as contributed to job generation. Therefore, the growth of SMEs in terms of quantity and quality will foster economic growth. Thenceforth, the development and the improvement of SMEs performance have attracted much attention of police makers, practitioners as well as firm owners and board of directors. Many factors contributes to the improvement of firm performance, including innovation, capital investment, quality of human resources, etc.

Among these factors, innovation has been considered one of the most important drivers as it could foster firm and economic growth (Grupp, 1998; Cheng et al. 2013; Kim & Huarng, 2011; Wu, 2011). Innovation was also found to contribute to sustain competitive advantage (Chen & Huang, 2010; Subramaniam & Youndt, 2005). However, some empirical works stated that the connection between innovation and performance has been still an unfastened question (Bowen, Rostami & Steel, 2010), while some concluded no impact of innovation on firm performance (Hitt et al., 1997; Ettl, 1983; David et al., 2014; Koellinger, 2008; Dunk, 2011).

In Vietnam, few studies have examines the role innovation in enhancing SMEs performance, except for the works by Ru-Jen, Kim-Hua and Yong (2013) who found the positive effects of green product innovation on firm performance. Therefore, this paper is

¹⁹ <https://www.vietnam-briefing.com/news/facilitating-sme-growth-vietnam.html/>

conducted to enrich the literature on the relationship between innovation and SMEs performance in Vietnam in particular and developing economies in general.

The main objective of this paper is to examine the effects on firm performance. Unlike the previous studies in Vietnam, this paper employs IV/2SLS approach to estimate the causal effects of innovation on firm performance in order to control for estimation bias due to potential endogeneity. The analysis of this study employs the data from two surveys on SMEs in Vietnam in the year 2011, 2013 and 2015. Another contribution of this paper is that it used various innovation indicators, including introduction of new products, improvement of products and introduction of new technology (or process) as well as firm performance indicators, including ratio of total value added over total assets, total revenue growth rate, and ratio of total gross profit over total assets

This remainder of paper are as follows. Section 2 reviews the literature. Section 3 introduces methodology and describes data. Section 4 presents and discusses research results. Section 5 gives conclusion, policy implications and limitations.

2. LITERATURE REVIEW

Many authors have conducted researches on the contribution of innovation to firm performance; however, their findings have been mixed. Using sample of U.K manufacturing firms Geroski et al. (1993, 1995) found that innovation has both direct and transitory positive effects on firm profit, accounting profitability, stock market rates of return and growth. Bolton (1993) and Matsuo (2006) also revealed a positive relationship between innovation and firm performance. Brown (1997), Tidd et al. (2001), and McAdam and Keogh (2004) confirmed that innovation is a vital determinant in accomplishing firms' goals and successful competition and that firms with innovation activities are more dynamic in the competitive market. Similarly, Pett & Wolff (2009) conducted a research on SMEs in the US and found the positive effect of product and process innovation on SMEs' performance.

However, David et al. (2014), Koellinger (2008) and Dunk (2011) concluded no evidence for the relationship between innovation and firm performance. In a research in Brazil, David et al. (2014) also confirmed no evidence for the relation between innovation and firms' financial indicators such as return on assets, return on equity, return on sales, etc. Meanwhile, some studies found mixed. For the case in Europe, Koellinger (2008) found the positive effects of product or process innovation activities on turnover and increases employment, but no evidence for a relationship between innovation and profitability. As for the case of firms in automotive supplier sector in Turkey, Atalay et al. (2013) showed that firms who has product and process innovation activities has higher performance than non-innovative firms; however, there is no evidence to conclude the effects of organizational and marketing innovation activities on firm performance.

3. METHODOLOGY

3.1. Estimation strategy

Firstly, we employ an Ordinary Least Square (OLS) as a base-line regression to investigate the effect of innovation on firm performance. The base-line regression is expressed using the following equation:

$$Y = \alpha + \beta_1 \text{INNO}_i + \beta_2 \text{FIRM-CHAR}_i + \beta_3 \text{TIME} + \varepsilon_i \quad (\text{Eq.1})$$

where, Y_i is one of three variables used to measure firm performance (CHTVAD, CHSALE and CHGPA). $INNO_i$ is the innovation variable. $FIRM-CHAR_i$ is a vector of control variables. $TIME$ is time dummy variable. The research objective is to examine the impact of innovation on firm performance, and thus we are highly interested in coefficients of β_1 . We expect that β_1 is significantly positive.

In Eq. (2), we control for firm characteristics when we examine the relation between innovation and firm performance. In addition, as described in Table 1, we use the change in outcomes, and thus we can control for the time-invariant heterogeneities. However, there may exist some unobservable factors which may affect both firms' innovation and performance. To treat for the potential endogeneity, we employ an IV-2SLS regression method. Due to the feasibility and availability of data, we use a firm's network with politician and civil servants as a potential instrumental variable for innovation activities.

3.2. Variables measurement

Innovation. We follow previous studies on innovation in SMEs (Ayyagari et al. 2011; Lee et al. 2015) to define innovation activities, including: (1) introduction of new product groups, (2) improvement of existing products (or change specification), and (3) introduction of new technology or new production process). Based on these definition and availability of data, we construct the corresponding innovation variable, including: (1) $INNOD$ equals 1 if firms has any innovation activities, and 0 otherwise; and (2) $AINNO$ is the number of innovation activities (ranging from 0 to 3) that firms had.

Firm performance. We will use three indicators to measure performance, including ratio of total value added over total assets, total revenue growth rate, and ratio of total gross profit over total assets. In order to control time-invariant heterogeneities, we use the change in these indicators over time (first difference).

Control variables. We control for firm characteristics in the regression of firm performance on innovation. These characteristics include ratio of total fixed assets to total assets, ratio of total debt to total assets, ratio of total cash and deposits to total assets, firm age and ratio of investment in physical capitals to total assets

Instrumental variable. We use a firm's network with politician and civil servants as an external instrumental variable for innovation. The rationales to choose network with politician and civil servants as an instrument for innovation is that it is highly correlated to firm's innovation activities but it does not have a direct impact on firm performance

The definition and measurements of all the variables used for empirical analysis are presented in more details in Table 1.

4. DATA

We use data from the surveys on SMEs in Vietnam conducted by the Development Economics Research Group (DERG) at the University of Copenhagen (UCPH), the United Nations University's World Institute for Development Economics Research (UNU-WIDER), Central Institute for Economic Management (CIEM), and Institute of Labor Science and Social Affairs (ILSSA) (CIEM et al., 2011, 2013, 2015). The surveys collected data from approximately 2,500 non-state manufacturing SMEs in 9 provinces and cities of Vietnam, including Hai Phong, Ha Noi (including Ha Tay), Phu Tho, Nghe An, Quang Nam, Lam Dong,

Khanh Hoa, Ho Chi Minh City, and Long An.

This survey includes various types of innovation activities and firm performance indicators.²⁰ We use data from the surveys in 2011, 2013 and 2015. We remove any observations with missing values for the variables used in this paper. To reduce the effects of outliers, we winsorize all variables used in our paper at 1% and 99% percentiles. Our final sample has 4,134 observations.

Table 1. Descriptive statistics

This table reports the descriptive statistics for the main variables for firms in our sample. Sample consists of Vietnamese private small and medium-sized enterprises in surveys conducted in 2011, 2013 and 2015 by the University of Copenhagen and its partners. All variables are winsorized at 1st and 99th percentiles.

Variables	Definition	Mean	SD	Min	Max
INNOVATION					
INNOD	Dummy variable which is equal to 1 if firm has at least one innovation activities and 0 otherwise.	0.329	0.470	0.000	1.000
AINNO	Number of innovation activities that firm has	0.259	0.384	0.000	1.386
FIRM CHARACTERISTICS					
TANG	The ratio of total fixed assets to total assets	0.772	0.214	0.114	0.995
TDEBTR	The ratio of total debt to total assets	0.075	0.156	0.000	0.895
CASHR	The ratio of total cash and deposits to total assets	0.096	0.115	0.001	0.590
LAGE	The natural logarithm of firm age	2.806	0.468	1.609	4.190
CEAT	The ratio of investment in physical capitals to total assets	0.083	0.165	0.000	0.926
FIRM PERORMANCE					
CHTVAD	Change in ratio of total value added over total assets between two surveys	0.059	0.571	-3.633	3.803
CHSALE	Change in total revenue growth rate between two surveys	0.803	6.709	-0.997	297.413
CHGPA	Change in the ratio of total gross profit over total assets between two surveys	0.034	0.412	-2.597	2.595
INSTRUMENTAL VARIABLE					
NETWO	Network size: Politicians and civil servants	1.463	2.638	0	100
Observation		4,134			

²⁰ The surveys' method, questionnaires, and data are available at <https://www.wider.unu.edu/database/viet-nam-sme-database>

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Table 2. Correlations

This table reports the paired correlations among variables. Sample consists of Vietnamese private small and medium-sized enterprises in surveys conducted in 2011, 2013 and 2015 by the University of Copenhagen and its partners. All variables are winsorized at 1st and 99th percentiles.

	INNOD	AINNO	TANG	TDEBTR	CASHR	LAGE	CEAT	CHTVAD	CHSALE	CHGPA	NETWO
INNOD	1.000										
AINNO	0.9631*	1									
TANG	-0.1027*	-0.1046*	1								
TDEBTR	0.1025*	0.1095*	-0.3465*	1							
CASHR	0.0457*	0.0342*	-0.6893*	0.0802*	1						
LAGE	-0.0514*	-0.0602*	0.1722*	-0.1031*	-0.0981*	1					
CEAT	0.1233*	0.1255*	-0.2550*	0.5631*	0.0943*	-0.0779*	1				
CHTVAD	0.0128	0.0131	0.1012*	-0.0303*	-0.0765*	0.0354*	-0.0549*	1			
CHSALE	0.0256*	0.0288*	0.0287*	0.0023	-0.0128	-0.0266*	-0.0056	0.1518*	1		
CHGPA	0.0018	-0.0031	0.1081*	-0.0340*	-0.0735*	0.0327*	-0.0571*	0.9016*	0.1535*	1	
NETWO	0.0739*	0.0810*	-0.0878*	0.0536*	0.0373*	-0.0226	0.0248	0.0412*	-0.0014	0.0610*	1

Note: * $p < 0.1$

5. EMPIRICAL RESULTS

5.1. Correlations

Table 2 presents the correlation among variables used for analysis. Regarding the correlation between innovation and firm performance variables, innovation variables are positively correlated with only total revenue growth rate, but uncorrelated with the ratio of total value added over total assets and the ratio of total gross profit over total assets

5.2. Base-line (OLS) Regression

Table 3a and Table 3b report the estimates from OLS regression. Innovation variables are positively related to firm performance variables and most of the coefficients are statistically significant. In particular, innovation activities (at least one innovation activities or number of innovation activities) play a significant role in enhancing firm performance via increasing the ratio of total value added over total assets, total revenue growth rate, and the ratio of total gross profit over total assets except for the relationship between number of innovation activities and change in the ratio of total gross profit over total assets.

5.3. 2SLS Regression

In OLS regression using Eq.1, when we examine the relation between innovation activities and firm performance, we control for several firm characteristics as well as use the change in outcomes to control for time-invariant factors. However, there may exist some unobservable factors which may affect both firms' innovation and performance. Therefore, to deal with this potential endogeneity problem, we use a 2SLS regression with instrument. Firm's network with politician and civil servants are used as an instrumental variable for innovation.

First, we then use the Cragg-Donald Wald F-statistic test to check for weak instruments. The results (F-stat = 33.377 for INNOD, and F-stat = 38.4 for AINNO) show that the null hypothesis of weak instrument is rejected, meaning that social network is a valid instrument for firms' innovation activities. Secondly, endogeneity tests of endogenous regressors reveal that innovation is endogenous for models with change in the ratio of total value added over total assets and change in the ratio of total gross profit over total assets as dependent variables but exogenous for model with change in total revenue growth rate as a dependent variable. Therefore, we interpret the results from IV/2SLS estimates for models with change in the ratio of total value added over total assets and change in the ratio of total gross profit over total assets as dependent variables, and the results from OLS estimates for model with change in total revenue growth rate as a dependent variable.

The results from IV/2SLS regression reveals that innovations significantly increases firm performance by enhancing the change in the ratio of total value added over total assets and change in the ratio of total gross profit over total assets. Innovation activities are found to have no effect on change in total revenue growth rate using IV/2SLS regression; however, as above discussion, we choose to report the results from OLS regression for the case of change in total revenue growth rate as a dependent variable. Therefore, innovation activities are concluded to significantly improve the change in total revenue growth rate.

Table 3a. Innovation (INNOD) and Firm Performance

This table reports the results from the OLS regression model:

$$Y_i = \alpha + \beta_1 \text{INNOD}_i + \beta_2 \text{FIRM-CHAR}_i + \beta_3 \text{TIME} + \varepsilon_i$$

where, Y_i is one of variables used to measure firm performance (CHTVAD, CHSALE and CHGPA). INNOD_i is a dummy variable which is equal to 1 if firm has at least one innovation activities and 0 otherwise. FIRM-CHAR_i is a vector of control variables. TIME is a time dummy variable. Sample consists of Vietnamese private small and medium-sized enterprises in surveys conducted in 2011, 2013 and 2015 by the University of Copenhagen and its partners. All variables are winsorized at 1st and 99th percentiles.

Variables	CHTVAD	CHSALE	CHGPA
INNOD	0.047** (0.017)	0.383* (0.099)	0.024* (0.086)
TANG	0.250*** (0.000)	1.716** (0.021)	0.214*** (0.000)
TDEBTR	0.102 (0.158)	0.838 (0.328)	0.077 (0.142)
CASHR	-0.054 (0.621)	1.166 (0.364)	0.015 (0.847)
LAGE	0.024 (0.204)	-0.453** (0.046)	0.013 (0.330)
CEAT	-0.168** (0.010)	-0.424 (0.583)	-0.118** (0.012)
Time FE	0.052*** (0.004)	-0.058 (0.790)	0.036*** (0.006)
Constant	-0.233*** (0.003)	0.511 (0.580)	-0.193*** (0.001)
Observations	4,134	4,134	4,134
Adj.R ²	0.0131	0.00130	0.0137

Note: *p*-values in parentheses

* *p* < 0.1, ** *p* < 0.05, *** *p* < 0.01

Table 3b: Innovation (AINNO) and Firm Performance

This table reports the results from the OLS regression model:

$$Y_i = \alpha + \beta_1 AINNO_i + \beta_2 FIRM-CHAR_i + \beta_3 TIME + \varepsilon_i$$

where, Y_i is one of variables used to measure firm performance (CHTVAD, CHSALE and CHGPA). $AINNO_i$ is number of innovation activities that firm has. $FIRM-CHAR_i$ is a vector of control variables. $TIME$ is a time dummy variable. Sample consists of Vietnamese private small and medium-sized enterprises in surveys conducted in 2011, 2013 and 2015 by the University of Copenhagen and its partners. All variables are winsorized at 1st and 99th percentiles.

Variables	CHTVAD	CHSALE	CHGPA
AINNO	0.058** (0.016)	0.530* (0.062)	0.024 (0.163)
TANG	0.252*** (0.000)	1.742** (0.019)	0.214*** (0.000)
TDEBTR	0.102 (0.160)	0.830 (0.333)	0.077 (0.141)
CASHR	-0.049 (0.652)	1.213 (0.345)	0.016 (0.833)
LAGE	0.025 (0.196)	-0.448** (0.049)	0.013 (0.330)
CEAT	-0.167** (0.010)	-0.433 (0.575)	-0.117** (0.013)
Time FE	0.052*** (0.004)	-0.047 (0.829)	0.035*** (0.008)
Constant	-0.235*** (0.003)	0.457 (0.622)	-0.191*** (0.001)
Observations	4,134	4,134	4,134
Adj.R ²	0.0131	0.00149	0.0135

Note: *p*-values in parentheses

* *p* < 0.1, ** *p* < 0.05, *** *p* < 0.01

Table 4a: Innovation (INNOD) and Firm Performance-2SLS

This table reports the results from the first and second stages of the 2SLS regression of firm performance (CHTVAD, CHSALE and CHGPA) on innovation (INNOD), other firm characteristics and a time dummy variable. Instrumental variable is a firm's network size with politicians and civil servants. Sample consists of Vietnamese private small and medium-sized enterprises in surveys conducted in 2011, 2013 and 2015 by the University of Copenhagen and its partners. All variables are winsorized at 1st and 99th percentiles.

Variables	INNOD	CHTVAD	CHSALE	CHGPA
NETWO	0.015*** (0.000)			
INNOD		0.665*** (0.006)	0.309 (0.905)	0.692*** (0.000)
TANG	-0.195*** (0.000)	0.383*** (0.000)	1.700* (0.067)	0.358*** (0.000)
TDEBTR	0.066 (0.249)	0.057 (0.486)	0.844 (0.335)	0.028 (0.670)
CASHR	-0.096 (0.262)	0.014 (0.911)	1.158 (0.378)	0.088 (0.375)
LAGE	-0.032** (0.036)	0.044* (0.051)	-0.455* (0.059)	0.035* (0.055)
CEAT	0.233*** (0.000)	-0.310*** (0.001)	-0.407 (0.676)	-0.272*** (0.000)
Time FE	-0.248*** (0.000)	0.201*** (0.001)	-0.076 (0.909)	0.197*** (0.000)
Constant	0.656*** (0.000)	-0.661*** (0.000)	0.563 (0.780)	-0.656*** (0.000)
Observations	4,134	4,134	4,134	4,134
Adj.R ²	0.0937	.	0.00128	.

Note: *p*-values in parentheses

* *p* < 0.1, ** *p* < 0.05, *** *p* < 0.01

Table 4b: Innovation (AINNO) and Firm Performance-2SLS

This table reports the results from the first and second stages of the 2SLS regression of firm performance (CHTVAD, CHSALE and CHGPA) on innovation (AINNO), other firm characteristics and a time dummy variable. Instrumental variable is a firm's network size with politicians and civil servants. Sample consists of Vietnamese private small and medium-sized enterprises in surveys conducted in 2011, 2013 and 2015 by the University of Copenhagen and its partners. All variables are winsorized at 1st and 99th percentiles.

Variables	AINNO	CHTVAD	CHSALE	CHGPA
NETWO	0.013*** (0.000)			
AINNO		0.759*** (0.006)	0.353 (0.905)	0.790*** (0.000)
TANG	-0.187*** (0.000)	0.395*** (0.000)	1.706* (0.075)	0.370*** (0.000)
TDEBTR	0.063 (0.178)	0.054 (0.512)	0.842 (0.338)	0.024 (0.710)
CASHR	-0.156** (0.026)	0.068 (0.593)	1.183 (0.389)	0.145 (0.155)
LAGE	-0.033*** (0.008)	0.048** (0.036)	-0.453* (0.066)	0.039** (0.034)
CEAT	0.185*** (0.000)	-0.296*** (0.001)	-0.400 (0.670)	-0.257*** (0.000)
time FE	-0.201*** (0.000)	0.189*** (0.001)	-0.081 (0.895)	0.184*** (0.000)
Constant	0.572*** (0.000)	-0.659*** (0.000)	0.564 (0.778)	-0.653*** (0.000)
Observations	4,134	4,134	4,134	4,134
Adj.R ²	0.0961	.	0.00139	.

Note: *p*-values in parentheses

* *p* < 0.1, ** *p* < 0.05, *** *p* < 0.01

6. CONCLUSION

This paper examines the impact of innovation activities on firm performances measures by various indications. In order to control for potential endogeneity, we use IV/2SLS regression for empirical analysis. The findings reveal that innovation significantly improved performance of SMEs by enhancing such indicators as change in ratio of total value added over total assets, change in total revenue growth rate and change in the ratio of total gross profit over total assets.

Our findings imply some important implications. Policy makers should enact relevant

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policies to support the SMEs with innovation activities, thereby increasing firm performance and their competitiveness. For instance, encouragement policies or financial incentives (tax reduction or subsidies) for innovative firms should be implemented and/or fostered.

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CREDIT RISK ANALYSIS OF MICROCREDIT USING THE DATA OF A CHINESE MICROFINANCE COMPANY AND DATA MINING TECHNIQUES

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ABSTRACT

Microcredit is the extension of small loans (microloans) to impoverished borrowers who typically lack collateral, steady employment, or verifiable credit history. Microfinance companies have focused on improving rural societies and helping individuals solve financial difficulties. They have received considerable attention from governments, scholars, and related institutions since their emergence. However, microfinance belongs to a vulnerable industry, and microcredit has a high default risk. These have caused a higher business risk for microfinance companies. Therefore, the credit risk analysis of microcredit becomes an urgent issue at present. Although the urgency, few studies analyze microcredit's credit risk using big data sets and sophisticated manners. Data mining techniques are an emerging discipline that obtains useful knowledge from large amounts of data. We can make inductive reasoning and automatically classify customers' credit risk by using them. Thus, building a credit risk assessment model can effectively help microfinance companies improve personal credit risk evaluation in terms of efficiency and accuracy and service quality and risk management capabilities. The purpose of this study is to compare several data mining techniques and proposes the best one for analyzing the credit risk of microcredit. To that end, we extracted 46471 customer's loan records of the microfinance company in China. For the analysis, we used IBM SPSS Modeler 18 and IBM SPSS Statistics 24. The result shows that the logistic regression model has the advantages of more lenient assumptions, fewer required parameters, no strict restrictions on dependent variables, and easy to understand conclusions.

Keywords: Microfinance, Data Mining, Logistic Regression, Decision Tree, Neural Network, Credit Risk Analysis

JEL Classification: M21

1. INTRODUCTION

Microfinance emerged in the 1970s to help impoverished residents in Bangladesh to solve their financing difficulties. China's microfinance companies' establishment is relatively late. They have limited operating experience and are relatively immature in credit risk management. Therefore, microcredit companies face more credit risk than traditional commercial banks and other mature financial institutions (Jin & Mingliang, 2013). Credit risk is the most significant risk to a small loan company. A small loan company's characteristics make it an institution that can only carry out loan business and can't absorb deposits. This requires small loan companies to have a more complete credit risk management system to evaluate customers. Suppose a microfinance company designs a set of scientific credit risk evaluation models. In that case, the more effective customer data analysis in the Big Data era can benefit the microfinance institutions' credit risk management (Logan, 2015). The purpose of this study is to compare several data mining techniques and proposes the best one for analyzing the credit risk of microcredit. To that end, we extracted 46471 customer's loan

records of the microfinance company in China. For the analysis, we used IBM SPSS Modeler 18 and IBM SPSS Statistics 24. The result shows that the logistic regression model has the advantages of more lenient assumptions, fewer required parameters, no strict restrictions on dependent variables, and easy to understand conclusions.

2. LITERATURE REVIEW

2.1. Microfinance

Recently, research on microfinance has mainly focused on the evaluation of social efficiency. When designing regulatory standards, it may be useful to use a layering approach that recognizes the fundamental differences in capital structure, funding, and the risks faced by different types of microfinance institutions (Greuning et al., 2016, Beisland et al., 2020).

2.2. Credit Risk Assessment

The biggest challenge faced by microfinance companies is the issue of credit risk control. Jinying (2009) insisted that the lack of professional talents in credit risk assessment makes it difficult for microfinance companies to identify and control risks. Xu (2011) believes that unlike the commercial banks, the loan officers of small loan companies primarily understand the loan customers through visits, investigations, etc. and can only judge customers' credit risk status from the subjective perspective. No credit management meets its operating characteristics. The software and customer rating systems are relatively backward in terms of risk control measures, making the borrower's risk control ability weaker.

Based on the credit risk of microfinance, many scholars proposed the necessity of credit assessment. Yanxue & Lu (2010) insisted that the credit evaluation system can improve microfinance companies' risk control ability. And it enhances the information asymmetry relationship between microfinance companies and loan customers. Moreover, it reduces the operational risk of loans and improves risk control methods.

2.3. Data Mining Techniques

Wu et al. (2004) optimized the use of neural network model and genetic algorithm, established a further optimized neural network credit evaluation model, and obtained an excellent market application. Ye & Minjie (2006) combined the decision tree and genetic algorithm to evaluate customer credit risk using quantitative and qualitative analysis and conducted quantitative research based on qualitative classification. Yan et al. (2006) used Bayesian classifiers to classify customer data and designed for fraud detection of credit card usage. Nguyen (2019) proposed credit risk evaluation models using conventional data mining techniques (logistic regression, neural networks, and decision tree) and ensemble technique (XGBoost).

3. RESEARCH METHOD

3.1. Data Description

This paper collects the microcredit data set from NEO INCLUSIVE FINANCE in China. We contacted several microfinance companies, and this company is consent to provide the data

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set. This company's primary business offers premium and practical financial information and services for small-micro business owners, wage earners, students, and individual entrepreneurs. For the protection of consumer privacy, this data set does not involve private customer information. In the credit data, the percentage of default customers is relatively small, generally not exceeding 3% to 5%. We used a stratified sampling method to build a data set (Siddiqi, 2006). Table 1 is the data set used in this paper. The data includes 11 variables, including nine input variables (independent variables), a target variable (dependent variable), and a weight variable representing the sampling weight.

Table 1. Variables of Modeling Data

Variable	Type	Value
Age	Continuous variable	18 ~ 71
Income	Continuous variable	0 ~ 10000
Number of Children	Continuous variable	0 ~ 6
Number of Family Members	Continuous variable	1 ~ 15
At current address time	Continuous variable; 999 represents missing data	0 ~ 360 (month)
At current position time	Continuous variable; 999 represents missing data	0 ~ 336 (month)
Housing type	Discrete variable	Rent; Owner; Missing
Address	Discrete variable	First-tier cities; General city (second & third tier); Suburban & Rural
Loan type	Discrete variable	Home Loans; Car Loans; Education Loans; Travel Loans & Others
If default	Target variable, 1 stands for default	0; 1
WOE	This data set extracts data from the population and reflects the proportion of bad customers in the overall data by weighting variables.	1,30

Table 2. Descriptive Statistic

	Age	Income	Num .Child	Num. Fam	Add, Time	Posi, Time	If Default
N	Valid	46471	46471	46471	44696	45770	46471
	Missing	0	0	0	0	1775	701
Std. Deviation	11.38	1653.13	1.183	1.438	87.62	85.434	0.17674
Mean	36.87	1875.73	.90	2.54	94.03	83.44	.03228
Median	35.00	2100.00	1.00	2.00	60.00	48.00	.00000
Mode	31	0	0	1	3	288	.000
Range	53	100000	23	24	360	336	1.000
Minimum	18	0	0	1	0	0	.000
Maximum	71	100000	6	15	360	336	1.000

The entire data includes customer's necessary information and their loan type from January 2017 until September 2017. This study extracted 46471 customers and their loan records as primary data. To better understand the data information, we use the descriptive analysis to present the continuous variables' information.

According to descriptive statistical analysis, we can see the current address time has 1775 missing records, and the current position time has 701 missing records. By observing the variables, we can find that the linear relationship between the number of children and the number of family members is positive and very strong. The correlation coefficient of the two variables shows 0.951.

3.2. Research Framework and Pre-processing

<Figure 1> shows the framework of this study. In SPSS Modeler, there is not a single node that can complete the credit scoring process. A credit scoring model can still be built according to a research framework using multiple data stream combinations.

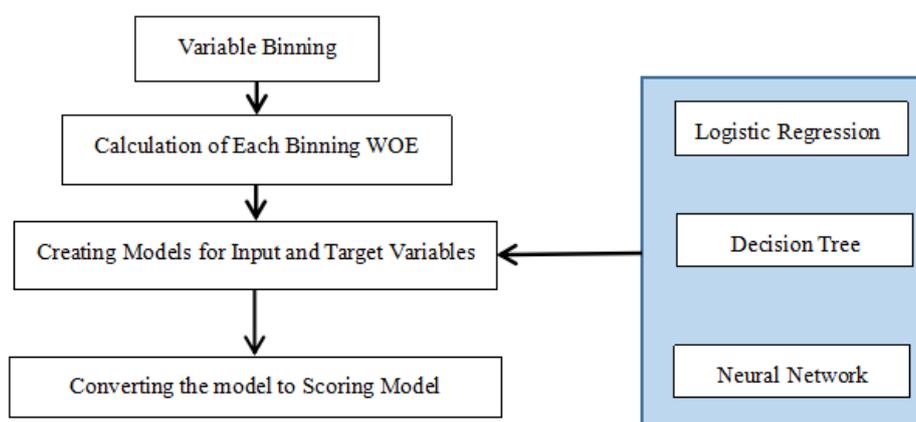


Figure 1. Research Framework

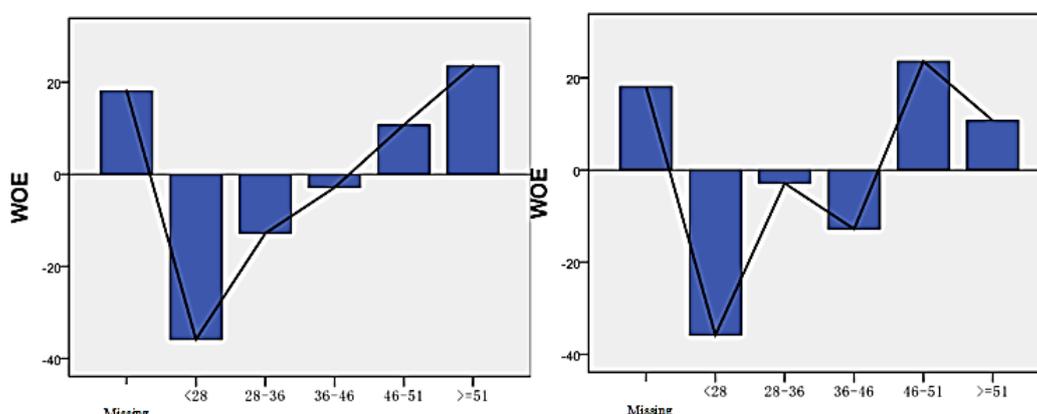


Figure 2. Good Bin and Bad Bin

The binning of variables include the binning of continuous variables and the binning of discrete variables. In general, binning is a combination of specific business issues, and there is

no standard answer. In general, we should have the following basic principles in binning. First, the number of bins should be moderate. If the number of bins is too small, the degree of discrimination will be insufficient, and too much will bring about poor stability and inconvenient management. Second, each bin's number of records should be reasonable and should not be too much or too little. Thirdly, bins should be able to show prominent trend characteristics in combination with target variables. <Figure 2> shows good bins and bad bins. Finally, The difference in the distribution of target variables in adjacent bins should be large.

WOE is the weight of evidence. The WOE is calculated based on the proportion of good customers and bad customers, which changes in the same direction as the default percentage. According to the WOE, besides the trend characteristics of different bins, it is also an important input variable of Logistic regression. The calculation formula for this variable is:

$$WOE = \ln\left(\frac{GCRatio}{BCRatio}\right) \times 100$$

In this formula, GCRatio means good customer ratio, and BCRatio means bad customer ratio. Further, according to WOE, we can calculate IV (Information Value). The calculation formula for IV is:

$$IV = \sum_{i=1}^n (GCRatio - BCRatio) \times \ln\left(\frac{GCRatio}{BCRatio}\right)$$

We can use IV to indicate whether the variable has significant significance for the predicted target variable. When $IV < 0.02$, this variable has little significance for predictors. When $0.02 \leq IV < 0.1$, this variable has some significance for predictors. When $0.1 \leq IV < 0.3$, this variable has high significance for predictors. When $IV \geq 0.3$, this variable has a very high significance for predictors. However, When $IV > 5$, this variable tends to over-predict the target variable. It should be carefully examined to see if it has chosen a strongly causal variable to the target variable and whether this variable can be used to predict the model (Siddiqi, 2006).

For continuous variables, there is a special binning node in IBM SPSS Modeler that contains the optimal binning method. Using this method, we need to set a discrete variable target. After setting the target variable, the node will bin the specified continuous output variables according to the target variable's distribution. Then we can choose to export and generate a new variable with the continuous variable binning result. For the case of a large number of discrete variables, in IBM SPSS Modeler, the reclassification node can be used to re-bind the discrete variables following the principle that the WOE value is close. Running the binning and generating the WOE value data stream in the results shown in Table 3.

According to the WOE, we could see that the default rate declines with increasing age. The default rate for middle-income is higher, and the default rate for high-income is low. Although the low-income default rate is higher, it is lower than the default rate of middle-income. The childless default rate is significantly higher than that of having children. People who have a long time in their current address have a lower default rate than those who have a short time at their current address.

Table 3. Input Variable and Binning Value

Variable	Bin	WOE	IV
Age	1. <23	-110.587	0.354
	2. 23-28	-57.248	
	3. 28-46	21.242	
	4. >=46	95.496	
Income	1. <1000	66.003	0.199
	3. >=2400	9.307	
	2. 1000-2400	-52.126	
Num.Child	1. <1	-21.478	0.051
	2. >=1	24.066	
Add.Time	1. <18	-31.917	0.027
	2. >=18	8.54	
Posi.Time	1. <18	-56.404	0.179
	2. 18-96	-6.435	
	3. >=96	65.472	
Home Type	Rent	-1.899	0.008
	Owner	43.956	
	Missing	-1.805	
Address	General city	1.05	0.026
	Suburban & Rural	-69.25	
	First-tier cities	81.895	
Loan Type	Home Loan	67.788	0.172
	Education Loans	0.064	
	Travel Loans&Others	-69.25	
	Car Loans	-25.895	

3.3. Data Mining Techniques

3.3.1 Logistic Regression

Logistic regression is a widely used data analysis technique when predicting target variables as discrete variables. The logistic regression model is:

$$\text{logit}(p) = \beta_0 + \beta_1x_1 + \dots + \beta_kx_k$$

P is the probability that we are concerned about the appearance of results, such as bad customers. Logit is a transformation function, usually called the logit transformation: $\text{logit}(p) = \ln\left(\frac{p}{1-p}\right)$. The logit transform can transform p-values ranging from 0 to 1 to values that are arbitrary real numbers to construct models using linear regression. x is the input variable, which is the independent variable of the predictive model. β is the constant term of the regression equation.

3.3.2 Neural Network

The artificial neural network is a mathematical algorithm model that can be distributed parallel information processing by simplifying, abstracting, and simulating the biological neural network to construct a human brain structure and function (Jeatrakul & Wong, 2009).

The artificial neural network is composed of mathematical model neurons. The neuron is an input-output information processing unit, and the information processing is linear. Neurons can be abstracted as simple mathematical models.

3.3.3 Decision Tree

The decision tree consists of three parts: node, branch, and leaf. The root node is located at the top node and represents the beginning of the decision tree. Each other node represents a specific attribute test, and each corresponding branch corresponds to a test result. The decision tree algorithm generally adopts a top-down recursive construction method. During the construction process, each node will perform a test according to different preset classification attribute values and then form other branches until the last leaf node.

4. EXPERIMENTAL DESIGN AND ANALYSIS RESULTS

4.1 Logistic Regression Model

The logistic regression model is provided in IBM SPSS Modeler. We can use the data flow shown in <Figure 3> to build a logistic regression model. The input variable used here is the WOE value corresponding to the binning of each variable. Also, the stepwise method is used for regression in the model (Siddiqi, 2006).

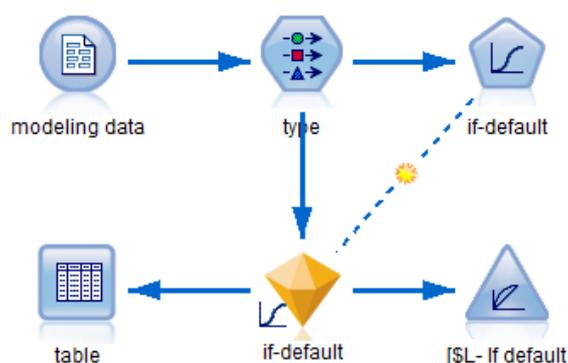


Figure 3. Logistic Regression Model

After running the data, we can get the logistic regression analysis results shown in Table 8. As shown from the table, only six variables entered the model during the stepwise regression analysis because the IV at the current address time was only 0.008. Therefore, we chose to exclude it. We can also see the regression coefficients and constants for each variable from the table.

Table 4. Logistic Regression Analysis Coefficient Results

Model	Action	Effect(s)	Model Fitting Criteria		Effect Selection Tests		
			-2 Log Likelihood	Chi-Square(a,b)	df	Sig.	
Step 0	0	Entered	Intercept	2237.369			
Step 1	1	Entered	WOE_Age	1715.228	553.352	1	.000
Step 2	2	Entered	WOE_Loan Type	1500.955	194.794	1	.000
Step 3	3	Entered	WOE_Pos time	1409.184	90.797	1	.000
Step 4	4	Entered	WOE_Add	1385.008	24.426	1	.000
Step 5	5	Entered	WOE_Income	1371.276	13.995	1	.000
Step 6	6	Entered	WOE_Num child	1364.254	7.024	1	.008

Stepwise Method: Forward Stepwise

a. The chi-square for entry is based on the score test.

b. The chi-square for removal is based on the likelihood ratio test.

If_BC	β	Std. Error	Wald	df	Sig.	Exp(β)	95% Confidence Interval for Exp(β)	
							Lower Bound	Upper Bound
Intercept	-3.398	.028	14508.016	1	.000			
WOE_Age	-.007802	.000	270.556	1	.000	.992	.991	.993
WOE_Income	-.002629	.001	9.126	1	.003	.997	.996	.999
WOE_Num child	-.003423	.001	7.015	1	.008	.997	.994	.999
WOE_Pos time	-.005902	.001	67.734	1	.000	.994	.993	.996
WOE_Add	-.008257	.002	26.132	1	.000	.992	.989	.995
WOE_Loan Type	-.007679	.001	63.093	1	.000	.992	.990	.994

a. The reference category is: 0.0.

However, each coefficient based on the logistic regression results alone is not sufficient for credit evaluation. The use of logistic regression for credit evaluation requires the generation of a credit scoring model combined with the WOE value of each variable. The transformation of logistic regression coefficients into credit scores is a scaling process.

Nowadays, it is common to use the following equations to represent the credit score relationship: (1) $Score = Offset + Factor \times \ln(odds)$, (2) $Score + PDO = Offset + Factor \times \ln(2 \times odds)$.

Where PDO (points to double the odds) represents the Score that needs to be increased to double odds. By solving (1), (2) equations can be obtained: $PDO = Factor \times \ln(2)$. which means $Factor = PDO / \ln(2)$, $Offset = Score - Factor \times \ln(odds)$.

If the Score is 500 points and the odds ratio is 30:1, and if 50 points increase the Score, the odds ratio is doubled. From the above formula, we can get:

$$Factor = 50 / \ln(2) = 72.1348, Offset = 500 - 72.1348 \times \ln(30) = 254.6553.$$

Thus the final scoring formula can be:

$$Score = 254.6553 + 72.1348 \times \ln(odds).$$

From the previous introduction of logistic regression, we can see that the left side of the logistic regression equation is $Logit(p) = \ln(odds)$, Substituting this result into the previous credit scoring equation yields:

$$Score = Offset + Factor \times \ln(odds)$$

$$Score = Offset + Factor \times -(\alpha + \sum_{j,i=1}^{k,n} (\beta_j \times WOE_j))$$

$$Score = \sum_{j,i=1}^{k,n} (\frac{Offset}{n} - \frac{\alpha}{n} \beta_j \times WOE_j)$$

WOE represents the WOE value of each bin of each variable, α , β represents the logistic regression result's coefficients, n represents the number of input variables, and k represents the number of bins for each input variable. It should be noted that the regression equation was previously changed to a negative sign because the odds numerator used in the logistic regression is the proportion of bad customers, and the odds here are the proportion of good customers. Therefore, each variable can be obtained by the following transformation, and the corresponding rating value of each bin:

$$Score = \frac{Offset}{n} - Factor \times (\frac{\alpha}{n} + \beta_i \times WOE).$$

Among them, Offset and Factor value can be calculated according to the previous. According to the coefficients obtained by the logistic regression model, we can use SPSS Modeler to achieve the scoring model. <Figure 4> is the data stream to achieve the credit score.

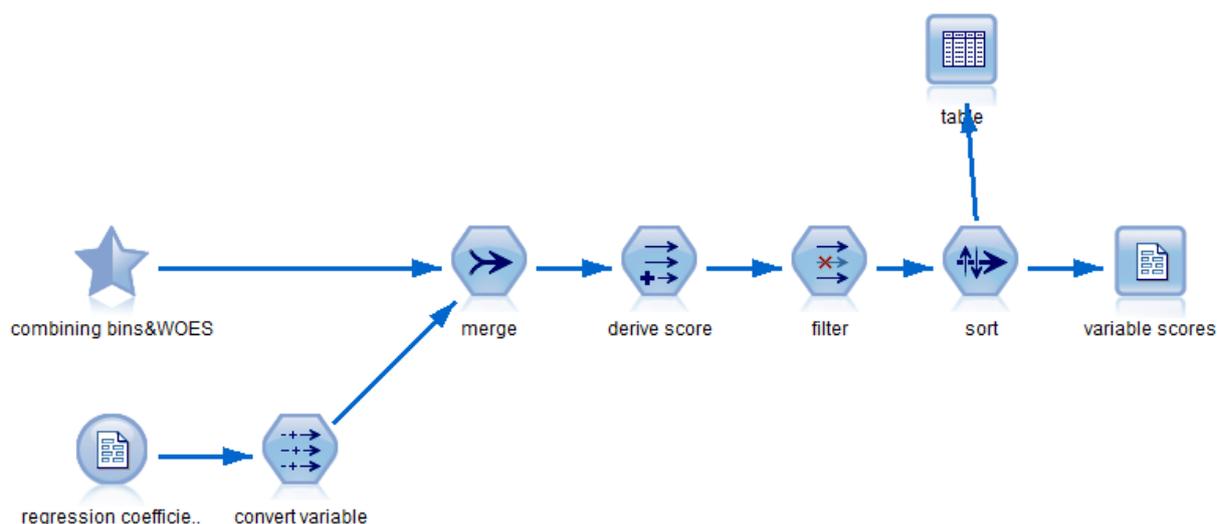


Figure 4. Transform Logistic Regression Coefficients into Credit Scores

According to the scoring model, we can get the Score table shown in <Table 9> and the corresponding Score value for each variable.

Table 5. Variable Bins and Scores

Variable	Bin	Score
Age	1.<23	21
	2.23-28	51
	3.28-46	95
	4.≥46	137
Income	1.<1000	96
	3.≥2400	73
	2.1000-2400	85
Num.Child	1.<1	78
	2.≥1	89
Posi.Time	1.<18	59
	2.18-96	81
	3.≥96	111
Address	General city	132
	Suburban & Rural	84
	First-tier cities	42
Loan Type	Home Loan	121
	Education Loans	83
	Travel Loans&Others	69
	Car Loans	45

4.2. Decision Tree Model

We develop a chi-square Automatic Interaction Detector (CHAID) decision tree using SPSS Modeler. We set 70% of the data for the training set and 30% for the validation set through data partitioning. The model is shown in <Figure 5>. In this model, we set the variable of if default as the target variable and set the variable of age, income, and others for predictor. The resultant model yielded a predictive accuracy of 96.73% (n= 31397).

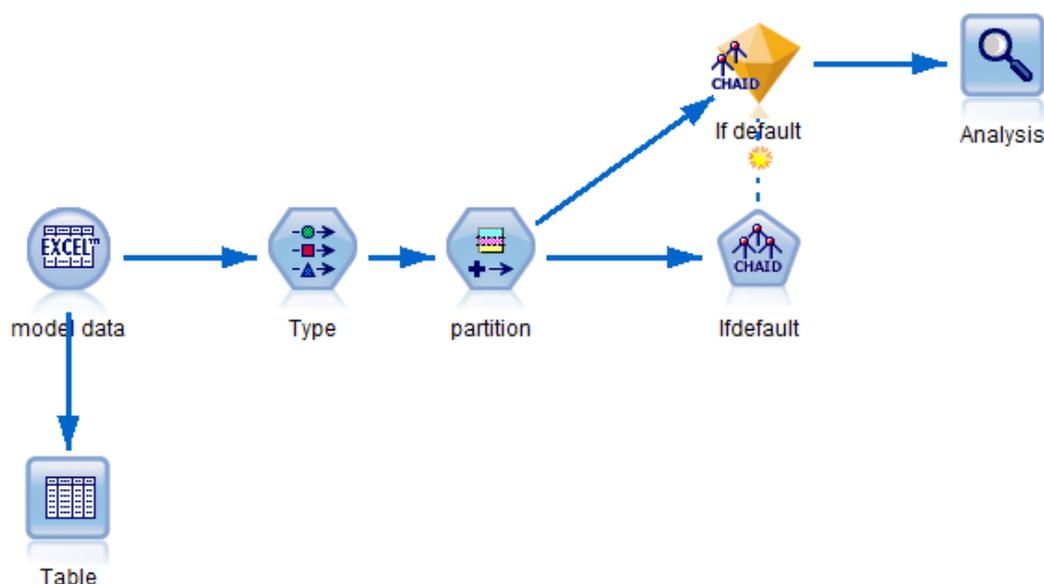


Figure 5. The CHAID Model

<Figure 6> shows the relative importance of the variables predicting if a customer will default during their micro-loan. The relative importance of each predictor ranged from 0 to 1. The higher the value, the more critical the predictor, as shown in <Figure 6>. These variables come from the predictors' sensitivity metrics, which reflect the reduced variance of the target variables when learning the predictor variables. They are reasonable measures of the importance of sorting predictors (Saltelli, 2004). From the relative importance of predictors, we could see that the top seven predictors in descending order of importance are age, loan type, position time, number of children, income, address time, and home type. We could see that the relative importance of age is higher than other predictors, which is 0.5. The second more top predictor is loan type, which reaches 0.16. According to the table, when we need to perform credit evaluation on customers, we may need to consider the age of customers and the type of loans they require.

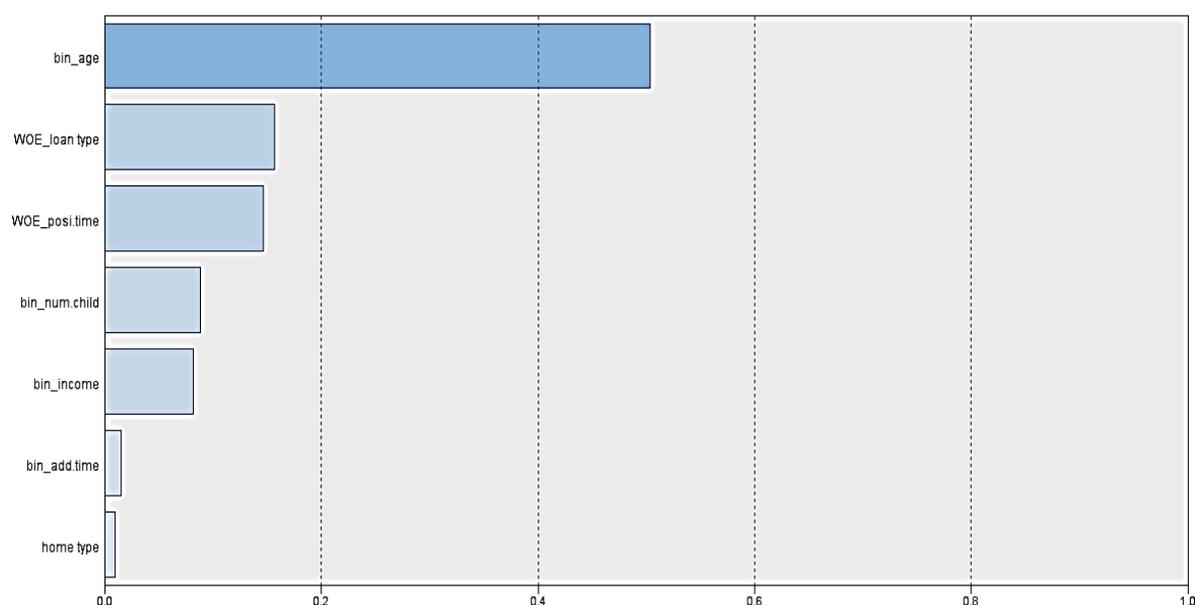


Figure 6. Relative Importance of Predictors in CHAID Tree

From <Figure 7>, we could see the branches of CHAID tree. The first branch of the decision tree represents a percent of customers' age. According to the binary age, we could see that the younger age is, the higher ratio of default. Among 32457 training data, there are 1060 bad customers. However, the default ratio of customers younger than 23 years old reaches 9.293%, and those who are older than 46 years old are only 1.129%. From the second branch, young customers can see that the variable which has the most significant impact on the default rate is the loan type. To effect the default rate of working hours in the current position, we can know that its distribution is roughly consistent with the WOE value. The longer the current working hours, the lower the default rate.

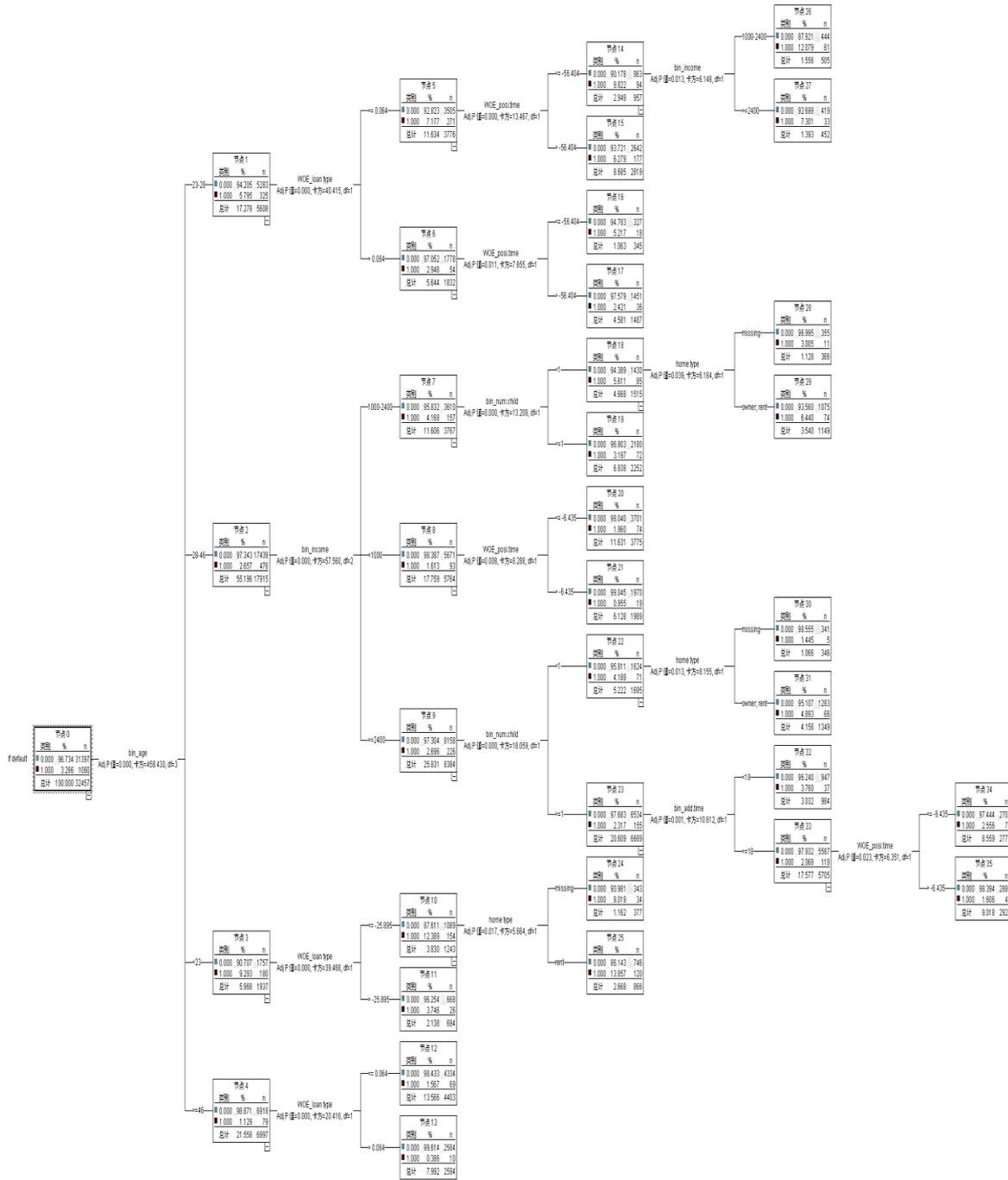


Figure 7. CHAID Decision Tree for Predictors

4.3. Neural Network Model

The neural network depends on different parameters determined through experiments, namely the number of hidden layers, number of hidden nodes, transmission/activation functions, and learning algorithms. The choice of these parameters plays a vital role in model construction. Therefore, we use variables other than the if default variable and the corresponding WOE values of the variables as input variables. Also, we construct an expectation vector (Target) with if default variables are represented by binary values 0 and 1, which correspond to good and bad applicants, respectively. Dividing data into training and

validation sets is an essential step in establishing a neural network. Insufficient division of work samples may affect classification, but there is no general solution to this problem.

For this reason, the different departments using the available data will conduct experiments on training and testing. Like the decision tree model, we partitioned the data into a 70% training set and a 30% test set. The model of a neural network is shown in <Figure 8>.

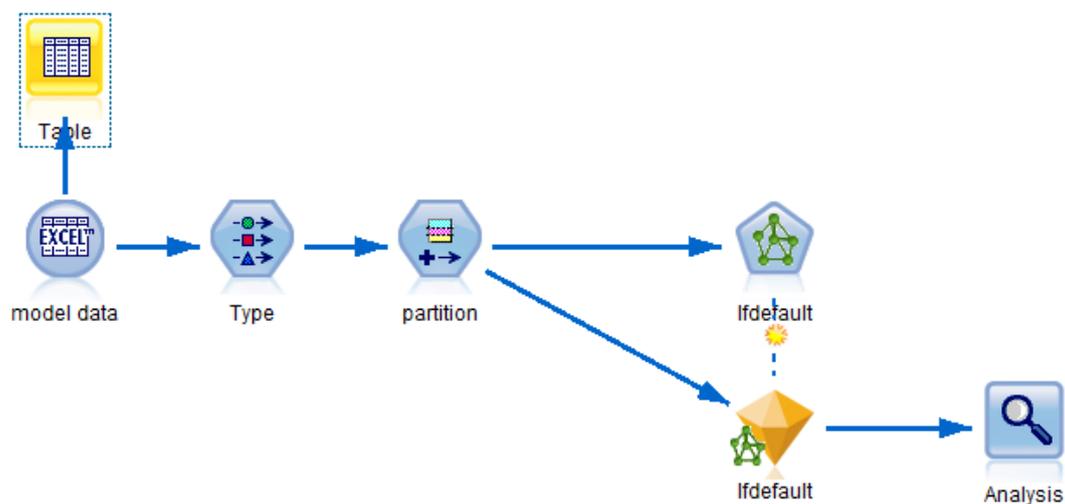


Figure 8. Neural Network Model

According to the result of the model, we could get the relative importance value of variables. For the target variable, we put all the binary variables. And we use WOE value in a row as predict variables. The relative importance value of the neural network is shown in <Table 6>. And the effect figure is displayed in <Figure 9>, in which we could clearly understand its trend. The top four binary variables are income, age, address, and loan type of customers. On the other hand, the utmost importance of WOE values is address, age, position time, loan type, address time, and home type of customers. The importance of income reaches 0.969, and it of age is 0.907. We could say that whether it is a decision tree or a neural network model, it is shown that age has a significant influence on default prediction.

Table 6. Relative Importance Value of Neural Network Model

Nodes	Importance
WOE_hometype	0.042
WOE_add.time	0.0483
Loan_type	0.0536
Address	0.0559
WOE_loan type	0.063
WOE_posi.time	0.0676
bin_age	0.0907
bin_income	0.0969
WOE_age	0.1326
WOE_Add	0.1618

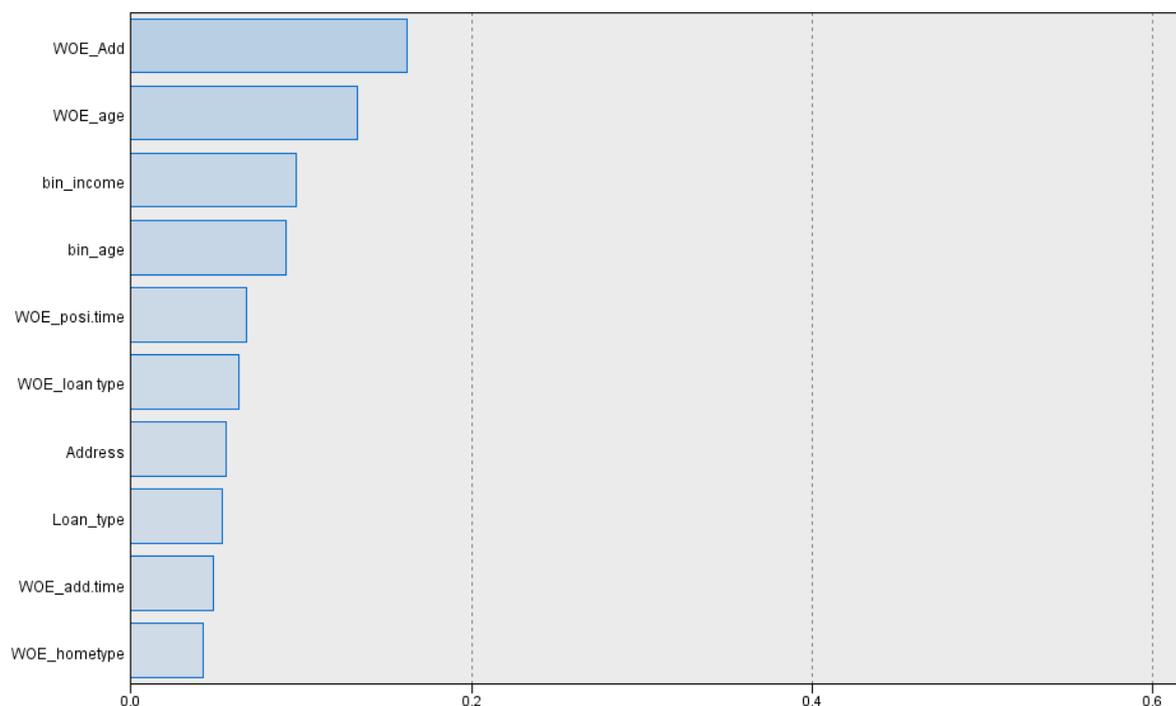


Figure 9. Relative Importance of Predictors in Neural Network

Neural networks also exhibit many shortcomings in data analysis. First of all, its dependence on the sample is too strong, requiring that the sample be comprehensive and typical. Because it involves a few subjective judgments, it places high demands on the choice of samples. A neural network is called a black box; that is, it can only give a judgment result and not tell you why. To solve the shortcoming, we should combine multi-layer perceptrons (MLP) with other methods that explain better functions to form hybrid systems. This can maintain the features of high accuracy, adaptability, and robustness of neural networks and Added its interpretation function. Its black box feature makes the generated model difficult to interpret, and the training process is longer when designing the topology of the optimization network. However, despite the above shortcomings, the MLP model should be used by financial institutions to replace the traditional parametric model because of its high prediction accuracy.

4.4. The Analysis of Results

We can test the model based on records that already know the actual results. In the neural network and decision tree model, we established partitions. By using a sample partition to generate a model and using another sample to test the model, we can get a generalization of the model to other data sets, which shows in Table 11. The analysis shows that for 44970 records (more than 96.77%) in the 46471 records, the model's predicted value matches the actual response in the logistic model. For the decision tree and neural network, the analysis of the training set and the test set shows a correct rate of 96.73% and 96.86%.

Table 7. Analysis Table of Models

	Logistic Regression		CHAID Tree & Neural Network			
			Training		Test	
Correct	44970	96.77%	31397	96.73%	13574	96.86%
Wrong	1501	3.23%	1060	3.27%	440	3.14%
Total	46471		32457		14014	

AUC (Area Under ROC Curve) is a standard used to measure the quality of classified models. The full name of ROC is called Receiver Operating Characteristic. Its primary analysis tool is a curve drawn on a two-dimensional plane ROC curve. The plane's abscissa is a false positive rate (FPR), and the ordinate is a true positive rate (TPR). We can get a pair of TPR and FPR points for a classifier based on its performance on the test sample. In this way, the classifier can be mapped to a point on the ROC plane. Adjusting the classifier classification threshold, we can get a curve passing (0, 0), (1, 1), which is the ROC curve of this classifier. In general, this curve should be above the line between (0, 0) and (1, 1).

Because the ROC curves formed by the lines (0, 0) and (1, 1) represent a random classifier. If you get a classifier located below this line, an intuitive remedy is to reverse all predictions. If the classifier output is positive, then the final classification result is negative, and vice versa. Although the ROC curve to represent the classifier's performance is intuitive and easy to use, people always want to have a value to signify the classifier's quality. So Area Under ROC Curve (AUC) appeared. In general, the AUC value is between 0.5 and 1.0, with a larger AUC representing better performance. The AUC value is the Area covered by the ROC curve. The higher AUC, the better the classification effect.

When AUC = 1 is the perfect classifier. When this prediction model is used, no matter what threshold is set, a perfect prediction can be obtained. For the vast majority of predicted occasions, there is no perfect classifier.

$0.5 < AUC < 1$, better than random guessing. If this classifier (model) properly sets the threshold, it can have predictive value.

AUC = 0.5, follower guessing, the model has no predictive value.

AUC < 0.5 is worse than random guessing, but it is better than random guessing as long as it is always anti-prediction. The AUC value of the two models shows in Table 8 and Figure 10. The AUC value of CHAID is 0.717, which is higher than 0.704 of the neural network. This indicates that in the two models using the same partition data, the CHAID tree model is better predicted on the target variable.

Table 8. Evaluation of CHAID and Neural Network Model

Model	CHAID Tree				Neural Network			
	Training		Test		Training		Test	
	AUC	Gini	AUC	Gini	AUC	Gini	AUC	Gini
\$R-if default	0.717	0.435	0.699	0.398	0.704	0.408	0.689	0.378

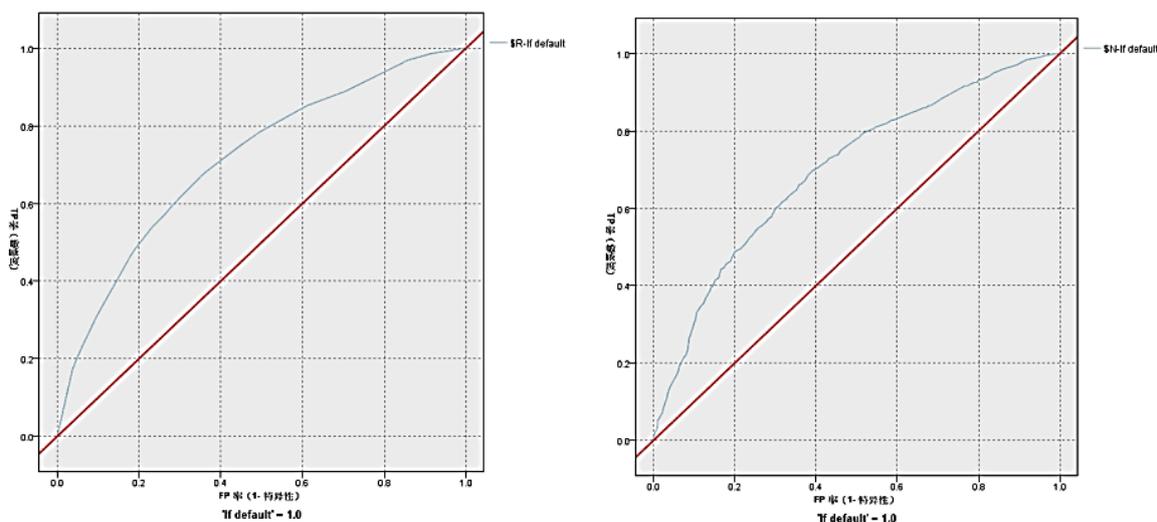


Figure 10. AUC of CHAID & Neural Network

After analyzing the various aspects of the model above, they all can determine the type of customer. Although the accuracy of the neural network and decision tree is high because the neural network is a black-box operation, the model's details are not clear. There is a lack of explanatory power to sort the importance of the variables. In comparison, the accuracy of the logistic regression model is relatively high. The robustness of the model is good, and the regression equation can be given. The effect of the influencing factors can be compared. It is worth promoting in practice, and it is the case. Therefore, if we need to determine the category we belong to accurately, we do not need to explain the impact variables. In this case, the decision tree and the neural network have more significant advantages. Instead, we can choose the logistic regression model.

5. CONCLUSION

5.1. Summary of Results

After a comparative study of various risk assessment methods, we can find that the Logistic model has the advantages of more lenient assumptions, fewer required parameters, no strict restrictions on dependent variables, and easy to understand conclusions. On the one hand, it overcomes the shortcomings of the standard credit risk measurement subject to subjective factors. On the other hand, it defeats the shortcomings of modern credit risk measurement models that have stringent requirements on data. Therefore, this model is more suitable for research on microfinance risk identification. This study screened the IV value when selecting the index variable, in which the ratio of WOE to the Logit model was the same. To avoid the need to set many dummy variables in the Logit model and improve the model accuracy. In this study, the WOE value was introduced into the credit evaluation model to enhance the econometric model and form a logistic regression model of evidence weight. First of all, the credit scoring model based on the logistic regression method aligns with China's current consumer credit industry's data requirements. It has the advantages of easy implementation and reasonable interpretation. Therefore, this can be the primary modeling method for establishing a credit scoring model in China. Classifications are used to classify the variables that entered

the model. Removing statistically significant variables and choosing variables with higher IV values to enter the model training can effectively speed up the model's training process and provide an optimization space for traditional practice. The linear relational expression can be obtained through Logistic regression. The influence degree of variables can be understood to pay more attention to the factors with greater weight in practice.

A decision tree can determine the probability of a customer type based on the value of a feature variable or a combination of values. It does not interpret all the characteristic variables because it can only interpret the dependent variable based on certain characteristic variables selected at the end of the classification tree's growth. The multi-layer perceptron does not require the distribution, covariance, etc. of the sample. It is insensitive to the noise data and deviation data that exist in the sample. The linear discriminant analysis method is not sensitive to noise data, but it has high sample distribution requirements and covariance requirements. The multi-layer perceptron does not require the distribution, covariance, etc. of the sample. It is insensitive to the noise data and deviation data that exist in the sample. The linear discriminant analysis method is not sensitive to data, but it has high sample distribution requirements and covariance requirements.

5.2. Implications

Credit risk is the most important risk in the development of the microfinance industry. Analyzing the incentives of credit risk is a necessary way to prevent and reduce credit risks. However, while preventing credit risks, we should conduct a correct credit risk assessment on the loan before the transaction is concluded. Therefore, the risk management for microfinance should mainly focus on the accurate prediction of its credit risk. Simultaneously, establishing a good credit management mechanism and strengthening quantitative research on microloans are necessary conditions to ensure the microfinance industry's healthy and orderly development. The microfinance institution must set a limit on the borrower's borrowing limit. Even if the borrower defaults, the loan has little impact on the platform's overall bad debt rate. The use of the risk reserve fund is repaid, and the risk is controllable. The main groups faced by microfinance are small and medium-sized enterprises and individuals. If they are large-scale and long-term projects, they can only invest in investors through standard demolition. On the surface, the less dispersed the risk is for finding borrower users and risk control. The offline approach generally refers to cooperation with micro loan companies. Microfinance companies have many high-quality customers who can conduct on-site inspections. Some microfinance companies can also access central bank credit reporting, which is more conducive to screening high-credit borrowers.

5.3. Limitations and Future Research

This research still has many deficiencies. Firstly, the data on microfinance platforms in China is basically presented on the website through the user's borrowings. Micro financial platforms rarely publish company annual reports, nor do they have an obligation to provide their internal data outside the platform. Therefore, this research lacks comparative data from other microfinance companies to demonstrate. Second, the micro-financial credit risk assessment includes the credit risk of the borrower and the credit risk of the platform. Due to the difficulties of data collection, the company's credit risk can not be added to the risk assessment system through a comparison of various platforms. Finally, to reduce random variable distribution on the estimation error, this paper uses information entropy to measure

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risk. The entropy function is only a probability density function and has nothing to do with the random variable's value. The information conveyed by the information entropy does not reflect the specific event's risk, especially the risk of extreme events, in solving practical problems.

The credit scoring model developed in this paper is based on the customer's credit data. With the development of big data, the credit scoring data will be limited to credit data. The credit scoring model can also use various data, such as e-commerce data, mobile data, social network data. E-commerce data and mobile phone data can reflect customer spending power, spending habits, and other information. Social network data can reflect customer relationships and additional information. Adding more of this information can examine the customer's repayment ability and willingness to repay in multiple ways. At present, FICO and the three largest credit bureaus all use big data analysis technology to conduct forward-looking research on the credit scoring model. Alibaba's sesame credit score was also based on big data analysis. It combines diverse data such as traditional financial transactions, repayment data, social networking data, and e-commerce data. With the improvement of theory and methods and the deepening of practice, credit scoring based on big data analysis will occupy the mainstream.

Second, improvements in modeling methods. Although the credit scoring model based on the logistic regression method works well, the artificial intelligence method is more effective in prediction accuracy. Therefore, with the improvement of the artificial intelligence method and the deepening of practice, the artificial intelligence method can be used to establish a credit scoring model and improve the prediction accuracy of the model. Besides, the credit scoring model will focus on decision making. The credit scoring model has always been based on a predictive model, which predicts customers' future performance through their past credit performance. In the future, the credit scoring model can also quantify the impact of decision-making and jointly predict customer's future performance from both customer credit performance and credit decision-making. This is also the future direction of the credit scoring model.

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ANALYSIS OF CONSUMPTION TAX ON TOBACCO IN EUROPEAN UNION

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ABSTRACT

The aim of the article is to indicate and evaluate the main changes in the level of excise taxes in the European Union and to determine their impact on the final consumer. An analysis of the main changes in the level of excise duty on tobacco in the countries of the European Union carried out in the years 2011 and 2020. The difference between the fixed and percentage of the excise tax is describing, and the individual preferences of European countries are stated. The research itself focuses on the dependency between the size of tobacco taxation and the number of smokers. The initial assumption is that the increase in tobacco taxation causes a significant decrease in the number of smokers. The research results have shown that an increase in the tobacco tax rate affects the number of smokers, but the extent of the impact is significantly lower than was previously expected.

Keywords: Tax policy, Consumption Tax, Tobacco, Excise duty

JEL Classification: H27

1. INTRODUCTION

Tobacco use is still widespread in Europe. Nicotine cigarette smoking is currently one of the largest epidemics in the world. Most smokers start smoking at a young age, and nicotine addiction develops rapidly. Tobacco smoking causes several serious diseases and worsens the course of existing diseases. More than 70 substances are contained in tobacco smoke that have been proven to cause cancer. One of the reasons for not smoking is money. Taxes make up a large part of the selling price. In order to address the global tobacco burden, the World Health Assembly unanimously adopted the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) in 2003. In force since 2005, the main goal of the FCTC WHO is to protect current and future generations from the consequences (health, society, environment, economy) of tobacco consumption and exposure. (WHO, 2005) .

“To help countries meet their World Health Organization commitments under the FTCT, the WHO introduced a package of six evidence-based tobacco control measures in 2008 that shows to reduce tobacco use. These measures known as the MPOWER package. These measures reflect one or more provisions of the WHO FCTC. MPOWER refers to:

M: Monitoring tobacco use and prevention policies.

P: Protecting people from tobacco smoke.

O: Offering help to quit tobacco use.

W: Warning about the dangers of tobacco.

E: Enforcing bans on tobacco advertising, promotion, and sponsorship.

R: Raising taxes on tobacco.” (RCTFI, 2007)

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Of these measures, the research in this paper focuses on the R point: Raising taxes on tobacco. This point concerns both the hypothesis and the research question. The research question is focused on increasing the tobacco tax and the hypothesis is focused on the relationship between the increase in the tobacco tax and the number of smokers. Taxation constitutes the most significant revenue source of the state. The state can increase taxes to increase their revenues. The set of available taxes also includes excise duties. By increasing the excise tax on tobacco, the state also has the opportunity to reduce its consumption. One of the aims of this paper is analysis the increase in tobacco taxes in the European Union from 2011 to 2020.

2. LITERATURE REVIEW

The World Health Organisation's Framework Convention on Tobacco Control (FCTC) entered into force on 27 February 2005. It is one of the most recognized treaties in the UN system. The FCTC is a legally binding treaty that requires countries or parties to the treaty to implement evidence-based measures to reduce tobacco use and exposure to tobacco smoke. In May 2020, the FCTC had 182 members. The FCTC is effective in reducing the destructive effects of tobacco products on health, lives and the economy, which are global in nature. (Tobacco-FreeKilds, 2020) According to the information provided in the National Strategy for the Prevention and Reduction of Damages Associated with Addictive Behavior 2019-2027, tobacco and alcohol use is one of the main causes of morbidity and mortality in the Czech Republic; almost 20% of total mortality is due to smoking; about 6% due to alcohol consumption. (Scémy et al. 2020)

Reducing the consumption of alcohol, tobacco and unhealthy foods could reduce the incidence of the most common non-communicable diseases, including type 2 diabetes. Also many types of cancer or, for example, heart disease many types of cancer and heart disease. (Lim et al., 2012; Steel et al., 2018; Whiteford et al., 2013) The structure of a country's tobacco tax can also affect price variability, affecting consumption and incentives for tobacco users to switch to cheaper alternatives in response to higher taxes and prices. (Chaloupka et al. 2014). While raising tobacco prices by raising tobacco taxes has proven to be effective in reducing tobacco use, evidence suggests that rising cigarette prices may be accompanied by compensatory behavior. (World Health Organization, 2015; Bader et al., 2011; Xu et al., 2013; Licht et al., 2011) Higher tobacco prices are generally considered to be the most effective anti-smoking deterrent. (Brown et al., 2014; Chaloupka et al., 2012; Ross et al., 2011; World Health Organization, 2011). Compensatory behavior can result in switching to cheaper brands, buying products in bulk, or buying individual cigarettes.

Tax and pricing policy are the most effective measure for influencing its consumption. (Šteflová, 2014) According to WHO data, tobacco consumption will fall by 4% in higher-income countries if the price of tobacco increases by 10% due to taxes. In lower-income countries, such a price increase would reportedly lead to an 8% reduction in tobacco consumption. The global growth in the number of smokers has stopped for the first time, which could mean a reversal in the global epidemic, which has already claimed the lives of tens of millions of people. The World Health Organization (WHO) stated this in a report published in London on 19 December 2019. WHO stated that the efforts of governments to step up the fight against smoking is paying off. For many years, we are witnessing a constant increase in the number of people who smoke or otherwise consume tobacco products. For the first time we see their numbers decline because governments are against stricter tobacco industry. WHO report on the global tobacco epidemic proposes to use the levels of total taxes (excise + VAT)

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of 75% of the retail price as an indicator of the "effective tobacco taxation policies." The World Health Organization has set governments a global goal of reducing by 2025 the use of tobacco by 30% and this goal remains out of reach. On the basis of current progress should be achieved by 2025 only 23% reduction. Only 32 countries are currently on track to achieve a 30% reduction. (WHO, 2019).

There are two approaches to tobacco control:

- The first approach imposes an obligation on participating states to limit tobacco use by banning smoking in public places, implementing anti-smoking awareness programs, and strictly regulating prices. But addicted smokers usually do not respond to similar campaigns.
- The second approach seeks to expand the number of alternative products that will help addicted smokers or eliminate smoking altogether. However, both models must be put together to achieve a good result.

3. METHODOLOGY

This research was done in 2020 and used data from the Taxes Europe online database and the Eurostat database. It focused mainly on the rate of excise duty on tobacco and data from 1 March 2011 and 1 March 2020 were used as benchmarks. The research also focused on the number of smokers, data from 2012 and 2017 were used for comparison.

The total tobacco tax consists of two components. The amount of tax on cigarettes using a fixed part and a percentage of the tax rate is calculate as the sum of the following items:

- The product of the percentage of the tax rate and the price for the final consumer of these cigarettes divided by 100,
- The product of the fixed part of the tax rate and the number of pieces.

The tax base for the percentage of the tax on cigarettes is the price to the final consumer. The tax base for the fixed part of the tax on cigarettes is the quantity expressed in pieces. For these two components, we compared how they have changed over the studied years. Furthermore, the research focused on the analysis of the increase in the total cigarette tax and its effect on reducing the number of smokers. Excise taxes on tobacco are revenue to the state budget, the state by raising taxes seeks to reduce the consumption of cigarettes and thus reduce the cost of treating diseases related to tobacco consumption. Based on these two analyses, research a hypothesis was formulate.

Based on the data obtained, the following hypotheses were stated:

- **Hypothesis H₀** - There is a strong dependency between increasing the excise duty on tobacco and reducing the number of smokers in EU countries
- **Hypothesis H₁** - There is not a strong dependency between increasing the excise duty on tobacco and reducing the number of smokers in EU countries

Research methods used in economics are analysis and synthesis, scientific abstraction, induction and subtraction, hypothesis testing, experimentation, modelling, and others. To analyse the impact of excise duty on consumers, the SPSS statistical program is used, which is highly suitable to test these types of dependencies. The Shapiro-Wilk test is used to determine if the data is normally distributed. Pearson's correlation coefficient and paired t-test are used to

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test the relevant hypotheses. This type of testing is currently used to describe economic reality, to test its hypotheses and to apply econometric models and methods in various areas of economic theory.

4. DATA

Basic data were downloaded from the databases European Commission Directorate-General Taxation and Customs Union, Indirect Taxation and Tax administration Indirect taxes other than VAT. These data were recovered for the years 2011 to 2020. Data for the number of smokers were available only for the period 2012 to 2017. Data for 2020 will be available at the end of the year.

Table 1. Tobacco excise tax rate in individual EU countries

Country	1.3.2011				1.3.2020			
	Specific Excise (1000 pieces EUR)	Ad valorem excise in %	Total Tax in %	WAP per 1000 cigarettes to 8(2) EU/EUR	Specific Excise (1000 pieces)	Ad valorem excise in %	Total tax	WAP per 1000 cigarettes to 8(2) EU/EUR
AT	32.00	42.00	75.57	189.40	58.00	37	77.11	252.75
BE	15.93	52.41	76.81	226.37	66.47	40	78.65	312.66
BG	51.64	23.00	85.58	112.49	55.73	25	82.41	136.77
CY	40.00	40.00	77.50	163.50	55.00	34	75.08	219.00
CZ	43.82	28.00	77.18	134.77	62.55	30	82.69	177.00
DE	82.70	24.66	76.62	229.80	98.20	22	70.23	301.49
DK	90.58	21.65	80.94	230.53	158.4	1	77.91	278.33
EE	38.35	33.00	84.45	110.25	81.95	30	86.94	203.50
EL	19.66	52.45	83.70	156.56	82.50	26	84.49	210.83
ES	12.70	57.00	79.88	166.52	24.70	51	79.22	227.40
FI	17.50	52.00	78.80	216.09	69.75	52	89.46	385.25
FR	19.59	56.99	80.64	270.00	62.80	54	85.33	428.34
HU	35.60	28.40	80.60	110.57	61.23	23	75.94	193.30
IE	183.42	18.25	78.92	423.50	346.0	9	85.00	603.00
IT	7.6765	54.57	74.98	205.00	20.98	51	77.83	245.00
LT	38.23	25.00	77.75	108.03	62.25	25	77.23	178.50
LU	16.89	47.84	70.26	180.11	18.89	46	69.29	232.94
LV	31.73	34.50	81.20	110.69	78.70	20	81.25	179.29
MT	28.00	47.00	77.14	188.00	107.0	23	78.44	268.94
NL	99.85	20.52	78.67	236.72	180.3	5	77.93	324.47
PL	40.22	31.41	84.77	116.04	52.11	32	83.07	161.20
PT	69.07	23.00	81.74	172.50	96.12	15	75.40	230.50
RO	48.50	22.00	81.92	119.56	81.32	14	75.97	176.79
SE	137.77	1.00	76.49	248.29	148.1	1	74.71	275.72
SI	20.40	45.15	77.28	132.00	73.64	22	79.82	184.50
SK	55.70	23.00	81.62	132.78	64.10	23	77.19	170.82

Source: Taxes Europe online database -

http://ec.europa.eu/taxation_customs/taxation/excise_duties/index_en.htm

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From 1 January 2014, the total excise duty on cigarettes shall be at least 60% of the weighted average retail selling price of cigarettes released for consumption. This excise duty shall not be less than EUR 90 per 1 000 cigarettes irrespective of the weighted average retail selling price under Council Directive 2011/64 / EU. For this reason, it follows from Table 1 that all countries surveyed in the European Union have increased the Specific Excise tax. On average, these countries increased Specific Excise tax by 76.75% between 2011 and 2020 to comply with the EU directive. For Ad valorem excise taxes, it was not so clear-cut. In countries FI, LT, SE and SK, Ad valorem excise did not Change, it increased in countries BG, CZ and PL. In other EU countries surveyed, there was a decrease in Ad valorem excise. EU countries have focused more on increasing the Specific Excise tax. Total tax increased in 11 EU countries. In 2011 the average total tax was 79.27% and in 2020 79.06%. It follows that there has been no increase in total taxes over the last 9 years, but according to Figure 1 and Figure 2, there has been an increase in Excise taxes yields.

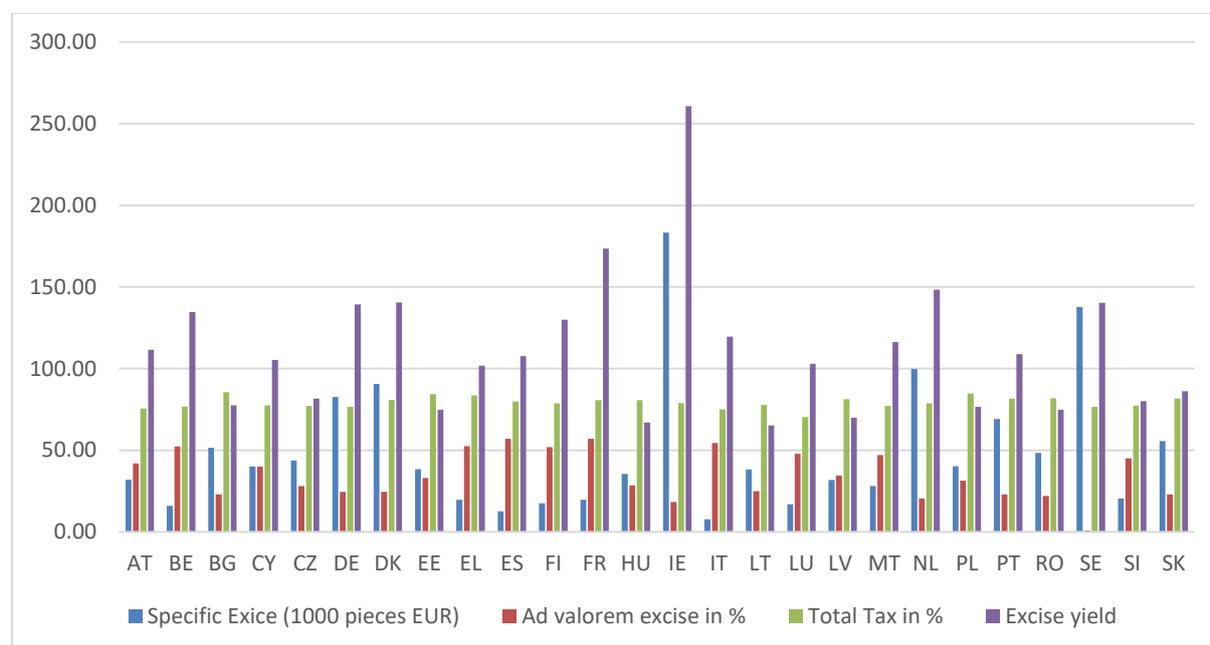


Figure 1. Size of excise duties at 1.3.2011 in EU, Source: Eurostat

Figure 1 shows the amount of Total tax in percentages, which consists of Specific Excise tax and Ad valorem excise tax. Furthermore, the size of the Excise tax yield in individual EU countries as of 1 March 2011 shown as well.

Figure 2 shows the amount of Total tax in percentages, which consists of Specific Excise tax and Ad valorem excise tax. Furthermore, the size of the Excise tax yield in individual EU countries as of 1 March 2020 shown as well

Day smokers are defined as the population aged 15 and over who report smoking every day. Smoking is a major risk factor. This indicator is given as a whole and by sex and is measured as a percentage of the population considered (total, men or women) aged 15 and over. (OECD, 2020)

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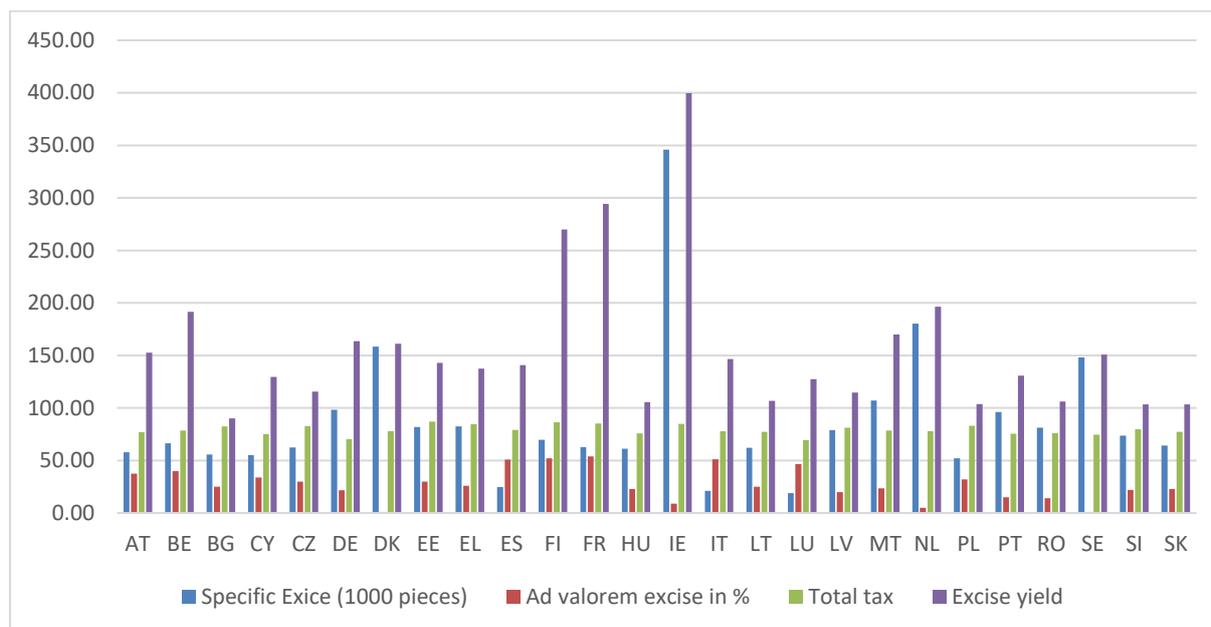


Figure 2. Size of excise duties to 1.3.2020 in EU, Source: Eurostat

Table 2. The European Union's relationship to smoking.

	2012	2017	
	% smokers	% smokers	% decrease/increase
Austria	33 %	28 %	-5%
Belgium	27 %	19 %	-8%
Bulgaria	36 %	35 %	-1%
Cyprus	30 %	27 %	-3%
Czech Republic	29 %	28 %	-1%
Germany	26 %	25 %	-1%
Denmark	26 %	18 %	-8%
Estonia	26 %	23 %	-3%
Greece	40 %	36 %	-4%
Spain	33 %	27 %	-6%
Finland	25 %	20 %	-5%
France	27 %	36 %	-9%
Hungary	33 %	26 %	-7%
Ireland	29 %	19 %	-10%
Italy	24 %	23 %	-1%
Latvia	36 %	33 %	-3%
Luxembourg	26 %	21 %	-3%
Lithuania	30 %	28 %	-2%
Malta	27 %	24 %	-3%
Poland	32 %	29 %	-3%
Portugal	23 %	25 %	+2%
Romania	30 %	28 %	- 2%
Sweden	13 %	7 %	-6%
Slovenia	27 %	28 %	+1%
Slovak	23 %	26 %	+3%
UK	26 %	17 %	-9%

Source: OECD - <https://stats.oecd.org/Index.aspx?QueryId=58290#>

5. RESULTS AND DISCUSSIONS

The weighted average price (WAP) for cigarettes according to Table 1 has increased by 40.08% since 2011. Pursuant to Articles 8 (2) and 14 (2) of Council Directive 2011/64 / EU, the weighted average price (WAP) of cigarettes and fine-cut tobacco must be calculated on the basis of the total value of all cigarettes / fine-cut tobacco cut tobacco released for consumption on the basis of the retail selling price, inclusive of all taxes, divided by the total quantity of cigarettes / fine-cut tobacco released for consumption on the basis of data on all these releases for consumption made in the previous calendar year. For the number of smokers, data from 2012 and 2017 were used, as data were completely available only for those years from all surveyed countries. And by 2017, according to the EU directive, EU countries had to adjust their minimum excise duties on cigarettes. Table 2. shows that the percentage of smokers has decreased in some EU countries, but has increased in several countries, namely Portugal, Slovenia, and Slovak. The aim of the research was to find out whether there is a relationship between an increase in the excise tax on tobacco and a reduction in the number of smokers. This dependence was tested on the statistical program SPSS. The relationship between the number of smokers and the amount of excise duty on cigarettes was tested. Since the data based on the Shapiro-Wilk test do not show a normal distribution, the Spearman correlation coefficient was used to determine the correlation coefficient. Based on the calculated paired t-test, we do not have enough evidence to reject the null hypothesis in favour of the alternative hypothesis. There is a relationship between the amount of excise duty and the number of smokers, but this relationship is weak because R² is low = 0.603.

The output of the statistical model shown in the following tables.

Table 3. Model Summary – Number of smokers to tobacco excise duty

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.776 ^a	.603	.553	.4489

Source: SPSS

a. Predictors: (constant) t

Table 4. Anova^a – Number of smokers to tobacco excise duty

Model 1	Sum of Squares	Mean Square	F	Sig
Regression	2.444	1	12.131	.008 ^b
Residual	1.612	.201		
Total	4.056	9		

Source: SPSS

a. Dependent Variable: Number of to tobacco excise duty

b. Predictors: (constant) t

Table 5. Coefficients^a – Number of smokers to tobacco excise duty

Model 1	Unstandardized	Coefficients	Standardized	t	Sig.
	B	Std. Error	Coefficients		
(constant) t	8.167	.307		26.633	.000
	-.172	.049	-.776	-3.483	.008

Source: SPSS

a. Dependent Variable: (constant) t

6. CONCLUSIONS

Governments usually try to find the right balance between protecting public health and reducing tobacco consumption. The state uses an increase in the excise tax on tobacco for this. The system of taxation of cigarettes in the countries of the European Union is currently very complex. This research looked at the effect of increasing tobacco excise duties on smokers. The amount of excise duty is affected by many factors, one of which was Directive 2011/64 / EU, which set minimum prices for cigarettes and the total excise duty on cigarettes weighted by the average retail selling prices of cigarettes released for consumption. Under this directive, the flat rate per unit of product and the ad valorem tax was changed. Therefore, there was a significant change in the Specific Excise tax of up to 76.75% between 2011 and 2020.

The weighted average price (WAP) for cigarettes has risen by 40.08% over the past 9 years. Based on this statement, it was examined whether the number of smokers decreased by the same percentage and whether the increase in the tax depends on the reduction in the number of smokers. Statistics show that the relationship between the level of the tobacco tax and the number of smokers in the EU exists, but it is very weak. This directly contradicts the expectation of WHO (Šteflová, 2014), that increase in tobacco taxes should decrease tobacco consumption by at least 4%. Based on this statement, we can reject the H_0 hypothesis and confirm the alternative hypothesis.

There are many factors in reducing smokers. One of the factors was the ban on smoking in restaurants, which came into force gradually in individual EU countries from 2004 to 2019.

The EU should continue to implement comprehensive tobacco control policies, as they have a positive effect on reducing the prevalence of smoking and increasing the rate of tobacco cessation in their populations.

Future research should build on research into the impact of tobacco excise duties on reducing the number of smokers and include other areas that are working to reduce the number of smokers in the world.

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CONCEPTUAL VIEW OF THE RELATION BETWEEN REGIONAL INNOVATION CLUSTER AND ITS INNOVATIVE OUTCOMES: THE MODERATING ROLE OF KNOWLEDGE SHARING

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ABSTRACT

Regional innovation cluster is a broad concept that lays on many levels. Relevant studies about regional innovation cluster play an important role when evaluating the competitiveness of regional or firms. However, there are few studies examined regional innovation cluster and its innovative outcomes in individual level, which is the competitive advantage of regional innovation cluster to other traditional industrial parks. The main purpose of this research is to propose conceptual framework on the relationship between Regional innovation cluster and its innovative outcomes, include innovation performance and innovative work behavior. The conceptual paper guides a direction for future studies about innovation behaviors of employees by conceptual framework in explaining the relation between regional innovation cluster, innovative performance, and innovative work behavior. In practical, managers should propose or implement policies which recommend knowledge sharing activity at the organizational level, it also boost innovative outcomes of both firms and individual in the regional innovation cluster.

Keyword: Regional economics, innovation; knowledge sharing; network strength; skilled labors; innovation climate.

JEL Classification: D23, R58, P25.

1. INTRODUCTION

Innovation has become the driving force behind sustained economic growth (Schumpeter, 1934) and identified as having an impact on economic growth (Nadiri, 1993; Romer, 1986; Pessoa, 2007; Gerguri & Ramadani, 2010). In microeconomic, innovation has an impact on the financial performance of the companies (Norris et al., 2010), gain competitive advantage (Standing & Kiniti, 2011). Lecocq et al (2011) judges that a firm's ability to innovate also increasingly dependent on external resources that exist in certain locations. The Regional Innovation Cluster (RIC) has been identified as one of the key external factors for firm innovation (Boix & Galletto, 2009). It also determined to effects firm innovation performance (Baptista and Swann, 1998, Beaudry & Breschi, 2003). Firm in RIC can consist of access to information and specialized resources at a lower cost (Baptista & Swann, 1998; Beaudry et al., 2003), have specialized and diverse labor resources (Boix & Galletto, 2009; Keeble & Wilkinson, 1999). Previous studies on RIC and its innovation in clusters were divided into two categories: some focused on cluster-level factors and others focused on firm-level factors (Turkina et al., 2019). However, there are few studies have analyzed the perspective at individuals level in RIC. This study was conducted to synthesize conceptual reviews on the impact of RIC on individuals in the cluster, namely Innovation Work Behavior. Innovation Work Behavior (IWB) is defined as "the behavior of an individual that is intended to intentionally create, introduce, and apply new ideas, processes, or products" (Janssen, 2000).

So that, a conceptual review of the impact of RIC on IWB will help to build foundational theories and propose research directions on the impact of regional development policies.

2. THEORETICAL BASIS

2.1. Regional innovation cluster

Cluster is defined as “*a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities*” (Porter, 1998). The cluster concept was developed based on the theoretical literature of Marshall (1920) and Krugman (1991) in the economic principles of spatial agglomeration. Otherly, Cluster is “*a network of strongly interdependent firms, knowledge-producing agents (e.g. universities, research institutes), bridging institutions (e.g. brokers, consultants) and customers linked to each other in the production chain*” (OECD, 2002). The cluster was identified as support the firms’ productivity and innovation capabilities (Ferreira et al., 2012; Kaličanin & Gavrić, 2014). Cluster membership should benefit a firm in terms of its innovation output rather than in terms of the firm’s financial or growth performance (Lecocq et al., 2011).

Wessner (2011) defined regional innovation cluster (RIC) as “*regional concentration of large and small companies that develop creative products and services, along with specialized suppliers, service providers, universities, and associated institutions. Ideally, they bring together a critical mass of skills and talent and are characterized by a high level of interaction among these entrepreneurs, researchers, and innovator*”.

2.2. Benefits of becoming a member of Regional innovation clusters

The clusters are identified as having an effect on firm innovation performance (Turkina et al., 2019). Firms will often innovate in a strong cluster (Baptista & Swann, 1998) and have better innovation performance than the national average (Boix & Galletto, 2009). It is because of the accumulated knowledge of members in case of less codified knowledge and has spatial proximity (Bathelt, Malmberg, & Maskell, 2004). Becoming a member of RIC also has more advantages in attracting highly skilled labor in the local region (McEvily & Zaheer, 1999; Porter, 1998) and has more efficient knowledge transfer (Malmberg, & Maskell, 2002).

From the financial perspective, becoming a member of RIC can help firms to save the costs because firms can share the specific costs, reduce the inter-firm transaction and shipment cost to the partners (Malmberg, & Maskell, 2002). Firms in RIC also easier access to the capital from the market (Pecze, 2019) and also gain general benefits from investments in public goods by government or private firms (Porter, 1998).

RIC also helps its members quickly and access the needs of new customers (Porter, 2000). It also provides better accessibility to suppliers or specialized inputs (Porter, 1998; Malmberg & Maskell, 2002). Firms in RIC can respond to more complex needs or new customer needs, thank the local advantages of service and the available workforce (Porter, 2000).

Thus, based on previous literature, it can be seen that the accumulated advantages of human resource and the proximity to the location create advantages for RIC in innovation. Skill labor, Innovation climate and Network strength are identified as 3 important variables affecting Innovation performance.

Skilled labor

Unlike traditional industrial, innovation clusters represent a system of close relationships not only between companies, their suppliers and customers but also including scientific research centres and universities (Mazur et al. , 2016). According to Marshall (1920), Malmberg & Maskell (2002), the constant market for skills, especially specialized skills that create benefits for the localized industries. Porter's regional competition model (1998) shows that the supply of talent in the cluster will be higher due to the advantage of easily attracting talented people from other locations to the cluster.

Able (e.g. has certain cognitive capabilities, expertise, relevant task knowledge, necessary technical skills and personality characteristics) and willing (e.g. motivated and satisfied) to be innovative are prerequisites for individuals to be able to participate in innovation behavior (Parzefall et al. ,2008). Studies show that the diversity of skills and experiences has an important impact on the innovation results (Damanpour, 1991; Bantel & Jackson, 1989). These diverse and highly skilled working groups often have different perspectives and perspectives, because the members have a diverse range of skills and knowledge and create different creative ideas (Paulus, 2000). Consequently, interdisciplinary teams will have better innovation performance than a very homogenous team (Parzefall et al., 2008).

Innovation climate

According to Malmberg & Maskell (2002), Porter (1998), becoming a member of clusters offers the firms to develop new technological solutions and have better innovative performance. The companies in RIC will have benefits from fast access to research, increased added value in processes and products, competitive advantages and market integration in supply chains (Fundeanu & Badele, 2014). Clusters and regional research institutes also positively effecting to the innovation of SMEs (Tsuji & Miyahara, 2009). It creates an innovative atmosphere in organizations, that fosters and propagates creative mechanisms to achieve innovative ideas and organizational outcomes.

Innovative climate influence enhances the innovative behaviors of employees (West & Andersen, 1996). Some scholars suggested that individuals also often have more incentives to take initiative in an organizational climate that encourages risk-taking (Amabile & Grysiewicz, 1987; Morrison & Phelps, 1999). So, the innovative climate also to be considered to determine performance innovatively through the need for innovation and provides an atmosphere of support for new and creative ideas (Leung et al., 2014).

Network strength

Network strength measures the frequency, intensity, trust, and stability of interactions among network partners (Eisingerich et al., 2010). On the individual level, Porter (2000) summarized that the connection network of individuals in one of the factors of the main positive influences of clusters depend. The personal connections also have the positive effect of the information flow through face-to-face connections, problem-solving together and support innovation in co-located business partners (Bathelt et al., 2004; Gordon & McCann, 2000).

Good interpersonal relations and a high level of trust in the group will lead to employees feeling safe to present their ideas openly on innovative performance (Axtell et al., 2000). Good network also helps individual to increase knowledge exchange and knowledge creation, and thus innovative work behavior (Shu et al., 2010).

2.3. Innovative Performance

Innovative performance (IP) is a set of output activities such as patents, new products, or R&D, the performance of innovative process is also captured as a vital competitive advantage of the organization (Jiang & Li, 2009). In an innovative-oriented organization, the network structure or network form can positively related to IP (Xie et al. 2014). The more network of organization is expanded the more efficiency the organization will benefit. Larger organization networks can create higher opportunities for sharing knowledge among employees, stimulate the exchange between staff from many departments. Thus, in RIC network strength establishes a suitable environment for flowing idea and have an impact on Innovative performance. One of the most vital elements in RIC is the innovation climate which is a mechanism for implementing innovative ideas and directly effects individual innovative performance then creates innovative performance at organizational level (Chen et al., 2013). Skilled labor also has a strong impact on IP because they have a trend to propose an idea for improving process (Knoben, 2009). Social Exchange theory stated that individuals react positively if they are well treated (Goulder, 1960), and employees who had been shared new ideas, new technology from their colleagues would tend to share back their knowledge such as innovative ideas to other colleagues. Sharing-climate and innovative performance when combined can create an energetic environment, especially exchange between innovative employees in cluster has a diffuse effect to others and form innovative work behavior because new ideas always keep discussing openly in regional cluster.

2.4. Innovative work behavior

Innovative work behavior (IWB) is a concept related to innovation from an individual perspective. IWB differs from employee creativity – the production of new and useful ideas concerning products, services, processes and procedures (Amabile, 1988) – because it also includes the implementation of ideas (De Jong & Den Hartog, 2010).

IWB in firms can create innovation in products, processes, and services, forming new production methods and management systems (Tidd, 2001). Dorenbosch et al. (2005) divided IWB into 2 phases: inventing, and implementing ideas. Before that, Scott and Bruce (1994) divided IWB into 3 phases including: conceptualization – employees often identify problems in their firm, seek new ideas to act as solutions to solve these problems; idea protection – the new idea is promoted throughout the organization to seek support from the internal or external for the next development to build groups including competent individuals; and idea practice – putting finished ideas into promoting daily work of firm (Janssen, 2000). Based on analysis into stages, Janssen (2000), De Jong et al., (2010) and Bysted (2013) are scholars who developed the scale of IWB in literature.

2.5. Knowledge sharing and its role in the relationship between RIC and Innovative Performance

Knowledge sharing is “*a set of individual behaviors involving sharing one’s work-related knowledge and expertise with other members within one’s organization, which can contribute to the ultimate effectiveness of the organization*” (Yi, 2009). In cases where there is less barrier to acquiring knowledge, the accumulation of knowledge and technical knowledge of members is easier than the exchange of the latter because of the proximity of space (Bathelt, Malmberg, & Maskell, 2004). Co-location is associated with better access to specialized, high productivity employees with lower search and training costs (Marshall, 1890). In RIC membership, a high-level of trust enables more efficient knowledge transfer among firms, this has been confirmed by the argument about information flow in the studies of Porter (2000). Training and knowledge sharing provides opportunities for learning and development processes targeted at behavioral, task, knowledge, skill improvement and it makes IWB better (Abdullah et al., 2014).

Skilled labor, Innovative Performance, and Knowledge sharing in RIC

According to Wilson & Spoehr (2009), industrial clusters are organized to promote competitive advantage for firms that accumulate from the transfer of tacit knowledge among skilled workers who are also in the space-constrained area. High-value tacit knowledge is also created by skilled workers working in industrial clusters with diverse industries (Henry & Pinch, 2000). This knowledge can be naturally shared by personal relationships of trust and reputation (Lissoni, 2001). In regular, company loyalty will limit inter-firm knowledge sharing or only sharing the low-value information; however, Benner (2003) in a study of networks of key individuals in Silicon Valley argue that skilled workers need to acquire new knowledge which is newest in the market so they often relied on open social networks with colleagues in other firms in the same fields of work to gain more knowledge and improve their abilities. Thus, in RIC, the necessary skills can be supplemented by skilled labor through knowledge sharing more easily. This essential knowledge and diversity in skills have also been identified as impacting innovation results according to studies by Parzefall (2008) and Damanpour (1991).

Innovation climate, Innovative Performance, and Knowledge sharing in RIC

Individual innovative behavior is affected by an individual, the group, and the organization (Mumford et al., 2002). Members in an organization can create and share knowledge by having a consensual culture, valuing organizational coherence, and maintaining a harmonious atmosphere through discussion, participation, and knowledge sharing (Tsai & Wang, 2004). An organization itself is unable to create knowledge, individuals are mean to spread knowledge through sharing. Thus, the innovation climate encouraged creating and knowledge sharing (Fu, et al., 2007).

Network strength, Innovative Performance, and Knowledge sharing in RIC

Strong networks may provide access to resources that would otherwise be beyond the scope of a single firm (Portes & Sensenbrenner, 1993). A high-level of trust between firms in cluster enables more efficient knowledge transfer (Pecze, 2019). Being a member of RIC brings

better information flow in firms (Marshall, 1920; Porter, 2000; Gordon & McCann, 2000). According to Woodman et al., (1993), social networks in one of the factors affect personal innovation. Holub (2003) noted that faster knowledge transfer through sharing helps cultivate the ability to think and create (Yu et al., 2013).

3. RESULTS

Based on the above theoretical grounds, a conceptual framework will be proposed to guide future research by illustrating the relationship between RIC and IWB. Regional innovation clusters bring benefits about network strength, innovation climate, skilled labor due to its high requirement when recruiting and its geographic advantage. Thus, we stated that in RICs when the knowledge sharing behavior increase, it can enhance the process form RIC's benefits to innovation performance. As innovation performance increased, it contributes to form innovative behaviors at the workplace.

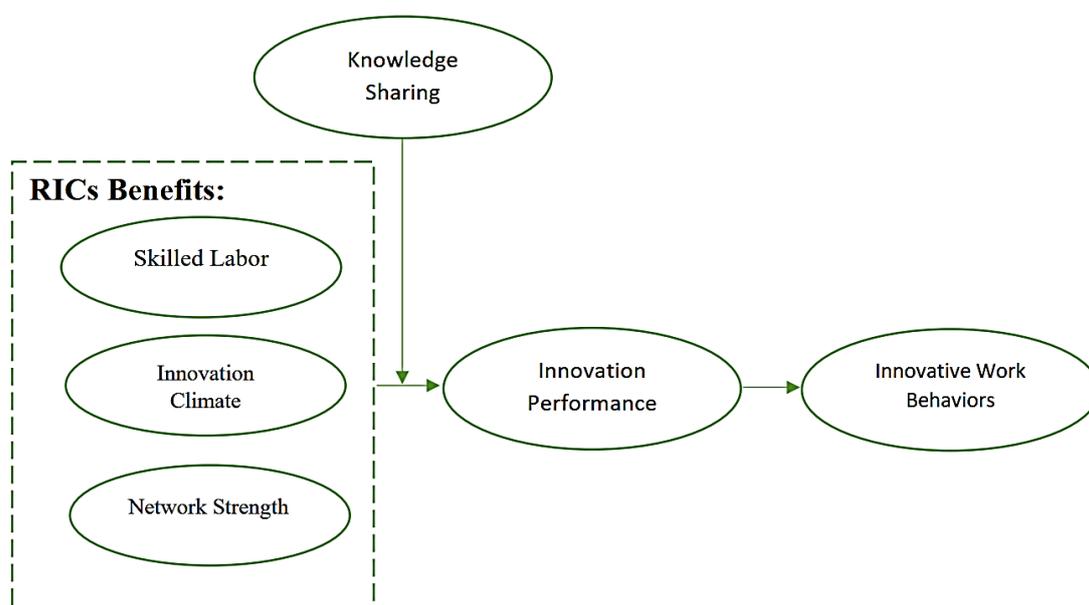


Figure 1. Conceptual Framework (Source: Own research)

4. DISCUSSION

For the literature's contribution, scholars could consider testing hypotheses as a proposed framework to determine the relation between RIC benefit and its innovative outcome. Scholars could identify more benefits in RIC or factors that impact on the innovative matter in RIC, also. Researchers should make a comparison between innovation in RIC of public and private sector for suggesting managerial implications for both.

In practice manner, managers should propose or implement policies that recommend knowledge sharing activity at organizational level. Further, organizations in RIC should form a sharing connection for ensuring the flow of knowledge. Besides, knowledge management need to be considered strictly for the margin of knowledge-sharing and knowledge-leaking behaviors are very close. The flow of innovative ideas at the organizational level can boost innovative performance and spread out to form innovative behaviors of employees.

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5. CONCLUSION

The success of the innovation cluster is depended mainly on the innovative behaviors of employees. Innovation is considered as competitive advantages of RIC to other clusters. Despite the numerous studies in innovative behaviors, we only have a few scholars who pay decent concern to resolve this matter in RIC. With the review of previous studies, we have given a research framework on the relationship between RIC and IWB, with the moderating role of knowledge sharing. However, this study still has limitations on the lack of research samples to experimentally test the above arguments. In the empirical research, we can use questionnaires, with scales of skilled labor variables from Paranto and Kelker (2000); innovation climate from Ronquillo (2013); network strength from Eisingerich, Bell and Tracey (2010); knowledge sharing from Huang (2009); and Innovative work behavior (Janssen, 2000). Subsequent studies may examine the RIC's context between Asia and Europe in affecting IWB. The stratification sample selection will be suitable with experimental research, in order to test the above theoretical relationships. We encourage future researchers and practitioners to build upon the framework in these studies in order to enhance our understanding of RIC./.

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IMPROVING THE QUALITY OF HEALTH CARE IN THE CZECH REPUBLIC

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ABSTRACT

The quality of health care and the quality of health facilities are a closely watched issue in all developed countries. The quality is reached when following certain standards while providing health care and an overall quality management system, which includes an assessment of clients' satisfaction with services offered by medical facilities. Health facilities need to realize that quality is one of their main competitive advantages. The quality of health care can be improved in many ways. One of them is the systematic improvement of skills of young, inexperienced doctors in the form of controlled postgraduate training in hospitals by providing so-called adequate education and guidance (or supervision and counselling) by experienced doctors. The paper wants to highlight the possibilities of improving health care by means of the system of postgraduate education of doctors in the Czech Republic. The aim of the paper is to present the need for quality postgraduate education of young doctors and follow-up research, aimed at improving the existing postgraduate education. From the point of view of methodology, the contribution is based on quantitative research, which was carried out using a questionnaire survey of 98 respondents in all types of medical centres of the Czech Republic (district, regional, faculty hospitals and private medical facilities). In the final part, the recommendations not only for improving postgraduate education are stated, but also initiatives and proposals for further research activities in the context of improving health care and reducing health care costs are made.

Keywords: Postgraduate Education, Health Management, Quality Management, Human Resources Management

JEL Classification: 119

1. INTRODUCTION

The aim of each organization must be to gradually improve. This is a clear condition of any sustainable quality management system. Improvement is done both at the level of products (products and services), individual processes and the system. It should also be the goal of every member of staff. Improvement can be ensured by correcting already established bad practices, their prevention and improvement (Sanders, 2017). The residential system is a state-subsidized postgraduate education in the health sector, providing doctors with a guarantee of preparation for the attestation test without undue delay under the guidance of a trainer who regularly evaluates their preparation. It also means lower costs for health facilities with education and preparation.

But are young doctors in residential places really well prepared?

Quality education is the basis of a quality doctor, namely such a doctor, who is able to make decisions about the patient's health so that his treatment is always carried out in accordance with current knowledge in the field of medicine and leads to his benefit.

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The subject of the contribution is research in the field of postgraduate education in order to improve the level of this education. Changes in the education of doctors in residential places are proposed at work, leading to improvement in this education. This will make it easier for health organizations to retain the existing employees, thus avoiding outflows to other facilities or completely outside the industry.

The work analyzes the current form of postgraduate education for most young doctors. The basis for the project part is the evaluation of quantitative research. On the basis of all auxiliary analytical methods, a project is developed with all the important elements leading to the successful implementation. The aim of each organization must be to gradually improve. This is a clear condition of any sustainable quality management system. Improvement is done both at the level of products (products and services), individual processes and the system. It should also be the goal of every member of staff. Improvement can be ensured by correcting already established bad practices, their prevention and improvement (Sanders, 2017). The residential system is a state-subsidized postgraduate education in the health sector, providing doctors with a guarantee of preparation for the attestation test without undue delay under the guidance of a trainer who regularly evaluates their preparation. It also means lower costs for health facilities with education and preparation.

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Quality education is the basis of a quality doctor, namely such a doctor, who is able to make decisions about the patient's health so that his treatment is always carried out in accordance with current knowledge in the field of medicine and leads to his benefit. The subject of the contribution is research in the field of postgraduate education in order to improve the level of this education. Changes in the education of doctors in residential places are proposed at work, leading to improvement in this education. This will make it easier for health organizations to retain the existing employees, thus avoiding outflows to other facilities or completely outside the industry. The work analyzes the current form of postgraduate education for most young doctors. The basis for the project part is the evaluation of quantitative research. On the basis of all auxiliary analytical methods, a project is developed with all the important elements leading to the successful implementation of the above objectives. In recent years, initiatives and organizations of young doctors have realised few analyses. However, these analyzes only map the current situation and working conditions of young doctors and do not evaluate the quality of preparation for the attestation exam or their satisfaction.

2. LITERATURE REVIEW

The quality of health care is determined by a set of many factors. A necessary precondition for achieving this quality is the introduction of a quality management system or quality management in a medical organization (Briš, 2010). In the European Union, these quality management systems are assessed and compared (health consumer powerhouse - HCP) in order to improve the performance of health care systems and strengthen the position of consumers in the health market (Björnberg, 2016).

2.1. Quality management in health care

“The quality of health care is defined as the degree to which care provided by health institutions to individuals or specific populations increases the likelihood of desired health outcomes, is consistent with current expertise, while delivering patient and health care satisfaction” (Arthur,

2011). Henderson et al. (2010) perceives quality in health care from two points of view. From the point of view of the customer and the service, and it is necessary to include both ways of perception in the understanding of quality. As stated by Škrla (2003), quality in health care is far more than improving medical or nursing care only, and its complexity must be considered.

2.2. History of quality management in health care

In earlier times, the quality of health care was not an inseparable part and was taken for granted. There were no tools to measure, control or improve it. The massive development of medical technologies in the second half of the twentieth century determined parallel monitoring of the quality of health care that new technologies provided. “The gradual growth of the ‘health capitalization’, i.e. the interest of individuals and certain social groups to invest in maintaining or improving health (increasing the potential of health) leads to a situation where quality becomes of interest to ‘private’; care recipients are transformed from the role of ‘care objects’ to the role of ‘care subjects’. It seems that the process of ‘capitalization of health’ is a very strong indicator of the emergence of systems assessing the quality of health services provided” (Šťastný, 2015).

2.3. History of quality management in health care in the Czech Republic

According to Pynes (2011), there was an intensive development of quality monitoring in the 1970s and this was due to the development of advanced medical technologies and enormously rising health care costs. The issue of quality management in the health sector is somewhat difficult from the point of view of Czech history. For the reason of the previous era of communism and a barrier caused by that, news from the world of medicine did not always reach us. A certain stop sign was also caused by the planned economy in socialist Czechoslovakia. The quality of health care was provided by means of administrative measures, e.g. decrees, orders, methodological instructions, etc. An important factor of this period was the dominant role of the state. With the arrival of democracy, health care was characterized by the lack of care provided. An uncoordinated decentralization took place and the quality of care was not adequately monitored (Šťastný, 2015). The significant development of quality monitoring took place only at the end of the 1990s, especially after the accession of the Czech Republic to the European Union. Various forms and systems of quality monitoring and measurement (Šťastný, 2015) started to develop.

2.4. Specifics of quality management in health care

Health care is particularly challenging because it is knowledge-based. Unlike other mainly engineering fields, human resources compensation by sophisticated machines was not carried out. Moreover, health care is becoming a much more technically equipped sector, and the importance of education and training for staff must grow in proportion to these technological advances (Ben-Tovim, 2017). The Ministry of Health of the Czech Republic proposes seven attributes of quality and performance of services in health: access, continuity, proportionality, efficiency, economy, acceptability and safety (Šťastný, 2015). Some authors also add that the specifics of quality management in the health sector are also adjusted by requirements that are determined by the expectations of both clients – employees and clients – patients (Škrla, 2003).

In addition, the role of health insurance companies, professional companies, politicians who create other criteria and requirements for the quality of health services (Madar, 2004) also becomes important.

Gladkij (2003) divides quality into five types:

- perceived results of the quality system;
- clinical results achieved;
- perception of the development of the quality system;
- organisational determinants;
- individual determinants.

But why has health quality been increasingly monitored lately? One of the reasons is purely economic – commercial aspect. Thus, the relationship between the supply and demand of health services. From this point of view, it is the aim of managers to have the greatest competitive advantages of selected products or services. The demand is determined by the consumer himself. Another reason is that there are now increasing legal disputes in the health sector, so there is a need to control the services more as well as improve their quality. Across all sectors, we can also see ever-increasing implementation of standards and regulations in order to improve quality. Ivanová (2013) did not forget either the possible reason for the reduced costs while increasing the quality of the services offered, combined with less complexity of processes and reduction in the occurrence of adverse events.

2.5. Quality system in health care

“We can define the health quality system as a summary of the structure of the organization, the individual responsibilities, procedures, processes and resources needed to continuously improve the quality of the health services provided, the ultimate goal of which is to improve health, improve the quality of life and satisfaction of the people they care for” (Gladkij, 2003). Another definition of the quality system in health care understood by the WHO is the system as a tool for creating excellence in achieving goals in the field of health care improvement with regard to the current expectations of the population (Lane, 2020). Gladkij (2003) also stresses that the goal of the health care quality system is to reduce errors, adverse outcomes, wasted time and added costs associated with poor quality of a particular performance, product or service. All these objectives must correspond to the needs and requirements of patients, employees and other external and internal clients. These objectives are achieved through the introduction of appropriate methods and measures to monitor and evaluate the quality of care and by defining standards. Health professionals who participate directly in these procedures also play an important role in this process.

Quality concerns health care as a whole. On the one hand, the legislators are responsible for the general quality structure and legislation, and they are also quality guarantors. On the other hand, there are health facilities and their workers working. Clients also play an important role. Together with managers and partners of medical institutions, they are then involved in the evaluation of health care. In the health care quality assessment, it is first necessary to establish criteria that contain the basic aspects and results of the care provided. It is necessary to choose such a monitoring system based on established quality indicators, documentation, quantitative investigation, etc. Typical determinants of health care quality are quality system documentation, worker engagement, continuous monitoring of the system and its management

using updated quality standards, care for knowledge capital of workers, updating quality improvement procedures (Gladkij, 2003). “The application of the peer review method” is also of great importance for the mutual assessment of diagnostic, therapeutic, nursing and safety procedures as well as activities of colleagues from other similar workplaces” (Gladkij, 2003).

2.6. Quality of education and performance of doctors and its evaluation

Evaluating clinical performance in medicine is important, however, challenging. Historically, assessments are implicit, non-standard and based on holistic or subjective judgments. Recent reforms in postgraduate medical education have brought new systems for assessing competences and performance. Education and development should focus on developing skills and knowledge that the individual needs to effectively pursue his or her career. Henderson et al. (2010) divides development into three categories:

- training: work-specific helps people acquire and develop the necessary knowledge and skills to carry out their work effectively;

- on-going professional development: keep up with the latest research, approaches and techniques;

- personal development gives people the opportunity to develop a successful career in the organization. It also recognizes that individual personal growth is important for maintaining motivation.

McCarthy's study (2016) demonstrated that e-learning can form a useful part of the repertoire for patient safety education. Many people now agree that not only basic medicine and clinical medicine but also medical humanities is needed in medical education (You, 2015).

2.7. The influence of hours spent on postgraduate education

In a review study, Moonesinghe et al. (2011) describes the immediate impact of physicians' working hours in postgraduate training on patient safety and clinical outcomes. The studies examined pointed to the effect of reducing the number of working hours spent on postgraduate education, opportunities to improve practical skills and the impact on patients. The reduction in the number of working hours worked had no effect on improving training outcomes in most studies. A few studies also looked at training opportunities, but only one of the six examined ones showed an improvement in participation in training. This was done on a sample of doctors of internal medicine. However, as pointed out in the end, restrictions concerning working time or other changes in postgraduate medical education could affect the quality of training (Moonesinghe, 2011).

An important part of the article was the impact on the patients themselves. “In the literature examining the link between reduced working hours and objective impacts on patients, it is evident that there is no clear indication of benefit or harm. It may seem intuitive that doctors who work fewer hours will be less tired, reduce the number of errors, and patients' results should be better” (Moonesinghe, 2011). Here, Moonesinghe (2011) states that only two of the studies examined have shown an obvious negative impact on patients. Four studies, on the other hand, proved improvement. However, most have shown that reducing the number of working hours has no impact on patients.

The overview shows that the reduction in the number of working hours of young doctors in postgraduate education has either a beneficial or neutral impact on patient's safety. The

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clinical outcome has limited or no effect on postgraduate training. Given the conflicting results of the various institutions and the poor quality of some of the studies evaluated, it was impossible to compare these effects when working time was reduced to less than 56 or 48 hours per week, which is in accordance with European legislation (Moonesinghe, 2011).

Identifying needs in education plays a key role. This can be detected by different procedures. These procedures include expected needs, analysis of education gaps, analysis of organization plans and human resources plans, surveys and evaluations of work performance and individual development, job analysis and skills analysis (Armstrong, 2015).

2.8. Postgraduate education in the Czech Republic

Postgraduate training of doctors means obtaining professional competence. The professional competence of the doctor is obtained by successful completion of professional education by passing attestation examination. Professional competence is a precondition for being a doctor. Professional education is in accordance with the to Act 95/2004 Coll. § 5 para. (4) in the form of all-day training to the extent corresponding to the specified weekly working hours, or to a part-time training to a lower extent than the specified working time. However, the overall length, level and quality shall not be lower than in the case of all-day training. This training is rewarded. The scope of the completed practice is confirmed by the supervisor and the statutory representative of the medical institution (Law No. 95/2004).

In order for the doctor to be included in his pre-attestation training, it is necessary that this is carried out in an accredited workplace for the selected field. The education system divides the accredited workplaces with regard to their degree.

The first milestone in the attestation preparation is the acquisition of the so-called Basis. By acquiring this, the doctor confirms that he has the prerequisites and knowledge needed to pursue the profession in the chosen field. There are now 19 basic ones (Table 2), the completion of which is a precondition for the next part of professional education and the issue of a certificate of completion of the basic strain authorising the performance of certain activities without professional supervision, but only with professional guidance. The shortest possible length of practice for acquiring the Basis is now 30 months, according to the new decree.

Since the training of doctors is very expensive, it would be almost liquidating for a wide range of medical institutions to pay for all their professional education. Therefore, there is a subsidy program in the Czech Republic. It is done by providing residential areas. Professional education (postgraduate education) is completed by an attestation examination before the branch attestation committee established by the Ministry of Health of the Czech Republic. On the basis of an attestation test, the doctor may work in the field in which he has acquired professional competence (successful passing of the attestation test completely alone).

3. METHODOLOGY

The subject of the research was to find out the current view on the quality of postgraduate education of doctors and their satisfaction. Quantitative research was used to obtain data in the form of a questionnaire survey. Research questions were asked in the following 4 areas:

1. Identification questions,
2. Perception of postgraduate education of physicians through the eyes of the educated,

3. Relationship and influence of supervisors on postgraduate education of physicians,
4. What are the working conditions of physicians in pre-certification training and can they influence their feeling about the quality of education?

3.1. Research objectives and research issues

The basic objective of the questionnaire survey was to find out the current quality and satisfaction with the training of doctors, especially in the residential program through their own eyes - what the education is like, what its direction is, whether young doctors know the benefits associated with the residential program and whether they consider these as benefits. Another goal was to find out how a sample of doctors is satisfied with their education, and whether they see some space for improvement specifically compulsory certified courses in the context of pre-attestation training. It examines the impact of completing courses on the education and subsequent practice of selected doctors. One of the main objectives of the questionnaire survey was the section dedicated to supervisors. Since the doctor's supervisor is accompanied by the entire pre-trial preparation, his role is very important. Therefore, the questionnaire also focused on how intensive the consultations and the relationship between the doctor and his supervisor are. The research also maps their workload and salary scores.

The questionnaire consisted of nineteen questions both closed and open and divided into several sections. The first section on identification issues examined the gender distribution of respondents, at what stage of education they are at and whether they received a residential place. This was followed by the second and third sections of the questions, which examined the educational program itself, as perceived by the participants themselves what their interaction with supervisors is, how they perceive the education itself and the mandatory activities that relate to it. The fourth part of the questionnaire survey concentrated on mapping the job title, conditions, workloads and salary assessments of respondents across their expertise.

3.2. Characteristics of the research file

An important fact of the questionnaire survey is the sample of respondents addressed. This sample corresponds to a group of doctors after graduating from the medical faculty, doctors in professional education (doctors at the time of preparation to complete the level Basic and after its completion in their own professional preparation) and doctors just after the attestation. At the same time, those doctors who were educated in the residential placement program were invited to complete the questionnaire, too. These doctors made up the majority of the selected set.

3.3. Implementation and processing of the questionnaire survey

Six doctors were approached for the pre-tests. These doctors were selected from both the faculty and district hospitals. Half of this number was made up of doctors with an assigned residential location. The questionnaire was sent to them on-line two weeks before the official questionnaire was released. In addition, an open question was asked at the end of the pre-test questionnaire, which asked about possible complaints and recommendations for changes. On the basis of such information, the questionnaire was made to its final form, grammatical and stylistic deficiencies were also corrected.

The final questionnaire was published online using the Google form tool. The internet link was then distributed mainly via social networks. It was published in groups whose majority

share is made up of doctors from the above characteristics of the research group. In the time horizon from 1 December 2018 to 28 February 2019, a total of 98 doctors preparing for or shortly after the attestation examination completed the questionnaire. No login or input of personal data was required to maintain the anonymity of respondents. Moreover, the results of the questionnaires were made available to the authors only.

4. DATA

A total of 98 respondents (doctors) completed the questionnaire survey, including 58 women and 40 men, working in all types of medical facilities in the Czech Republic (district, regional, university hospitals and private health facilities). The method using questionnaires seems to be the most effective. Not only can we better address doctors, but we also give them anonymity and space to express their opinion in open questions. In the evaluation we can identify the illogical answers of the respondents.

Here, we can also follow a certain trend according to which female doctors are outnumbered. All questionnaires were completed properly, but there were irregularities related to the acquisition of a residential place for certain fields. Some respondents, such as nephrology and otorhinolaryngology, said they were the holders of a residential site. However, this is not possible according to the listed residential sites, so they are probably classified in several fields such as nephrology and internal medicine or, in the case of ENT (ear, nose, throat), in the field of surgery. For the purposes of the analysis, in this case, this residential place will be counted in the field for which the subsidy program is listed.

5. RESULTS AND DISCUSSIONS

Perception of quality of education (second and third areas of research)

As the subject of investigation is to obtain an idea about the quality of education in residential places mainly, the question of whether doctors are residents followed. A total of 61 residents completed the questionnaire. This accounts for 64.9% of responses. The remaining 35.1% were filled in by doctors who do not educate themselves within the residential system. Four doctors did not answer the question. However, even these answers gave us an idea about their education. An interesting fact is that most of the residents were women. This may also correlate with the idea that female doctors can leave the system for a short period of time because of motherhood. Therefore, they are offered residential places, which guarantee them the shortest possible training time and clear conditions of education. The answers also show that most doctors with a residential place are getting ready to acquire the level Basic. This may explain the much greater interest of hospitals in providing education subsidies from the state budget in the last two years.

The task of the next part of the questionnaire was to find out how the current training is carried out. However, 27 (27,6 %) interviewees are not informed about the training plans. This is a rather surprising finding, given that the preparation for attestation examinations and the performance of traineeships is partly within their competence and in most Czech hospitals, they have to arrange internships by themselves. Based on this, one can assume the result of question 5. An alarming finding is that 24 (24.5%) doctors admit that the traineeships completed do not take place in accordance with the training plans. These internships are shortened mainly due to the needs of the home workplace. Only 52 (53.1%) of traineeships completed are consistent with the training plans. The remaining number of doctors who ticked the item “do not know”

can be explained by the fact that they have not yet completed any compulsory internships or do not know what the length of internships is according to the plans. A positive finding was that most doctors know their supervisors, but consultation interactions do not take place in 63.2% of cases, which is equivalent to 60 doctors. Consultations with supervisors take place several times a week for only three doctors in the field of surgery, cardiology and neurology. Less frequent consultations take place with future doctors who have completed the questionnaire across all fields of specialization. The frequency of answers to the question how often consultations take place is given in Figure1.

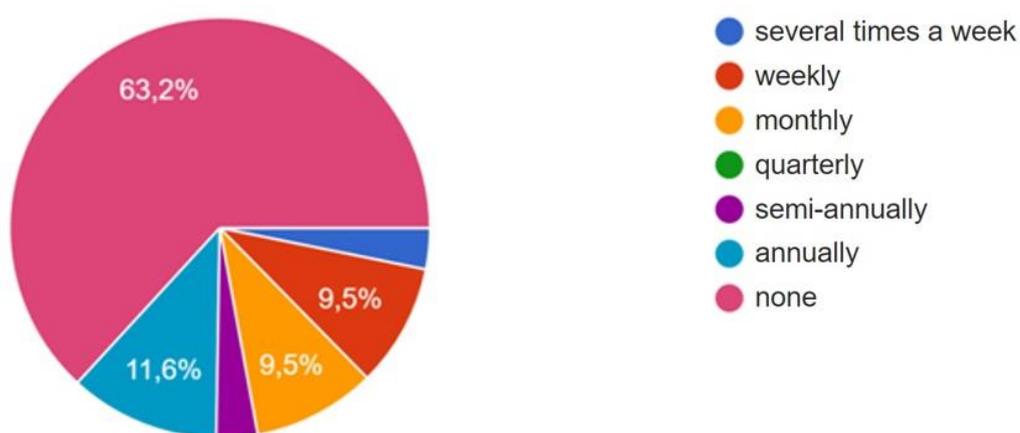


Figure 1. Frequency of consultations with supervisors (own processing)

The educational programs include compulsory educational courses provided by the Institute of Postgraduate Education in the Health Service. These activities were rated mostly positively, only 13 respondents were dissatisfied with the courses. Course participants were mostly satisfied with both the length of the courses, the program and the contribution of the lecture to practice. However, a third of respondents have not completed the courses yet.

The subjectively perceived quality of education was an important issue of the whole quantitative inquiry. The answers were rated as average to below average in most responses. Grades 1 (best) to 5 (worst) were rated. Only 5 doctors were satisfied with the quality of the training program, 20 respondents would rate the quality with mark 2. Mark 3 was awarded by 31 respondents. The quality of education was graded by 38 doctors with grade four, and 4 doctors awarded the worst possible grade. However, the overall negative attitude towards residential places can also be found. In open questions, the respondents complained mostly about the lack of supervision, the lack of interaction with the supervisor and poor motivation. Among other reasons, there were non-compliance with the prescribed duration of traineeships and disproportionate workload.

Period of education

The third part of the questionnaire focuses on the length of education. In this case, the period of interruption was also considered (e.g. due to pregnancy and parental leave, or changes in the field). Only 8 doctors did not continue with education and practice. Of that number, there was only one man. The average duration of interruption is 2-3 years. At the same time, these

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respondents extended the estimated length to prepare for the attestation test. Doctors in residential places estimate their duration of preparation in accordance with the minimum required length according to the educational plans of the respective fields. However, here we can find exceptions. For example, a doctor with a residential position in radiology said that she estimates her education in the length of 10 years, while noting no benefits that flow from gaining a residential place. A longer period of training was reported by doctors without residential jobs, with less than 1.0 working time, and those who signed a qualification/stabilization agreement with the hospitals where they work. The question was when they signed the agreement. The agreement is intended to provide doctors without residential places with the shortest possible length of preparation according to educational plans. By signing it, however, they usually undertake to stay in this hospital for some time after passing the attestation test.

Perception of the residual (subsidy) program from the point of view of doctors (second and third areas of research)

The penultimate part of the questionnaire survey was intended to find out what awareness and views respondents had on the residential system. All 98 doctors answered this question, and their answers were almost even. 31.6% of respondents said they felt the benefits associated with the subsidy program, 34.7% did not perceive these benefits, and the last group of 33 doctors did not have a clear opinion. The doctors were then able to express themselves more specifically. Some of the reasons for their answers were the proper completion of education in the shortest possible time, compliance with traineeships and non-signing of stabilisation agreements. On the other hand, comments on the reduction of traineeships, even if they received the residential place, dominated. Comments on the supervisor and the lack of supervision also often appeared. Some of the experience of doctors prove that they do not see the difference between residential education and without it, and that doctors have the same conditions for education.

Working conditions (fourth area of research)

The last set of questions mapped working conditions of doctors in pre-attestation preparation. 19 doctors are working with a signed qualification/stabilization agreement, which is already abandoned due to the high level of awareness of young doctors. Most doctors also have full-time work, i.e. they have a full-time job (1.0). Four doctors work part-time, which is likely to stretch the length of their pre-screening training. This part is associated with another doctoral study. In question 18 (time spent at work), the main finding was that almost 34.7% of doctors spend up to 60 hours a week at work. This means 20 hours of overtime a week. Such workloads can mean not only increased fatigue, loss of attention and the associated higher risk of errors, but also demotivation and psychological hardship, which later can cause the burn-out effect. Given the lack of medical staff, it can generally be argued that the number of hours of overtime will continue to increase. The number of working hours that doctors work weekly, including the institutional emergency service, is shown in the following figure (Fig. 2).

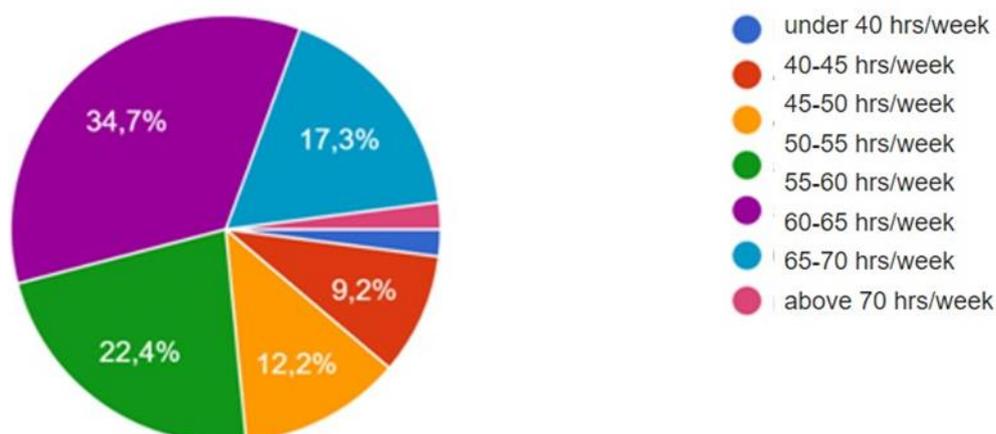


Figure 2. Number of working hours per week including overtime (own processing)

The last one of the questions, which was optional, focused on the salary assessment of doctors. Next illustration (Fig.3) shows the cash assessment of doctors without counting overtime work. The doctors were supposed to give a net wage. Only 7 doctors have a net monthly income above CZK 50,000. These doctors are according to the questionnaires just before the planned attestation, or in their own professional training. 29 doctors reported that their monthly net income is between CZK 30-35,000. 22 (22,4 %) respondents receive CZK 35-40,000 per month. Four doctors reported earnings between CZK 25-30,000, which is also the lowest income among those surveyed. However, the question is whether their salary assessment is sufficient in view of the work done and overtime. (1USD = 22 CZK)

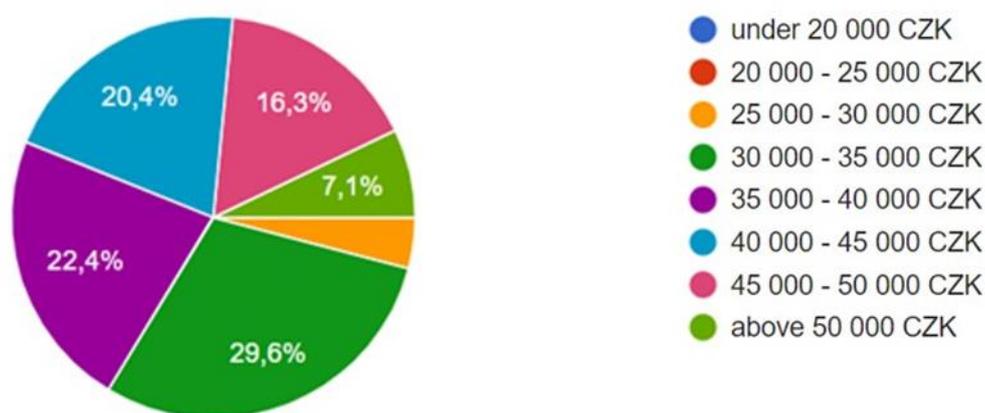


Figure 3. Salary evaluation of doctors in the pre-attestation preparation (own processing)

6. CONCLUSION

Training of doctors in the pre-attestation period is mainly associated with self-managed education, which assumes that people will learn much more when they figure out themselves how things work. However, in pursuing a medical profession, perhaps more than in any other job, they need someone to give advice, help them and be a support in the crisis situations. They must be encouraged to ask for help or help themselves. At the same time, their efforts must be supported by superiors and management.

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New doctors' staff is chosen for a planned and systematic approach, which includes defining competences and what they need to learn or what skills they should acquire. As for this aspect, mainly more experienced colleagues, or supervisors and mentors are used. Education should be supported by a favorable environment for self-study, for example, by providing materials, paying for optional courses or on-line learning opportunities.

In particular, the political spectrum and the professional public should contribute to the concept of improving the quality of postgraduate training of doctors in a residential place through a kind of unification of appropriate measures in the assessment of the quality of postgraduate medical training.

The main objective of the contribution was therefore the creation of a project aimed at improving the quality of postgraduate training of doctors in a residential place. The project was developed on the basis of information obtained in the analytical section, providing personal experience and information from various medical institutions. The analytical part consisted of quantitative investigations using questionnaires intended for physicians in the pre-screening preparation. The project developed to improve the preparation for the attestation test, which leads to greater employees' satisfaction, improvement of the quality of care provided and to the reduction in costs of health facilities, as stated by Jimmerson (2007) and Morrow (2012) in their publications. The project aims to encourage and motivate physicians and thus also to stabilize the situation in health care. Despite the time-consuming nature of the medical profession, it is necessary to motivate both young doctors and their trainers correctly and purposefully. In some aspects, this may be a greater financial reward for both groups, or hospital management may focus on improving the quality of education through specific projects to support the activity itself. Curiosity and Innovation can help.

In the future, it would also be appropriate to introduce long-term longitudinal studies on the basis of evaluation and monitoring, which would focus on the objective results of treated patients during the pre-trial training of doctors. These could be monitored, for example, by focusing on complications, the occurrence of adverse events, or the length of hospitalisation. The evaluation of such a research inquiry could enable better planning of the training of future generations of doctors and would document the quality with the clinical impact of the current education system.

All measures that lead to better training of doctors are supported not only by professional public, but are a motivating factor for young doctors, too. It is important that the changes have a systemic impact. A great space to develop education provide different simulators and alternative environments to train. The level of supervision and the resulting resident assessments also have potential. Such quality monitoring of education could bring about a comparison between different regions and the identification of practices that lead to quality education. The limitations of the proposed solution may be caused by frequent political changes and therefore also by changes in views on health policy. For example, a change in health care funding could bring extra money for the necessary implementation of the project and stimulate curiosity and innovation in medical education, or, conversely, deepen the existing dissatisfaction evident from the research survey.

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VIETNAMESE LEAGUE OF LEGENDS PROFESSIONAL ESPORTS TEAMS RESOURCES ALLOCATION PROCESSES CONFRONT WITH PLAYER TRANSFERS: BUILDING A PRELIMINARY FRAMEWORK THROUGH DYNAMIC CAPABILITIES

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ABSTRACT

Professional eSports teams are on the rise in Vietnam since nearly a decade, notably thanks to Garena' efforts for developing the Vietnamese League of Legends (LOL) eSports scene from 2012 to the present day. However, there is still currently little understanding of how Vietnamese professional eSports teams are allocating and realigning their key resources, especially players and managerial staff in order to achieve better sporting and financial performance in this very competitive market. The purpose of this exploratory study is therefore to analyze the peculiarities of the fledgling Vietnamese eSports ecosystem in the light of professional eSports teams and players transfers' nascent regulation by exploring which kind of dynamic capabilities might help those key actors to survive in this industry. Drawing upon the researcher immersion inside Vietnamese eSports culture and two preliminary semi-structured interviews with key primary stakeholders of this burgeoning market, the findings of this research participate to enhance existing knowledge about Vietnamese professional eSports teams' environment. Hence, the findings lead the author to suggest a preliminary framework for exploring empirically the LOL Vietnamese eSports player transfers and to confront it with the specific dynamic capabilities (DC) supporting LOL Vietnamese professional eSports teams' resources allocation and organization.

Keywords: eSports, Vietnam, dynamic capability, professional team, League of Legends, player transfers

JEL Classification: L22, M13, M51

1. INTRODUCTION

In 2018, the *Vietnamese Championship Series* (VCS) became the sixth independent region recognized by *Riot Games* as major league, alongside South Korea, China, Europe, North America and the last gathering Taiwan, Hong Kong and Macao (Rubio, 2018). Today, Vietnam still benefits through the VCS from their own national *LOL* league while their neighboring countries such as Taiwan, Malaysia, Hong Kong, the Philippines, Thailand and Singapore are only holding one or a few *LOL* teams inside the *Pacific Championship Series* (PCS). This provides Vietnam a particular positioning within the South East Asia eSports context which foster foreign investments such as the recent signing of Vietnamese *LOL* players from *Lowkey Esports* with the European organization *Team Secret* (Liquipedia, 2020). Those examples tends to illuminate that the Vietnamese eSports industry is now embedded in the context of “*glocalisation*” as recently delineated by McCauley, Nguyen, McDonald and Wearing (2020, p. 11) for the case of gaming in Vietnam. According to them, “*the glocalisation of gaming in Vietnam represents external regional influences (East Asia) and those further*

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afield (Europe and North America) that are interpreted through the prism of Vietnam's unique socio-cultural traditions.” As a result, gaming and by extension eSports companies need to prepare themselves to tackle the “*constant shifts in technology, society and economy*” happening not only in Vietnam, but also in the geographical areas of influence previously mentioned.

Notwithstanding the remaining risk for foreign firms to settle new businesses in communist Vietnam (Nguyen & Kend, 2019), it is clear that eSports appear as a burgeoning market in this country, as established by the following set of data. First, the access to eSports is facilitate by external factors such as the growth of the middle and upper class in Vietnam, resulting from political and economic national policies (World Bank & Ministry of Planning and Investment of Vietnam, 2016). In this regard, Mangeloja (2019, p. 35) reported that “*one-third of internet users in Vietnam say they have recently watched a video game tournament*”. Secondly, some key data are in full swing since a few years as expressed by Appota Esports (2019). Notably, they estimated that the number of eSports players in Vietnam increased from 3 million in 2016 to 26 in 2019. The same applies for the prize money delivered in eSports tournaments in Vietnam, expanding from 216 thousand US dollars (USD) in 2015 to 787 thousand USD in 2018. Drawing upon the Newzoo (2019) global market report, Appota Esports (2019) also pointed out an estimated revenues of over 365 million USD for the Vietnamese eSports industry and projected Southeast Asia's online gaming market to reach 10 billion USD in 2025.

Beyond those numerical data, Vietnam also benefits from a long story with eSports. As a matter of fact, some pioneer games like *Warcraft II*, *Age of Empires*, *Starcraft* as well as *Counter Strike* were already played by the Vietnamese players in local area networks (LAN), and in a lesser extent in internet cafes nearly two decades ago (Dang & Ali, 2018). Likewise, Vietnam is an official member of the *International Esport Federation* (IeSF) since 2009 through *Vietnam Recreation Esports Association* (VIRESA) and possess professional eSports teams since 2010 (Van, 2018). Some even achieved remarkable results such as *GeniusGaming* which finished second at the *World eSports Master 2010* (Saigon Dragon Studios, 2017) or more recently *GAM Esports* which managed to qualify for the group stage of the *LOL World Championship 2019* (Geracie, 2019).

Nowadays, the growth of the Vietnamese eSports industry seems massively driven by the success of Multiplayer Online Battle Arena (MOBA) games like *LOL* and *Battle Royale* games such as *Player Unknown Battlegrounds* (PUBG). Nonetheless, it should be remind that this constantly changing market remains relatively nascent and subject to the emergence of many new trends, due to both external geographical influences and internal peculiarities. First, as occurring with games like *Hearthstone* (2014, Blizzard) globally (Rogers, 2019), mobile gaming is demarcated as a promising market for eSports in Vietnam given that many gamers are “*switching from playing PC [Personal Computer] games to mobile games*” and young Vietnamese's “*have grown up [...] with the emergence of technology*”(Nguyen, 2015, p. 24). In this regard, eSports titles such as *Mobile Legends: Bang Bang* (2016, Mooton) and especially *Arena of Valor* (2016, Garena), usually known as *Liên Quân Mobile* in Vietnam, are expanding themselves very fast across South East Asia. As a matter of fact, the latter became in 2019 the most important mobile eSports scene by prize pool globally (Esports Earnings, 2020.), just behind *LOL*. Interestingly, this was happening the same year Vietnam was hosting the *Arena of Valor World Cup* (Niko, 2018). According to Appota Esports (2019), a second tendency towards eSports in this country hold in the particular interest of the Vietnamese for titles that are published by locally based companies like *LOL*, *CrossFire*, *Arena of Valor* as well as the

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FIFA Online series. Aside VCS' case, this resulting with the establishment of many Vietnamese eSports leagues, for instance the *Arena of Fame* (Arena of Valor), the *National Championship* (FIFA Online 4) by *Vietnam Esports* as well as the *Crossfire Legends Star League* (CrossFire) by VNG. Last but not least example, *Union of Vietnamese Students in France* even exposed an interesting level of resilience by organizing the *UEVF Esports Championship* (UEVF, 2020) as a solidary answer to face with the COVID-19. Consequently, eSports is now unsurprisingly both portray as a recommended tool that “*Vietnamese gaming companies should place more focus on [...] in their future plans*” (Phan, 2019, p. 21) and a strategic asset to target customers belonging to the Generation Z (Dimock, 2019) which characterize around 85 percent of Vietnam's eSports audience (Appota Esports, 2019).

Despite the significance of recent researches within gaming industry in Vietnam (Dang & Ali, 2018; McCauley et al., 2020; Thanh Trung Nguyen, 2015; Phan, 2019), there are still many questions that would require investigation given that “*Vietnam's gaming ecosystem is only beginning to catch up more developed countries*” (McCauley, Nguyen, et al., 2020, p. 12). Similarly, the same observation applies for the still under construction eSports ecosystem in Vietnam. Meanwhile, Vietnamese firms are urged to develop peculiar knowledge and skills such as absorptive and innovative capacities “*for developing national innovation capacity, with the goal of creating an innovation-led economy*” (World Bank & Ministry of Planning and Investment of Vietnam, 2016, p.171). According to the authors, Information and Communications Technologies (ICT) companies such as *VNG Corporation* and *Appota* are expected to play a critical role in this transition. However, notwithstanding the involvement of those two firms for the development of the Vietnamese electronic sport industry, the word “eSports” was not quoted a single time in this report. Nonetheless, portraying a better understanding of the rationales behind the growth of eSports might be of interest for Vietnamese's authorities since the number of Vietnamese eSports players and fans are respectively estimated to 15 and 10 million in 2018 by Appota Esports (2019). At the same time, elite eSports teams are beginning to professionalize themselves notably since the recognition in 2018 by *Riot Games* of the VCS as a main league in the *LOL* eSports ecosystem. In this context, very little is known about the managerial skills necessary for developing a successful professional eSports team in this highly competitive environment (Scholz, 2019) despite prior researches covering team formation and coordination (Freeman & Wohn, 2017) and team dynamics (Tang, 2018).

From this perspective, this present research aims to suggest a preliminary theoretical framework for a more in-depth future analysis of the specific capacities that help Vietnamese professional eSport teams to fastly allocate and realign their key resources in order to achieve both better sporting and business performance. Two objectives are derived from this research proposition. The first (and main) objective of this study is to explore how fast Vietnamese eSports professional teams are transforming their organizational structure, especially through human resources redistribution. A second objective of this paper is to bring the light on the peculiarities of the Vietnamese eSports ecosystem that might affect the development of professional eSports teams in Vietnam. Globally, the originality of this paper comes from the fact that (1) it lays the foundation for a future empirical investigation of professional Vietnamese eSports team human resources redistribution, especially through the lens of player transfers, and (2) confronted this exploratory field analysis with the conceptual background of dynamic capabilities (DC) and Vietnamese firm' specific features. In the following sections, a literature review of eSports player transfers, team formation and dynamics mechanisms is presented and confronted with the conceptual background of DC and Vietnamese peculiar firms'

features. Then the method is detailed, the preliminary results are presented and discussed in light of both eSports and Vietnamese firm's DC literatures.

2. LITERATURE REVIEW

2.1. ESports player transfers and team formation dynamics

While professional gaming is on the rise since few years (Salo, 2017), professional eSports players are developing their personal brand (Musabirov, Bulygin & Marchenko, 2019) and some of them even become superstars (Ward & Harmon, 2019). However, eSports players are now evolving in a very competitive environment where they constantly need to deal with the fear of being replace by another one (Holden & Baker, 2019). Notably, this concern is nurtured both by the fact that numerous eSports player transfers occur every year and they seem unequally regulated across the different eSports scenes (Holden, Kaburakis & Rodenberg, 2017). For instance, Ashton (2020) reported that some game publishers like *Riot Games* and *Blizzard*, which are respectively managing the *LOL* and the *Overwatch* eSports scenes within a centralized model, are regulating it by adding clear transfer windows and minimum contract standards for players. Conversely, Carrillo Vera & Aguado Terrón (2019) noted that *Valve Corporation* is building the eSports ecosystem of *DOTA 2* and *Counter-Strike: Global Offensive* (CS:GO) by cooperating with private companies such as *Electronic Sport League* (ESL) to support the development of major competitions like the *Intel Extreme Masters* (IEM) of Katowice. In practice, it seems that the frequency of eSport player transfers tend to vary greatly, even between two eSports scenes managed across similar decentralized models. In this regard, Sushevskiy & Marchenko (2018) poses that *DOTA 2* eSports teams conclude only a few transfers between two editions of *The International* (the main *DOTA 2* eSports tournament of the season) to secure more sport consistency. On the contrary, Ashton (2020) reported that *Astralis* was one of the very few major *CS:GO* teams which kept the same roster of players over the two last years.

As a result, eSports players are now trying to maximize their revenues linked to their eSports activities given the uncertain feature of the eSports industry and the relatively short duration of their career (Hollist, 2015). Additionally, the pressure to remain competitive is leading some of them to risky situations where their health is endangered. From this perspective, Holden & Baker (2019, p. 415) reported the case of *LOL Team Liquid* professional players "who were up to sleep as little as four hours a night and practice up to fourteen hours a day during training sessions". Beyond this, authors also pointed out the lack of unionization towards eSports players employment status which vary too much from one league to another. Hence, even though eSports players embody key actors in the co-creation of the eSports experience (Seo, 2013), some find themselves in precarious circumstances at a time when they are now also considered as a commercial resource for their organization (Lokhman et al., 2018). This concern is further reinforced by the specific position of professional eSports teams in this industry. In other words, they are also pushed to develop strategies in order to stay competitive at the highest possible level. According to Ashton (2020), those organizations are often relying on their general manager to take care of market watch and scouting critical tasks in order to anticipate their need for roster future reconfigurations. Nonetheless, this duty does not only revert to the general manager as some professional eSports teams like *Fnatic* are now working with legal advisers (Hawkins, 2018) or consulting agencies in order both to protect their players and to adapt their recruitment strategy more efficiently to the current regulations of the league in which they participate.

In this context, prior researches has shown that eSports teams are relying on a variety of dynamic criteria in order to identify their new teammates such as geographical location, peer recommendations or observing high school tournaments (Freeman & Wohn, 2017). Authors also pointed out the complex need for professional eSports teams to build a strong multimodal communication strategy between the teammates in order to reach a sustainable level of performance. In this line, Tang (2018) corroborates Freeman & Wohn' (2017) findings by outlining individual heterogeneous eSports and cognitive player skills with team cohesion and communication ones as key success factors for successfully collaborating under the pressure for winning (Holden & Baker, 2019). According to Tang (2018), another deciding factor for achieving viable team performance depend on the abilities of eSports players to enhance their social connections through camaraderie and friendship outside the game.

However, what is not yet clear is the possible impact of individual or teamplay skills on the process of hiring new eSports players. In the same vein, very little is known outside the South Korean context (Hilvoorde & Pot, 2016) about the talent discovery and identification strategies in the context of eSports professional teams. Research to date has not either determined how those organizations are using eSports transfers to redistribute their human resources or to offer their players post-career opportunities across this industry; for instance undertaking coaching, broadcasting (Salo, 2017), streaming or analyst responsibilities. From this perspective, we do not know also the amount of eSports player transfers pushing players in retirement or free agent status. Lastly, there is a lack of knowledge addressing whether and how eSport player transfers can help professional eSports teams to reach better sporting and financial results. Consequently, team capacities to sense and seize new transfer opportunities remained quite unknown outside the role of professional eSports teams managers (Ashton, 2020).

2.2. Firm's dynamic capabilities in Vietnamese organizations

2.2.1. Dynamic capabilities theoretical foundations

Traditionally, Barreto (2010) reported that the concept of DC was designed to address how companies can reach and maintain a competitive advantage when operating in contexts of rapid technological change (Teece, Pisano & Shuen, 1997). In this regard, Teece et al. (1997) define DC as “*the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments*” (p. 516). For this reason, DC are depicted as superior or higher capabilities (Katkalo, Pitelis & Teece, 2010) which can enable companies to address, or even to generate changes in their industry (Teece, 2018). Hence, DC should be distinguished from operational capabilities (OC), that are portrayed by Winter (2003) as those which support firms to generate on a regular and short term basis revenues for a living.

Up to now, it is now well established that DC has evolved to become a multidisciplinary research field and “*one of the most active research areas in the field of strategic management*” (Di Stefano, Peteraf & Verona, 2010, p. 1187). In this line, Schilke, Hu and Helfat (2018) recent review of DC researches corroborated Barreto's (2010) prior one by stating that this topic is now covering a wide variety of management areas. Another outcome from Schilke et al. (2018) meta-analysis lays in the fact that they demonstrated how DC also differ theoretically in terms of antecedents, dimensions, mechanisms, moderators, and outcomes. As a result, it should be point out that scholars have portrayed numerous conceptualizations of DC such as; for instance transforming (Lampel & Shamsie, 2003), marketing (Menguc & Auh, 2006), absorptive (Zahra & George, 2002), adaptive and innovative (Wang & Ahmed, 2007), and

more recently networking (Aujirpongpan & Hareebin, 2020), talent management capabilities as well as organizational agility (Harsch & Festing, 2020).

2.2.2. Dynamic capabilities within Vietnamese firms

According to Nam, Tuan and Van Minh (2017), the analysis of DC through the lens of Vietnamese firms tend to remain a relatively virgin area despite the relevance of some prior empirical studies (Dao, Nguyen, Tapanainen & Bui, 2016; Nguyen & Nguyen, 2011). Nonetheless, there seems to be a growing interest for DC analysis in the context of the Vietnamese companies over the last few years as many of them are dealing with major changes (Tran, 2019). In this line, empirical researches has been covering DC across a variety of businesses such as the hotel (Pham, Tran, Thipwong & Huang, 2019) and tourism industries (Nguyen, 2019) as well as several form of manufacturing and services firms (Hue, 2019; Than, Nguyen, Tran & Le, 2019).

Collectively, those researches are providing new insights towards Vietnamese firms' specificities. In this regard, Dao et al. (2016) firstly asserted that innovation capabilities positively influenced Vietnamese firm's performance. Authors then illuminated the recruitment of human resources with an entrepreneurship mindset and the shift from building new products or services to focus on improving company reputation as key drivers of firm's efficiency. Notably, this seems in line with Augier & Teece (2009) analysis who identified the manager as an important feature of firms' DCs. Dao et al. (2016) lastly outlined that is it determinant for firms to develop innovative capabilities when operating in relatively immature markets. In the same glance, Nguyen & Nguyen (2011) enhanced Dao et al. (2016) observations by stating that marketing capabilities also powered Vietnamese firm's performance in transition industries. They additionally pointed out that those companies should endeavor to develop their marketing and innovative capabilities in order to increase their survival capacities to deal with competitive environments. Especially, this tend to symbolize a major concern for Vietnamese firms given that they are mainly small and medium enterprises (SME) and often "*lack of resources and R&D capabilities to innovate and develop competitive advantage*" (Than et al., 2019, p. 8). Conversely, SME' features of Vietnamese companies might also be considered as a strength which allow them to reach a higher level of organizational flexibility and adaptability (Hue, 2019). Nonetheless, researcher also noted that it is harder for SME to foster crucial DC such as absorptive capacity given the fact that they rely heavily on their employee skills for this purpose.

Ultimately, Pham et al. (2019) analysis of the integration of social networking site (SNS) such as Facebook, Twitter and Google + across a sample of 124 hotel managers reached the conclusion that two new forms of DC can allow Vietnamese firms to improve their performance and hence build competitive advantages. Combining DC with resources-based view (RBV) theoretical standpoint, authors finally advocated the strategic interest for managers to "*continually learn how to identify, analyze and improve their organizational DC by developing opportunity recognition capability and opportunity capitalization capability*" (p. 16). However, the nature of DC enabling professional eSports teams to identify and capitalize on the development of new resources (e.g. human, financial and marketing) in order to improve their sporting and business firm' performances to survive in this constantly changing industry remains very unclear. Therefore, this present research try to fill this void by contributing to the recent call for new empirical researches towards DC within emerging economies (Wu, Chen & Jiao, 2016) by focusing on the specific case of Vietnamese professional eSports teams DCs.

3. METHODOLOGY

In most recent studies, Vietnamese firm's DCs has been mostly measured by quantitative methods (Dao et al., 2016; Hue, 2019; Pham et al., 2019; Than et al., 2019). However, given the very exploratory feature of this present research and the lack of literature linking DC to Vietnamese professional eSports teams, a qualitative approach was chosen to conduct this exploratory study (Koenig, 1993), based on in depth semi-structured interviews. For instance similar method has been adopted by Nguyen & Nguyen (2011) when building their pilot study based upon in-depth and face to face interviews in order to identify which specific constructs from the DC literature they will analyze across Vietnamese firms. Accordingly, this present research serve a similar aim, which might allow researcher to build a preliminary framework for a future study.

3.1. Sampling

In line with Taussig (2013) recommendation's, the researcher of this present study has sought for immersing himself on the field to gain a better understanding of the complexities of the transitioning Vietnamese eSports industry and gaming culture both influenced by overseas companies customs and more regional or local traditions (McCauley et al., 2020). For this purpose, the researcher firstly visited ten different gaming centers over a trip of three weeks in the city of *Hà Nội* and took more than 200 pictures inside those facilities in order to capture all the shades and the trends of this burgeoning market. Secondly, the researcher sought to take into consideration the standpoint of some primary Vietnamese eSports stakeholders in the sense of Scholz (2019) on the investigated topic. Notably, each gaming center director visited by the researcher was asked physically for a future semi-structured interview in English or to answer questions by email in English or Vietnamese given that the interviewer is learning Vietnamese. In addition, two Appota Esports strategic representatives were contacted by email a few weeks before the researcher arrival in the capital of Vietnam given the peculiar positioning of this firm in Vietnamese ICT and eSports industries. As shown in Table 1 (anonymized), two companies agreed to take part to this exploratory study.

Table 1. Vietnamese eSports primary actors interviewed

Company	Role in the eSports industry	Interview date	Duration
Appota Esports	Game Publisher and multimodal platforms	18 December 2020	1 hour and 36 minutes
Cyzone eSport Center	Community enabler	25 December 2020	49 minutes

3.2. Data collection

All interviews were recorded and transcribed verbatim. In line with Kvale & Brinkmann (2015), questions were “*short and devoid of academic language*” (p. 157). The interviews began with respondents describing their professional background. Introductory questions were asked in order to introduce the general concept and the story of each company. Then, respondents were questioned about their positioning inside the Vietnamese eSports market and their connection with other key stakeholders of this industry. Especially, respondents were asked to provide explanations about how they alter their firm strategic activities to adapt

themselves to market changes. In this regard, questions addressed their abilities to redistribute their main resources (human, marketing and financial) in this manner. Respondents were further questioned about both the current perspectives and limits for developing an eSports business inside Vietnam. As a result, the topic of Vietnamese professional eSports teams also came naturally during the interview process given respondents links with those key actors and their crucial positioning within this ecosystem. Additionally, probing questions were asked when further information was needed to answer specific questions, as well as when interviewees tackled interesting issues that the interviewer wanted to explore more deeply. Besides, the findings were illuminate and cross-check through the collect of key secondary data, namely the *Appota Vietnam Esports Guidebook 2019* (Appota Esports, 2019), and the pictures taken by the researchers inside ten different gaming centers in *Hà Nội*.

3.3. Data analysis

Data from the interviews and the *Appota Vietnam Esports Guidebook 2019* (Appota Esports, 2019) were thematically organized with the help of QSR NVivo 10, a software program that facilitates the systematic coding and qualitative data management processes (Jackson & Bazeley, 2019). In this regard, three sets of exploratory primary nodes were created, one referring to the current situation of the Vietnamese eSports industry gathering data related to its evolution, current trends, limits and perspectives. A second node displays verbatim concerning the capacity of interviewed firms to realign their main resources (human, financial and marketing) in order to adapt their activities to Vietnamese eSports market changes. The last node exhibits data associated with Vietnamese professional eSport teams features. In addition, pictures taken by the researcher inside ten gaming centers located in *Hà Nội* were analyzed to bring the light on Vietnamese eSports and gaming culture specificities (e.g. main games or devices to play).

4 .RESULTS AND DISCUSSIONS

4.1. Results

4.1.1. Vietnamese eSports ecosystem features

In accordance with the second objective of this paper, three broad themes emerged from the analysis of the Vietnamese eSports industry. Talking about the historical and social characteristics of this market, respondents firstly illustrate that the path for eSports stakeholders' professionalization remains (quotation 1) nascent and strongly connected to the will of game publishers to support this trend (quotation 2). Interestingly, one interviewee also outlined the growing interest for women in eSports since the emergence of *LOL* (quotation 3). Secondly, respondents reported the difficulty for Vietnamese eSports actors to work with oversea companies (quotation 5) given the lack of government policies to endorse the development of eSports activities (quotation 4). As a result, Appota Esports interviewees want to help the Vietnamese eSports market to become less unorganized (quotation 7), especially by strengthening business linkages between oversea and local firms (quotation 6).

Table 2. Vietnamese eSports market features

Criteria	Quotations
Historical and social picture of the Vietnamese eSports market	(1) <i>“We have not developed eSports ten years ago because we thought in Vietnam that was only a game and only amateur tournaments were running in internet cafes at that time”</i> (Appota Esports). (2) <i>“Garena setup the footage for professional eSports in Vietnam when they firstly bring League of Legends and then Arena of Valor”</i> (Appota Esports). (3) <i>“Five years ago, our customer were 99 percent young men playing Counter-Strike 1.6, Starcraft and DOTA but we have now around 30 percent of women and 70 percent of men since the arrival of League of Legends”</i> (Cyzone eSport center).
Limits for developing eSports in Vietnam	(4) <i>“The main problem for the development of the Vietnamese eSport market is that our government do not want us to develop it. [...] They need to have policies to develop our market in Vietnam”</i> (Cyzone eSport Center). (5) <i>“We have very few game intellectual properties [IP]. [...] That is why we want to work with oversea companies to have the IP and do more tournaments in Vietnam”</i> (Appota Esports).
Perspectives for future eSports development in Vietnam	(6) <i>“It is not easy for oversea companies to do an eSports tournament in Vietnam because they need to ask the government to give you the permission, to find the venue and to work with a lot of local providers. So we are trying to connect oversea with local resources”</i> (Appota Esports). (7) <i>“Esports market in Vietnam is new and very unorganized. We want to create a professional environment where young people can have an eSports career as a professional player, caster or in management”</i> (Appota Esports).

4.1.2. Vietnamese’ firms capacities to deal with eSports market changes

The present section offers a brief overview of capacities needed by Vietnamese eSports key actors to adapt their strategies with recent shifts in their environment. In the case of Appota Esports, interviewees recognized key opportunities that might help to reshape the Vietnamese eSports ecosystem, especially in the formation, sponsorship (quotation 8) and player transfers areas (quotation 9). In addition, marketing (quotation 10) and organizational agility (quotation 11) capabilities were depicted as crucial ones for firm’s survival. In this regard, Cyzone eSport Center respondent acknowledged the necessity for gaming centers in Vietnam to build strong communities in order to keep customers connected with their brand (see pictures). For instance, Vietnamese gaming centers are doing so by organizing weekly and monthly tournaments in the main games as shown by the following picture.



Pictures 1.2. Pictures taken by the researcher during the Dell Gaming Championship Viet Nam 2020 on LOL in Vikings Esport Arena (15 December 2019)

Table 3. Vietnamese’ firms capacities to face eSports market changes

Criteria	Quotations
Business Model diversification strategy	<p>(8) <i>“As a tech startup company, we want to diversify from our main business which is the production of eSports events to areas no one has investigated yet here such as eSports academy and building an interactive tool to track the impact of eSports sponsorship”</i> (Appota Esports).</p> <p>(9) <i>“We also want to jump on eSport player transfer opportunity as no one care and we already have a network of lot of friends that are doing eSports in China and South Korea”</i> (Appota Esports).</p>
Importance of firms’ marketing capabilities	<p>(10) <i>“I had a very strong marketing team last year but I lost it. Things were going down while Vikings was marketing themselves very well and succeed to build good eSports communities”</i> (Cyzone eSport Center).</p>
Importance of firms’ organizational agility	<p>(11) <i>“Two or three years ago, League of Legends was massively played but everything slow down now so we halve the number of PC in our second room to 150. [...] I think many Internet cafe changed to the survivor mode now”</i> (Cyzone eSport Center).</p>

4.1.3. Exploratory Vietnamese professional eSports teams features

In light with the main purpose of this research, this last section of the results introduced specific characteristics of Vietnamese professional eSports team’s environment. According to Appota Esports interviewees, there was no specific regulation before 2017 in terms of player transfers (quotation 12), which lead to many scandals (quotation 14) despite the efforts of Garena to professionalize the Vietnamese *LOL* eSports scene (quotation 13). In this context,

respondents identified the need for Vietnamese professional eSports teams and players to improve their understanding of the fledging regulation (quotation 16) in order to enhance their capacity to sign and maintain eSports sponsorships (quotation 17). Developing such skills tend to be crucial for eSports teams, especially in an ecosystem where non endemic companies commitments remains also incipient (quotation 15). Ultimately, at a time where more firms are urged to support the development of eSports in Vietnam (quotation 18), a major concern relies in the fact that Vietnamese professional eSports teams’ organization structure and resources allocation appear as an uncharted area.

Table 4. Vietnamese’ eSports teams features

Criteria	Quotations
Lack of regulation between 2012 and 2017	<p>(12) <i>“From 2012 to 2017, there was no set of rules in transfers or anything like that and eSports teams were not well organized in Vietnam. [...] They were training in internet cafes but now they start to have their gaming house”</i> (Appota Esports).</p> <p>(13) <i>“League of Legends is the main game because Garena invested a lot in this scene back in 2012 and 2013 by supporting financially players and their teams”</i> (Appota Esports).</p> <p>(14) <i>“Scandals were often reported when players signed with another team while still playing for their first team but Garena reinforced the regulation in terms of player transfer in 2017 and it is now better”</i> (Appota Esports).</p>
Sponsoring resources	<p>(15) <i>“From 2016 to 2018, non-endemic companies like Coca Cola or Monster Energy entered the Vietnamese eSports market and more recently Vietjet, an aviation company committed on Arena of Valor. [...] It is a good sign and that bring a lot of revenues for eSports teams and the tournaments”</i> (Appota Esports).</p> <p>(16) <i>“Vietnamese eSports players are too jumpy and pure in terms of their speech and media image. This can indirectly hurt the brand which is sponsoring them so this is very important to help them to be more professional”</i> (Appota Esports).</p> <p>(17) <i>“We want to help Vietnamese teams to follow the regulations and provide them branding services because one of their main concern is how they can get and hold a sponsor”</i> (Appota Esports).</p> <p>(18) <i>“ESports need more brand to sponsor the market and the teams”</i> (Cyzone eSport Center).</p>
Lack of knowledge around Vietnamese professional eSports teams organization’ structure and resources allocation	<p>(19) <i>“We also try to understand how the eSports teams organize and allocate their resources [...] because two years ago, it was just a group of people playing together which got a brand name but now they start to register as a company”</i> (Appota Esports).</p>

4.2. Discussions

The present study was designed to suggest a preliminary theoretical framework to support a future analysis of the specific capacities that help Vietnamese professional eSport teams to fastly allocate and realign their key resources in order to achieve both better sporting and business performance. The most obvious finding to emerge from this preliminary analysis lies in the difficulty for Vietnamese firms to develop eSports business activities because of a lack of political policies in that respect despite the growing role of eSports and gaming cultures in this country (McCauley et al., 2020) which count plenty of gaming centers and internet cafes since nearly two decades (Dang & Ali, 2018). This study also illustrated that those organizations are evolving in a very competitive environment which ties up Scholz's (2019) description of the global eSports ecosystem.

In this context, this exploratory research suggest three emerging issues concerning Vietnamese professional eSports teams. A first one lies in their capacities to realign their talent identification strategies (Ashton, 2020; Hilvoorde & Pot, 2016) with the fledging changes in terms of player transfer regulation. A second one belongs to the lack of existing knowledge towards Vietnamese professional eSports teams marketing capabilities (Menguc & Auh, 2006) and innovative capabilities (Wang & Ahmed, 2007). Nonetheless, those capacities were outlined as crucial ones to survive in immature (Dao et al., 2016) or in transition industries (Nguyen & Nguyen, 2011) which tend to be the case of the Vietnamese eSports industry. Finding and retaining financial sponsors was portray by one interviewee as a last problem for those organizations, which might also affect their capacities to subsist in this very competitive environment.

As a result, this might be of an interest both for scholars and practitioners to explore whether and how eSports player transfers could positively or negatively influence professional eSports teams sporting and financial performance. Given that the interviewees depicted *LOL* as one of the first professional eSports scene in Vietnam, such empirical analysis could be done on this competitive arena, with a specific focus on transfers occurring between the beginning of the *Glorious Arena* in 2012 and the last edition of the *VCS* in 2019. From this perspective, it should be interesting to scrutinize and classify eSports player transfers on the Vietnamese *LOL* eSports professional scene (e.g. transfers between secondary and a top team, transfers between two top teams, managerial staff transfers, full roster acquisition, retirements, players becoming free agent). Notably, this might participate to the improvement of the existing academic knowledge, not only towards eSport player transfers (Suschevskiy & Marchenko, 2018), but also in terms of player career structure (Salo, 2017) and professional eSport team formation processes (Freeman & Wohn, 2017; Tang, 2018).

In accordance with findings derivate from quotation 19, this may also be interesting to confront this quantitative analysis with a qualitative study focusing on how *LOL* Vietnamese professional eSports teams organize and allocate their resources, especially their human, marketing and financial ones. From this perspective, this might be interesting to analyze how the development of higher order DCs such as opportunity recognition and opportunity capitalization (Pham et al., 2019), marketing (Menguc & Auh, 2006) or innovative capabilities (Wang & Ahmed, 2007) could help those organization to allocate those resources effectively. This choice can be justify by the fact that both a player and a possible sponsor can be seen as major opportunities to capitalize on in order to improve team positioning in the very competitive eSports industry. However, future studies should not neglect the analysis of possible secondary capacities which might also help those organizations to fulfill their

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objectives such as and networking (Aujirpongpan & Hareebin, 2020) and talent management capabilities as well as organizational agility (Harsch & Festing, 2020).

Ultimately, the findings of this research, while preliminary might also foster future managerial implications as it suggest exploratory insights that could help Vietnamese companies such as Appota Esports in their quest to build an interactive tool in order to improve Vietnamese professional eSports team's management processes as well as to enhance the professionalization of some stakeholders of this industry.

5. CONCLUSION

Drawing upon the preliminary findings collected, the present research reach the conclusion that it might be interesting to setup an empirical analysis of *LOL* Vietnamese eSports player transfers and to confront it with the specific DCs supporting *LOL* Vietnamese professional eSports teams' resources allocation and organization. However, as every academic research, the present study also have some limits. The most important limitation lies in the fact that findings were generated only through two preliminary semi-structured interviews and across researcher' observations of the Vietnamese eSports culture within gaming centers in *Hà Nội*. Despite the quality of those materials, further research should also capture the viewpoint of professional eSports teams on this topic and investigate their strategic objectives.

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THE IMPACT OF NON-INTEREST INCOME TO THE PROFITABILITY OF JOINT-STOCK COMMERCIAL BANKS IN VIETNAM

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ABSTRACT

This paper study the impact of non-interest income from various sources including service activities; foreign exchange trading activities; securities trading activities; capital contribution and share purchasing activities and other activities to the profitability of 23 joint-stock commercial banks in Vietnam from 2010 to 2018. Using the fixed-effect model and random effect regression models, we find that non-interest income has an affirmative impact on the ability to generate profit of banks. Also, we find that total assets, bank capitalization, GDP growth, and inflation positively affect the profitability of banks. On the other hand, operating costs have a adverse impact on profitability. This paper contribute to the growing literature of the bank's non-interest income and suggest some policies for bank administrators to increase the profitability of Vietnamese joint-stock commercial banks.

Keywords: Non-interest income, Profitability, Vietnamese commercial banks, Diversification

JEL Codes: G21, G32

1. INTRODUCTION

Profits play a critical role in the development of businesses and banks as well as society as a whole. Therefore, increasing profit is always the main goal of banks and businesses in operations. Two sources are contributing to commercial bank's income: interest income and non-interest income where interest income from loans is the main source of banks' income. The bank's non-interest income consists of payment service fees, trust services, cross-selling insurance, investment, and business activities. In recent years, commercial banks have realized the importance that non-interest income brings to the bank's operation when the source of interest income is potentially risky.

Since Vietnam's joining to the World Trade Organization in January 2007, in the process of opening and implementing WTO commitments, the Vietnamese economy has been increasingly participating in the international economic sectors, including banking and financial services. The commercial banking system of Vietnam is strongly restructuring in the direction of opening the banking service market, implementing international commitments.

On the other hand, there is still a big gap between Vietnamese commercial banks and banks from around the globe. In terms of income structure, most of the current income sources of Vietnamese commercial banks still come from credit activities, which are potentially more risky activities than other banking activities (Batten & Vo, 2016). Also, other channels of capital mobilization such as the growing stock market can help businesses access to a larger pool of fund, which then put more pressure on credit income of commercial banks. As a result, the bank profit margin from credit threatens to be negatively affected.

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Moreover, in recent times, the modern banking industry is moving in the direction of digitization, creating many opportunities to develop and expand banking services. The Government of Vietnam has also approved and issued the "Development Strategy of Vietnam's Banking Industry to 2025, with the orientation to 2030". It is worth noting that in this strategy, there is a goal: "Increasing the proportion of non-credit service income in the total income of commercial banks to about 16 - 17% at the end of 2025".

It is the significant changes in technology, competitive environment, customer needs, and government policies that are the drivers of the continuous development of non-traditional products and services. Thus, in addition to income from traditional activities such as credit activities, non-traditional activities also give commercial banks a large amount of non-interest income coming from sources such as service fees, commissions, insurance, or stock. There have been many studies analyzing the relation between non-interest income and profitability of commercial banks as well as the impact on other factors such as risk (see Minh & Thanh, 2020; Thota, 2020 for example) However, many studies on the affect of non-interest income on the profitability of commercial banks yield multidimensional conclusions.

Domestically, the Decision 986 on approving the development strategy of the banking industry on August 8th, 2018 outlines the direction to increase the percentage of non-interest income to 16-17%, which contributes to reflect the importance of non-credit income to the bank's operating efficiency.

To contribute to the understanding of the impact of fee-based income on the profitability of Vietnamese banks, this study is conducted to analyze the impact of fee-based revenue on the profitability of the Vietnam commercial banking system in the period from 2010 to 2018. Our empirical research results illustrate the positive impact of non-interest income on the profitability of banks. However, not all components of non-interest income have the same affirmative effect on the profitability of banks.

In the next section, we will outline previous studies on the impact of non-interest income on the ability to generate profit of Vietnamese commercial banks. Section 3 presents data and research methods. Section 4 is the result of our empirical research and discussions. The last part is the conclusions and policy implications of the study.

2. LITERATURE REVIEW

Banks are the primary source of finance for business in Asia's private sector (see Deesomsak et al., 2004). Thus, research related to the banking sector is important. Much researches have been carried out to determine the impact of non-interest income on the profitability of banks, however, the results are ambiguous. Moreover, to the best of our understanding, there are not so many pieces of research focus on the effect of each component of non-interest income on the bank's ability to generate profit.

Profitability is the ability of the company to make profits, which is often measured by the Return on Equity (ROE) or Return on Assets (ROA) (Hamdi et al., 2017). Commercial banks' main aim is to generate profit through their lending activities. However, there is a trend toward increasing non-interest income domestically and globally. One possible explanation for this trend is using Modern Portfolio Theory (MPT) developed by Markowitz (1952). Modern Portfolio Theory by Markowitz considers an asset's return as a random variable and sees the portfolio as the weighted mix of assets. Based on MPT, diversifying income in a bank can

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increase business performance from risk reduction (Lin et al., 2020). The portfolio diversification in banks can be done in three ways:

- Diversity through financial products and services.
- Diversity through expanding geographic scope.
- Diversity through a combination of geographic and business diversification.

The theories related to financial intermediation implies that increasing profitability is related to the diversification of income sources. Banks offering more products and services will create more demand and will earn more income. Many researchers also show that banks around the world are shifting their income structure toward more non-interest income (Al-Tarawneh et al., 2016).

However, whether focusing on non-interest income is good or bad is still a problem of debate. On one hand, based on the diversification theory of Markowitz, moving toward fee-based income should diversify and hence reduce the risk and increase the bank's profitability (Williams, 2016). Sun et al., (2017) debate that expanding the fee-based activities might become the main measure to preserve the total income level of banks when the traditional interest income business faces intense competition due to the limitations of a stable population. Non-interest income can (1) satisfy the needs for different financial services by the innovation of new fee-based financial products and services; (2) improve the investment rate of banks to bonds and stocks.

On the other hand, many researchers show that while non-interest income may have a positive impact on the revenue of the banks, it synchronously heightened the risks for banks (see Bailey-tapper, 2010; Batten & Vo, 2016; Bian et al., 2015; Lee et al., 2014; Stiroh & Rumble, 2006). DeYoung & Roland (2001) give three reasons to explain why fee-based earnings can expand the risks of the bank. First, they argue that the relationship between customer and bank is weaker than the traditional lender-borrower relationship. Second, expanding the business lines might be costly while the only cost of an additional loan on an established lending relationship is just the interest expenses. Third, fee-based businesses often require less regulatory capital compare to the lending business, thus leads to intensive leverage usage and increase earnings volatility as a result. Evidence is found to support the idea that the bank should focus on its main operation activity, which is lending activity. Focusing on non-interest income brings many drawbacks: more risky activity, the questionable ability to manage a wide range of services and products, the tendency to increase leverage. Non-interest earning activities tend to use higher financial leverage than interest-earning activities. Hidayat et al., (2012) finds that the impact of product diversity on bank risk highly correlated with asset size of banks. Specifically, bank that have less assets tend to have a smaller product bases and vice versa.

Many papers show that the relationship between non-lending activities and profitability is non-linear. For example, Sun et al., (2017) used data of 16 commercial banks from from 2007 to 2013 to study the relationship between non-interest revenue and bank profitability, using a threshold regression model and draw two conclusions. First, there are two non-linear thresholds in the studied relationship. Second, there is an adverse relation between the non-interest income index and the bank's performance. However, when this index exceeds the threshold, the negative correlation will gradually decrease, indicating that this ratio needs to be strictly controlled to create a positive correlation between non-interest income and bank profitability.

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In some cases, the components of non-interest income affect the profitability of banks differently (Ghosh, 2020). Nisar et al., (2018) examines the effect of diversifying revenue on profits and the stability of commercial banks from South Asian. Using the two-step system GMM method to 231 South Asian commercial banks from 2000 to 2014, the study finds that diversifying bank revenue has an affirmative effect on the bank ability to generate profits consistently. Moreover, the paper divides non-interest income into fees, commissions and others. The results show that earnings from fee and commission have an adverse effect on the ability to generate stable profits of South Asian commercial banks, while other non-interest revenues has an affirmative effect. It confirm that the different types of fee-based activities have a different effect on the bank's ability to generate profits.

As for the Vietnamese case, most researchers focus on the risk-return tradeoff between expanding business lines and profitability (Minh & Thanh, 2020; Nguyen & Pham, 2020). The study of Minh & Thanh (2020) used the revenue from fee-based activities to measure the relationship between non-interest revenue and the operation of 21 Vietnamese commercial banks in the 2008-2017 period. Besides, the paper also measures the impact of equity ratio, loan outstanding ratio, customer deposit ratio, general cost ratio, and bank size on the profitability of Vietnamese banks. Using GMM, this paper show that fee-based activities have an affirmative impact on banks' profits. The analysis also shows the negative impact of customer deposit and equity size on the ability to generate profits of commercial banks, while the ratio of outstanding loans affect the performance of commercial banks positively.

Despite the sizable literature, the relationship between non-interest income and return is still inconclusive. Therefore, we aim to contribute to the understanding of non-interest income for banks using updated data from Vietnamese commercial banks and study in-depth the effects of non-interest income sources to see if the diversification of non-interest income increases the business activities efficiency of the bank or not.

3. METHODOLOGY

3.1. Data

The financial data used in this study were obtained from the audited financial statements of Vietnamese joint-stock commercial banks published on their website. Among 31 commercial banks listed by the State Bank of Vietnam, we excluded 8 banks with incomplete data or inadequate information. The final sample contains 207 firm-year observations from 23 Vietnamese commercial banks for the period 2010-2018.

The macro data were collected from the International Monetary Fund (IMF) data.

3.2. Research model

Inherited from prior empirical studies (Al-Tarawneh et al., 2016), we use NONICOM (ratio of non-interest income to operating income), NONSER (ratio of fee and commission income to operating income), NONEX (ratio of foreign exchange income to operating income), NONSECUR (ratio of trading securities to operating income), NONCOP (ratio of income from investment to operating income) and NONOTH (ratio of income from other business activities to operating income) as independent variables to measure the impact of non-interest income on the profitability of joint stock commercial banks. We also included six control variables namely SIZE (logarithm of total assets

representing bank size), EQTA (the equity ratio to total assets represents the capitalization of the bank), OCTA (the ratio of operating expenses to total assets represents the bank's cost), TLTA (the ratio of total loans to total assets), GDP (GDP growth rate) and INF (inflation rate). We then construct the regression model using these variables as follows:

The model studies the effect of non-interest income on bank's profitability

$$ROA_{i,t} = \beta_0 + \beta_1 NONICOM_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 EQTA_{i,t} + \beta_4 TLTA_{i,t} + \beta_5 OCTA_{i,t} + \beta_6 GDP_t + \beta_7 INF_t + u_{i,t} \quad (1)$$

$$ROE_{i,t} = \beta_0 + \beta_1 NONICOM_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 EQTA_{i,t} + \beta_4 TLTA_{i,t} + \beta_5 OCTA_{i,t} + \beta_6 GDP_t + \beta_7 INF_t + u_{i,t} \quad (2)$$

The model studies the effect of different non-interest components on bank's profitability

$$ROA_{i,t} = \beta_0 + \beta_1 NONSER_{i,t} + \beta_2 NONSECUR_{i,t} + \beta_3 NONEX_{i,t} + \beta_4 NONCOP_{i,t} + \beta_5 NONOTH_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 TLTA_{i,t} + \beta_8 EQTA_{i,t} + \beta_9 OCTA_{i,t} + \beta_{10} GDP_t + \beta_{11} INF_t + u_{i,t} \quad (3)$$

$$ROE_{i,t} = \beta_0 + \beta_1 NONSER_{i,t} + \beta_2 NONSECUR_{i,t} + \beta_3 NONEX_{i,t} + \beta_4 NONCOP_{i,t} + \beta_5 NONOTH_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 TLTA_{i,t} + \beta_8 EQTA_{i,t} + \beta_9 OCTA_{i,t} + \beta_{10} GDP_t + \beta_{11} INF_t + u_{i,t} \quad (4)$$

Since our data includes both time and space, the research will use two methods: Fixed Effects Model (FEM) and Random Effects Model (REM), then test the appropriate estimating method using the Hausman test.

Table 6. A detailed description of the variables used in the regression model

	Variable	Measurement	Hypotheses
Dependent variable	ROA	Profit after tax/ total assets	
	ROE	Profit after tax/ total equity	
Measurement variables	NONICOM	Non-interest income/ total operating income	+
	NONSER	Fee and commission income/ total operating income	+
	NONEX	Foreign exchange trading income/ total operating income	+
	NONSECUR	Trading securities income/ total operating income	+
	NONCOP	Investment income/ total operating income	+
	NONOTH	Other income/ total operating income	+
Control variable	SIZE	Log value of the bank's total assets	+
	EQTA	Equity/ total assets	+
	TLTA	Total loans/ total assets	+
	OCTA	Operating cost/ total assets	-
	GDP	$\frac{GDP' - GDP}{GDP}$	+
	INF	Inflation rate	-

Source: Author's computed

4 .FINDINGS

4.1. Descriptive statistics

The findings from Table 6 show that the average NONICOM value of banks in Vietnam is 15.4%. This number is still low compare to the proportion of the non-interest income of commercial banks in developing countries, which is as high as 40% in the US (DeYoung & Rice, 2004). The lowest non-interest income rate we observed is -30.39% belong to Viet A Bank in 2015 and the highest is 59.32% of HD Bank in 2013.

Among components of non-interest income, NONSER is the highest contribution to the non-interest income of observed banks with an average value of 7.04%, in which Sacombank has the highest value of 30 percent in 2017 and the lowest is -1,106 percent belongs to the National Commercial Joint-stock Bank. The income from other activities has an average of 6%, however, this number is considered to be highly unstable. The average NONEX, NONSECUR, NONCOP values amounted to -0.075 percent, 0.5 percent, and 1 percent, respectively, and it can be seen that commercial banks did not focus on these revenues since their proportion is lower than other income sources, such as income from fees and commissions.

Table 7. Descriptive statistics parameters used

Variable	Obs	Mean	Standard deviation	Min	Max
NONICOM	207	0.1539	0.1184	-0.3039	0.5932
NONSER	207	0.0704	0.0561	-0.01106	0.3091
NONEX	207	-0.00075	0.0634	-0.36998	0.1008
NONSECUR	207	0.005298	0.035665	-0.1761	0.35645
NONCOP	207	0.0161	0.02964	-0.0358	0.2059
NONOTH	207	0.0629	0.0767	-0.1459	0.4992
ROA	207	0.00797	0.0062	0.000083	0.04729
ROE	207	0.0887	0.0635	0.00075	0.2682
SIZE	207	7.985	0.50022	6.9151	9.1183
EQTA	207	0.0972	0.0427	0.04062	0.2564
OCTA	207	-0.0168	0.0051	-0.0329	-0.0058
TLTA	207	0.538	0.1245	0.19104	0.7435
GDP	207	0.0623	0.0058	0.0525	0.0708
INF	207	0.0657	0.045	0.0088	0.1868

Source: Author's computed

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Table 8. Correlation matrix

	ROA	ROE	NONICOM	NONSER	NONEX	NONSECUR	NONCOP	NONOTH	SIZE	EQTA	OCTA	TLTA	GDP	INF
ROA	1													
ROE	0.7659	1												
NONICOM	0.2170	0.2503	1											
NONSER	0.2141	0.4600	0.4501	1										
NONEX	0.0575	0.1152	0.4860	0.1564	1									
NONSECUR	-0.1044	-0.0806	0.2171	-0.0493	-0.3053	1								
NONCOP	-0.0555	-0.0745	0.2462	-0.0156	-0.0880	0.1101	1							
NONOTH	0.2007	0.0209	0.6164	-0.1373	-0.0149	0.1159	0.0263	1						
SIZE	0.0283	0.4880	0.3445	0.5214	0.2248	0.0139	-0.0095	-0.0383	1					
EQTA	0.3254	-0.2417	-0.0735	-0.3536	-0.0740	-0.0374	0.0396	0.2085	-0.7212	1				
OCTA	-0.2477	-0.0574	0.0454	0.1012	-0.1128	0.1090	0.1100	-0.0040	0.1746	-0.3513	1			
TLTA	0.1215	0.1361	0.0351	0.0741	0.1954	-0.0441	-0.2317	-0.0514	0.2124	0.0224	-0.3183	1		
GDP	0.0426	0.1646	0.0494	0.1406	0.1681	-0.1668	-0.1527	-0.0291	0.1747	-0.2102	0.1439	0.2751	1	
INF	0.3546	0.2599	-0.1271	0.0718	-0.2040	-0.0226	0.0237	-0.0787	-0.1934	0.2086	0.0791	-0.3474	-0.3221	1

Source: Author's computed

The results of the correlation coefficient matrix are intended to analyze and test the multicollinearity phenomenon of the variables. According to Wooldridge (2002), the collinearity phenomenon occurs when the variables have a correlation coefficient of over 80%. Based on the correlation matrix above, we find that the absolute value of the correlation coefficient is not higher than 80%, without the collinearity of the variables in all four models, the data are consistent with the research model. To further investigate the multicollinearity phenomenon of the model, we then construct a variance inflation factor (VIF) test. Detail results are shown in **Lỗi! Tụ-tham-chiều thể đánh dấu không hợp lệ..**

Table 9. The result of VIF testing

	ROA Model (1)	ROE Model (2)	ROA Model (3)	ROE Model (4)
NONICOM	1.27	1.27		
NONSER			1.49	1.49
NONSECUR			1.18	1.18
NONEX			1.26	1.26
NONCOP			1.11	1.11
NONOTH			1.17	1.17
SIZE	2.94	2.94	3.15	3.15
EQTA	2.82	2.82	2.93	2.93
TLTA	1.53	1.53	1.61	1.61
OCTA	1.35	1.35	1.39	1.39
GDP	1.25	1.25	1.34	1.34
INF	1.3	1.3	1.42	1.42
MEAN VIF	1.78	1.78	1.64	1.64

Source: Author's computed

The results of the correlation coefficient matrix are intended to analyze and test the multicollinearity phenomenon of the variables. According to Wooldridge (2002), the collinearity phenomenon occurs when the variables have a correlation coefficient of over 80%. Based on the correlation matrix above, we find that the absolute value of the correlation coefficient is not higher than 80%, without the collinearity of the variables in all four models, the data are consistent with the research model. To further investigate the multicollinearity phenomenon of the model, we then construct a variance inflation factor (VIF) test. Detail results are shown in **Lỗi! Tụ-tham-chiều thể đánh dấu không hợp lệ..**

Table 9 presents the results of the VIF index, an important indicator for testing the collinearity phenomenon. All VIF indices of the independent variables in the model are less than 3. Therefore, it can be affirmed again that the model does not have a multi-collinear problem.

4.2. The impact of non-interest income on profitability

Lỗi! Tụ-tham-chiều thể đánh dấu không hợp lệ. shows the effect of non-interest income on profitability, using FEM and REM methods respectively. For model (1), five out of seven variables in FEM method are significant including NONICOM, SIZE, EQTA, GDP

and INF, while the REM method has six out of seven variables statistically significant namely NONICOM, SIZE, EQTA, OCTA, GDP and INF. NONICOM, SIZE, EQTA, GDP, and INF have a positive effect on ROA, and OCTA has a negative impact on ROA. For model (2), variables NONICOM, SIZE, GDP and INF are significant and have a positive impact on ROE in both FEM and REM methods. OCTA is only statistically significant in REM method and has a negative effect on ROE.

Table 10. Regression results between non-interest income and profitability

	Model (1)		Model (2)	
	FEM	REM	FEM	REM
NONICOM	0.0114834***	0.0104067***	0.0694531**	0.0696908**
SIZE	0.0082556***	0.0054899***	0.0610988**	0.0680381***
EQTA	0.0869708***	0.0795797***	0.0595373	0.071597
OCTA	-0.1225938	-0.1919829**	-1.479263	-1.809883**
TLTA	0.002175	0.002009	-0.0087108	0.0090855
GDP	0.2108524***	0.2446581***	2.72578***	2.649501***
INF	0.0586473***	0.0559549***	0.5645036***	0.5911038***
CONSTANT	-0.0883936***	-0.0684341***	-0.6427791***	-0.7115295***
OBS	207	207	207	207
R-square	0.3958	0.4412	0.4599	0.4694
P-value	0.6723		0.8604	
Hausman	REM		REM	

Source: Author's computed.

*, **, *** corresponding to the confidence level of 90%, 95% and 99%, respectively

4.3. The impact of components of non-interest income on profitability

Models (3)& (4) further examine the effect of each component of non-interest income on a bank's profitability. In Model (4), only five out of eleven variables under the FEM method and seven out of eleven variables by REM method are statistically significant including NONSER, NONOTH, SIZE, EQTA, OCTA, GDP and INF where NONSER, NONOTH, SIZE, EQTA, GDP and INF have a positive relationship with ROA while OCTA shows the opposite relationship. The results of the regression were uniform in both methods when studying the impacts of each non-interest source on ROE. Specifically, NONSER, NONOTH, SIZE, EQTA, GDP, INF variables are statistically significant and positively affect ROE whereas OCTA has the opposite effect.

After estimating results from FEM and REM methods, the research continues to conduct the Hausman test with the hypotheses:

H₀: There is no correlation between independent variables and random errors, the REM model is more suitable.

H₁: There is a correlation between independent variables and random errors, the FEM model is more suitable.

Hausman test results show that: p-value values are 0.672 and 0.864 respectively for the two models testing the effect of non-interest income on profitability. Therefore, we accept the hypothesis H_0 , the results from REM model deliver optimal results to our study. Based on the p-value results in **Lỗi! Tự-tham-chiếu thể đánh dấu không hợp lệ.**, we also conclude that the REM approach will be ideal to analyze the effect of each non-interest income source on the bank's profitability.

Table 11. Regression table results between noninterest income components and profitability

	Model (3)		Model (4)	
	FEM	REM	FEM	REM
NONSER	0.0150692	0.0164212**	0.1805992*	0.1962288**
NONEX	0.0077015	0.0034052	0.0354543	0.0214209
NONSECUR	-0.0123287	-0.0098037	-0.0787559	-0.0684624
NONCOP	0.0041385	0.0004834	0.0073584	-0.0110986
NONOTH	0.0200144***	0.0181886***	0.1099736**	0.1031899**
SIZE	0.0077853***	0.0051447***	0.0641105**	0.0634711***
EQTA	0.0820481***	0.0751913***	0.0498717	0.0578586
OCTA	-0.1463297	-0.2029775**	-1.889774*	-2.042793**
TLTA	0.0027025	0.0024765	-0.0112198	0.006809
GDP	0.1825561**	0.2150481***	2.407687***	2.359983***
INF	0.0576929***	0.053919***	0.5469938***	0.5541192***
CONS	-0.0835641***	-0.0643599***	-0.6590806***	-0.6649628***
R-square	0.4187	0.4610	0.4786	0.4864
P-value	0.1860		0.9956	
Hausman	REM		REM	

Source: Author's computed.

*, **, *** corresponding to the confidence level of 90%, 95% and 99%, respectively

5. DISCUSSION

5.1. The ratio of non-interest income to total operating income (NONICOM)

The non-interest income ratio (NONICOM) is directly proportional to the bank's profitability (ROA, ROE) with the 0.01 regression coefficients in model (1) and 0.06 in model (2), respectively. That means that the ROA will increase by 0.01 if the non-interest income rises by 1, and the ROE will increase by 0.06 in the same condition, ceteris paribus. This finding is consistent with our initial expectations and is similar to the results of previous studies (see Al-Tarawneh et al., 2016; Bailey-tapper, 2010), which demonstrate that rising non-interest income is one of the strategies to increase bank profits when credit growth is restricted by the State Bank's interest rate. Indeed, several banks have stepped up and raised the non-interest income proportion to a higher level such as VIB, STB, MBB, TCB, ... The proper establishment of a non-interest income source can enhance interest income and contribute to the competitiveness and productivity of the banks.

5.2. The ratio of income from fee and commission to total operating income (NONSER)

The net income ratio from service activities (NONSER) has a positive relationship with the bank's profitability, measured by both ROA and ROE, at a high significance level. It means an increase in service activities revenue will contribute positively to the profitability of the bank. Specifically, the coefficients of NONSER in models (3) and (4) are 0.016 and 0.19, respectively. It shows that when the revenue from service activities increases by 1, the ROA increases by 0.016 and the ROE increases by 0.19, holding other variables constant. This regression result also corresponds to our expectations and is in line with the results from Meslier et al., (2014), "Deregulation and increased competition have led banks to expand their activities and to develop new lines of businesses besides their traditional interest activities. Banks have diversified their income sources by performing new activities, such as underwriting and trading securities, brokerage and investment banking, and other activities, which generate non-interest income". According to Karakaya & Er (2012) and Al-Tarawneh et al., (2016), the profitability of banks improves if they focus on increasing the fees received from their customers. This will be an income segment that should be focused on by joint-stock commercial banks to diversify their product portfolio and thus increase their profits. Jamaica's commercial banks rely heavily on earnings from noninterest activities, which has also been constructed by the development of ATM and POS technology as Bailey-tapper (2010) confirmed. In Vietnam, this market segment has been deployed by some banks, and the most noticeable is the competition for digital conversion between banks such as TPBank with automatic banking; Vietcombank with Digital Lab, VPBank has a digital bank called YOLO, LienVietPostBank has developed Vi Viet, VietinBank has applied a new core bank to increase the number of customer transactions, thereby improving service income.

5.3. The ratio of income from other business activities to total operating income (NONOTH)

The ratio of net income from other business activities (NONOTH) is significant at 5% for model (3) and 10% for model (4). The regression results confirm the positive relationship between other business activities and the bank's profitability and show that when the income from other business activities increases by 1, the ROA increases by 0.018, and the ROE increases by 0.1, ceteris paribus. This result consistent with the conclusion of Nisar et al., (2018). Most of the profits from other business activities come from liquidating insolvent loan collaterals and settling bad debts. This stream of income, however, is not as steady as service sales. Improving revenue from other business activities not only increase the bank's profits but also improve the prestige and liquidity of the bank, as the bank raises money from the asset sales and disposes of bad debts in the bank.

6. CONCLUSIONS

Our research is based on data from 23 joint-stock commercial banks in Vietnam collected from financial reports and reputable websites such as CafeF, Vietstock, the IMF, and the World Bank. The final sample consists of 207 observations from 2010 to 2018. The study showed the relationship and impact levels of non-interest income (NONICOM) and non-interest income components such as NONSER, NONSECUR, NONEX, NONCOP, NONOTH to the profitability of commercial banks, measured by ROA and ROE, with SIZE, EQTA, OCTA, TLT, GDP and INF as controlling variables. NONICOM, NONSER, NONOTH, SIZE, EQTA,

GDP, INF have a positive impact on the profitability of the bank while OCTA has a negative relationship with ROA and ROE; TLTA is not statistically significant in all four models. This shows that banks increasing non-interest income (income from other business activities and, in particular, service income) or total assets can lead to an increase in the bank's profit. However, we find that the impacts of each non-interest income component are not uniform. The components that have a positive impact on both ROA and ROE are income from service activities and income from other activities. Income from service activities is also the factor that accounts for the highest proportion of non-interest income components. This result is reasonable compared to the current situation of commercial banks in Vietnam and aligned with past studies. Banks' products and services are increasingly improving both in quality and quantity to meet the diverse needs of customers. This trend contributes to the improvement of banks' competitiveness as well as limit risk and increases profits. The second component of the non-interest income is the revenue from the bank's other activities, which helped the bank manage bad debt collateral, improve the bank's liquidity and indirectly improve the credit quality of credit institutions.

With the stated results, this paper contributes to the literature regarding the impact of non-interest income on the profitability of banks. The research also offers practical recommendations for the development of non-interest income components to optimize the profitability of the Vietnamese joint-stock commercial bank system.

The drawback of our study is that the number of group observations is limited to 9 years (from 2010-2018), thus cannot fully analyze the whole picture. Also, the paper focuses only on the profitability of the bank without analyzing the impact of non-interest income on the risk factors. Last, we only focus on commercial banks and have not touched on other specializations. We hope that this will be the next development direction for further studies.

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BOARD GENDER DIVERSITY AND FIRM PERFORMANCE: EVIDENCE FROM VIETNAM

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ABSTRACT

This research examines the interaction between board gender diversity and firm performance in Vietnamese listed firms for the period 2011-2018. Results indicate that board with female presence, especially three women or more, has a positive effect on firm outcomes and be supported by the critical mass theory. In addition, chairwomen and executive role of female board members have a robust and significant relationship with firm accounting value. These results suggest the impact of executive women might not contribute to firm growth opportunity in Vietnam. This study adds more evidence about the latest and largest scale evidence in Vietnamese market, which supports the policymakers to legislate gender equality and encourage female leadership in the economy.

Keywords: Board Gender Diversity, Female Directors, Female Executives, Firm Performance

JEL Classification: D25

1. INTRODUCTION

Board of directors builds up partial corporate foundation and affects a wide variety of firm aspects (Hoang, Abeysekera, & Ma, 2017). Hence, in some recent decades, firms around the world are under pressure of diversifying their board concerning structure and demography, especially gender (Adams & Ferreira, 2009; Tu, 2017), to serve the corporate development. The increasing trend on board gender diversity, however, seems to come from gender equality achievement rather than the demand of corporate operations after some financial crises (Farrell & Hersch, 2005). Despite the movement, Deloitte (2018) reported a low percentage of female directors in many developed countries including Spain with gender quotas (Reguera-Alvarado, de Fuentes, & Laffarga, 2017). Even greater gender diversity could improve board monitoring function (Adams & Ferreira, 2009) but necessarily lead to better firm performance (Nguyen, Locke, & Reddy, 2015).

The tie between board gender diversity and firm value has been studied in different samples of manifold countries. However, most prior findings are inconclusive. In some countries without board gender quotas, Carter, Simkins, and Simpson (2003), Liu, Wei, and Xie (2014) and Nguyen et al. (2015) document a positive and significant linkage between board gender diversity and firm outcomes, whereas Farrell and Hersch (2005), Rose (2007) and Haslam, Ryan, Kulich, Trojanowski, and Atkins (2010) find no statistical relation between those subjects, Adams and Ferreira (2009) and Ahern and Dittmar (2012) however find a negative association. For nations mandating board gender quotas, Ahern and Dittmar (2012) documents a negative bond between female directors and firm value in Norway while Reguera-Alvarado et al. (2017) finds out the reverse result in Spain. Moreover, most papers in this field do concentrate on well-established markets with strong corporate governance, especially the

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U.S and European markets - those countries benefited from the shifts of women's rights in the 1960s (Reguera-Alvarado et al., 2017). When Post and Byron (2015) suggests that the context of the linkage between board gender diversity and firm performance may be a key point in reconciling a range of results, there are a few studies on nascent markets such as Vietnam (Tu, 2017). As reported by Vo, Nguyen, and Le (2020), Vietnam is relatively different from most of the developing countries owing to its market orientation. Most listed firms in Vietnam origin from state-owned enterprises (SOEs) which started to be privatized from 1990. Moreover, they also have issues regarding underdeveloped corporate governance (Nguyen et al., 2015) and thus may benefit from gender-diverse boards (Adams & Ferreira, 2009; Gul, Srinidhi, & Ng, 2011). In the year 2011, Vietnam implemented a new 10-year span strategy for socioeconomic development which offers support to perform gender equality with women advancement.

It is worth noting that women advancement in Vietnam is relevant to institutional context (Nguyen et al., 2015) and improved along with the rapid economic development (Vo et al., 2020). Vu, Duong, Barnett, and Lee (2017) find that the Vietnamese media does exhibit and reinforce strong sex-role stereotypes as regard female leaders and their counterparts in community. For the gender equality achievement in Vietnam, the Law on Gender equality in 2006 and the Law on Domestic Violence Prevention and Control in 2007 make the decisive role of women in society. However, males still play such important part in making crucial decision that the contribution of female leaders to economic growth cannot be recognized in public (Oxfam, 2017), which retains the discrimination against businesswoman (Vo et al., 2020).

In an effort to give empirical evidence regarding female effect on listed firms in Vietnamese market, we utilize a panel of 499 firms during the period 2011-2018. We examine the effect of women directors in terms of general, executive and board chair positions. Our results present a positive and significant relationship between board gender diversity and firm performance. In addition, we document that the effect of boards with two females is significant and strong positive for ROA and ROCE whereas boards with three or more women have stronger influence on ROE and Tobin's Q. The impact of women directors on firm accounting value become stronger when they hold executive or board chair positions.

This study contributes to the view that female directors tend to benefit manifold values of firms through advisory and executive role. We provide empirical evidence for the regulators to enforce some policies that promote women rights and impulse gender equality without gender quotas. Our research also brings useful empirical guidance to corporations for conducting gender diversity on boards.

The remainder of this study is as follows: Section 2 first summarizes some literature about the effect of board gender diversity on firm performance and then presents the research question. While Section 3 discusses the sample and empirical methods, Section 4 describes summary statistics and analyzes the linkage between women on boards and firm performance. We conclude in Section 5.

2. LITERATURE REVIEW

Although many scholars studied the influence of board gender diversity on firm performance for over the last decades, no theory points out this linkage directly and singly (Carter, D'Souza, Simkins, & Simpson, 2010). According to Carter et al. (2010), the perception of the impact board gender diversity has on firm performance is available in both resource dependence theory and agency theory. First, resource dependence theory (Pfeffer & Salancik,

1978) considers businesses as open systems whose survivals rely on external environments. As reported by Pfeffer (1973) and Pfeffer and Salancik (1978), the risks caused by this reliance can decrease when boards have larger size and greater diversity. As an extension of this literature, female directors can strengthen firm governance by providing deliberate advice and counsel (Huse & Solberg, 2006); advancing firm legitimacy as gender diversity draw more and more attention of the mass and become mainstream in society (Hillman, Cannella Jr, & Harris, 2002); and also widen communication channels of firms such as tighten the bond between firms and female customers (Hillman, Shropshire, & Cannella Jr, 2007). Second, agency theory refers to the crucial part of corporate boards in diminishing the conflict of interests between shareholders and managers in the same firm (Fama & Jensen, 1983; Jensen & Meckling, 1976). Some early findings suggest that monitoring effect of female board members can advance corporate governance (Adams & Ferreira, 2009) and hence improve outcomes of weak-governed firms (Gul et al., 2011; Liu et al., 2014). Based on these literatures, we propose the hypothesis below:

H1: The fraction of women on boards has a positive linear relation to firm performance.

Moreover, some earlier studies as Lee and James (2007) and Kristie (2011) use the perspective of tokenism and sex-role stereotypes theory in analyzing the extent of board gender diversity. Kristie (2011) states “one is a token, two is a presence, and three is a voice”. Developed from token status theory, critical mass theory views female directors as a subgroup of the board which merely influence firm performance when their size reaches a critical number (Kramer, Konrad, Erkut, & Hooper, 2006). Specifically, Kramer et al. (2006) and Liu et al. (2014) document that boards with at least three female directors tend to outperform others. Based on these literatures, we state the hypothesis concerning the number of female directors on board as follows:

H2: Firms with at least three female directors on boards tend to outperform others.

Some prior studies as Schmidt (2015), Singh and Delios (2017) further find that the advisory role of board members will be a priority to their monitoring role when making good strategic decisions. Moreover, female executives on board could provide firms with more useful external resources than general directors due to their full participation in day-to-day firm activities (Liu et al., 2014). Specifically, they can foster better working connections and also communication channels of the firm. Following Huang and Kisgen (2013), Faccio, Marchica, and Mura (2016), firms led by female CEOs or CFOs tend to take less risk and lower leverage that lead to a higher chance of survival. The discussion above allows us to state the following hypotheses:

H3: Executive women on boards tend to benefit firm performance.

The chairperson of the board plays a vital part of the firm and takes partial responsibility for the monitoring efficiency of the board (Bennouri, Chtioui, Nagati, & Nekhili, 2018). According to Nekhili, Chakroun, and Chtioui (2018), female chairperson tend to be more interactive than their counterparts so they can advance the quality of board decisions and consequently benefit firm performance. Although Liu et al. (2014), Bennouri et al. (2018), Nekhili et al. (2018) document a positive relationship between chairwoman and accounting-based value, they find no linear linkage between chairwoman and firm market value. Nekhili et al. (2018) supposes that these results depend on the organization and culture where the board chairs work. Based on the discussion above, we propose the prediction as follow:

H4: Female board chair tends to benefit firm performance.

3. METHODOLOGY

3.1. Variables measurements

3.1.1. *Dependent variables*

This study estimates firm performance by accounting value and market value. While the accounting value shows an objective backward-looking (Aggarwal, Jindal, & Seth, 2019), market value reflects expectation of investors on firms (Rose, 2007) and provides forward-looking (Aggarwal et al., 2019). Aside from ROA and Tobin's Q – the common proxies for firm performance, some prior studies also examine the impact of women directors on other aspects of earnings such as ROE (Haslam et al., 2010; Hoang & Vo, 2014) and ROCE (Hoang & Vo, 2014). However, Hoang and Vo (2014) and some previous evidence find insignificant relationship between female directors and firm accounting value in Vietnam, which raises a question in this study. We hence employ return on assets (*ROA*), return on equity (*ROE*), return on capital employed (*ROCE*) and Tobin's Q (*TOBINQ*) as independent variables.

We utilize the primary methods to calculate the independent variables. In terms of accounting measures, we define *ROA*, *ROE* and *ROCE* as net income divided by assets, net income divided by equity and earnings before interest and taxes divided by the sum of shareholder equity and long-term debts, respectively. As for *TOBINQ*, we calculate it as the book value of assets divide the sum of market capitalization and net liabilities.

3.1.2. *Independent variables*

Our main variable of interest is board gender diversity. Following Farrell and Hersch (2005), Liu et al. (2014), Nguyen et al. (2015) and among others, we assess this issue by both the percentage of women directors on boards (*Per_W*) and the number of female board members. This is because a simple proportion could lead to imprecise results when a good measure should reach its maximum value (Aggarwal et al., 2019). For the quantity of female board members, we employ a group of dummy variables (*D_1W*, *D_2W* and *D_3W*) to find out the critical mass threshold. We define *D_1W* as 1 if the firm has 1 female director on board and 0 otherwise; *D_2W* as 1 if the firm has 2 female directors on board and 0 otherwise; *D_3W* as 1 if the firm has 3 female directors on board and 0 otherwise.

In addition, we also investigate the linkages between the proportion of executive women on board (*Per_Exe_W*) and firm performance, chairwomen (*W_Chair*) and firm performance. This study wonders how such the effect of gender diversity on firms varies when female members occupy the highest position on boards or have executive power. The dummy variable *W_Chair* equals 1 when the chairperson is female and 0 otherwise.

3.1.3. *Control variables*

We separate the whole control variables in this research into three following groups: board characteristics, ownership characteristics and firm characteristics, in consistent with Liu et al. (2014). The set of board characteristics consists of board size (*Bsize*) and CEO duality dummy variables (*Duality*) which equals 1 when the chairperson of a firm is also the chief executive officer of this firm at the same time. The control variables of the ownership characteristics group are the percentage of shares the state owns (*Per_State*) and the percentage of shares the foreigners own (*Per_Foreign*). The set of firm characteristics comprises debt to assets ratio (LEV) and the number of listed years in natural log (*Ln_Fage*).

3.2. Estimation models and approach

We appreciate the main model in the research of Liu et al. (2014) due to their inheritance and development from prior studies, also some similarities between the economy of China and that of Vietnam such as a large portion of government shares in listed firms (Hoang et al., 2017). However, to accommodate it more closely to the Vietnamese context and also the aim of our research, we have to drop some variables and make changes with the calculation of some in that model. The alterations refer to Hoang and Vo (2014), Nguyen et al. (2015) and among others. The regression model in this study remains as below:

$$\begin{aligned} Firm_Performance_{it} = & \gamma Board_Gender_Diversity_{it} \\ & + \beta_1 Board_Char_{it} + \beta_2 Ownership_Char_{it} \\ & + \beta_3 Firm_Char_{it} + \alpha_i + \lambda_t + \varepsilon_{it}. \end{aligned} \quad (1)$$

This study employs *ROA*, *ROE*, *ROCE* and *TOBINQ* as the alternative proxies for *Firm_Performance*. With regard to *Board_Gender_Diversity*, the measures are the ratio of female executive directors on board (*Per_Exe_W*), the dummy variable chairwoman (*W_Chair*) and either the proportion of women on boards (*Per_W*) or the group of dummy variables that quantify the number of female board members (*D_1W*, *D_2W* and *D_3W*). *Board_Char*, *Ownership_Char* and *Firm_Char* are our control variable groups, namely board characteristics, ownership characteristics and firm characteristics.

We utilize Robust Least Square as the main approach to eliminate the influence of heteroscedasticity and multi-collinearity from the results. We run regression on panel data with firm fixed effect, α_i , and time fixed effect, λ_t .

4. DATA

Our initial sample includes the set of firms listed on Hanoi Stock Exchange (HNX) and Ho Chi Minh Stock Exchange (HSX) from 2011 to 2018, excluding utility firms and financial institutions. This is because regulated and unregulated industries may have systematic differences in their boards of directors (Subrahmanyam, Rangan, & Rosenstein, 1997) and their financial statements (Hoang et al., 2017). Our sample period begins in the year 2011 when Vietnam started conducting the 10-year socioeconomic development strategy. This plan is noteworthy for its achievement of reinforcing gender equality and fostering women rights.

We construct a balanced panel data based on a list of the 500 largest firms by market capitalization on 31/12/2018. The idea behind the top ranking is that the larger firms could have greater presentation of female board members, following Carter et al. (2003) and some previous evidence. We compile financial data and stock information from the database of FinGroup Corporation while the dataset of board is hand-collected through annual managerial reports. After that, we eliminate observations with negative sales or equity and the outliers with regard to financial values from the sample. The final sample comprises 3123 firm-year observations for 499 firms.

5. RESULTS AND DISCUSSION

5.1. Descriptive statistics and correlations

Table 1 presents the summary statistics of all employed variables. The range of *ROA* is

from -47.2% to 78.4% and narrower than that of *ROE* (from -80.9% to 98.2%). When the average of *ROA* is 6.7%, *ROE* and *ROCE* record 12.9% and 15.3%, respectively, in average value. In the whole sample period, *TOBINQ* varies from 0.192 to 7.766 and has a median of 0.851. Compared to the previous evidence in Vietnam during global recession 2008-2011 (Nguyen et al., 2015), our statistics indicate an improvement on investor expectation for the way firms use resources.

It is noteworthy that the proportion of female board members ranges from 0% to 80% and constitutes an average of 14.6%. Merely a third of them (about 5.1% of observations) occupy executive positions and more than a half (around 8.6% of sample) hold chair seats. Our full sample includes 1444 observations with no women, 1033 firm-years having one woman on boards, 459 observations with two female board members and 187 observations with at least three women directors, respectively representing 46.2%, 33.1%, 14.7% and 6.0% of the whole.

According to Deloitte (2017) and Deloitte (2018), the average percentage of women directors in Vietnam is lower than that reported in Australasia (20.8%) and Europe (22.6%) but higher than that of most nations in Asia (7.8% on average). Aside from that, our mean value is lower than Vietnamese figures in mentioned articles. A possible explanation for this is an increase in the average proportion of female directors on boards over years, which reflects Vietnamese attempts for gender equality achievements. In part, our statistics also suggest that larger firms may perform gender diversity on boards better than the smaller ones do, in accordance with Carter et al. (2003).

Figure 1 illustrates how board gender diversity alters in Vietnam during the period 2011-2018. Figure 1a reveals an upward trend of the average percentage of women on Vietnamese boards, from 13.7% in 2011 to 16.1% in 2018. In Figure 1b, the exhibited trends are similar in pattern and pace during the span of 2011-2018: boards with at least one women witness slight growths in average proportion, from 50.4% to 54.6%; the weight of boards with two or more women rises minimally from 17.6% to 20.1%; the ratio of firms with at least three female board seats increases insignificantly from 5.1% to 7.1%. These statistics indicate a response of firms to the gender-diverse call.

As regards board characteristics, the number of board members is around 5 or 6 on average and its range is from 3 to 11, which abide by the Law on Enterprise in 2014. It is notable that 28.4% of board chairs in our sample also hold chief executive positions of the identical firm. In addition, governments on average own 28.3% of the whole shares while the percentage of foreign owners generally amounts to 11.4%. For firm traits, we document a wide range of leverage ratios (from 1.1% to 97.1%) and its median records 52.2%. According to Vo et al. (2020), this is plausible due to a relatively young age of Vietnamese stock market. Additionally, an average listing years of firms is approximately 6 and the max value is nearly 18 (equivalent to the age of the first securities market in Vietnam).

We perform a preliminary test for serial correlation. Table 2 presents the correlation matrix of utilized variables in our study. As our highest coefficient among explanatory variables is 0.57 (under 0.7) between *Per_W* and *D_3W*, we find no matter related to multicollinearity in the regression analysis following the rule of thumb.

Table 1. Descriptive Analysis

Variables	Mean	Median	Std	Min	Max
<i>Firm performance</i>					
ROA	0.067	0.052	0.076	-0.472	0.784
ROE	0.129	0.122	0.125	-0.809	0.982
ROCE	0.153	0.106	0.132	-0.734	1.231
TOBINQ	0.943	0.851	0.505	0.192	7.766
<i>Independent variables</i>					
Per_W	0.146	0.143	0.164	0.000	0.800
Per_Exe_W	0.051	0.000	0.098	0.000	0.667
D_1W	0.331	0.000	0.471	0.000	1.000
D_2W	0.147	0.000	0.354	0.000	1.000
D_3W	0.060	0.000	0.237	0.000	1.000
W_Chair	0.086	0.000	0.281	0.000	1.000
<i>Control variables</i>					
Board characteristics					
Bsize	5.583	5.000	1.207	3.000	11.000
Duality	0.284	0.000	0.451	0.000	1.000
Ownership characteristics					
Per_State	0.283	0.141	0.253	0.000	0.967
Per_Foreign	0.114	0.050	0.144	0.000	0.776
Firm characteristics					
LEV	0.499	0.522	0.214	0.011	0.971
Ln_Fage	1.734	1.946	0.653	0.000	2.944

Note: This table illustrates summary statistics of all variables in the final sample. The sample is a balanced panel data including 3123 firm-year observations and 499 firms over the period 2011-2018. This study measures firm performance by return on assets (ROA), return on equity (ROE), return on capital employed (ROCE) and Tobin's Q (TOBINQ). ROA and ROE equal net income divided by assets and net income divided by equity, respectively; ROCE is earnings before interest and taxes divided by the sum of shareholder equity and long term debt; TOBINQ is the ratio of the sum of market capitalization and net liabilities and the book value of assets. Regarding independent variables; Per_W is the ratio of female directors in the boardroom; Per_Exe_W is the proportion of female executive directors on board; D_1W equals 1 if firm has one female directors on board and 0 otherwise; D_2W equals 1 if firm has two female directors on board and 0 otherwise; D_3W equals 1 if firm has more than three female directors on board and 0 otherwise; W_Chair equals 1 if female hold board chair position and 0 otherwise. In term of control variables, Bsize indicates the number of directors on board; Duality equals 1 if chairperson of the board is also chief executive officer of the same firm and 0 otherwise; Per_State is the percentage of shares government own; Per_Foreign is the percentage of shares foreigners own; LEV is the debt to assets ratio and Ln_Fage is natural logarithm of the quantity of listed years.

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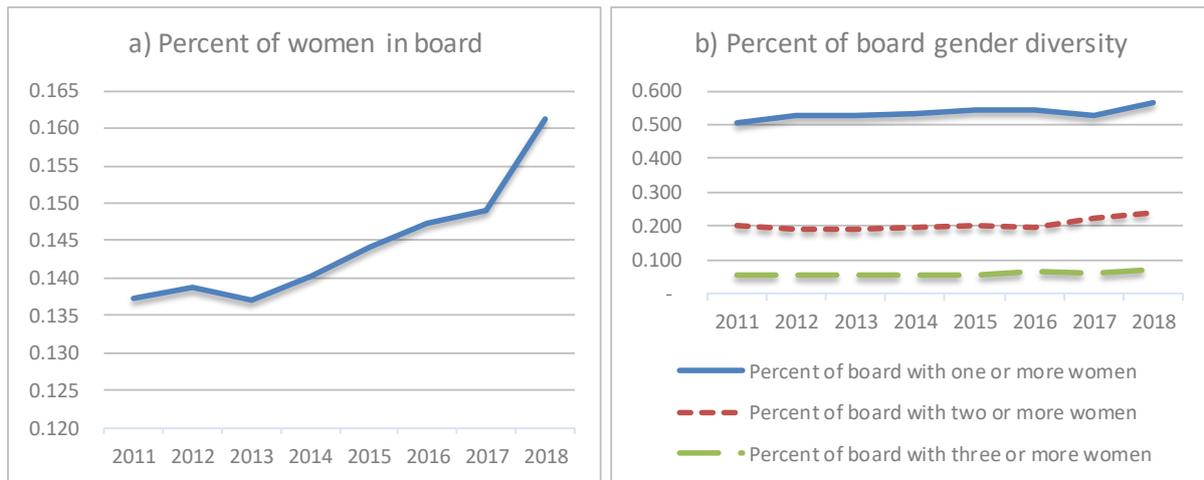


Figure 1. Descriptive statistics of board gender diversity through year.

Note: This figures display changes in the extent of board gender diversity from 2011 to 2018. Figure 1a shows how the average fraction of female directors on boards varies during the sampling period. Figure 1b compares changes in the average percentage of three different kinds of boards, namely board with one or more women, board with two or more women and board with three or more women, for the mentioned period.

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Table 12. Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	ROA	1.00															
2	ROE	0.85	1.00														
3	ROCE	0.86	0.89	1.00													
4	TOBINQ	0.36	0.30	0.34	1.00												
5	Per_W	0.05	0.02	0.05	0.06	1.00											
6	Per_Exe_W	0.06	0.05	0.08	0.03	0.61	1.00										
7	D_1W	0.00	-0.01	-0.02	-0.02	0.18	0.11	1.00									
8	D_2W	-0.00	-0.01	-0.00	0.01	0.54	0.30	-0.29	1.00								
9	D_3W	0.08	0.05	0.08	0.08	0.57	0.37	-0.18	-0.10	1.00							
10	W_Chair	0.06	0.04	0.07	0.07	0.41	0.25	0.01	0.20	0.28	1.00						
11	Bsize	0.04	0.02	0.02	0.06	0.04	-0.00	-0.02	0.07	0.19	-0.00	1.00					
12	Duality	-0.02	0.00	0.01	-0.08	0.07	0.15	-0.02	0.03	0.07	0.04	-0.03	1.00				
13	Per_State	0.10	0.12	0.12	0.07	-0.18	-0.13	-0.02	-0.10	-0.13	-0.08	-0.16	-0.26	1.00			
14	Per_Foreign	0.16	0.10	0.13	0.10	0.13	0.10	0.02	0.06	0.16	0.13	0.34	0.00	-0.18	1.00		
15	LEV	-0.46	-0.12	-0.23	-0.06	-0.08	-0.02	-0.03	-0.02	-0.08	-0.05	-0.05	0.01	0.06	-0.21	1.00	
16	Ln_Fage	-0.07	-0.09	-0.08	-0.01	-0.02	-0.01	-0.02	-0.02	0.03	0.07	0.04	-0.11	0.02	0.20	0.02	1.00

Note: This table performs correlation matrix among all employed variables. The whole determinations of utilized variables are summarized in Table 1

5.2. Regression results

Firstly, we examine the extent that females and their positions on boards affect firm outcomes. The regression results of firm performance on the percentage of women on boards, proportion of female executive board members, female chair dummy variable and all control variables are provided on Table 3. Our analyses are conducted in the full data sample and controlled for the robust errors.

From an overall perspective, the presence of females on boards is positive and statistically significant with firm earnings, supporting the main hypothesis in this study. For example, one percent increases in the proportion of female board members might lead to increases on average of 0.6%, 2.4%, 2.3% and 4.6% in *ROA*, *ROE*, *ROCE* and *TOBINQ*, respectively, as long as other factors remain constant.

Table 2. Impact of female board members on firm outcomes

Variables	ROA	ROE	ROCE	TOBINQ
Constant	0.118*** (22.16)	0.137*** (12.49)	0.173*** (14.61)	0.513*** (22.77)
Per_W	0.006* (1.93)	0.024* (1.70)	0.023* (1.75)	0.046* (1.70)
Per_Exe_W	0.045*** (4.19)	0.088*** (3.96)	0.115*** (4.82)	-0.023 (-0.51)
W_CHAIR	0.007** (2.18)	0.023*** (3.43)	0.035*** (4.83)	0.074** (1.98)
Bsize	0.000* (1.92)	0.025* (1.72)	0.012* (1.85)	0.045* (1.78)
Duality	0.003 (1.60)	0.001 (1.46)	0.003 (0.79)	-0.081* (-1.70)
Per_State	0.038*** (10.74)	0.077*** (10.61)	0.079*** (10.08)	0.021 (1.43)
Per_Foreign	0.067*** (10.22)	0.126*** (9.35)	0.126*** (8.67)	0.146*** (5.28)
LEV	-0.122*** (-30.95)	-0.031*** (-3.84)	-0.112*** (-12.72)	0.429*** (25.50)
Ln_Fage	-0.008*** (-6.03)	-0.020*** (-7.42)	-0.018*** (-6.22)	0.013** (2.41)
R ²	0.361	0.102	0.162	0.222

Note: This table reports the regression results from equation (1):

$$Firm_Performance_{it} = \gamma Board_Gender_Diversity_{it} + \beta 1 Board_Char_{it} + \beta 2 Ownership_Char_{it} + \beta 3 Firm_Char_{it} + \alpha_i + \lambda t + \varepsilon_{it}.$$

The sample includes 3123 observations with 499 firms for the period of 2011-2018. The whole determinations of employed variables are summarized in Table 1. We present value of robust z-statistics in brackets. These value depend upon robust standard error adjusted for potential heteroscedasticity and multi-collinearity.

*, ** and *** indicates statistical significant at the 10%, 5%, and 1% level, in sequence.

Moreover, we document that the executive role of women on boards has a significant and stronger positive impact on firm accounting value than female board chair and female board members in general do. Whereas one percent rising in the proportion of executive female board members makes *ROA*, *ROE* and *ROCE* go up by 4.5%, 8.8% and 11.5%, respectively, the coefficient of female chairperson for these measures are 0.7%, 2.3% and 3.5%, respectively. However, this study finds no statistical linkage between female executive board members and firm market value, implying executive works of women on boards might not benefit the potential firm growth. Regarding impacts of other characteristics, this study provides strong evidence that firms with higher percentage of shares owned by state and foreigners, lower leverage ratio and shorter listing history tend to have higher accounting value than the others. In contrast, investors might undervalue listed companies led by a dual CEO-chairman, have no interest in equity owned by governments, seem to appreciate firms having lower leverage and a longer listed time than others.

Table 3. Impact of the quantity of female board members on firm outcomes

Variables	ROA	ROE	ROCE	TOBINQ
Constant	0.118*** (22.21)	0.138*** (12.54)	0.175*** (14.74)	0.522*** (23.16)
D_1W	0.002* (1.88)	0.009** (2.19)	0.010** (2.11)	0.012* (1.65)
D_2W	0.006** (2.19)	0.013** (2.15)	0.013** (2.02)	0.035* (1.63)
D_3W	0.003** (1.97)	0.034* (1.78)	0.003 (0.34)	0.045** (2.43)
Per_Exe_W	0.045*** (4.21)	0.088*** (3.98)	0.112*** (4.72)	-0.019 (-0.43)
W_CHAIR	0.007** (2.26)	0.022*** (3.25)	0.032*** (4.47)	0.016 (1.18)
Bsize	0.000 (-0.09)	0.001 (0.35)	-0.002 (-0.91)	0.004 (1.22)
Duality	-0.003* (-1.75)	0.006 (1.40)	0.003 (0.75)	-0.013* (-1.68)
Per_State	0.038*** (10.76)	0.077*** (10.62)	0.079*** (10.12)	0.021 (1.41)
Per_Foreign	0.067*** (10.22)	0.126*** (9.36)	0.126*** (8.68)	0.146*** (5.28)
LEV	-0.123*** (-30.90)	-0.032*** (-3.87)	-0.113*** (-12.74)	0.430*** (25.53)
Ln_Fage	-0.008*** (-6.16)	-0.020*** (-7.49)	-0.018*** (-6.33)	0.013** (2.31)
R ²	0.364	0.103	0.164	0.225

Note: This table reports the regression results from equation (1):

$$Firm_Performance_{it} = \gamma Board_Gender_Diversity_{it} + \beta 1 Board_Char_{it} + \beta 2 Ownership_Char_{it} + \beta 3 Firm_Char_{it} + \alpha_i + \lambda t + \varepsilon_{it}.$$

The sample includes 3123 observations with 499 firms for the period of 2011-2018. The whole determinations of employed variables are summarized in Table 1. We present value of robust z-statistics in brackets. These value depend upon robust standard error adjusted for potential heteroscedasticity and multi-collinearity.

*, ** and *** indicates statistical significant at the 10%, 5%, and 1% level, respectively.

As mentioned above, we also consider the number that female board seats should be to improve firm earnings. Following critical mass theory and some prior empirical evidence, with the same percentage of women on boards, the greater number of board seats held by females, the better firms might perform. To examine its appliance in Vietnam, we replace *Per_W* in the previous regression model by three dummy variables *D_1W*, *D_2W* and *D_3W*. The results of this regression are shown in Table 4.

Our findings present a positive association between boards with female members and firm outcomes. Apart from *ROA* and *ROCE*, boards with at least three women exerts stronger and significant impact on firm earnings than boards with less than three females do. It is also notable that firms with two female board members increase *ROA* by a larger magnitude than firms with other number of women on boards do.

Additionally, the linkages between board size and firm performance, women board chair and *TOBINQ* disappear in the second regression results. Our findings therefore are in partial line with the hypotheses H2, H3 and H4 while fulfilling hypothesis H1 at the level of 10%. In general, board gender diversity is beneficial to firm performance, both executive role and chair position of female board members link positively to firm accounting value.

5.3. Discussion

This study documents a positive and statistical relationship between gender-diverse board and firm performance. The results are in accordance with our main literature and some earlier evidence such as Liu et al. (2014), Nguyen et al. (2015), Reguera-Alvarado et al. (2017) and among others. Our findings therefore offer some support to the view that board gender diversity tends to benefit firm values.

In terms of resource dependence theory, female directors can provide fresh ideas and different perspectives (Adams & Ferreira, 2009), make board decisions more deliberate (Huse & Solberg, 2006) and hence advance the quality of board advice and counsel. Moreover, gender-diverse boards can remedy the attendance problem of their counterpart for board meetings (Adams & Ferreira, 2009), strengthen the bonds between firms and female workforce or female clients (Liu et al., 2014). As for agency theory, Adams and Ferreira (2009) and Liu et al. (2014) suppose the presence of women directors is more likely to improve corporate governance, which may result in better firm performance. Harjoto, Laksmana, and Lee (2015) indicates that board with more women would upgrade the managerial ability of firms for a range of investors' need and interest.

As would be expected, our findings are generally in line with critical mass theory. Although the relation between sole women directors and firm outcomes is significant, the impact of board gender diversity on firm performance exerts stronger when more women are added into boards. Results confirm that firm's performance (*ROA* and *ROCE*) would benefit most from boards with two female directors when firms with at least three women on boards could be better for *ROE* and Tobin's *Q*. These differences could be explained by a smaller size of Vietnamese boards compared to that of China and many developed countries.

Furthermore, we also find strong evidence for a positive impact of female executive directors on firm accounting value. Following Liu et al. (2014), executive directors completely join in such firm operations that make a strong effect on firm outcomes. In addition, Erhardt, Werbel, and Shrader (2003) points out that earnings of firms with more female executives tend

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to be higher than average of their industry sector. Huang and Kisgen (2013) also provides evidence for higher profitability of firms led by female executives relative to that of firms led by their counterpart.

Despite the positive impact on firm accounting values, the executive role of female directors does not have any statistical relation to market value of firms. It is plausible that shareholders are more likely to appreciate the presence of females on board due to their monitoring role (Adams, Gray, & Nowland, 2011) while female managers seem to reject feminine stereotypes (Adams & Ferreira, 2009). Huang and Kisgen (2013) also documents firms with female executives tend to have lower growth in assets.

Our results show a robust and positive linear relation between chairwoman and firm accounting value, which replicates those of Nekhili et al. (2018) and Bennouri et al. (2018). This study offers some support to the view that female chairperson has a collaborative leadership style so they could benefit boardroom dynamics, bring quality improvement to board decision-making (Nekhili et al., 2018). To be specific, female board chair will have better preparation for board meetings (Huse & Solberg, 2006) and also solve the ambiguity better than their counterpart (Rosener, 1990). Furthermore, there could be advances in economic results and ethical perspective for both firms and society if board gender diversity experiences an upward trend (Harjoto et al., 2015; Reguera-Alvarado et al., 2017).

6. CONCLUSIONS

This research provides additional evidence for the relation between gender-diverse boards and Vietnamese firm performance. We document a significant and positive influence of the percentage of female directors on firm values measured by ROA, ROE, ROCE and Tobin's Q. We find that boards with two female directors exert a stronger and significant effect on ROA and ROCE relative to others, whilst firms with three or more women on boards tend to have higher ratios of ROE and Tobin's Q than others. Furthermore, our results also reveal strong evidence regarding the positive linkage between female executives on board and firm accounting value. Our findings in general support the view of resources dependence theory and critical mass theory.

This study provides empirical guidance for the governments in Vietnam and in other countries with similar institutional economies to impulse gender equality and women enhancement through applicable policies. Besides, our findings also offer some support to joint stock companies in conducting board gender diversity. Although mandatory law could be critical to gain effective gender equality on board (Reguera-Alvarado et al., 2017), it is notable that we do not suggest any legal requirement for gender quotas of boardroom. This is because quota-based policy can lead to a degradation of quality in corporate governance and may consequently damage firm value (Adams & Ferreira, 2009; Ahern & Dittmar, 2012). Torchia, Calabrò, and Huse (2011) finds that board strategic task could affect the critical mass of female directors on board. Without gender quotas, females can be recruited with higher quality and professional skills that enable them to surpass the discrimination preferences (Huang & Kisgen, 2013), revealing the justice of society and labor (Reguera-Alvarado et al., 2017). Moreover, quotas for female directors seem unnecessary in Vietnam since the number of gender-diverse boards can increase in recent years without them. In this case, we suppose that the Vietnamese current strategy of socioeconomic development is being conducted effectively, which implies gender diversity incentives should be considered as a priority option.

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NONLINEAR DYNAMICS OF COURNOT COMPETITION IN CARBON EMISSION TRADING MARKET

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ABSTRACT

In this paper, we model a nonlinear dynamic duopoly Cournot game with homogeneous products in which firms involve in the carbon emission trading scheme. We examine the stability of this system where firms both behave in a bounded rational manner. Each firm experiences a nonlinear demand function and a linear cost function, which covers both production cost and carbon emissions costs. The stable conditions of the Nash equilibrium are then investigated. Numerical simulations with varied parameters are also conducted to confirm the analytical results, which shows that the stability of the Nash equilibrium is lost and the system begins to behave chaotically due to the occurrence of bifurcations and chaos.

Keywords: dynamic stability, Cournot game, bounded rationality, carbon emission trading

JEL Classification: C62, C73, D43, L13, Q50

1. INTRODUCTION

Firstly introduced by Cournot (1897) the structure of various oligopolistic models have been captured much attention from economic researchers. In this framework, there are only a few firms that supply the whole market. Each firm makes decisions on its product output while taking both their strategies and others' actions into account. In a fully rational setting, firms are assumed to possess sufficient cognitive and computation skills required for their decision-making to solve their optimization problems given their complete knowledge of the market demand and the prediction of rival's product quantities (Askar and Alnowibet, 2016).

However, when it comes to reality, this assumption could be problematic. The reason is that it is likely impossible to require human beings to be fully rational, meaning that superior cognitive and computational skills are hard to be achieved. In this regard, a more realistic approach has been introduced, which concerns "reduced rationality". Among several approaches of reduced rationality (i.e. Puu, 1991; Local Monopolistic Approximation (LMA) introduced by Tuinstra (2004)), a decent amount of effort has been making in studying the dynamics of bounded rational systems. In this mechanism, firms are not required to have complete knowledge of the market demand but update their production quantities in discrete time periods given the estimation of local marginal profit and a constant adjustment speed over time (Askar, 2014).

Nevertheless, most of the studies working on the chaotic behavior of bounded rational players in such systems endowed firm with linear demand functions (i.e. Baiardi and Naimzada, 2018; Ding and Shi, 2009; Elsadany and Awad, 2016; Elsadany, 2017). Yet the relationship between price and quantity can be extremely complicated in the real world, so the simple linear demand function may fail to accurately capture the nature of this crucial conception, making the model unrealistic. Therefore, more attention has been paid to the nonlinear dynamical systems, where firms undergo nonlinear demand functions such as

isoelastic demand function (i.e. Cavalli and Naimzada, 2014; Cavalli et al., 2015; Cerboni Baiardi and Naimzada, 2018) as well as other proposed functions (Askar, 2014; Askar et al., 2015; Elsadany, 2012).

Moreover, while there has been a large amount of research examining the dynamics of Cournot games, only normal product markets are considered; studies that take the carbon emissions trading market into account are very limited. The carbon emissions trading market is a mechanism in which emitting firms receive an initial amount of permits from the government, and corresponding to the amount of emissions they produce and emissions they can abate, they will decide whether to sell surplus permits or buy extra permits in the market. In this sense, the existence of the carbon emission trading market can exert significant impacts on a firm's behavior, directly via its "post-trade" benefits and expenses. To the best of our knowledge, there are only Zhao and Zhang (2014) that attempt to cover this idea.

In this paper, we propose a Cournot game model where firms, which participate in the carbon emissions trading scheme, behave in a bounded rational manner. Each firm has a nonlinear demand function, which follows and Elsadany (2012) and Offerman et al. (2002) and a widely-used linear production cost and emissions abatement cost function. We then investigate the local stability of the systems by deriving equilibrium points and validate the analytical results by conducting numerical simulations with varied parameters.

The remainder of this paper is organized as follows. Section 2 presents a mathematical model while Section 3 analyzes the local stability of the fixed points and numerical simulations are also introduced. Finally, Section 4 gives some conclusions as well as a brief economic implication.

2. METHODOLOGY

In this model, supposed there are two firms $i = 1, 2$ producing the same product to sell in the market. Firms make decision of product quantities at discrete time periods $t = 0, 1, 2, \dots$. Each firm has a linear production cost $C_i(q_i)$ and during every i th period their production output is denoted as $q_i(t)$. The total supply in the market is therefore denoted as $Q(t) = q_1(t) + q_2(t)$. In order to determine the product price in the market, an inverse demand function is given as following:

$$p(Q) = a - bQ^n \quad (1)$$

It can be seen easily from (1) that when $n = 1$ the demand function become linear. Meanwhile, if $a = 0$, $b = -1$ and $n = -1$ it transform itself into the isoelastic demand function. In this paper, we consider only nonlinear demand function with $n = 1/2$, which is also suggested by Offerman et al. From there, we obtain a convex demand function as following:

$$p(Q) = a - b\sqrt{Q} \quad (2)$$

where a and b are positive constants. We can easily extrapolate from (2) that given this demand function, firms have an maximum level of supply that can accommodate the market, which makes sense from the economic point of view. In addition to the nonlinear demand function, firms are expected to experience linear cost functions, whose formula is as following:

$$C_i(q_i) = c_i q_i, i = 1, 2 \quad (3)$$

where c_i denotes the constant marginal cost function of each firm.

It should be noted that the production process of firms engage in emitting carbon dioxide emissions. These two firms hence participate in the carbon emissions trading market and each of them is assigned an initial allowance of r_0^i permits and has to buy this allowance at the price of p_0 from the government. Supposed that each firm emits e_i and is able to abate e_a^i at the cost of C_a^i . If any firm has a low abatement cost, they have an incentive to reduce more carbon dioxide emissions because their surplus emissions permits can be traded in the emissions trading market with higher price, which yields them benefits. Otherwise, if firms fail to reduce their emissions, they may need to buy extra emissions permit, whose price is determined in the emission trading market. In this paper, we suppose that firms both have surplus permits to trade. This surplus should be derived as: $r_0^i - (e_i - e_a^i)$.

To buy permits in the market, firms need to pay a unit price of p_r . Let α_i the marginal abatement cost of each firm, forming the abatement cost function:

$$C_a^i = \alpha_i e_a^i \quad (4)$$

We follow Zhao and Zhang (2014) and assume that emissions permitted of each firm is linear with their quantity. We have $e_i = k_i q_i$ where k_i ($k_i > 0$) denotes the emission coefficient for q_i . We also suggest that abated emission is linear to the emissions each firm produces, meaning that $e_a^i = m_i e_i$ where $m_i \in [0,1]$. The abatement cost function of each firms is then derived as:

$$C_a^i = \alpha_i m_i k_i q_i \quad (5)$$

After all the profit function of each firm, which consists of profits in the product market and yields from trading emission permit, can be formulated as following:

$$\pi_i(q_1, q_2) = q_i(a - b\sqrt{Q}) - c_i q_i + (r_0^i - k_i q_i + m_i k_i q_i) p_r - r_0^i p_0 - \alpha_i m_i k_i q_i, i = 1,2 \quad (6)$$

For simplicity, we denote:

$$t_i = a - c_i - \alpha_i m_i k_i - k_i p_r + m_i k_i p_r, i = 1,2 \quad (7)$$

The marginal profit of i th firm at the point of (q_1, q_2) is:

$$\Phi_i = \frac{\partial \pi_i}{\partial q_i} = t_i - b\sqrt{Q} - \frac{bq_i}{2\sqrt{Q}}, i = 1,2 \quad (8)$$

In this model, firms are bounded rational players, meaning that they adopt a gradient based mechanism to adjust their product quantities at discrete period of time. Specifically, firms have limited knowledge of the market demand and their rival's quantities decisions but can have rough estimate of the local marginal profit. This mechanism is triggered by a speed of adjustment, which is denoted as ε_i . The two-dimensional nonlinear map (q_1, q_2) is there defined as:

$$\begin{cases} q_1(t+1) = q_1(t) + \varepsilon_1 q_1(t) \left(t_1 - b\sqrt{Q} - \frac{bq_1}{2\sqrt{Q}} \right) \\ q_2(t+1) = q_2(t) + \varepsilon_2 q_2(t) \left(t_2 - b\sqrt{Q} - \frac{bq_2}{2\sqrt{Q}} \right) \end{cases} \quad (9)$$

3. RESULTS AND DISCUSSIONS

3.1. Equilibrium points

Equilibrium points of the system can be obtained when $q_1(t+1) = q_1(t)$ and $q_2(t+1) = q_2(t)$. We hence have 4 fixed points, which are $E_1(0,0)$, $E_2(0, \frac{4t_2^2}{9b^2})$, $E_3(\frac{4t_1^2}{9b^2}, 0)$, and $E_4(q_1^*, q_2^*)$ where

$$\begin{cases} q_1^* = \frac{4(t_1 + t_2)(3t_1 - 2t_2)}{25b^2} \\ q_2^* = \frac{4(t_1 + t_2)(3t_2 - 2t_1)}{25b^2} \end{cases} \quad (10)$$

E_1 , E_2 and E_3 are boundary equilibrium points, whereas E_4 is the Nash equilibrium. All equilibrium points have economic meaning if and only if q_1^* and q_2^* are non-negative. It is clear from (10) that t_1 and t_2 have the same signs and are both non-negative. In addition, $0 < 2t_1/3 < t_2 < 3t_1/2$.

3.2. Local stability of fixed points

In order to investigate the steady state of the system, we follow literature to examine the eigenvalues of the Jacobian matrix. The Jacobian matrix of the system can be derives as follows:

$$J(q_1, q_2) = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \quad (11)$$

where

$$\begin{cases} a_{11} = 1 + \varepsilon_1 \left(t_1 - \frac{b(9q_1^2 + 14q_1q_2 + 4q_2^2)}{4Q\sqrt{Q}} \right); \\ a_{12} = -\varepsilon_1 b q_1 \frac{q_1 + 2q_2}{4Q\sqrt{Q}}; \\ a_{21} = -\varepsilon_2 b q_2 \frac{q_2 + 2q_1}{4Q\sqrt{Q}}; \\ a_{22} = 1 + \varepsilon_2 \left(t_2 - \frac{b(9q_2^2 + 14q_1q_2 + 4q_1^2)}{4Q\sqrt{Q}} \right) \end{cases} \quad (12)$$

As the boundary equilibrium point $E_1(0,0)$ is invalid in economic setting, only the local stability of E_2 and E_3 is investigated.

Theorem 1. If $0 < \varepsilon_1 < \frac{2}{t_1}$ or $0 < \varepsilon_2 < \frac{2}{t_2}$, boundary equilibrium points E_2 and E_3 are unstable.

Proof

The Jacobian matrix at the Nash equilibrium point $E_2(0, \frac{4t_2^2}{9b^2})$ is as follow:

$$J\left(0, \frac{4t_2^2}{9b^2}\right) = \begin{bmatrix} 1 + \varepsilon_1\left(t_1 - \frac{2t_2}{3}\right) & 0 \\ -\frac{\varepsilon_2 t_2}{6} & 1 - \frac{\varepsilon_2 t_2}{2} \end{bmatrix} \quad (13)$$

Two eigenvalues of the matrix (13) can be written as:

$$\begin{cases} \lambda_1 = 1 + \varepsilon_1\left(t_1 - \frac{2t_2}{3}\right); \\ \lambda_2 = 1 - \frac{\varepsilon_2 t_2}{2} \end{cases} \quad (14)$$

The Jacobian matrix at the Nash equilibrium point E_3 is as follow:

$$J\left(\frac{4t_1^2}{9b^2}, 0\right) = \begin{bmatrix} 1 - \frac{\varepsilon_1 t_1}{2} & -\frac{\varepsilon_1 t_1}{6} \\ 0 & 1 + \varepsilon_2\left(t_2 - \frac{2t_1}{3}\right) \end{bmatrix} \quad (15)$$

Two eigenvalues of the matrix (13) can be derived as:

$$\begin{cases} \lambda_1' = 1 + 1 + \varepsilon_2\left(t_2 - \frac{2t_1}{3}\right); \\ \lambda_2' = 1 - \frac{\varepsilon_1 t_1}{2} \end{cases} \quad (16)$$

According to (10), $0 < 2t_1/3 < t_2 < 3t_1/2$. Therefore, if $\varepsilon_1 > 0$, λ_1 is greater than 1. At the same time, as $\varepsilon_1 < 2/t_1$, λ_2' is larger than 1. E_1 and E_2 are therefore unstable. Similar argument with $0 < \varepsilon_2 < \frac{2}{t_2}$. ■

Theorem 2. If both ε_1 and ε_2 are negative or $\varepsilon_1 > 2/t_1 > 0$ and $\varepsilon_2 > 2/t_2 > 0$, boundary equilibrium points E_2 and E_3 are saddle points.

Proof

It can be easily seen that if $\varepsilon_1 < 0$ and $\varepsilon_2 < 0$, λ_1' is positive (because $t_1 > 0$), and $\lambda_2' < 0$. Thus, E_3 are a saddle point. Similar argument with E_2 . ■

3.3. Local stability of the Nash equilibrium

In order to investigate the local stability of the Nash equilibrium point, we follow the Jury's conditions, which server as necessary and sufficient conditions for the locally stability of Nash equilibrium point, as following:

$$(i): 1 - Det(J) > 0; \quad (17)$$

$$(ii): 1 - Tr(J) + Det(J) > 0; \quad (18)$$

$$(iii): 1 + Tr(J) + Det(J) > 0 \quad (19)$$

Theorem 3. If $-4 < \theta_1 \varepsilon_1 + \theta_2 \varepsilon_2 < \varepsilon_1 \varepsilon_2 (\sigma_1 \sigma_2 - \theta_1 \theta_2) < 0$, E_4 is locally stable.

$$\begin{cases} \theta_1 = t_1 - \frac{b(9q_1^2 + 14q_1q_2 + 4q_2^2)}{4Q\sqrt{Q}}; \\ \theta_2 = t_2 - \frac{b(9q_2^2 + 14q_1q_2 + 4q_1^2)}{4Q\sqrt{Q}} \end{cases} \quad (20)$$

and

$$\begin{cases} \sigma_1 = -\frac{bq_1(q_1 + 2q_2)}{4Q\sqrt{Q}}; \\ \sigma_2 = -\frac{bq_2(q_2 + 2q_1)}{4Q\sqrt{Q}} \end{cases} \quad (21)$$

Proof

The local stability of E_4 can be obtained by solving the above inequalities, which can be written as:

$$(i): 1 - (1 + \theta_1\varepsilon_1)(1 + \theta_2\varepsilon_2) + \varepsilon_1\varepsilon_2\sigma_1\sigma_2 > 0; \quad (22)$$

$$(ii): 1 - (1 + \theta_1\varepsilon_1) - (1 + \theta_2\varepsilon_2) + (1 + \theta_1\varepsilon_1)(1 + \theta_2\varepsilon_2) - \varepsilon_1\varepsilon_2\sigma_1\sigma_2 > 0; \quad (23)$$

$$(iii): 1 + (1 + \theta_1\varepsilon_1) + (1 + \theta_2\varepsilon_2) + (1 + \theta_1\varepsilon_1)(1 + \theta_2\varepsilon_2) - \varepsilon_1\varepsilon_2\sigma_1\sigma_2 > 0 \quad (24)$$

This can be derived easily from (21), (22) and (23) that $-4 < \theta_1\varepsilon_1 + \theta_2\varepsilon_2 < \varepsilon_1\varepsilon_2(\sigma_1\sigma_2 - \theta_1\theta_2) < 0$, which also means:

$$\begin{aligned} -4 < (t_1 - \frac{b(9q_1^2 + 14q_1q_2 + 4q_2^2)}{4Q\sqrt{Q}})\varepsilon_1 + (t_2 - \frac{b(9q_2^2 + 14q_1q_2 + 4q_1^2)}{4Q\sqrt{Q}})\varepsilon_2 \\ < \varepsilon_1\varepsilon_2((-\frac{bq_1(q_1 + 2q_2)}{4Q\sqrt{Q}})(-\frac{bq_2(q_2 + 2q_1)}{4Q\sqrt{Q}}) - (t_1 \\ - \frac{b(9q_1^2 + 14q_1q_2 + 4q_2^2)}{4Q\sqrt{Q}})(t_2 - \frac{b(9q_2^2 + 14q_1q_2 + 4q_1^2)}{4Q\sqrt{Q}})) < 0 \blacksquare \end{aligned}$$

3.4. Numerical Simulations

In this section, we generate a one-dimensional bifurcation diagram to explore the dynamic behavior of the system in Section 2. We also conduct some numerical simulations by varying the value of a specific parameter, which is ε_1 , to see how the system react to one certain change of ε_1 . Note that ε_1 represents the adjustment speed of firm 1th. For the sake of convenience, we choose the fixed values of parameters as follows: $a = 10$, $b = 4$, $c_1 = 1$, $c_2 = 2$, $\alpha_1 = 0.3$, $\alpha_2 = 0.5$, $m_1 = 0.3$, $m_2 = 0.5$, $k_1 = 0.4$, $k_2 = 0.8$, $p_r = 9$, $\varepsilon_2 = 0.3$.

Figure 1 demonstrates the chaotic behavior of the system by plotting the bifurcation diagram of q_1 and q_2 . As can be seen from Fig.1, if $a = 10$, $b = 4$, $c_1 = 1$, $c_2 = 2$, $\alpha_1 = 0.3$, $\alpha_2 = 0.5$, $m_1 = 0.3$, $m_2 = 0.5$, $k_1 = 0.4$, $k_2 = 0.8$, $p_r = 9$, $\varepsilon_2 = 0.3$, the system experiences

a flip bifurcation at $\varepsilon_1 = 0.62$. Specifically, whenever the values of ε_1 are smaller than 0.62, the Nash equilibrium is locally stable. However, from this point, as soon as the flip bifurcation occurs, the Nash equilibrium loses its stability and is starting to approach the route to chaos. As ε_1 further increases, 2-cycle also loses its stability and bifurcates into a four-cycle at around $\varepsilon_1 = 0.76$. Through a couple of period-doubling bifurcations, the system eventually becomes chaotic. In this sense, we can say that this is a complex behavior of the quantity, which move from stable equilibrium to the chaos trajectories via the occurrence of period-doubling bifurcation. In other words, the steady state of this system is highly sensitive to the small change of the adjustment of speed.

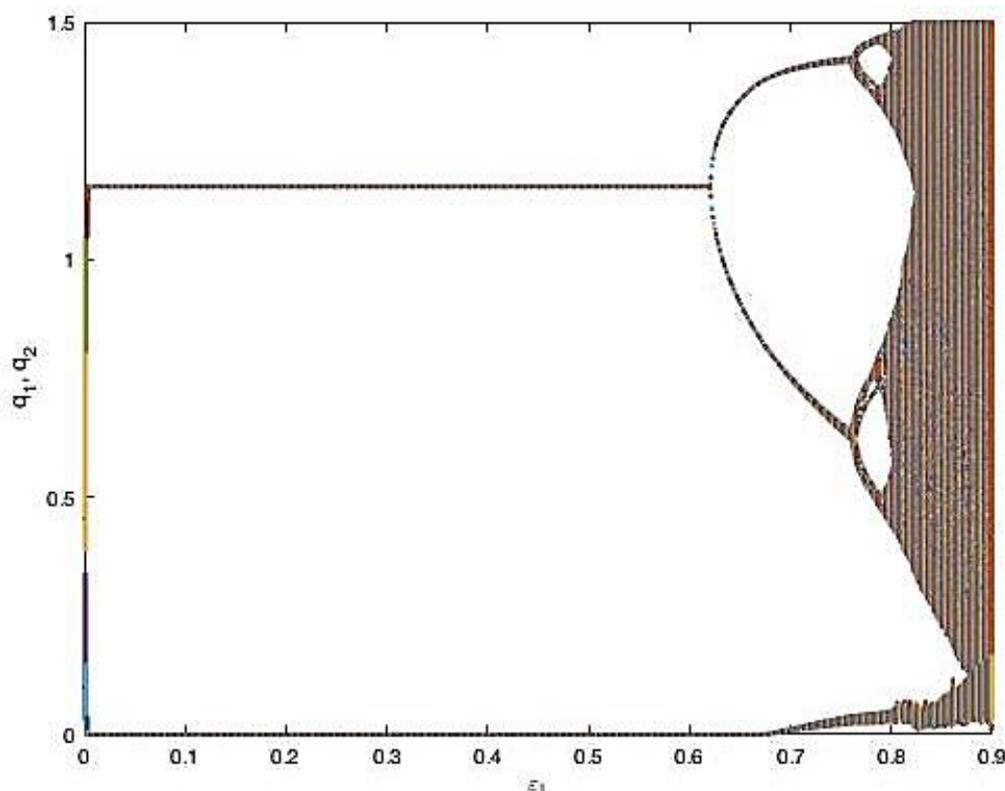


Figure 1. Bifurcation diagram of q_1 and q_2 with respect to ε_1

From the economic perspective, one would say that there should be a certain range for the values of two adjustment speed firms employ since the system's stability is vulnerable to the values of theirs. Otherwise, the market is likely to be getting more chaotic and unpredictable, which may yield alleged impacts on the economy.

4. CONCLUSIONS

In this paper, we propose a Cournot framework in which firms are boundedly rational players who participate in the emissions trading scheme. Each firm has a nonlinear demand function and a linear cost function. In order to obtain maximum profits, firms adopt gradient rules based on their local estimation of marginal profit. This paper aims to study the chaotic behavior of this system due to the variation of a specific parameter in the system and finds that the Nash equilibrium loses its stability and causes an advancement in the route to chaos through period-doubling bifurcations as the speed of adjustment increases. In this end, we suggest that

the values of the speed of adjustment should be kept in a proper range to ensure the steady-state of the system.

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FIRM CASH HOLDINGS IN LOWER-INCOME DEVELOPING COUNTRIES: A STUDY OF REAL ESTATE AND CONSTRUCTION FIRMS IN VIETNAM

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ABSTRACT

In this paper we argue and find evidence that pecking-order theory is more relevant than trade-off and free cash flow theories in explaining cash holdings in lower income developing countries, specifically Vietnam. Cash holdings and cash flows are found to be positively correlated, supporting the predictions of pecking order theory that cash is accumulated to finance investment. Moreover, firms with higher leverage would hold more cash to lower the financial difficulties due to high leverage. Our results also show that listed firms hold less cash than unlisted firms because they have better access to capital markets. In addition, the effect of leverage on cash holdings of listed firms are lower compared to that of unlisted firms. Meanwhile, the effect of cash flows on cash holdings of the listed firms are higher than that of the unlisted firms.

Keywords: cash holdings, Vietnam

JEL Classification: G30, G32, G39

1. INTRODUCTION

From 2009 to 2018, Vietnamese firms in the real estate and construction industries hold more than 8% of cash and cash equivalents in its net assets. The decision of holding cash is of utmost importance for these firms to ensure that they can pursue their investment policy. Without sufficient cash on hands, firms have to raise external capital, either by selling assets, raising debts, issuing stocks or cutting dividends. Raising external funds cost more than holding cash due to the high transactional cost in converting assets to cash and in raising capital by issuing debt or equity; the agency cost of debts; and the asymmetric information between firms and potential outside investors. Moreover, under-developed and imperfect bond and stock markets in developing countries like Vietnam also pose problems and difficulty for firms in raising external funds.

The topic of determinants of cash holdings has a rich academic literature. Starting from the seminal work of Kim, Mauer & Sherman (1988) and Opler, Pinkowitz, Stulz & Williamson (1999) in the U.S, most studies are conducted for the context in developed countries such as UK in Ozkan and Ozkan (2004) and EMU countries in Ferreira and Vilela (2004). Some recent papers chose to study developing countries such as Al-Najjar (2013) and Hall, Mateus & Mateus (2014). However, little focus was paid into explaining the difference in the determinants of firm cash holdings in the developing countries and developed countries, and in some studies there found similar results (Al-Najjar, 2013). These results can be explained by the fact that Al-Najjar (2013) chose to investigate mainly the higher-income developing countries. Since there are so many variations even among developing countries themselves, studies which focus on firm cash holdings in lower-income developing countries should be called for.

This paper examines the effects of firm characteristics on their cash holdings from the perspective of a lower-income developing country, specifically Vietnam. We first review three main theories that explain corporate cash holdings, viz. static trade-off theory, free cash flow theory, and pecking order theory. Then, we describe the context of capital markets in Vietnam. Capital markets in Vietnam are still at their early stage; therefore, market inefficiency, information asymmetry, and agency cost of debt are so severe. These increase transactional costs of converting assets into cash and also negatively affect the firms' ability to raise external capital. Under such extreme conditions, we argue that pecking order theory is more relevant in explaining firm cash holdings. Cash is accumulated mainly to mitigate the transaction cost of converting substituting assets into cash, especially from costly external funds. Our empirical analysis is designed to test this theory. We use Fiinpro Platform database to extract a sample of 347 firms operating in the real estate and construction industry for the 2009-2018 period. The real estate and construction industry is our research context since decision of holding cash is critical to firms in this industry. These firms need enormous sources of funding for investments while being constrained from raising funds from external sources due to the inefficiency and underdevelopment of Vietnam capital markets.

Our regression results show that firm *cash flow* is strongly related to firm cash holdings, which is consistent with predictions of pecking order theory. As external capitals are expensive and somehow restricted, cash flows are accumulated for funding investments, hence, being the main source of the firm's cash. Moreover, we also find that firm with higher *leverage* would have higher cash ratio. This is a new result as compared to that of previous studies in developed countries and even higher-income developing countries (Opler et al., 1999; Ferreira and Vilela, 2004, Al-Najjar, 2013; Hall et al., 2014) which suggest an opposite situation that firms with a higher degree of leverage will hold less cash. Firms with high leverage still hold a large amount of cash to lower the probability of financial difficulty, including high interest expenses and difficulty in raising additional debts in Vietnam. These results, hence, lend support to our argument that in conditions where external capital markets are not efficient, pecking-order theory is more relevant than trade-off and free cash flow theory in explaining firm cash holdings. We believe that this theory and our results could be generalized to any other lower income countries having the similar conditions in their capital markets even though we use the context and evidence of capital markets in Vietnam to build our argument. Our paper then emphasizes the importance of the context in empirical research testing the relevance and applicability of finance theories developed in the contexts of Western advanced countries into developing ones.

The paper is organized as follows. In Section 2 we review the theories and develop proposition concerning cash holdings in the specific context of Vietnam. Data description is presented in Section 3. Section 4 discusses empirical results. Section 5 is our conclusion.

2. PROPOSITION ON FIRM CASH HOLDINGS FROM A DEVELOPING COUNTRY'S PERSPECTIVE

2.1. Theoretical models

We discuss in details the three theories: the trade-off theory, the pecking order theory, and free cash flow theory. A summary of these model predictions for the firm characteristics obtained from Ferreira and Vilela (2004) is shown in Table 1²¹.

²¹ Our review of theories is based mostly on the literature review by Ferreira and Vilela (2004)

2.1.1. Trade-off theory

When making the cash holding decisions, firms' management normally weight the related benefits and costs. The major cost of holding cash is the missed opportunity of other high-return physical or financial assets. On the other hand, there are two main benefits: the transactional cost motive and the precautionary motive. The first motive states that, by holding cash, firms can avoid the transactional costs when raising external capital, either in transactions of selling assets, issuing debt or equity, or cutting dividends. The other motive is that firms hold more cash to make sure they can still pursue their investment policy, even in the event of financial distress resulting from unexpected loss or having difficulty in raising external funds. Thus, management try to determine an optimal level of cash holdings at which the marginal benefits equal the marginal costs.

Under the trade-off theory, firms with higher *investment opportunity* hold higher cash because without enough cash holdings they have to raise external capital, which might be unavailable or available at high prices. Other factors may have negative effects on cash, including *firm size*, as larger firms hold less cash due to lower probability of being in financial distress; *cash flows* and *liquid assets*, as they are considered substitutes for cash (Ferreira and Vilela, 2004). Firms that pay *dividends* are also expected to hold lower cash because they can raise funds at lower cost by cutting dividends (Ozkan and Ozkan, 2002).

Some factors have unclear effects on cash level. Higher *leverage* can be a proxy for firms' ability to raise debts with few constraints, suggesting firms hold less cash. However, higher *leverage* could put firm under pressure for paying off interests; thus, firms may hold higher cash for safety. *Debt maturity*, as measured by the proportion of long-term debts in total debts, may have negative or positive effects on cash holdings, depending on the firms' ability to raise additional debts (Ferreira and Vilela, 2004).

2.1.2. Pecking order theory

The pecking order theory (Myers, 1984; Myers and Majluf, 1984) suggests that there is no optimal level of cash holdings, instead firm cash holdings depend on investment needs and whether internally generated funds are sufficient. Management prefer to finance investment first with retained earnings, then more costly sources such as debt and other risky securities, leaving common stock (with highest costs of financing) as their final option.

Under pecking order theory, firms with strong *investment opportunity* would hold higher cash generated internally for investment. Other factors that can have positive relationship with cash holdings include *size* and *cash flow*, as larger firms and those having higher operating cash flows are able to accumulate a large amount of cash. In contrast, *leverage* is negatively correlated with cash holdings, because firms will raise debts when retained earnings are exhausted, and pay off debts when there are sufficient funds to do so (Ozkan and Ozkan, 2002; Ferreira and Vilela, 2004).

2.1.3. Free cash flow theory

As suggested by Jensen (1986), management in firms with large free cash flow have incentives to accumulate cash rather than distributing to shareholders to gain discretionary power over firms' resources. Accordingly, firms with large shareholder dispersion are expected to hold excess cash as this increases managerial discretion (Opler et al., 1999). Large firms

tend to have highly dispersed ownership, thus, firm *size* is positively correlated with cash holdings. In contrast, *leverage* and cash holdings have negative relationship. Firms with low debts are less subject to monitoring by the capital markets, and thus hold more cash. *Investment opportunity* also has negative effect on cash holdings. Firms with lower market-to-book ratio or poor growth prospect have the incentives to hold excess cash to pursue their investment program, as they would have difficulty raising external capital.

Table 1. Summary of model predictions (Ferreira and Vilela, 2004)

Variable	Trade-off theory	Pecking-order theory	Free cash flow theory
Dividend payments	Negative		
Investment opportunity	Positive	Positive	Negative
Liquid asset substitutes	Negative		
Leverage	Unknown	Negative	Negative
Real size	Negative	Positive	Positive
Cash flow	Negative	Positive	
Debt maturity	Unknown		

2.2. Capital markets in lower-income developing countries and a proposition on firm cash holdings

Important literature of cash holdings is conducted for developed countries including the US (Kim et al., 1988; Opler et al., 1999), UK (Ozkan and Ozkan, 2004) and EMU countries (Ferreira and Vilela, 2004) where the capital markets are developed and thus highly accessible for raising capital. Capital markets in lower-income developing countries like Vietnam have significant differences, thus we expect that the determinants of cash holdings in Vietnam are not similar to the ones in those countries. We argue that the lack of efficient capital markets on which firms can rely to optimize their cash-holdings decisions makes pecking order theory more prevalent than trade-off and also free cash flow theory in explaining cash holdings.

According to the Ministry of Planning and Investment of Vietnam (2020), in 2018 over 93% of Vietnamese firms are small and medium-sized enterprises (SMEs), whose main capital source is bank debts. However, their ability to borrow is somehow restricted. Around 30% of the SMEs cannot get access to bank debts because they lack qualified collaterals and transparent financial data. Such firms sometimes have to use illegal credit, locally known as “black credit”, with very high interest rates. Those firms who can borrow still face the risk of financial difficulties because most bank debts are short-term and they may have difficulty raising additional funds.

Other capital sources are from bond and stock markets, however, only accessible to small number of larger firms (Viet Nam News, 2020). Bond market is still at early stage (Manh et al., 2020; Vuong and Tran, 2011). Regulatory framework is still weak and information transparency is low. Meanwhile, Vietnam stock market, despite being at its 20th anniversary of foundation, is still striving to reach an emerging market status (Custom News, 2020). It is not strictly regulated and supervised, lacking regulatory framework and due diligence procedure. Low transparency, asymmetric information, and weak shareholder protection are major problems - in other words, the market is far away from efficient. There are cases in which financial statements of the firms are manipulated (Tien Hung et al., 2018). Detailed information of firms’ investment projects is often unavailable. Researches have not found supportive

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evidence for weak form efficiency for Vietnam's stock market (Truong et al., 2008; Gupta et al., 2014). Security prices are not the true reflection of firms' true economic value, but rather affected by herding behavior, the arbitrage and speculative activities, and even manipulation (e.g. Vo and Phan, 2017). This situation makes external capital highly expensive, as investors ask for underpricing in stock prices to counter for their lacking of information. Furthermore, debt and equity investors do not have independent information of firms' performance, such as credit rating from independent agency (TheLeader, 2019). As such, it can be said that information asymmetry is highly severe in Vietnam.

The above problems of Vietnamese capital markets are magnified for firms in the real estate and construction industry, which have long-term investments that requires enormous funding but may not be able to raise external capital or can only do so at very high cost. Their main source of funding is leverage, which can account for up to 70% of total capital requirement of a project (FPT Securities, 2019). The risky nature of real estate projects as well as information asymmetry leads to high interests of external capital. Moreover, agency cost of debts are significant, making it difficult for firms to raise additional debts. Stock market is restrictedly accessed because only large companies can have their stock listed. Moreover, the firms' projects usually have long cash conversion cycle, meaning firms have high risk of financial difficulties. In summary, we expect real estate and construction firms would hold large cash because they have frequent expenditures, high interest expenses, and certain difficulty in accessing capital markets.

From the above analysis, we develop our proposition that, in Vietnam, pecking order theory is more relevant in explaining cash holdings than the trade-off and free cash flow theories. The reason comes from firms' high transaction costs, asymmetric information, agency cost of debts and low access to capital markets. As such, firms would accumulate cash from retained earnings for investments because external capitals are expensive and limited. Moreover, even high-levered firms would still accumulate cash to reduce the risk of financial difficulties, meaning we expect a positive relationship between leverage and cash holdings, different from Opler et al. (1999) and Ferreira and Vilela (2004). However, that relationship is not opposite to the pecking-order theory. In Vietnam, the leverage ratio at around 0.45 is much higher than in the U.S; thus, even though companies have surplus cash flows to pay off debts, they would still accumulate some of the cash in precautionary to the potential difficulties in raising external capitals. Summary of our review of theories and proposition are shown in Table 2.

Trade-off theory is not relevant because it suggests an optimal point of cash holdings that does not make sense in Vietnam, as shown in Figure 1. Due to high transaction costs in converting assets to cash, the marginal cost of liquid asset shortage in Vietnam would be shifted further above, much higher than the marginal cost of liquid assets. In other words, firms do not have access to efficient capital markets to rely on to optimize their cash-holdings decisions. Free cash flow theory is also irrelevant, because its condition is the high agency cost between managers and shareholders due to highly dispersed ownership. However, in Vietnam, ownership is concentrated, and managers are often owners (Tran and Le, 2020). Family-owned firms are also very common (e.g. Nguyen and Vo, 2015, Luong, 2019)²². Thus, the agency cost between shareholders and managers tend to be lower in Vietnam as their interests are more

²² In Nguyen and Vo (2015), the presence of families is measured by either family ownership if a family possesses more than 5% of equity ownership of the firm or the presence of the family's members in board of directors and top management team. The authors found a presence of families in 43% of firms in their sample of Vietnamese listed firms in Ho Chi Minh Stock Exchange (HOSE) in 2013. It is also said that "95% of Vietnamese enterprises are family businesses and 100 largest family-run enterprises account for about 25% of the country's GDP" (Luong, 2019).

aligned. Moreover, due to certain constraints in raising funds, firms are more reluctant in spending cash for value-destroying projects or expensive acquisition.

Table 2. Our review of theories and Proposition

Theories	Developed countries	Lower-middle income developing countries (Vietnam)
Trade-off theory	Marginal cost of cash shortage balance marginal cost of holding cash (liquidity premium)	Marginal cost of cash shortage is so high compared to marginal cost of holding cash that an optimal point makes no sense.
Pecking-order theory	Relevant	Relevant
Free cash flow theory	Relevant, especially in the U.S or UK with diverse ownership	Not relevant

Our proposition: In the context of Vietnam, pecking order theory is more relevant than the trade-off and free cash flow theories in explaining firm cash holdings.

In Vietnam, there indeed are two papers on the determinants of cash holdings of listed energy enterprises (Phung and Nguyen, 2016) and of listed real estate firms from 2010 and to 2014 (Truong and Phan, 2016). These papers do not analyze or pay any attention to the conditions of Vietnam financial markets to develop proposition about the differences in determinants of cash holdings between firms in developed countries and a lower-income developing country such as Vietnam. As compared to those studies, our paper contributes to the literature by reviewing the theories and Vietnamese context, developing a proposition and investigating the evidence for the relevance of the theories in Vietnam.

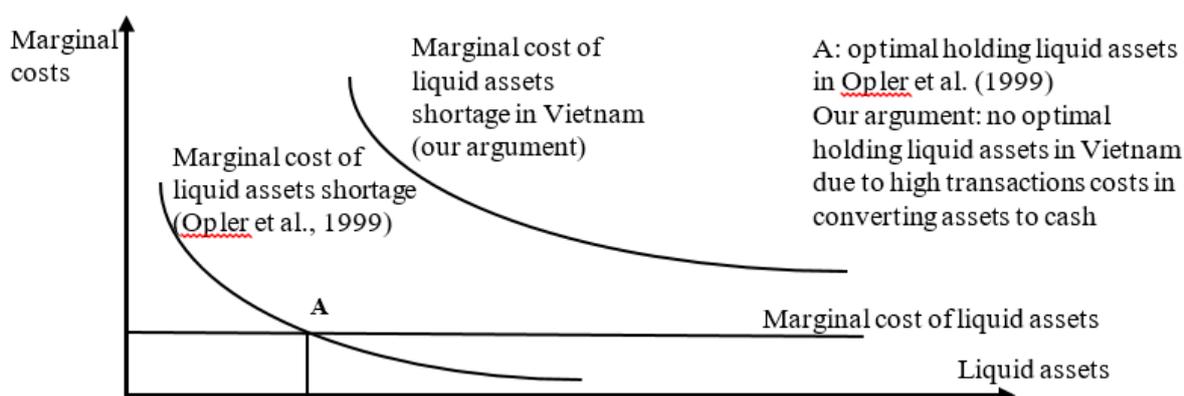


Figure 1. Optimal holdings of liquid assets, amended from Opler et al. (1999)

3. DATA DESCRIPTION

We investigate a sample of companies in the real estate and construction industry for the 2009-2018 period, obtained from Fiinpro Platform, a reliable and comprehensive financial database of Vietnamese companies. We include both listed and unlisted companies available in the database. Publicly listed companies are those having their shares listed on two stock

exchanges in Vietnam²³. Unlisted companies are those having their shares of stock traded in OTC markets and subject to lower discipline on information transparency. We expect that the level of cash holdings would be different between listed and unlisted firms because of difference in their ability to raise capital. After dropping observations with missing information, our final sample is an unbalanced panel dataset with 2178 firm-year observations of 347 firms.

3.1. Cash ratio

Cash ratio is the ratio of cash and cash equivalents over net assets, in which net assets are computed as book value of assets less cash and equivalents²⁴. Cash ratio is the measure of firm cash holdings. The descriptive statistics of Cash ratio is shown in Table 3. The annual average cash ratios are shown in Figure 2. The overall mean is 8.3%, but cash holdings were higher in 2009 and 2010 and suddenly dropped in 2011 and 2012 when the economy growth is slowing down after two consecutive macro-economic crises in 2009 and 2011. Cash ratio becomes fairly stable in the following years. The average cash of real estate and construction firms in Vietnam is lower than 17% of in the U.S (Opler et al., 1999) and 15% in EMU countries (Ferreira and Vilela, 2004) but higher than 3.5% in Russia and 3% in India (Al-Najjar, 2013).

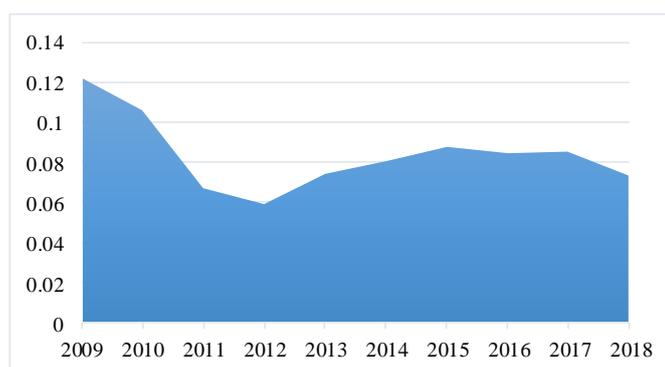


Figure 2. Average cash ratio, 2009-2018

(Source: author's own calculation from the data)

3.2. Independent variables

We estimate seven independent variables, adopted from Ferreira and Vilela (2004). *Dividend dummy* is constructed to capture firms' dividend payments. It equals 1 if the firm paid dividends in a year and 0 if otherwise. Firms' *investment opportunity* is proxied by the market-to-book ratio, calculated as market price per share over book value per share. *Net working capital ratio* is the proxy for liquid asset substitutes, measured as net current assets minus total cash and equivalent divided by net assets, in which net current assets equals current assets minus current liabilities. *Leverage* equals to total debts divided by net assets. We estimate *firm size* as the natural logarithm of total assets in constant year 2010 dollars as proxy for the real

²³ Two stock exchanges in Vietnam are Ho Chi Minh and Hanoi Stock Exchanges..

²⁴ We drop 2 outliers with cash ratio greater than 1000. For 10 observations with cash ratio from 1 to 7, we truncate cash ratio by define cash ratio greater than 1 to be equal 1

size of firms²⁵. *Cash flow ratio* is calculated as cash flow divided by net assets, in which cash flow is after-tax profit plus depreciation. *Debt maturity* is the ratio of long-term debt over total debts. We also include an *exchange dummy* to investigate the difference in cash holdings of listed and unlisted firms. It sets a value of 1 if a firm is unlisted, and 0 if it is listed. The summary statistics of all variables are shown in Table 3. The correlation matrix is presented in Table 4. It is note-worthy that cash flow ratio and leverage is negatively correlated (correlation coefficient equals -0.225). It means firms with strong cash flows would choose to free up the debt, which shows some innital evidence in support of pecking order theory.

Table 3. Descriptive statistics

Variables	Mean	25 th percentile	Median	75 th percentile	Standard deviation	N
Cash ratio	0.083	0.144	0.045	0.103	0.122	2178
Dividend Dummy	0.643	0.000	1.000	1.000	1.000	2178
Market-to-book ratio	1.180	0.300	0.660	1.150	223.610	2178
Net working capital ratio	0.103	-0.031	0.075	0.242	0.889	2178
Leverage	0.696	0.553	0.728	0.859	2.466	2178
Firm size	17.273	16.346	17.178	18.027	23.002	2178
Cash flow ratio	0.046	0.015	0.039	0.075	1.003	2178
Debt maturity	0.256	0.041	0.166	0.402	0.995	2178
Exchange Dummy	0.393	0.000	0.000	1.000	1.000	2178

Table 4. Correlation matrix

	1	2	3	4	5	6	7	8
1. Cash ratio								
2. Dividend Dummy	0.170							
3. Market-to-book ratio	-0.011	-0.001						
4. Net working capital ratio	-0.073	0.037	-0.034					
5. Leverage	0.057	0.059	0.042	-0.547				
6. Firm size	-0.066	0.106	0.013	0.011	0.065			
7. Cash flow ratio	0.356	0.277	-0.118	0.116	-0.225	0.040		
8. Debt maturity	0.002	-0.009	0.032	0.195	-0.057	0.283	0.043	
9. Exchange Dummy	0.053	-0.027	0.028	-0.245	0.249	-0.205	-0.145	0.053

4. EMPIRICAL RESULTS

4.1. Univariate tests

Table 5 shows the firm characteristics on each cash ratio quartile. Quartiles' ranges are calculated for each year. Median values are in bracket. The t-statistics tests the hypothesis that there is significant difference between the fourth quartile and first quartile firms. We find that dividend dummy, leverage, and cash flow ratio are significantly different at the 5% level between the first and fourth cash ratio quartiles, which suggest some monotonic relationship between these firm characteristics and cash holdings. Firms paying dividends, having higher degrees of leverage, and higher cash flow ratios tend to have higher cash ratios. These

²⁵ Firm size in nominal values is converted into real values (base year: 2010) using GDP deflators. Real values in Vietnamese dong (VND) are then converted into US dollars (USD) using the official annual exchange rate in 2010 of 18,612.92 VND/USD.

preliminary results show innitial support for the prediction from pecking order theory and somehow in contrary with expectations coming from trade-off theory and free cash flow theory. Keeping in mind that from Table 5, we can only appreciate the unconditional (to other factors) differences in firm characteristics in relation to firm cash holdings. It is better to use multivariate regressions where we can simultaneously control for a large vector of firm characteristics, year, and firm fixed effects, which is presented in our next section 4.2.

Table 5. Firm characteristics by cash ratio quartiles*

Variables	1 st quartile	2 nd quartile	3 rd quartile	4 th quartile	t-statistic (p-value)
Cash ratio	0.007 [0.006]	0.029 [0.026]	0.069 [0.066]	0.229 [0.173]	30.35 (0.0000)
Dividend Dummy	0.391 [0.000]	0.639 [1.000]	0.740 [1.000]	0.806 [1.000]	15.41 (0.0000)
Market-to-book ratio	1.272 [0.425]	1.187 [0.620]	1.162 [0.715]	1.097 [0.830]	-0.42 (0.6625)
Net working capital ratio	0.084 [0.078]	0.128 [0.098]	0.115 [0.071]	0.084 [0.051]	-0.03 (0.5137)
Leverage	0.683 [0.691]	0.679 [0.729]	0.704 [0.751]	0.719 [0.751]	2.13 (0.0168)
Firm size	17.205 [17.126]	17.296 [17.194]	17.454 [17.335]	17.137 [17.060]	-0.84 (0.7997)
Cash flow ratio	0.013 [0.017]	0.036 [0.032]	0.051 [0.046]	0.083 [0.069]	12.64 (0.0000)
Debt maturity	0.291 [0.211]	0.250 [0.158]	0.243 [0.137]	0.241 [0.138]	-3.14 (0.9991)
Exchange Dummy	0.451 [0.000]	0.390 [0.000]	0.337 [0.000]	0.392 [0.000]	-1.97 (0.9754)

* Note: Quartiles for cash ratio are determined each year

4.2. Regression tests

Besides pooled OLS, we specifically employ firm-level fixed effect panel data models to control for any constant unobserved heterogeneity. Model (1) and (2) apply for the whole sample while model (3) employs only unlisted firms and model (4) uses only listed firms. Regression results are shown in Table 6. We choose to explain here in more details the results from Model (2), (3) and (4), our preferred models, since those models have net out some heterogeneity and endogeneity concerns.

Across all models we find significant evidence that firms with higher *leverage* would have higher cash ratio. With leverage measured as total debts over net assets, the parameter of 0.257 in Model (2) means with 1 percent (0.01 unit) increase in leverage, cash ratio is estimated to increase by 0.00257 (0.257 percent). This can be explained that firms with high leverage are under high pressure for paying off debts and interests. The pressure would be magnified for real estate and construction firms in Vietnam who usually bear high interest rates. Also those high-levered firms hold a large amount of cash because they may have lower ability to raise additional debts and to raise funds via bond and stock markets. This result is consistent with Truong and Phan (2016) who also investigated real estate firms in Vietnam. However, it is opposite to Opler et al. (1999) and Ferreira and Vilela (2004) who study developed countries.

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Also, it contradicts the result in those studies of upper-middle income developing countries (Al-Najjar, 2013; Hall et al., 2014). Thus, it shows there can be different cash holding decisions between lower-income developing countries versus the upper-income countries as well as developed countries, which can be due to the situation in Vietnam: high transaction cost, agency cost of debts and underdeveloped capital markets.

Model (3) and (4) show that the effect of leverage to the increased cash holdings are higher for unlisted firms than that of listed firms. In detail, for each 1 percent increase in leverage, cash ratio of unlisted firms is predicted to increase by 0.3 percent, while that of listed firms would increase by 0.219 percent. This can be due to the fact that listed firms have better access to debt and equity funds. These results also support our analysis in Section 2 that the situation of Vietnamese capital markets would affect firm cash holdings.

Our results about the positive effect of leverage on cash holdings is not contradict with pecking-order theory, because even though firms may use cash to pay off debts, they would still accumulate some of the cash whenever possible for precautionary reasons. Our paper examines the real estate and construction firms who very often make large capital investment requiring both internal and external funds. It is shown from our results that those firms while borrowing would still accumulate cash from internal funds for investment. By doing so, the firms can avoid high transactional cost or difficulty in raising capital. The regression results support our argument in Section 2.2 about how firm cash holdings decisions are affected by some characteristics of the capital markets in Vietnam. Also as expected, free cash flow theory is not relevant as it predicts a negative relationship between leverage and cash holdings.

Cash flow ratio also shows significant positive effects on cash holdings and strongly supports the pecking-order theory, consistent with the results of Ozkan and Ozkan (2002) and Ferreira and Vilela (2004). Model (2) estimates that on average each 1 percent increase in cash flow ratio (measured by the ratio of cash flows divided by net assets) is associated with 0.455 percent increase in cash ratio. Firms would accumulate a large amount of cash from operating cash flows to fund their investment. They do not favor external funds because of the detailed information requirement and high transactional costs. From Model (3) and (4), the effect of cash flow ratio on cash holdings of listed firms is larger than that of unlisted firms. It is estimated that with each 1 percent increase in cash flow ratio, the cash ratio of listed firms would increase by 0.482 percent while that of unlisted firms would increase by 0.424 percent. This can be explained that in Vietnam, listed firms are large in size and also have good reputation; therefore, they have better investment opportunities attracting more customers than unlisted firms. Thus, they would accumulate more cash from their cash flows to fund these investments.

The positive relationship between cash flows and cash holdings, while supports the pecking-order theory, suggests that trade-off theory is not relevant because the theory predicts a negative relationship instead. Under trade-off theory, cash flows are considered as substitutes for cash holdings. However, our study shows that among real estate and construction firms in Vietnam, their cash holding decision is to accumulate cash from operations for investment because external funds are expensive and can be difficult to be raised. From these results, it is shown that the pecking-order theory is more relevant in explaining firm cash holdings in Vietnam.

Other firm characteristics show some effects on the cash ratio. In the OLS model, there found significant positive relationship between cash holdings and two dummy variables. Regarding the *dividend dummy*, it is shown that firms hold more cash to maintain the dividend payments, meaning they are reluctant to use dividend cuts as a source of funds. This result is

contrary to the prediction of trade-off theory. The coefficients of dividend dummy is not significant in the panel fixed effects models, as expected, since there is little variation in this variable (i.e. a lot of firms do not pay any dividend consistently in the period under analysis). The result of *exchange dummy* states that overall unlisted firms hold more cash than listed firms, which can be explained by their lower ability to raise external funds from capital markets. Moreover, due to lower information transparency, unlisted firms can only raise funds at high costs. Listed firms are usually in larger size with better reputation, thus their costs in raising external capital are relatively lower.

Table 6. Regression of cash holdings on firm characteristics

Independent variables	Models			
	Pooled OLS	Fixed effects model		
	Whole sample (1)	Whole Sample (2)	Unlisted firms (3)	Listed firms (4)
Dividend dummy	0.020*** (0.006)	0.007 (0.006)	0.014 (0.010)	0.004 (0.007)
Market-to-book ratio	0.001*** (0.000)	0.000 (0.000)	0.000 (0.000)	0.009 (0.008)
Net working capital	-0.027* (0.015)	-0.005 (0.030)	-0.035 (0.038)	0.027 (0.045)
Leverage	0.048** (0.021)	0.257*** (0.052)	0.300*** (0.096)	0.219*** (0.045)
Firm Size	-0.008*** (0.002)	-0.010 (0.009)	-0.018 (0.024)	-0.013* (0.008)
Cash flow ratio	0.558*** (0.079)	0.455*** (0.103)	0.424*** (0.144)	0.482*** (0.145)
Debt maturity	0.009 (0.013)	-0.019 (0.034)	-0.001 (0.031)	-0.021 (0.048)
Exchange dummy	0.013** (0.006)			
Constant	0.152*** (0.033)	0.060 (0.138)	0.180 (0.396)	0.142 (0.121)
Observations	2,178	2,178	855	1,323
Adjusted R-squared	0.164	0.212	0.285	0.170
Year FE	Yes	Yes	Yes	Yes
Firm FE	No	Yes	Yes	Yes
Number of id		347	160	187

Note: Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Firm size is found to be negatively related to cash holdings, though with strong significance only in Model (1) and weak significance in Model (4). Similar results were found in Ferreira and Vilela (2004) and Hall (2014). Larger firms would hold less cash because they have better access to raising external funds, which supports our argument that the decision of cash holdings in Vietnam is strongly affected by their access to capital markets. *Net working capital ratio* also showed negative effects but weak significance in only Model (1), as firms would hold less cash when having liquid asset substitutes.

The variable *market-to-book ratio* shows significant but with very low coefficients (0.001) in only Model (1). In other models, the coefficients are approximately zero. This may be due to the fact that market-to-book ratio is not a good proxy for investment opportunities in Vietnam because of market inefficiency. Stock prices are not the reflection of intrinsic value due to low information transparency, and because they are also affected by arbitrage and manipulation activities. Thus, market-to-book ratio is not relevant in explaining cash holdings in Vietnam.

5. CONCLUSION

This paper investigates the determinants of cash holdings using panel data of 347 real estate and construction firms in Vietnam from 2009 to 2018. Our results show supportive evidence that pecking-order theory is more relevant than the trade-off and free cash flow theories in explaining firm cash holdings for lower-income developing countries. From our analysis of Vietnamese capital markets, Vietnamese firms, especially in the real estate and construction industry, have high transactional costs, agency cost of debts, information asymmetry cost, and limited access to bond and stock markets. As external capitals are expensive and somehow restricted, cash flows are accumulated for funding investments. Moreover, we contribute a new result as compared to previous studies: firms with high leverage still hold a large amount of cash to lower the probability of financial difficulty, including high interest expenses and difficulty in raising additional debts. This result is different from those in developed countries (Opler et al., 1999; Ferreira and Vilela, 2004) and even higher-income developing countries (Al-Najjar, 2013; Hall et al., 2014), contradicting the results of these studies about the similarities in firm cash holdings between developing and developed countries. Different from these studies, we found evidence that trade-off theory is not relevant because firms in Vietnam do not have efficient capital markets to rely on to optimize their amount of cash holdings. Free cash flow theory is also irrelevant, because of the ownership of firm in Vietnam tend to be concentrated and many firms are family firms. Our results then show some contradiction to the predictions of the free cash flow theory.

Other firm characteristics also show that Vietnamese firms' ability to raise external capital more easily and at lower cost is strongly related to their cash holding decisions. We also found that overall listed firms hold less cash than unlisted firms because of their better access to capital markets. The effect of leverage on cash holdings of listed firms are lower than that of unlisted firms, due to the fact that listed firms have better access to external capital markets and also at lower cost, thus they hold less cash. For listed firms, the effect of cash flows on cash holdings are larger than unlisted firms, supporting the pecking-order theory that firms would use internal funds for investments.

In sum, this paper argues and finds evidence that pecking-order theory is more relevant than trade-off and free cash flow theory in explaining cash holdings in Vietnam where capital markets are not efficient. Though we use the context and evidence of capital markets in Vietnam to build our argument, we believe that our theory could be generalized to any other lower income countries having the similar conditions in their capital markets. Our paper, hence, also call for the importance of the context in empirical research testing the relevance and applicability of finance theories developed in the contexts of Western advanced countries into developing ones.

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