

Doctoral Thesis

# **Enhancing Green Knowledge Sharing: The Roles of Environmental Leadership, Green Human Resource Management, and Psychological Contract Breach in the Aviation Industry**

Posílení sdílení “zelených znalostí”: Role environmentálního řízení včetně řízení lidských zdrojů dle principů GHRM v leteckém průmyslu

Author: **Nguyen Thi Thu Huong**

Degree program: P6208 Economics and Management

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Supervisor: Professor doc. Ing. Zuzana Tučková, Ph.D.

Consultant: Associate Professor Dr. Nhat Tan Pham, PhD

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## ABSTRACT

Green human resource management (GHRM), which is defined as integrating the environmental aspect into human resource management, has been paid attention to by previous scholars. However, the existing literature has revealed an issue with how and when GHRM describes employees' green knowledge sharing as well as the roles of environmental leadership and psychological contract breach (PCB). Thus, by anchoring on social exchange theory and social learning theory, the study aims to build a comprehensive model to investigate (1) the direct effects of GHRM, environmental leadership, and PCB on green knowledge sharing (2) the mediating roles of environmental knowledge and eco-initiatives towards the effect of GHRM on green knowledge sharing (3) the moderating roles of environmental leadership and PCB in the connections from environmental knowledge, GHRM, and eco-initiatives to green knowledge sharing.

The mixed-methods approach is applied. First, the qualitative study is used to confirm and develop the questionnaire. Then, the quantitative approach is applied to test the proposed hypotheses. A two-wave time-lagged survey through this questionnaire is employed to collect the data from 443 respondents working for leading Vietnamese airlines and other companies in the aviation industry.

Data analysis is conducted by utilizing SPSS and the PROCESS package in R software. The main findings confirm the direct positive effect of GHRM on green knowledge sharing, environmental knowledge, and eco-initiatives, followed by the direct positive effect of environmental leadership and PCB on green knowledge sharing. Secondly, it is proven that environmental knowledge and eco-initiatives play a positive mediating role in the effect of GHRM on green knowledge sharing. Finally, it confirms the moderating roles of PCB in the connections from environmental knowledge, GHRM, and eco-initiatives to green knowledge sharing. Unexpectedly, hypothesis number 9, which is about the moderating role of environmental leadership in mediating from GHRM to green knowledge sharing via environmental knowledge, is not confirmed.

This study has contributions in both theoretical and practical aspects. In light of the social exchange theory, this study confirmed the relationship between GHRM and green knowledge sharing, which is a vital green behaviour. Besides, with the extension of social exchange theory and social learning theory, this study emphasized the mediating role of environmental knowledge and eco-initiatives in the relation between GHRM and GKS, and the moderating role of environmental leadership and psychological contract breach in the mediating relationship between GHRM and GKS. The study also contributes to the literature on how effective GHRM practices are in the aviation industry, which has been less studied before. It can be proved that,

besides technical solutions, GHRM is also a crucial system for supplying solutions for effectively protecting the environment. Finally, the study shows its limitations and suggests further research.

## ABSTRAKT

Ekologickému řízení lidských zdrojů (dále jen GHRM), které je definováno jako integrace environmentálních aspektů do řízení lidských zdrojů, je v současnosti věnována velká pozornost nejenom od současných autorů. Stávající literatura však poukázala na otázku, dotýkající se toho, jak a kdy GHRM popisuje sdílení ekologických znalostí u zaměstnanců, jakož i na roli environmentálního vedení za určitého psychologického vedení daného konceptu (PCB – psychological contract breach). Cílem této práce je tedy na základě teorie sociální výměny a teorie sociálního učení vytvořit komplexní model, který by zkoumal:

- (1) přímý vliv GHRM a environmentálního vedení a PCB na sdílení ekologických znalostí
- (2) zprostředkovaní role environmentálních znalostí a ekologických iniciativ vůči vlivu GHRM na sdílení ekologických znalostí
- (3) roli environmentálního vedení a PCB na souvislosti mezi environmentálními znalostmi a GHRM a ekologickými iniciativami prostřednictvím sdílení jejich znalostí.

V práci se aplikuje přístup smíšených metod. Nejprve se na potvrzení dotazníku používá kvalitativní studie. Poté je využit kvantitativní přístup k ověření navržených hypotéz. Ke sběru dat od 443 respondentů (pracující ve vietnamských leteckých společnostech) je použit dvouvládný časově zpožděný průzkum prostřednictvím dotazníku.

Analýza dat byla uskutečněna pomocí programu SPSS a balíčku PROCESS v softwaru R. Hlavními zjištěními jsou nejprve potvrzení přímého pozitivního vlivu GHRM na sdílení zelených znalostí, na environmentální znalosti a na ekologické iniciativy, dále přímý pozitivní vliv environmentálního vedení a PCB na sdílení zelených znalostí. Zadruhé je prokázána pozitivní zprostředkující role environmentálních znalostí a ekoiniciativ vůči vlivu GHRM na sdílení zelených znalostí. Nakonec se potvrzuje také moderující role PCB ve vztazích od environmentálních znalostí, GHRM a ekoiniciativ ke sdílení zelených znalostí. Nečekaně se nepotvrdila hypotéza číslo 9, která se týká moderující role environmentálního vedení při zprostředkování od GHRM ke sdílení zelených znalostí prostřednictvím environmentálních znalostí.

Tato studie má přínos jak z teoretického, tak z praktického hlediska. Ve světle teorie sociální výměny tato studie potvrdila vztah mezi GHRM a sdílením zelených znalostí, což je zásadní pro ekologické chování. Kromě toho, s rozšířením teorie sociální výměny a teorie sociálního učení, tato studie zdůraznila zprostředkující roli environmentálních znalostí, ekologických iniciativ ve vztahu mezi GHRM a GKS a moderující roli environmentálního vedení a porušení psychologické smlouvy ve zprostředkujícím vztahu mezi GHRM a GKS. Studie také přispívá k identifikaci účinnosti postupů GHRM v leteckém průmyslu, který byl dosud méně studován. Lze prokázat, že kromě technických řešení je GHRM také klíčovým systémem pro

odávání řešení pro účinnou ochranu životního prostředí. Závěrem studie ukazuje svá omezení a navrhuje směr dalšího výzkumu.

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## **LIST OF SYMBOLS, ACRONYMS & ABBREVIATIONS**

**GHRM:** Green human resource management

**PCB :** Psychological contract breach

**HRM:** Human resource management

**EM:** Environmental management

**EL:** Environmental Leadership

**ECO:** Eco-initiatives

**GKS:** Green knowledge sharing

**IATA:** International air transport association

**ICAO:** International civil aviation organization

**VNM:** Vinamilk corporation

**ACV:** Airport corporation of Vietnam

# 1. INTRODUCTION

## 1.1 Motivation of the study

Environmental challenges, including irreversible deforestation, global warming, severe levels of pollution, depletion of natural resources, climate change, and energy scarcity, have become urgent issues for the sustainability of ecosystems globally. In the context of the 21st century, interest in solving and mitigating these problems has become more widespread and diverse than ever before, as reflected in many international studies and reports (Saeed et al., 2019). In particular, the pressure of the global economy has forced countries in Asia to seek and implement sustainable solutions to deal with climate change, from applying green technologies and improving energy efficiency, to promoting advanced environmental policies (Renwick et al., 2013). The focus on these measures not only demonstrates countries' commitment to protecting the environment but is also an important step in ensuring sustainable development for future generations.

In the aviation industry, environmental protection has become an important concern for scientists and governments. Emissions such as SO<sub>x</sub> and NO<sub>x</sub> during the development and transformation of this industry can turn into volatile nitrate and sulfate aerosols. At the same time, hydrocarbon (HC) emissions can also form semi-volatile organic particles. These elements all have a role in causing climate change (Brasseur et al., 2016). Forecasts show that, without intervention, emissions from this sector will increase significantly, with estimates that could increase two to four times compared to levels observed in 2015. This leads to a worrying forecast that annual CO<sub>2</sub> emissions from international aviation could reach around 1.8 billion tons by 2050 (ICAO, 2019). This increase depends not only on the type of emissions - CO<sub>2</sub>, NO<sub>x</sub>, or PM - but also depends on the scenarios and analysis models used, as outlined by the International Civil Aviation Organization (ICAO, 2019).

Therefore, controlling and minimizing carbon emissions from the aviation industry becomes necessary to limit negative impacts on climate change. This is especially important as demand for aviation is expected to continue to increase in the future, requiring strong and effective measures to minimize environmental impacts while supporting sustainable development in the aviation industry. The ICAO organization has established standards to ensure that the aviation industry complies with the latest and most advanced technologies to minimize environmental impact (Cumpsty et al., 2019). In the Vietnamese context, the Vietnam Civil Aviation Administration is also actively paying attention to environmental issues, emphasizing the importance of applying ICAO standards and implementing measures to reduce environmental pollution from aviation activities. Researchers have defined green aviation as efforts to improve fuel efficiency in aircraft, develop effective new-generation air traffic

control systems, and apply new technologies and improved technical processes. The aim of these efforts is to achieve the goal of carbon-neutral global air transport (Weeks et al., 2011). The environmental performance of today's organizations is not simply a competitive advantage but also drives the development of new capabilities for the organization. This includes the ability to learn, integration between stakeholders, and the ability to innovate, especially in addressing environmental challenges (Aragón-Correa & Sharma, 2003; Jabbour & Santos, 2008). In the field of aviation, the majority of research focuses mainly on exploring technical solutions to minimize the environmental impact of this industry. These studies include the development of new aircraft designs with the goal of reducing carbon emissions and noise (Janić, 2018). In addition, selecting a suitable fleet (Lee et al., 2018) and optimizing fuel efficiency (Mak et al., 2007) are also used to reduce environmental impact.

Wehrmeyer (1996) emphasized the importance of integrating environmental management (EM) with human resource management (HRM), suggesting a close integration between the two fields. He noted that combining EM and HRM effectively faces many challenges and encouraged future research to focus on addressing these difficulties. In the same context, Milliman and Clair (1996) are known as pioneering scholars in exploring the role of HRM in implementing EM, proposing a new research direction in which HRM is considered an integral part of the environmental management process. The model of HRM practices developed by Milliman and Clair (1996) clearly points to the important role of human resources in supporting the implementation of a company's specific environmental strategy. They emphasize that these HRM practices tend to focus on environmental protection. Elements in the field of HRM are established with the goal of promoting employee participation in environmental-related activities in the workplace. This includes activities such as training programs, recruitment processes, appraisal methods, and performance management strategies, along with implementing reward policies and maintaining positive relationships with employees. Govindarajulu and Daily (2004) have shown that, through the application of these HRM elements, organizations can enhance their competitiveness and, at the same time, comply more effectively with environmental standards. The integration of HRM elements into environmental strategies has been researched and theoretically developed by Renwick et al. (2013), emphasizing the importance of combining human resource management and environmental protection in an organization.

Renwick et al. (2013) clarified that GHRM is the integration of EM into HRM. GHRM is not just the application of one or two individual solutions but is a comprehensive system, including the ongoing development, implementation, and maintenance of programs and policies that support and motivate employees in organizations to become more environmentally friendly. Within the framework of GHRM, organizations focus on creating a work environment where pro-environmental

behaviors are not only encouraged but expected as part of daily work. This includes establishing hiring policies, training and development, performance appraisals, and reward systems that support environmentally friendly behaviors. GHRM emphasizes creating awareness and understanding of the importance of environmental protection, as well as providing the necessary tools and resources so that employees can contribute to the organization's sustainability goals (Renwick et al., 2013; Pless et al., 2012). In the drive towards achieving corporate environmental goals and contributing to long-term environmental conservation, GHRM plays an essential role. This includes training and retraining employees on a regular basis so they can carry out their duties in a more environmentally responsible manner. GHRM not only involves the implementation of a series of policies and regulations but also includes the implementation of activities that help employees contribute to the benefit of both people, businesses, communities, society, and the natural environment. HRM in implementing EM standards is an important factor in proactively addressing environmental challenges (Ren et al., 2018). GHRM also has a significant influence on green behavior and environmental performance in the hotel industry (Pham et al., 2019; Ren et al., 2020). GHRM offers diverse HRM strategies designed to nurture and develop green employees, also known as employees with high environmental awareness and environmental protection actions (Luu, 2019; Pham et al., 2019; 2020). Paille et al. (2014) also assert that GHRM is often considered an important factor in building a corporate environment to encourage effective environmental performance. Research on GHRM to date has shed light on the important role of GHRM in promoting general environmental behavior in the workplace, especially in encouraging voluntary green activities (Pinzone et al., 2016; Dumont et al., 2017). However, there is a lack of research on other green behaviors, such as green knowledge sharing, which opens up opportunities to expand and enrich the research literature on GHRM and its influence on environmental protection behavior in organizations.

Green knowledge sharing is described by Lin and Chen (2017) as the process through which employees willingly share knowledge and information related to environmental protection with colleagues in their organization. This process is not just a simple exchange of information but is also an important means of disseminating environmental knowledge among employees, with the ultimate goal of enhancing common understanding and supporting environmental goals. The company's long-term goals relate to environmental protection and sustainability. Therefore, green knowledge sharing is defined as the extent to which employees actually share environmental information and knowledge with others in the same organization (Lin & Chen, 2017). When employees are fully informed and encouraged about environmental education, they become important agents in promoting positive environmental change within the organization (Bhushan & MacKenzie, 1992). Thus, it is clear that GHRM has a positive impact on green knowledge sharing (Rubel et al., 2021).

Besides, in this study, we explore the role of environmental leadership and psychological contract breach (PCB) in moderating their impact on employee green behavior. Environmental leadership is defined as the ability of leaders to encourage and support individuals and organizations towards ecological sustainability (Egri & Herman, 2000). These leaders demonstrate a deep concern for environmental protection and sustainable development (Su et al., 2020). In addition, there is a similar leadership style to environmental leadership. That is green transformational leadership, which is leaders' behavior that motivates employees to achieve environmental goals and encourages them to carry out environmental activities (Chen & Chang, 2013). Meanwhile, PCB is understood as a situation in which employees feel that the organization has not fulfilled their formal or informal commitments (Robinson & Morrison, 2000). This breach has been shown to have a negative relationship with employee commitment to the organization, as stated by Zhao et al. (2007). Therefore, in a context where attention to environmental protection is increasingly focused, this study focuses on determining the influence of the above factors on green knowledge sharing, with the goal of contributing to achieving environmental protection goals in the aviation industry.

## **1.2 Environmental Impact in Aviation industry**

### **1.2.1 International scenario**

The aviation industry has developed into one of the key means of transportation, providing quick travel solutions for millions of people around the globe and helping them cover great distances in little time. The boom in the global aviation industry is driven by a series of factors, including the expansion of international trade and the growing need for individuals to travel and explore new lands. Over the past fifteen years, the aviation industry has seen significant growth, with global flight volumes increasing by more than two-thirds, reaching an impressive figure of around 39 million flights in 2019. However, this development comes with negative consequences for the environment, as large amounts of carbon dioxide (CO<sub>2</sub>) and other pollutants are emitted. It is undeniable that, in 2019 alone, commercial airlines emitted nearly 900 million tons of CO<sub>2</sub> into the atmosphere, a huge jump from 627 million tons of CO<sub>2</sub> in 2004. By 2020, the pandemic COVID-19 has forced the cancellation of a large number of flights, leading to a temporary decline in global air travel. The direct result of this is a decrease of about 60% in CO<sub>2</sub> emissions from the aviation industry compared to 2019, according to Statista (2022).

In 2015, the United Nations launched the 2030 Agenda for Sustainable Development, a comprehensive action plan to promote development not only in the economic and social sectors but also in the environmental sector globally. In this context, the International Civil Aviation Organization (ICAO), as the leading organization in international civil aviation, has emerged as an active participant, making an important contribution to the progress towards the goal of global sustainable development. As a



professional organization, ICAO is committed to promoting economic and social benefits around the world while focusing on environmental protection.

ICAO not only demonstrates its commitment to the environment through its policies and actions but also by contributing to the implementation of almost all of the 17 Sustainable Development Goals (SDGs) set by the United Nations (2015). In particular, this organization has demonstrated its important role in promoting environmental conservation efforts, thereby contributing to the achievement of 14 out of 17 Sustainable Development Goals. This engagement reflects ICAO's deep commitment to the environment and affirms the importance of aviation in supporting sustainable development.

It is expected that emissions from international aviation, which affect both global climate and local air quality, will witness growth through 2050. This increase is forecast to range from 2 to 4 times the 2015 figures, depending on the type of emissions considered (CO<sub>2</sub>, NO<sub>x</sub>, or PM) and the specific analysis scenarios applied in the assessment. With technological developments in the aviation sector, it is predicted that the area affected by day-night noise levels around airports will reach a state of equilibrium by 2030 and remain stable since then. However, it should be noted that uncertainty about future aviation demand is still much greater than the ability to improve technology and operational efficiency (ICAO, 2019).

Forecasts show that there will be progress in increasing the fuel efficiency of international aviation by 2050. However, the implementation of the International Civil Aviation Organization's (ICAO) target to increase fuel efficiency by 2% per year appears to face major challenges. In particular, achieving the carbon-free growth target after 2020 seems to be even more difficult. Although sustainable alternative fuels are seen as a potential solution to this challenge as the aviation industry continues to grow, the current lack of comprehensive data hinders their accurate assessment and their long-term applicability. At the same time, adopting alternative fuel solutions in the near term may not be realistic, and their implementation remains uncertain. Market-based initiatives were expected to help address these shortcomings; however, implementation of these initiatives has been delayed, unlikely to begin before 2020 (ICAO, 2019).

### **1.2.2 Vietnam situation**

The air transport industry, one of the important economic pillars representing a modern and advanced form of transport, is gradually becoming indispensable in many aspects of social, security, and national life. national room. Since its establishment in 1956, Vietnam's aviation industry has witnessed significant progress, reflected in each stage of development, making an important contribution to meeting transportation needs while promoting the process of industrialization, modernization, and stronger international integration.

In addition, socio-economic development due to Party and State policies has created favorable conditions for the strong development of the aviation industry. The transformation of the aviation industry in Vietnam is carried out in parallel with the country's overall development trend, reflected in the expansion and upgrading of aviation infrastructure. However, the facilities of many airports that were built several decades ago are still facing management and technology challenges, demonstrating the need for improvement and strong investment in the aviation industry to meet the needs of development and integration.

Recently, Vietnam has witnessed significant development in the aviation industry with the improvement and modernization of its fleet. Infrastructure has been significantly reconstructed and upgraded, along with streamlining the management structure and expanding the network of flight routes, both domestic and international. In particular, Vietnam Airlines, the national airline, has made great strides not only in expanding passenger transport services but also in enhancing cargo transport capabilities, contributing to the industry's overall achievements in both of these areas.

However, in the context of the regional and global economies facing many difficulties and challenges, Vietnam Airlines cannot avoid market fluctuations. Despite efforts to improve, compared to the fierce competition of the international aviation industry, aviation infrastructure and technology in Vietnam have not really reached the desired development speed. This is partly because Vietnam is still a country in the process of development, and attracting investment capital for the industry still faces many challenges, affecting the competitiveness of the domestic aviation industry. As an important industry that helps connect Vietnam to the world and links regions within the country, as well as an important source of revenue for the country, Vietnam's aviation industry faces an urgent need to find and apply more effective solutions to meet the country's rapid development requirements and enhance its position in the region and the world.

Vietnam and a number of other countries have successfully managed the COVID-19 epidemic, and as of March 15, 2022, Vietnam has reopened international flights, actively supporting the tourism and aviation sectors. In April 2022, the number of international visitors to Vietnam skyrocketed to 10.44 million, 2.4 times higher than the previous month and 5.2 times higher than the same period last year. In total, in the first quarter of 2022, Vietnam welcomed 192.4 million international visitors, an increase of 184.7% compared to the first quarter of the previous year. Notably, 88.6% of these are overseas Vietnamese; this number increased nearly four times compared to the previous year. An increase in travel and tourism demand has been clearly noted in the first months of 2022, with the aviation industry playing a central role in the economic recovery through the opening of many new routes.

In April 2022, the number of passengers transported by air increased by 45% over the previous month and 40.5% over the same period last year, while the number of

passengers transported increased by 47% and 52%, respectively. 8%. In the first 4 months of 2022, compared to the same period last year, transport and passenger turnover by air increased by 26.3% and 36.0%, respectively, although compared to the same period in 2019—a year not affected by the COVID-19 epidemic—this number has decreased by 16.9% and 44.7%. These figures reflect that, despite the recovery, Vietnam's aviation industry still needs more time to fully return to normal operating status before the pandemic.

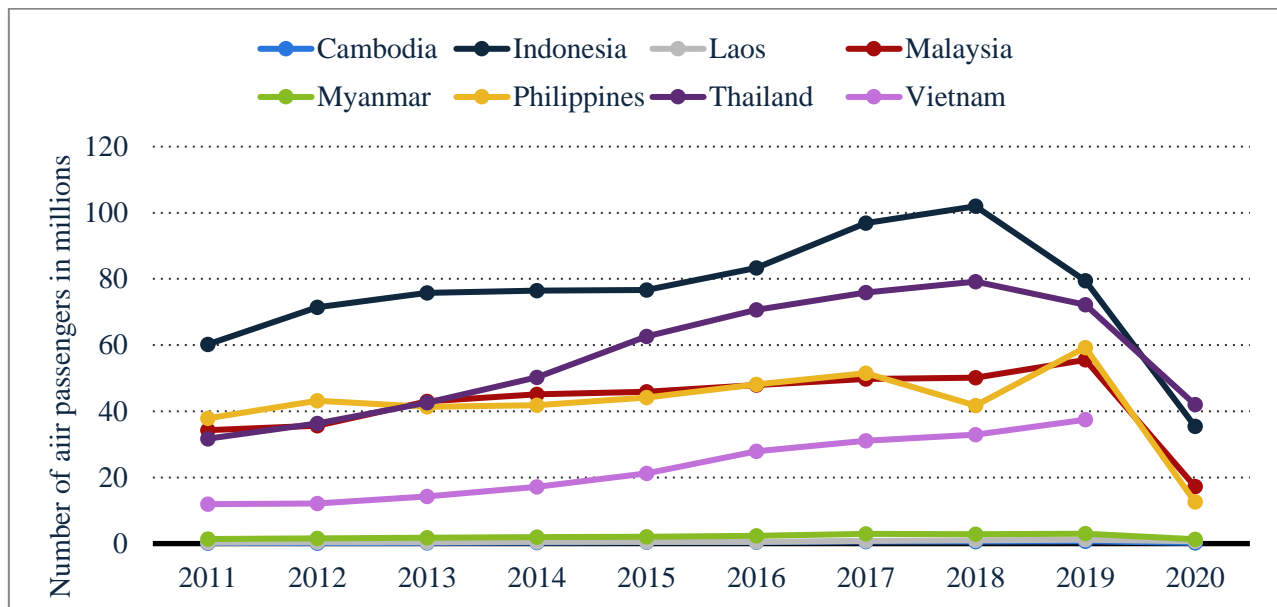


Figure 1: Estimated domestic air passenger traffic in ASEAN 2011-2020 by country (Source: Statista, 2022a)

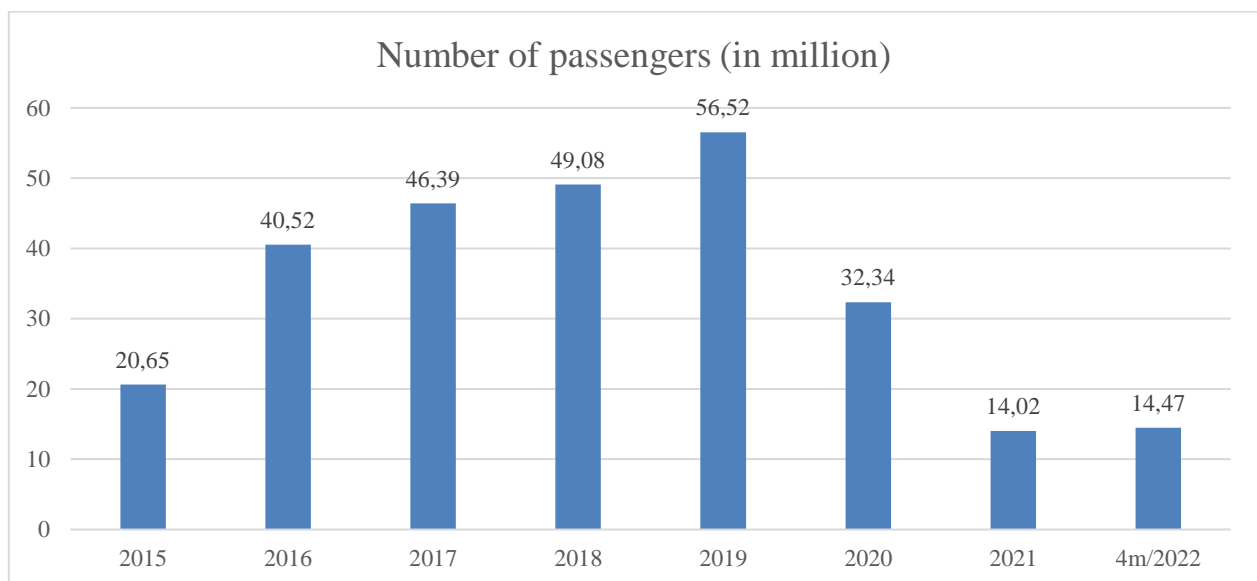


Figure 2: Number of passenger carried by airway in Vietnam from 2015 to 2022 (4 first months)

*(Source: Statista, 2022)*

The air transport sector in 2023 has recovered and received positive growth signals, shown in aspects such as airlines continuing to promote operations and the international flight network being restored. and expansion, the domestic aviation market has completely recovered and grown compared to 2019, and the international market is gradually recovering and is expected to soon reach 2019 levels in 2024.

The total air transport market in 2023 is estimated to reach approximately 74 million passengers, an increase of 34.5% compared to 2022, equal to 93.6% compared to 2019 (before the COVID-19 epidemic), and 1.1 million tons of goods, down 9.3% compared to 2022, equal to 87.3% compared to 2019. International passenger transport reached 32 million passengers, an increase of 1.7 times compared to 2022, equal to 77% compared to 2019 (CAAV, 2023).

### **1.3 Research problem**

Previous empirical research was reviewed using the databases Scopus and Web of Science (see Appendix 1). This study solves some research problems as follows:

First, a series of empirical studies were conducted to explore the influence of GHRM on pro-environmental behavior, with special attention to voluntary green behaviors (Pinzone et al., 2016; Pham et al., 2019; 2020). Some other studies have expanded the scope of research to include the impact of GHRM on organizational environmental performance (Ren et al., 2020). Many scholars (Dumont et al., 2017; Guerci et al., 2016; Song et al., 2021; Pham et al., 2020; Renwick et al., 2016), have unanimously emphasized GHRM as an advanced strategy that helps organizations not only promote green behavior among employees but also significantly improves overall environmental performance. These works all show that, through the implementation of GHRM policies and practices, businesses can facilitate a positive work environment that supports and encourages employees to participate in activities for environmental protection not only within the scope of work but also in daily life. This includes adopting measures such as environmental training, developing policies that reward green behavior, and creating a common norm in which environmental attention is considered a core value. Thereby, GHRM not only contributes to environmental protection through raising employee awareness and action but also creates competitive benefits for businesses by improving environmental performance and creating a green, sustainable company image for the public and stakeholders.

Based on the principles of social exchange theory, implementing GHRM policies in an organization is found to have the potential to encourage employees to perform and share pro-social behaviors. environmentally friendly. When employees are equipped with knowledge and skills about environmental protection through training courses

and are recognized for their efforts through rewards from the organization, they often feel happier and more satisfied. This facilitates a positive cycle where employees feel encouraged to give back to the organization by sharing their environmental knowledge with colleagues, thereby strengthening the environmental culture internally. Although many previous studies have emphasized environmentally friendly behaviors, the relationship between GHRM and sharing knowledge about environmental protection has not been thoroughly explored (Wong, 2013). GHRM policies such as environmental training and recruitment of environmentally conscious human resources, recognition, and reward activities are said to have a positive impact on green knowledge sharing, serving as a foundation for sustainable development of the organization. Previous studies have unanimously shown that the role of environmental leadership is an important factor influencing employee behavior in organizations. Specifically, environmental leadership promotes employee autonomy, encouraging them to freely express their views on the environment within the framework of their job responsibilities (Graves et al., 2013; Singh et al., 2020). At the same time, the influence of GHRM on environmentally friendly behavior and environmental job performance in the hotel sector has been proven (Kim et al., 2019; Pham et al., 2019; Ghouri et al., 2020). According to social learning theory (Bandura, 1977), leaders' environmentally friendly attitudes and behaviors have the potential to set an example, encouraging employees to follow and share their environmental knowledge, including using social media platforms to spread green messages. Therefore, the role of environmental leadership is undeniable in encouraging employees to share green knowledge, creating a solid foundation for a working environment towards sustainable development (Su et al., 2020).

However, psychological contract breach (PCB) is perceived to have a negative impact on employee behavior. Studies (Lee et al., 2014; Bal et al., 2008) have shown that PCBs have negative consequences for employee behavior, including green knowledge sharing. Based on the principles of social exchange theory (Blau, 2017), employees' perceptions of the company's failure to comply with its commitments may minimize their willingness to engage in pro-social behavior. environment, such as sharing green knowledge. Therefore, there is a need for a deeper understanding of how environmental leadership and PCBs impact GHRM adoption and the process of sharing green knowledge within the organization.

Finally, the service industry, and especially the airline industry, requires more detailed empirical research. The aviation industry has shown interest in environmental issues, however, much of the current research and discussion focuses on the idea of "green aviation", focusing more on engineering than people. From NASA's perspective, the concept of green aviation refers to the aviation industry recognizing and taking responsibility for the impact it has on the environment, including not only its carbon footprint and other emissions but there is also the problem of noise pollution. This emphasizes the aviation industry's obligation to minimize negative impacts through

the adoption of environmentally friendly technologies, improved energy efficiency, and the development of sustainable operating methods to protect the natural environment. Research works show that the majority of works on green human resource management are carried out in the context of the manufacturing industry (Pham et al., 2019; Amui et al., 2017). However, in the aviation industry, a number of research related to green aviation (Janic, 2018; ADB, 2009) have been published. Despite this, this industry still lacks in-depth empirical studies to explore the effects of GHRM, environmental leadership, and psychological contract breach on employees' environmentally friendly behavior, such as sharing green knowledge.

Thus, previous work has some gaps:

- Gap 1: The contributions of GHRM policies towards employees' GKS are less paid attention to.
- Gap 2: There are lack of research of the role of PCB in the relationship between GHRM policies and GKS.
- Gap 3: The role of EL in the relationship between GHRM policies and GKS needs to be studied more.
- Gap 4: The role of GHRM policies towards employees' green behaviors in the aviation industry is under explored.

From the existing literature, **the research problem** is to investigate the relationship between green human resource management and green knowledge sharing; and the roles of environmental leadership and PCB in the aviation industry.

#### **1.4 Research questions and research objectives**

The main goal of the research is to investigate factors impacting employees' green knowledge sharing, including investigating the role of GHRM, environmental leadership, and PCB in boosting employees' green knowledge sharing.

##### ***Research questions***

- **RQ1:** Are there direct effects of GHRM, environmental knowledge and eco-initiatives, environmental leadership, and PCB on green knowledge sharing?
- **RQ2:** Are there the mediating roles of environmental knowledge and eco-initiatives towards the effect of GHRM on green knowledge sharing?
- **RQ3:** Are there moderating roles of environmental leadership and PCB in the connection from GHRM to green knowledge sharing?

##### ***Research Objectives:***

- **RO1:** To investigate the direct effects of GHRM, environmental knowledge and eco-initiatives, environmental leadership, and PCB on green knowledge sharing.

- **RO2:** To investigate the mediating roles of environmental knowledge and eco-initiatives towards the effect of GHRM on green knowledge sharing.
- **RO3:** To investigate the moderating roles of environmental leadership and PCB to the connection from GHRM to green knowledge sharing.

## 1.5 The structure of the thesis

This thesis is organized into nine chapters along with appendices, to provide a comprehensive overview of the research undertaken.

The first chapter, "Introduction", begins with a brief presentation of the thesis, including the rationale and need for the study, as well as setting out the research questions and specific objectives. In addition, this section also briefly introduces the overall structure of the thesis.

The second chapter, "Literature Review", delves into identifying and clarifying key concepts such as GHRM and green knowledge sharing. At the same time, this chapter also describes the definitions of environmental knowledge, eco-initiatives, environmental leadership, and psychological contract breach, as well as explores and analyzes related organizational theories.

Chapter three focuses on establishing the research framework and developing hypotheses based on the literature review presented.

In the fourth chapter, "Research Methodology", the thesis introduces the use of mixed methods, combining both qualitative and quantitative research, and clarifies how to do it step by step.

Chapter five describes in detail the results obtained from the qualitative research, including how to conduct in-depth interviews and develop the questionnaire.

Chapter six continues with the presentation and analysis of results from the quantitative research section, evaluating the relationship between GHRM and other related factors stated in the research hypothesis.

The seventh chapter discusses the main findings from the study, providing an insight and assessment of their implications.

Chapter eight addresses the contribution of the thesis to both theory and practice, emphasizing the importance and influence of research in the field of GHRM and environmental protection.

Finally, chapter nine concludes the thesis, mentions the limitations of the study and provides suggestions for further research.

The appendix includes references, a list of published works, the author's curriculum vitae and other supporting documents, providing additional information and support for the thesis.

## **2. LITERATURE REVIEW**

### **2.1 Theoretical background**

#### **2.1.1 Social Exchange Theory**

The social exchange theory proposed by Blau (2017) can be interpreted as follows: Individual behaviors in organizations are understood as part of the social exchange process, where the behavior of leaders and employees interact with each other. Blau (2017) emphasizes the notion that these interactions create a sense of obligation to reciprocate, reflected in recognition and reward for beneficial actions. This perspective is as a mutually beneficial process, leading to a state of equilibrium in exchange.

Later studies have also exploited and expanded this theory. Emerson (1976) and Jiang et al. (2012) have provided additional perspectives, strengthening social exchange theory. In the field of HRM, Snape and Redman (2010), as well as Pinzone et al. (2016), have used this theory to analyze and explain employee relationships and interactive behaviors in the workplace. Additionally, Ren et al. (2020) applied social exchange theory in their study of the link between GHRM and leadership.

Another aspect mentioned by Zhao et al. (2007) is the negative relationship between employees' perceptions of unfair behavior (PCB) and their behavior in the organization, also based on the basis of social exchange theory.

Cropanzano and Mitchell (2005) emphasize that social exchange theory (SET) provides a powerful conceptual framework for analyzing and understanding workplace behaviors. Specifically, Cropanzano and Mitchell (2005) identified three important forms of reciprocity within this framework:

1. **Transaction-based reciprocity:** This is the concept of reciprocity as a series of transactions between individuals, where each action by one person can lead to a response from another. In other words, in a work environment, each action of an employee or manager can stimulate or be responded to by the actions of others, creating a chain of reciprocal reactions.
2. **Reciprocity in folk beliefs:** This section explains the belief that each person will receive what they deserve, reflected in "social assumptions" about fairness and justice. The way this belief influences workplace behavior is through the formation of expectations that positive efforts and contributions will be rewarded.
3. **Reciprocity as a core value:** This is about emphasizing the importance of adhering to the principle of reciprocity as a cultural norm. Those who do not comply with this norm may face punishment or exclusion from the group. This norm is inherently part of the "cultural imperative", requiring people to behave fairly and responsibly towards each other, and is an important part of the social and cultural structure that is transmitted to each other achieved through generations.



Social exchange theory, an important concept in human resource management research, is often used to analyze how the implementation of HRM policies affects employee behavior and interactions within an organization (Snape & Redman, 2010). At the core of this theory is an in-depth exploration of the influence of the principle of reciprocity in building and maintaining sustainable relationships between employees and other stakeholders in the organization, including relationships between employees and management (Paillé & Mejia-Morelos, 2014). In particular, this theory mentions that employees have a positive view of HRM policies, thereby improving their commitment and affection towards the organization, encouraging them to perform beneficial behaviors for organizations such as sharing green knowledge (Kehoe & Wright, 2013). In the context of GHRM, social exchange theory has been applied to study environmental performance (Ren et al., 2020) and how the application of GHRM policies can impact employee behavior and environmental performance (Yusliza et al., 2019; Al Kerdawy, 2019).

Within the framework of the stated objective, the present study focuses on exploring the link between GHRM and the process of sharing environment-related knowledge among employees. It is expected that effective implementation of GHRM strategies will positively influence employee behavior, encouraging them to engage more strongly in sharing green knowledge with colleagues, thereby reflecting a model of two-way interaction between employees and the organization. In the context of environmental protection, the process of sharing green knowledge is not just a single activity but also an important part of management research, attracting widespread attention in academia and practice.

In my research, social exchange theory is applied to elucidate the impacts of GHRM and psychological contract breach on green knowledge sharing.

### **2.1.2 Social Learning Theory**

In the field of organizational research, social learning theory was introduced by Bandura (1977), outlining the profound influence of leaders on individuals in the organization. According to this theory, employees in an organization often learn and follow behavior based on the charisma and influence of a leader, especially when the leader is shown to share knowledge and information. Bandura (1977) emphasized the role of observation and simulation in the learning process. This theory holds that learning is not only the reproduction of behavior, attitudes and emotional responses but also the perception and learning from social interactions and the surrounding environment. This process involves observing and replicating patterns that are perceived as attractive and trustworthy (Brown & Trevino, 2006).

Lave and Wenger (1991) expanded the concept of learning in this theory, defining learning as the process of participating in social activities, thereby facilitating the sharing of knowledge and in-depth understanding more about the world. This theory emphasizes that learning is not only an individual cognitive process but also

interaction and cooperation in a social environment, with the goal of sharing and developing common knowledge. Social learning theory, according to Bandura (1977), provides insight into how leadership can influence the pro-environmental behavior of employees within an organization. According to this perspective, people working in organizations are influenced by the behavioral patterns they observe in various leadership positions, including team leaders, middle managers, and top leaders. As Ahmad et al. (2021) pointed out, the behavior of workers not only reflects their work, but is also shaped and regulated by the leaders they observe and learn from within the organization.

In an organizational context, leaders' understanding and commitment to environmental protection can initiate, direct, and support the implementation of environmental education initiatives, while at the same time they become role models in applying environmentally friendly behaviors. This enables employees in this organization to observe, learn, and emulate these behaviors. Therefore, within the framework of the current study, social learning theory is applied to analyze the influence of environmental knowledge on green knowledge sharing and environmental leadership, clarifying how through which environmental knowledge and practices are communicated and promoted within the organizational environment.

### **2.1.3 Psychological Contract Theory**

Psychological contract theory, developed from the core principles of social exchange theory, was expanded by Schein (2015). The main purpose of this theory is to explore and clarify the subjective nature of the relationship between employees and managers in an organizational environment. It specifically focuses on employees' personal perspectives and interpretations of the informal commitments they believe their managers have made to them (Robinson & Morrison, 2000). The psychological contract is not only a cognitive phenomenon but can also be understood as a process between perception and interpretation, thereby defining and maintaining the bond between employees and their organization. This leads to an emphasis on understanding implicit agreements, which do not need to be formally documented in employment contracts. Thus, the psychological contract involves employees' beliefs about what they expect to receive - or think they deserve to receive - based on a perceived commitment on the part of the employer. These beliefs are based on the assumption that leadership is committed to delivering these elements. An important requirement for an expectation to be considered part of a psychological contract is that it must arise from how the employee interprets commitments, whether implicit or explicit, from his or her employer.

The psychological contract, by its nature formed by employees' personal perceptions of what they expect from their organization, is deeply subjective. The basis for these expectations lies in the company's provision of benefits and rewards, and their achievement by employees, which play a central role in determining the employment

relationship. The development of this relationship over time is not limited to economic transactions but also extends to factors such as mutual trust, respect, and adherence to behavioral standards, all are other important aspects that are integrated into the continuous communication process between employees and the company (Rousseau, 1989). There are essentially two recognized types of psychological contracts: transactional contracts and relational contracts. Transactional contracts are mainly based on financial and economic transactions, with specific, clear terms and conditions, based on the principle of mutual benefit and balance between employee contributions and rewards from the organization, such as fair wages, guaranteed short-term employment, and a safe work environment. In contrast, relational contracts are based on emotional and social values, are open-ended, with significant investment from both parties, and are characterized by high levels of commitment, confidence, and stability. In this type of contract, the organization expects employee loyalty, commitment, and active participation, and in return, the organization provides long-term employment stability, training, and development opportunities, as well as facilitates a sense of belonging to a community.

According to research by Rousseau and Tijoriwala (1996), an organization can express its commitment through four specific categories of commitment to employees. These commitments include the provision of specific benefits, a principle of good faith and fairness in dealings, intrinsic elements of work that provide satisfaction, and a positive work environment and support. These elements are considered core to every psychological contract, and their specificity in each individual's contract is unique, reflecting their unique needs and expectations of the organization. In the context of psychological contracts, these commitments encourage participation and volunteer behavior, key characteristics of relational contracts. This leads to a high likelihood that the psychological contract between the employee and the organization will be relational in nature (Farmer & Fedor, 1999 ), where long-term commitment and interaction between the employee and the organization are emphasized.

Both Social Exchange Theory (SET) and Psychological Contract Theory (PCT) emphasize two core principles: the interactive process of exchange and the principle of reciprocity. These principles assert that the psychological contract is not simply an agreement, but also a multi-dimensional exchange mechanism between employees and the organization (Rousseau,1989). Cropanzano et al. (2017) further expand on this concept by showing that a strong and positive exchange relationship between employees and the company leads to the development of loyalty and commitment from employees, through which both sides gain benefits. This reciprocity, considered the foundation of all employment relationships, is essential for understanding and describing the link between how employees evaluate their psychological contract and their next attitudes and behaviors (Bordia et al., 2017; Cropanzano et al., 2017; Doden et al., 2018). Specifically, within the framework of studying green behavior in the workplace, Psychological Contract Theory provides a framework for further research

on how psychological contract breach can affect employee green knowledge sharing, emphasizing the importance of emotional and feeling factors in labor relations.

#### **2.1.4 Resource Based View Theory**

The resource-based view (RBV) of organizations holds that a company's competitiveness and success depend on how effectively the organization exploits its strategic resources. These resources need to be valuable, rare, and difficult to copy by other companies (Barney, 1991). In addition, resources become important when they are difficult to obtain, and competitors attempting to copy or find high-cost alternative resources to perform similar tasks, help the organization can sustain long-term excellence and sustainable competitive advantage from those important resources (Amit & Schoemaker, 1993).

Within the framework of the Resource-Based View (RBV), leaders and employees are viewed as important resources that help create competitive differentiation for the organization. For GHRM, developing, motivating, and opening up opportunities for employees to demonstrate their excellent performance is considered the key to maintaining a competitive advantage and achieving peak performance (Boxall, 1996). Human capital, embedded in complex social structures, fits the RBV criteria of providing value, being rare, and difficult to copy, thereby driving performance and advantage competition (Takeuchi et al., 2007). The special focus on leadership as a core resource shows the link between effective environmental management and RBV (Zhou et al., 2018). Specifically, green transformation leadership, through encouragement and inspiration, facilitates innovation and employee engagement in realizing the organization's environmental vision, thereby improving employee performance innovation drive and firm performance (Mittal & Dhar, 2016). Previous studies have confirmed the important role of green leadership in improving business performance, thereby allowing employees to work more effectively at all levels, from individuals, and groups to organizations, and at the same time promote innovation and voluntary behavior (Barrick et al., 2015; Chen & Chang, 2013; Choi et al., 2019; Ahmad et al., 2022). The RBV provides a useful explanatory framework for examining the relationship between environmental leadership and employee environmental behaviors such as sharing green knowledge and participating in eco-initiatives.

## **2.2 Concepts and previous studies**

### **2.2.1 Human Resource Management**

Human Resource Management (HRM) is a systematic approach focused on effectively managing and enhancing an organization's human capital. It operates on the principle that the workforce is a key driver of a company's success. HRM involves the management of various employment aspects, such as recruitment, training, development, and compensation, ensuring they align with the company's goals. It also

involves managing employee relations and ensuring compliance with employment laws. The main goal of HRM is to elevate employee performance to meet the strategic objectives of the employer, while also taking care of employee wellbeing. This discipline is flexible, adapting to changes in the broader economic, technological, and societal landscapes (Gary, 2020). In any organization, employees are considered the most valuable asset (Schuler, 1992). The special point here is that different from other physical elements in the organization, human resources are seen as a resource capable of constantly developing and changing (Cleveland et al., 2015). This emphasizes the importance of comprehensive human resource management, through the implementation of special human resources programs to serve and support employees in the organization. One of the main goals of human resource management is to bridge and optimize the relationship between employees' personal interests and the overall goals of the organization. Through creating a consensus and integration between employees' personal goals and organizational goals, maximum work efficiency and job satisfaction can be exploited (Schuler, 1992).

In addition, organizations investing in employees' personal development not only benefits themselves but also enables employees to contribute to the overall development of the organization. This investment process creates a positive loop through which both employees and the organization grow together and achieve sustainable success. These efforts not only help strengthen organizational capacity but also promote employee satisfaction and engagement with the organization, thereby creating a solid foundation for long-term success (Cleveland et al., 2015).

In recent times, the heightened focus on sustainability and environmental consciousness has guided both researchers and practitioners to view HRM as a pivotal tool for strategy and execution in advancing green changes within organizations (Jackson & Seo, 2010). Such a shift influences not just the organization but also extends to wider economic and societal realms (Mendoza-del Villar et al., 2020; Milliman & Clair, 1996). The HRM practices become a vital role in embedding sustainability into organizational frameworks and policies, thereby encouraging eco-friendly practices among employees (Taylor et al., 2013; Yong et al., 2020).

### **2.2.2 Green Human Resource Management**

Green Human Resource Management (GHRM) refers to the incorporation of environmental management principles into human resource management practices (Renwick et al., 2013). According to Ren et al. (2018), the objective of GHRM is to enhance employees' comprehension, expertise, abilities, and drive in order to enhance environmental performance in enterprises. Thus, GHRM may be regarded as the endeavors of HRM to uphold and facilitate environmental conservation. Dumont et al. (2017) have identified many HRM practices that are linked to environmental responsibility.

In the context of GHRM, it is crucial to establish hiring strategies that attract candidates who share the organization's commitment to environmental principles. Additionally, GHRM should emphasize on developmental initiatives and performance incentives that recognize and reward individual employee efforts toward environmental sustainability. Moreover, there should be a strong emphasis on implementing training programs designed to increase environmental consciousness among staff members, which in turn promotes a culture of environmentally responsible behavior within the workplace (Daily & Huang, 2001; Pless et al., 2012; Renwick et al., 2013).

Many researchers have examined GHRM across a variety of functions. Renwick et al. (2013) described GHRM as including aspects such as green training, green pay and reward systems, green recruitment, and green performance management. Dumont et al. (2017) also address green recruitment strategies and green development, implementation, and reward programs. Siyambalapitiya et al. (2018) mentioned to eight functions of GHRM including green recruitment, green selection, green training and development, green compensation and rewards, green performance evaluation, green employee relations and collective bargaining, green grievances handling. The five key components often emphasized include green recruitment, green selection, green training and development, green performance management, and green pay and bonuses, as pointed out by Yong et al. (2020). Recent studies have not only focused on how GHRM is implemented in organizations, but also highlighted the impact of GHRM on employees green outcomes (Muisyo & Qin, 2021). GHRM is believed to influence employee green behavior (Mukherjee & Chandra, 2018; Pham et al., 2019), environmental performance (Kim et al., 2019), and improve sustainability (Mousa & Othman, 2020). Many research works focus on studying GHRM in relation to employee green behavior in many countries, especially developing countries (Yong et al., 2020; Pham et al., 2019a). Therefore, research on the relationship between GHRM and specific green behaviors of each employee, such as sharing green knowledge, also needs to be paid more attention (Pham et al., 2019a).

### **2.2.3 Green knowledge sharing**

In a green context, many researchers have examined the sharing of green knowledge related to environmental issues in business organizations. They agreed that green knowledge sharing is clarified as the process by which employees share environmental knowledge and understanding with each other within an organization. Specifically, as Lin and Chen (2017) pointed out, green knowledge sharing is the spreading of environmental knowledge among the employee community. According to Rubel et al. (2021), this contributes to enhancing organizational efforts towards sustainability goals. Aboramadan et al. (2022) also emphasized that green knowledge sharing includes the exchange of environmental knowledge and experience among employees. In summary, although there are different ways of expressing it, it can be seen that all agree with the general view that sharing green knowledge is an important

process in which knowledge about environmental protection is shared and exchanged to support the implementation of environmental protection solutions and achieve the organization's sustainable development goals (Bhatti et al., 2020).

In recent times, academic interest in GHRM and its influence on environmental protection actions in organizations has been increasing. Studies have proposed many detailed recommendations to expand the scope of research in this area (Chaudhary, 2020; Renwick et al., 2013; Pham et al., 2020). Specifically, Pham et al. (2020) have identified a series of detailed proposals to promote sustainable development in human resource management, to supplement and enrich the existing literature on GHRM. One of those recommendations includes increasing research on the impact of GHRM on the outcomes of environmental protection activities in the service sector, such as in the aviation industry, to provide greater insight and better shape for this field.

Mousa and Othman (2020) have expressed support for expanding research in the service industries. In another study related to the banking industry, it was found that GHRM can contribute to improved environmental knowledge and information sharing among employees (Rubel et al., 2021). Besides, Renwick et al. (2013) emphasized the need to increase the number of studies on GHRM, especially in the Asian region. Although there has been a significant increase in the amount of research on GHRM, especially on the relationship between GHRM and employee environmental performance, there is still a lack of emphasis on the link between GHRM and the sharing of environmental knowledge. Applying social exchange theory, this thesis advances the view that GHRM has the ability to positively impact the sharing of initiatives and knowledge about environmental protection within organizations.

#### **2.2.4 Environmental knowledge**

Environmental knowledge can be understood as a comprehensive understanding of the facts, ideas, and associations related to the natural environment and its major ecological systems (Fryxell & Lo., 2003). Afsar et al. (2016) analyzed and interpreted environmental knowledge, emphasizing the importance of recognizing the impact of human actions on the natural environment, such as the use of toxic chemicals and product packaging. The product is not environmentally friendly. They describe environmental literacy as awareness and understanding of these impacts. This is also consistent with the research of Fryxell and Lo (2003), who said that environmental knowledge is not only awareness but also a deep understanding of information, ideas, and how elements in the environment nature and ecosystems interact with each other. They believe that this understanding covers many types of knowledge, from basic to complex, helping people identify and solve environmental problems effectively. In addition, workers with high environmental awareness and understanding can translate that knowledge into practical action, demonstrated through the adoption of environmentally friendly measures and behaviors at work and daily life (Amad et al., 2021). This shows the close connection between knowledge about the environment

and the actual implementation of environmental protection measures. Additionally, it is clear that an individual's specific environmental knowledge is more strongly related to support for pro-environmental behavior than just awareness of environmental issues (Ones & Dilchert, 2013). They also emphasize that making it easier to take environmentally friendly actions can be more effective than environmental knowledge and educational interventions.

When lacking accurate and complete knowledge about the environment as well as when faced with conflicting information, individual participation in environmental protection activities can be negatively affected. A Canadian study conducted by Kennedy et al. (2009) reflected this situation, with results showing that more than 60% of survey participants felt their efforts to protect the environment were limited due to a lack of knowledge. Lack of information or misconceptions about environmental issues not only hinders positive behavior but also leads to ineffective decisions in protecting the environment. This lack of understanding not only dilutes efforts to protect the environment but also causes unwanted negative consequences. However, Barber et al. (2009) highlight that with higher levels of awareness and knowledge about the environment and related core issues, individuals are more likely to engage in responsible actions. more responsible. environmental responsibility. This shows the importance of improving environmental knowledge in the community to promote positive behavior to protect the environment.

### **2.2.5 Eco-initiatives**

Eco-initiatives, as defined by Ramus and Steger (2000), refer to any actions undertaken by workers with the intention of enhancing the environmental performance of the organization. Boiral and Paillé (2012) defined eco initiatives as voluntary actions and suggestions that attempt to enhance environmental performance. Ramus and Killmer (2007) and Daily et al. (2009) contend that employee environmental efforts play a crucial role in the successful implementation of sustainability practices inside a firm. Multiple studies have demonstrated that employee environmental efforts exert a beneficial impact on the efficacy of an organization's environmental preservation endeavors. Raineri et al. (2016) highlight that employee initiative originates at the individual level. This suggests that the social environment in the area, as demonstrated by interactions among peers and dynamics within work groups, should encourage, rather than impede, the sharing of knowledge.

It was emphasized that employee eco-initiatives contribute significantly to the eco-innovation and greening of organizations (Ramus and Killmer, 2007). They achieve this by reducing environmental impact, solving environmental problems, and creating eco-efficient products or services. In general, in an organization, individual employees' eco-initiatives and environmental protection practices play an extremely important role in most activities (Boiral & Paillé, 2012; Raineri et al., 2016; Ones & Dilchert, 2013). These individual efforts are credited with having a more positive



impact on the environment than other initiatives. Finally, Paillé et al. (2014) note that these eco-initiatives are voluntary actions taken by employees, emphasizing their importance in the organization's environmental protection efforts.

### **2.2.6 Environmental leadership**

Environmental leadership is defined as the ability to influence individuals and organizations toward achieving the long-term goal of ecological sustainability (Zhang & Ma, 2021). Leaders' actions both encourage subordinates to carry out environmental protection activities that are highly effective and go beyond what is required, as well as motivate subordinates to care about and complete environmental goals (Chen & Chang, 2013). In fact, these environmental leaders themselves have also taken environmental protection actions. In an organization, the behaviors of these leaders become examples for their employees to look up to. These workers, in turn, will carry out strong environmental protection activities and, at the same time, be willing to creatively participate in green actions (Haddock-Millar et al., 2016). Xiao et al. (2017) emphasized the role of transformational leadership in stimulating employees to achieve high performance and encouraging knowledge sharing within the organization. This leadership style is mentioned as one of several leadership models that have been researched to better understand how leadership affects job performance. Studies, such as that of Bryant (2003), have effectively demonstrated the powerful influence of key elements of transformational leadership, including the ability to attract and inspire, on the spread of radiate knowledge. Therefore, the green transformational leadership style is considered a leadership style that targets environmental protection (Chen & Chang, 2013). In addition, environmental leadership has the ability to create a positive work environment, enhance employee autonomy, increase adoption of the organization's values and principles, and support employees in their expressing their views on work-related environmental issues, as reported by Graves et al. (2013) pointed out. It is clear that companies wishing to develop environmental responsibility will consider promoting environmental leaders (Papagiannakis & Lioukas, 2012). GHRM activities with the support of green leadership will encourage employees to participate in environmental protection programs (Roscoe et al., 2019).

The findings of Boiral et al. (2009) underscore a pivotal concept in environmental management within organizations, emphasizing the indispensable role of managers and leaders in actively engaging in environmental protection efforts. Direct and active participation enables them to understand practical issues more deeply, which in turn facilitates informed adjustments and decision-making processes tailored to specific environmental contexts (Dirks & Ferrin, 2002). By actively partaking in environmental activities, leaders not only lead by example in the implementation of these activities but also play a crucial role in disseminating environmental knowledge. Usually, within an organization, employees view knowledge and information as vital assets that give them a competitive edge. This perspective is used to secure more

projects, leading to increased earnings. As a result, employees are often hesitant to share their knowledge and information with others, unless they are strongly motivated or receive proactive encouragement from leadership at various levels (Ma et al., 2014).

Moreover, the participation of environmental leaders in these activities creates a culture of openness and collaboration. As Riva et al. (2021) suggested, this approach engenders a sense of respect, encouragement, and motivation among employees. It cultivates an environment where employees feel valued and heard, leading to a greater willingness to share knowledge and ideas (Teh & Yong, 2011). This positive atmosphere is vital for the dissemination and exchange of knowledge, which is essential for the collective effort in environmental protection and sustainable practices within the organization.

### **2.2.7 Psychological contract breach (PCB)**

The concept of "psychological contract" refers to an informal and unrecorded set of views that both employees and the company hold about each other's expectations and obligations in the current working relationship. This is an interactive understanding of what each party is expected to give and receive in return, a tacit understanding between the two parties. This contract, in contrast to official written agreements or legal contracts, embodies the underlying expectations, values, and responsibilities that an individual perceives as integral to their affiliation with the organization. The concept encompasses a set of anticipated responsibilities and commitments that are not specifically articulated but are understood to be integral to the comprehensive agreement between the two parties (Rousseau, 1989).

From an employee's standpoint, a psychological contract might be perceived as either fulfilled or breached. This view depends on whether individuals perceive that their employer has fulfilled the unspoken expectations of their shared connection. The employee's subjective evaluation of the terms and circumstances of the agreement determines whether the contract is fulfilled or breached (Robinson, 1996). Psychological contract fulfillment occurs when employees perceive that the organization has successfully met the majority of its promises and obligations (Lee et al., 2011). Conversely, employees see a breach of the psychological contract when they believe that the organization has failed to uphold one or more of its prior promises and obligations towards them (Morrison & Robinson, 1997). The term "psychological contract breach" refers to an employee's perception of the degree to which their firm has failed to fulfill its obligations (Robinson & Rousseau, 1994). In addition, Zhao et al. (2007) discovered that when workers perceive a breach, it has a negative impact on their dedication to the firm. This view is often seen as undesirable and can have an effect on the loyalty of the organization's members. Additionally, breaching a psychological contract can also affect the performance of employees (Bal et al., 2008). These breaches have a detrimental impact not only on the tasks immediately linked to

their position, but also on their conduct outside the designated work requirements. This impact is seen in both in-role and extra-role actions.

It was also found that abusive supervision has contrasting impacts on knowledge sharing (Choi et al., 2019). Dutta (2012) has proven that psychological contract breaches (PCB) have a detrimental impact on knowledge sharing behavior (Conway & Briner, 2009).

PCB might also be seen as an internal impediment. This suggests that if employees believe that their organization is not fulfilling its corporate obligations, it is improbable that such employees will actively participate in environmental sustainability efforts. How does a business's fulfillment of its psychological contract duties impact workers' incentive to engage in environmentally responsible acts during work hours? In their study, Herriot et al. (1997) employed critical incident methodologies to document that workers recognized training, recognition, and autonomy as crucial elements of a psychological contract. This is accomplished by soliciting employees' opinions on the paramount element of a psychological contract. These pledges are crucial for achieving our intended goals.

Employees who perceive the breach by their organization have reduced job satisfaction, decreased work commitment, and develop negative perceptions of their employer (Zhao et al., 2007) and intend to quit when they have an opportunity. There was a strong correlation between PCB and work performance, including an employee's success in their specific function. Based on the social exchange concept, this suggests that when workers come across PCBs, they could exhibit a decreased inclination to adhere to norms of reciprocity, and they may counterbalance these breaches by decreasing the amount of effort they do in their job (Zhao et al., 2007). This phenomenon can be better understood by observing the effects of a psychological contract breach. When such a breach occurs, employees often reduce the sharing of knowledge related to environmental conservation, which in turn has a negative impact on activities associated with the environment (Conway & Briner, 2009). Other activities include engaging in eco-initiatives and enrolling in training programs to acquire expertise on the environment.

### **2.2.8 Environmental issues in the aviation industry**

In the aviation sector, concern for environmental protection has become increasingly important and is considered a major challenge for the development of this industry. Experts in the aviation industry have emphasized that environmental issues and regulations related to them are forming major obstacles to the expansion of the aviation industry in the near future (de Neufville & Odoni, 2003). In particular, since the beginning of the 21st century, there has been an increasing emphasis on researching and addressing the environmental impacts of aviation, including but not limited to noise and greenhouse gas emissions (Mahashabde et al., 2011). Exhaust gases such as SO<sub>x</sub> and NO<sub>x</sub>, after decomposition, are converted into volatile nitrate

and sulfate aerosols, while hydrocarbon (HC) emissions are decomposed into semi-volatile organic particles, all contributing to the global climate change, according to research (Brasseur et al., 2016). Forecasts suggest that emissions from international aviation could increase two to four times above 2015 levels by 2050, depending on the type of emissions and scenario analyzed, including CO<sub>2</sub>, NO<sub>x</sub>, and PM particles. Although the latest techniques have been applied to reduce energy use, this increase in emissions is due to the rapid increase in demand for air transport activities. In response to these challenges, the International Civil Aviation Organization (ICAO) has published reports and established new standards to minimize environmental impact, in line with the most advanced technology, as demonstrated by Cumpsty et al. (2019). This not only emphasizes the importance of applying new technology to minimize environmental impact but also shows the aviation industry's efforts in finding sustainable solutions to develop responsibly with the environment.

The concept of Green Airline represents an innovative approach aimed at achieving sustainable social and economic development while concurrently safeguarding the environment at both local and global levels (Sarkar, 2012; Abdullah et al., 2016). This initiative seeks to foster an environmentally conscious society, focusing on a transportation system that minimizes carbon footprints through reduced carbon emissions, the adoption of renewable energy sources, and lower CO<sub>2</sub> and other pollutant emissions (ADB, 2009). There is widespread public awareness regarding the environmental impacts of transportation, with the aviation sector receiving particular attention.

In tackling the environmental challenges faced by the aviation industry, several critical factors come into play. Key among these are advancements in airline technologies, which encompass the development and implementation of more efficient aircraft designs and cleaner fuel alternatives. These technological innovations are essential in reducing the carbon footprint of air travel. Equally important is the design and construction of airports, which, together with their related transportation infrastructure, play a significant role in the overall environmental impact of aviation. Sustainable airport design includes integrating renewable energy sources, optimizing resource usage, and minimizing ecological disruption. Moreover, air traffic management systems are crucial in this endeavor. Efficient air traffic control can significantly reduce unnecessary fuel consumption and greenhouse gas emissions by optimizing flight routes and reducing in-flight holding patterns. The implementation of more sophisticated air traffic management technologies and procedures is vital to achieving more environmentally sustainable flight operations.

The urgency of these measures is underscored by data from Transport and Environment (2013), which indicates that aviation emissions are responsible for roughly 5% of global warming effects and constitute about 2% of global annual CO<sub>2</sub> emissions. This statistic highlights the aviation industry's substantial role in contributing to climate change, underscoring the need for continued innovation and

proactive measures. To mitigate these environmental impacts, the aviation industry must commit to a multifaceted approach. This approach should encompass not only technological advancements in aircraft and infrastructure but also broader operational changes, including flight and air traffic management optimization. Through such integrated efforts, the industry can move towards offering greener air travel options, paving the way for a more sustainable future in aviation while addressing the pressing concerns of global warming and carbon emissions.

'Perfect Flight' is a pioneering project, supported by the National Air Traffic Service, with the participation of leading UK airlines including British Airways, to reduce emissions carbon by 2020 through a three-phase plan. British Airways conducted a test flight, demonstrating the ability to reduce fuel consumption by 12% and significantly reduce CO<sub>2</sub> emissions (Harvey et al., 2013). To support pilot training and encourage the adoption of effective flying methods, an educational video has been released, encouraging cabin crew to watch and apply the techniques presented in daily practice, with the goal of improving understanding and action to reduce environmental pollution. This initiative aims to increase their awareness and knowledge on waste reduction. These studies mostly concentrate on technical aspects within the aviation sector. According to Harvey et al. (2013), the aviation industry is a sector where HRM has the capacity to enhance environmentally friendly performance. In the other side, airlines passengers tend to choose airlines who have activities to protect environment (Niu et al., 2016).

### **2.2.9 Green policies in Vietnam**

Vietnam, a developing country, has demonstrated a strong commitment to environmental protection through a series of important measures and policies. Notably, at the session of the National Assembly, the Law on Environmental Protection No. 72/2020/QH14 was passed in Hanoi on November 17, 2020, with the decision to apply from January 1, 2022. In addition, Decision 1658/QĐ-TTg was signed by the Prime Minister on October 10, 2020, approving the National Green Growth Strategy for the period 2021-2030, with a further vision to 2050, has set the goal of not only economic development but also protecting the environment and ensuring social justice, aiming for a prosperous, sustainable economy and minimizing the impact on global warming.

In this context, on December 30, 2022, the Ministry of Transport of Vietnam continued to show its determination to protect the environment through the issuance of Circular No. 52/2022/TT-BGTVT, regulating regulations on environmental protection in the field of civil aviation, officially effective from March 1, 2023. This Circular not only focuses on minimizing noise and emissions from aircraft engines during operations but also covers comprehensive environmental solutions at airports and aerodromes, including improving technical infrastructure, noise mapping, noise and emission control, and wastewater treatment, and solid waste, hazardous waste

management, as well as environmental incident prevention and response. In particular, this circular also emphasizes the need for airports and airport managers to deploy environmental management systems, an important step forward from just being encouraged as before, in order to enhance responsibility and effectiveness in protecting the environment at aviation facilities.

These steps not only reflect Vietnam's commitment to promoting a green and sustainable future but also contribute to global efforts to minimize negative environmental impacts from the aviation industry, while also contributing to global efforts to reduce negative environmental impacts from the aviation industry. promote green and carbon-neutral economic development, aiming to reduce global warming and protect the planet for future generations.

In Vietnam, it can be seen that environmental protection awareness in the community, and especially in the business world, has made significant progress. Businesses' compliance with environmental laws has been increasingly improved. This is reflected in the reduction in the number of facilities violating environmental regulations, a continuous decreasing trend over the years. This coupled with the growth in the public satisfaction index of the government's environmental management indicates positive progress in this area (National Report on the Environment, 2021)

Companies in Vietnam, including Vinamilk (VNM), have adapted to environmental legal and regulatory requirements by applying appropriate environmental policies at their companies. In its annual report, VNM detailed its efforts in implementing sustainable development, which reflects the company's commitment to the 17 sustainable development goals of the United Nations. The company has demonstrated compliance in reducing water consumption, ensuring that all water used meets standards. Furthermore, 100% of industrial wastewater and 85% of agricultural wastewater after being treated meet standards and most of it is recycled for use. Besides, a significant proportion of water used in production is also recovered, recycled and reused. This represents a huge step forward in sustainable water resource management (Vinamilk annual report, 2022).

Regarding Sustainable Development Goal 11, VNM has ensured that 100% of its waste management service providers comply with regulations and are licensed, without receiving any objections from the local community on environmental issues. For Sustainable Development Goal 13, the company has taken important measures in adopting renewable energy and promoting a circular economy, receiving recognition through awards. In addition, the company has also published its own report on sustainable development, focusing on reducing greenhouse gas emissions. This is a testament to the company's continuous efforts in practicing and raising awareness about environmental protection. This not only demonstrates VNM's commitment to contributing to a green and sustainable future but also reflects the general trend of

Vietnamese businesses in aiming for economic development in parallel with environmental protection. (Vinamilk sustainable development report., 2022)

VNM, one of the largest dairy companies in Vietnam, has implemented an integrated strategy for sustainable development. They implement solutions in a systematic and coordinated manner, targeting both goals related to climate change as well as those related to protecting nature, health, and livelihoods. In VNM's 2022–2026 development strategy, sustainable development is placed as the main focus. This strategy includes perfecting a sustainable development path based on globally successful dairy industry models. In addition, VNM will also deploy science and technology to improve agricultural production and manufacturing capabilities in a more sustainable way. Another part of this strategy is to increase the use of renewable energy and plant trees to reduce greenhouse gas emissions. VNM's ultimate goal is to achieve net zero emissions by 2050.

VNM has advocated financial support for environmentally friendly technologies, aiming to prolong and optimize the working efficiency of these technologies. At the same time, the company also implements projects to save energy and use energy more effectively. During the production process, VNM conducts inspections of all working processes in the production chain to evaluate actual energy consumption. The company has proposed and applied many initiatives to reuse energy and materials, as well as develop business models based on circular economy principles, ensuring that no resources are wasted. Energy plays an important role in contributing to greenhouse gas emissions globally. For VNM, not only using energy effectively but also converting from traditional energy to renewable energy is an inevitable direction and an important part of their mission. to achieve the goal of net zero emissions by 2050. Over the past year, VNM has committed to sustainable energy use, as demonstrated through many large-scale measures and initiatives. The company has deployed advanced technology, such as using saturated steam from biomass-fired fluidized bed boilers and switching to using CNG to replace traditional boilers at its factories.

In addition, VNM is also continuing to research and implement solutions to fully exploit available biogas sources. VNM's farm is expected to recover and use this biogas as fuel, aiming to save costs and increase the use of renewable energy sources. VNM announced that 86.8% of the energy used in the production process is green and clean (Vinamilk Annual Report, 2022).

Vietnam Airlines and Vietjet Air exemplify commendable implementation of environmental conservation within the aviation business. Vietnam Airlines has demonstrated their efforts to safeguard the environment in their annual report for the year 2019.

Vietnam Airlines puts compliance with regulations on environmental protection and energy savings at the top of its strategy. The airline has implemented measures to evaluate and control CO<sub>2</sub> emissions, reduce fuel consumption, and implement

innovation and promotion programs to save fuel, as well as reduce noise. In addition to complying with current environmental protection regulations, Vietnam Airlines also actively invests in updating vehicles, equipment, and technology, applying advanced technology solutions to minimize consumption. Fuel and CO2 emissions are harmful to the environment. In addition, Vietnam Airlines also focuses on enhancing the culture of safety and Integrity. The company has implemented and guided the Definition of Safety Behavior, deployed an online survey related to Safety Culture and Integrity, with a result of 3.9 points and a target of 4.0 points in 2020, according to Proactive Level. In addition to that, Vietnam Airlines offers training courses that include topics such as risk management and the use of insurance finances.

Vietnam Airlines conducted an analysis of the 17 sustainable development objectives established by the United Nations (2015) and chose a few of these goals to serve as the foundation for our sustainable development strategy for 2018. Concerning the preservation of the environment, there are three groups: G7, G12, and G13. The G7 is dedicated to ensuring that everyone has access to energy that is not only inexpensive but also highly dependable, environmentally friendly, and up to date. This will be accomplished by the purchase of a fleet of aircraft of the latest generation, such as the Boeing 787-9, Airbus A350-900, and Airbus A321neo, with the goals of lowering the amount of fuel consumed, limiting the amount of carbon emissions, and lowering the amount of noise pollution. Often included in this proposal is the implementation of the SAFRAN fuel economy software, often known as SFCO2.

In the context of the G12, the objective is to guarantee consumption and production patterns that are environmentally responsible. Participation in the Anti-Plastic Waste Alliance and the implementation of the "Zero Waster Vietnam Airlines" campaign are both included in this. To be more specific, the corporation will severely restrict and eventually do away with the usage of nylon bags, replacing them with materials that are less harmful to the environment. As a result of this action, it is anticipated that around fifty million nylon bags will be reduced, that 257 liters of pure water will be saved, that 9,000 kilowatt hours of energy will be saved, and that 513 thousand liters of fabric softener will be reduced yearly.

G13 emphasized the immediate implementation of actions to cope with climate change and its impacts. Part of this effort includes updating and modernizing the fleet, with the use of new, more fuel-efficient aircraft and engines, resulting in significant emissions reductions. In addition, promoting awareness of environmental protection is also emphasized through the organization of propaganda events such as "Community Volunteer Saturday", "Green Sunday", "No Plastic Bag Day" and "Earth Hour" (Vietnam Airlines annual report, 2019).

In its 2022 annual report, Vietjet Air mentioned the great environmental challenges the world is facing, especially the negative impact of human activities. This makes the global environment increasingly harsh. Vietnam is among the countries heavily



affected by climate change, which increases the urgency of environmental protection, a task not only important to society but also to VietJet.

Vietjet Air has shown a strong commitment to complying with environmental protection regulations, and the company also emphasizes using water resources sustainably and how to use energy in a saving ways, effective waste management and treatment to reduce and prevent pollution. Vietjet has proactively implemented a series of management programs to minimize negative impacts from aviation activities on the environment, focusing on effective management of fuel consumption and quality management of spare parts. replacement, tools and equipment, wastewater management, and raising awareness about environmental protection through propaganda and communication activities. Through these efforts, Vietjet's Board of Directors is not only able to monitor and control environmental impacts from the company's daily activities but also shape practical solutions to address and limit them. limit those impacts, ensuring that business operations not only comply with environmental standards but also contribute to a sustainable future for both communities and the planet.

In its 2022 annual report, Vietnam Airports Corporation performed a thorough analysis of the environmental impact of its business operations. A key finding from this report is that no significant greenhouse gas (GHG) emissions, either direct or indirect, were recorded, demonstrating the company's ongoing efforts to reduce minimize negative impact on the environment.

To achieve this result, the Corporation has applied a series of initiatives and advanced measures to reduce greenhouse gas emissions and increase energy efficiency. These measures include implementing automatic sensor taps and lighting systems at work stations, using insulated glass doors and windshield fans to improve cooling energy efficiency, as well as establish and comply with strict fuel consumption norms for vehicles and equipment operating in the airport. Gradually replacing traditional lamps with LED lamps also makes an important contribution to reducing power consumption. In addition, the company has focused on saving fuel for ground equipment by strictly controlling equipment operating time, increasing maintenance and using advanced technology equipment, such as aircraft power vehicles, reducing the use of luggage trucks by switching to carry-on luggage and cargo carts, to reduce CO2 emissions. Carrying out regular and periodic maintenance on equipment ensures that they always operate at their best, reducing energy consumption and emissions. The company also applies measurement and testing of exhaust gas concentrations of vehicles and equipment according to regulations to ensure compliance with environmental standards as prescribed in Article 35 of Circular 29/2021/TT-BGTVT.

One of the other groundbreaking measures is to limit the use of aircraft auxiliary engines and instead use trucks to tow and push the aircraft into position, as well as increase the use of telescopic tubes to reduce reliance on buses for passenger

movement, thereby reducing the number of vehicles needed to travel in the flight operations area. Finally, the deployment of underground refrigeration and power supply equipment, along with underground fueling systems at some airports, has not only significantly reduced the number of vehicles on the runway but also improves operational efficiency and reduces greenhouse gas emissions, reflecting the commitment and efforts of Airports Corporation of Vietnam in environmental protection and sustainable development (ACV, 2021).

### **2.2.10 Previous studies**

In these studies, social exchange theory is applied to analyze the link between GHRM, environmental leadership, and the effectiveness of environmental activities. Authors such as Fawehinmi et al. (2020), Yusliza et al. (2019), as well as Pham et al. (2020) have addressed this issue in their research. Another study by Ren et al. (2020) also focused on investigating the role of leadership as an important moderating factor between GHRM and performance in environment-related activities.

Social learning theory is considered an appropriate method to analyze the relationship between environmental leadership and other environmental issues in organizations (Ahmad et al., 2021; Moin et al., 2020). Regarding the application of GHRM, implementation methods are diverse, including creating recruitment and selection policies targeting environmentally concerned candidates, green training programs to enhance employees' environmental knowledge, conduct periodic environmental performance assessments and rewards, and develop an environmentally aware corporate culture as well as empower employees in environmental protection activities (Jabbour & Santos, 2008; Renwick et al., 2013; Renwick et al., 2016). Some other scholars (Pinzone et al., 2016; Pham et al., 2019; Yusliza et al., 2019) have also conducted research on the relationship between GHRM and employee behavior.

Research on the impact of GHRM on environmental performance has been conducted by a range of scholars, with notable contributions from Kim et al. (2019), Ren et al. (2020), and Singh et al. (2020). According to analysis by Renwick et al. (2013), GHRM includes various activities such as green training, green salary and incentive systems, green recruitment and selection, along with green performance management. However, there are several other aspects in GHRM that have been emphasized by other researchers such as Dumont et al. (2017), and five key elements have become prominent in discussions and research, namely are green recruitment, green selection, green training and development, green performance management, and green pay and incentives, as pointed out by Yong et al. (2020).

The influence of GHRM on employees' green behavior is clearly demonstrated through the study of Mukherjee and Chandra (2018). Kim et al. (2019) also pointed out the relationship between GHRM and environmental performance. The majority of research in this area focuses on expanding understanding of specific country contexts, especially developing countries, as reported by Yong et al. (2020), Pham et al. (2019).

GHRM has increasingly attracted research interest, especially in exploring its influence on employees' environmentally friendly behaviors. Pham et al. (2019) emphasized the importance of further research on specific green behaviors of each employee, including exchanging and sharing green knowledge (Bhatti et al., 2020). I reviewed all relevant papers in Appendix 1.

### **3. HYPOTHESIS DEVELOPMENT AND RESEARCH FRAMEWORK**

#### **3.1 Hypothesis development**

Applying HRM strategies has been shown to have a positive influence on knowledge sharing within organizations ( Fong et al., 2011 ; Aklamanu et al., 2016; Luu, 2019). In particular, when employees are fully equipped with knowledge through the company's training process and encouraged to apply it in their work, they become willing to share their knowledge with colleagues. In the environmental field, effective implementation of GHRM can significantly improve green behavior in an organization, especially by motivating employees to share environmental knowledge with others at workplace. Thereby, the impact of GHRM on the spread of environmentally friendly knowledge can be understood through social exchange theory (Blau, 2017). According to Emerson (1976) in social exchange theory, when employees feel benefits from the organization's policies and activities, they feel bound by the obligation to reciprocate, leading to perform behaviors that benefit the company (Jiang et al., 2012). Snape and Redman (2010) emphasize that social exchange theory is often used to explain how HRM policies influence interactions and mutually supportive behaviors between employees in the work environment.

Following the social exchange theory framework, this study addresses the potential influence of GHRM on positive environmental awareness through improving exchange relationships between employees and organizations. Based on the principles of social exchange theory, workers always seek a balance between the effort they put in and the rewards they receive, with the expectation that this exchange relationship will encourage them to put in more effort in their work (Cropanzano & Mitchell, 2005). In the context of employees being satisfied with the organization's GHRM program, for example taking courses on recycling and prioritizing the use of environmentally friendly products, they are knowledgeable about these environmental issues and know how to apply them. Then they feel appreciated and want to express gratitude through sharing knowledge with others, thereby enhancing green behavior in the organization (Teh & Yong, 2011). Although there has been much recent GHRM research exploring the relationship between GHRM and overall green behavior, attention to specific green knowledge sharing remains limited. In this study, we argue that GHRM may influence positive green knowledge sharing behavior. Thus, the following hypothesis is proposed:

*H1: There is a positive effect of GHRM on green knowledge sharing.*

Research in the field of GHRM, has discovered and demonstrated that implementing GHRM policies and practices has a significant impact on employees' perceptions and attitudes towards the environment. Applying GHRM strategies not only contributes to raising environmental awareness among employees but also motivates them to participate in more proactive environmental protection actions (Renwick et al., 2013; Tang et al., 2018). GHRM measures implemented in an organization will motivate individuals within that organization to have positive perceptions about green practices. From there, they will have good relationships with colleagues and use the green knowledge and skills they have been trained at the workplace (Tabrizi et al., 2023).

In this direction, specific elements of GHRM such as environmental training (green training), award system for environmental protection initiatives (green award), recruitment process to attract environmentally conscious candidates (green recruitment and selection), performance management that emphasizes environmental protection goals (green performance management) and the creation of a company culture that where the environment is valued (green engagement), have all been shown to be effective methods for improving employee understanding and commitment to environmental issues (Ahmad et al., 2022). Through the implementation of GHRM policies, organizations not only promote a more positive working environment but also create conditions for employees to develop a sustainable lifestyle, both in and outside the workplace (Singh et al., 2020; Renwick et al., 2013).

Through the development and implementation of environmentally oriented recruitment and selection processes, along with performance management, incentives, and environmental protection, as well as training and education, organizations can significantly improve employee knowledge about the environment. This not only raises their awareness of ongoing environmental issues but also increases their understanding of the meaning and benefits of creating a green work environment (Renwick et al., 2013; Saeed et al., 2019). A good example is the development of the engineering team at Toyota, where human resource policies are designed to encourage knowledge sharing, creativity, and individual learning. By implementing effective training methods, enhancing interpersonal interactions, and providing feedback, the organization expanded the knowledge and skill repertoire of its staff (Cleveland et al., 2015).

These policies not only help employees develop their skills and expertise but also enable them to better understand environmental challenges and how they can contribute to solving them through their daily work. From implementing training and education programs to establishing supportive work environments, organizations are not only promoting a green culture internally but also equipping employees with the necessary tools so that they become pioneers in applying sustainable and

environmentally friendly working methods. Consequently, the following hypothesis is valid:

*H2: There is a positive effect of GHRM on environmental knowledge.*

When implementing GHRM, by implementing green recruitment and selection strategies, employers will attract candidates with knowledge of environmental protection and a tendency to carry out environmental protection activities. GHRM employers obviously want to select a candidate who has environmental knowledge and tends to have an environmentally friendly attitude because this type of candidate is more likely to participate in eco-initiatives (Jabbour & Jabbour, 2016). When recruiting a new candidate, a green employer will consider to the personal environmental beliefs, so that new employee will be adapt easily with environmental activities in the organization (Renwick et al., 2013)

Besides, following the completion of the recruitment process, these personnel are then provided with training in environmental protection information, guidance in the steps to implement green initiatives, and training in green concepts, knowledge, skills, and responsibilities. According to Fawehinmi et al. (2020), their capabilities can be improved since they will have sufficient psychological ability to engage in a variety of environmentally conscious actions. According to Pinzone et al. (2016), green training gives organizations the ability to develop and strengthen the green skills of their employees, boost the desire of employees to participate in green activities, and provide an example for organizational green citizenship in the workplace. Fundamental training exercises that are a component of GHRM practices play a significant role in the process of persuading employees to participate in activities that are friendly to the environment (Pham et al., 2018; Islam et al., 2021). Additionally, it is considered that the provision of environmental rewards and recognition to employees (for example, in the form of daily praise and prizes provided by the firm) has a substantial impact on the inclination of employees to engage in conduct that is ecologically conscious (Ramus & Steger, 2000). According to Ren et al. (2018), when employees acquire a genuine comprehension of the significance of environmental preservation through the implementation of GHRM, they have a tendency to engage in environmental corporate citizenship behavior proactively. Although a number of scholars have shown a connection between green GHRM and the green behavior of employees, further study is required to elucidate this connection by investigating the ways in which GHRM influences activities that are environmentally conscious (Dumont et al., 2017; Yong et al., 2020). In this study, we will investigate the influence that GHRM has on eco-initiatives. For the reasons above, we propose this hypothesis:

*H3: There is a positive effect of GHRM on eco-initiatives.*

In today context, the role of environmental leadership has become more prominent and important than at any time in the past, reflecting unprecedented shifts in cultural

and social norms. This is reinforced by the continued increase in the impact that environmental challenges pose to businesses. This change comes not only from global environmental concerns such as climate change and pollution but also from the awakening of corporate social responsibility in protecting the environment. Environmental leadership is not only about applying environmental protection strategies to business activities but also about forming and maintaining a corporate culture in which environmental protection is an integral part. This requires leaders to constantly innovate, create, and make efforts to solve environmental problems while actively facilitating the participation and contribution of every employee in this process (Boiral et al., 2009). Effective trained leaders in the environmental field are acutely aware of the importance of protecting the environment (Daily et al., 2012). Not only are they more concerned with expectations from stakeholders, but they are also committed to making positive changes within their organizations. Interestingly, senior managers' environmental leadership is often related to the company's response to environmental issues (Boiral et al., 2009). Contributing to the successful management of internal environmental protection is receiving commitment from senior or middle managers (Zhu & Sarkis, 2004). Managers with outstanding leadership in the field of environmental protection often have exceptional values and attitudes, along with impressive behavior. They inspire their employees, exposing them to new perspectives on environmental issues (Goh, 2002). These leaders encourage employees to share their knowledge to reduce negative impacts on the environment. Furthermore, they also provide the necessary resources and support to improve environmental performance within the organization (Boiral et al., 2009; Dubey et al., 2015; Riva et al., 2021). Therefore, organizations that exhibit great environmental leadership tend to have more effective environmental management, and the influence of environmental leadership on the environmental actions of workers, such as the sharing of environmental knowledge (Khan et al., 2023), tends to be better with these businesses. Thus, we suggest the following hypothesis:

*H4: There is a positive effect of environmental leadership on green knowledge sharing.*

Recently, in the field of environmental sustainability, research on psychological contract breach has become popular (Paille et al., 2014; Paille & Raineri, 2015). We identify psychological contract breach (PCB) as a prominent problem, and we emphasize the importance of considering it as a factor that can help explain difficulties in implementing environmental protection behaviors in the workplace. PCBs can even act as an internal barrier in some specific situations. We observed that, in cases where employees felt their employers did not value their duties, they were less likely to engage in environmentally sustainable practices (Paille & Raineri, 2015). Furthermore, when employees feel their leaders have not lived up to their end of the bargain, they become dissatisfied with their jobs, reduce their dedication to the

company, and lose confidence in their managers' trustworthiness. As a result, they are more likely to think about changing jobs (Zhao et al., 2007).

In cases where employees perceive the psychological contract breach, they often express negative attitudes and think about quitting their job. Zhao et al. (2007) have shown that there is often a gap between intending to quit and deciding to take that action. In fact, many employees choose to leave a company only when they find a new, more suitable job opportunity (Rousseau, 1989). However, Zhao et al. (2007) also highlight that in cases where employees continue to work at the organization despite negative attitudes, this can have a negative impact on the entire work environment. Negativity and strong reactions from these employees not only negatively affect them, but can also lower the morale of colleagues around them in the organization.

In this study, Zhao et al. (2007) also observed that PCB behavior was significantly and negatively related to work outcomes such as organizational citizenship behavior and on-task performance. Because employees' sharing of green information is considered one of the aspects of employee volunteering behavior (Ramus & Killmer, 2007), which refers to differential behavior towards the environment (Boiral & Paillé, 2012), a similar model can be deduced for this. Assume that this positive employee behavior will contribute to a company's environmental achievements, for example, green behaviors such as participating in environmental initiatives, implementing energy-saving measures, and supporting sustainable practices within the organization (Lamm et al., 2013), which in turn will increase the company's environmental protection activities. In situations where the psychological contract is considered violated, employees may feel less encouraged to invest personal effort in green initiatives, which are often discretionary and require goodwill and commitment to broader organizational goals. They may perceive their increased efforts in green behavior as useless or undervalued, leading to a decrease in such activities (Paillé et al., 2014). From the comments above, we propose the following.

*H5: There is a negative effect of PCB on green knowledge sharing.*

In our assessment, pro-environmental behaviors, often motivated by environmental knowledge, awareness, and concern, are an important factor in predicting the desire to adopt green practices. This is because ecological behavior is often guided by environmental knowledge (Ahmad et al., 2021). An organization implementing GHRM, when recruiting, will tend to hire employees who tend to protect the environment. After that, these employees are trained on appropriate knowledge and ways to protect the environment at their organizations (Renwick et al., 2013). With their tendency to be environmentally conscious and their newly increased knowledge, these newcomers are enthusiastic about participating in environmental initiatives. When a company practices GHRM effectively, in addition to enriching its environmental knowledge through green training, employees also receive green

rewards (Pham et al., 2019a). Applying social exchange theory, we can explain that they happily participate in green activities and want to repay the company by performing green behaviors for the organization. One of those behaviors is sharing green knowledge that children learn from GHRM practices. Therefore, based on this argument, we assume that:

*H6: There is a mediating effect of environmental knowledge on the relationship between GHRM and green knowledge sharing.*

The idea of eco-initiatives has been formally presented by Ramus and Steger (2000) and is defined as “any action taken by employees that they think will improve the company's environmental performance” (page 606). Boiral and Paille (2012) also define eco-initiatives as a form of discretionary behavior and include proposals aimed at improving environmental activities and performance. Thus, scholars agree that this is a voluntary behavior that improves environmental performance.

Eco initiatives focus on encouraging individual actions, which can occur at any level within the organization. They are based on employee creativity and suggestions, with the aim of improving environmental performance. Ramus and Killmer (2007) describe these initiatives as accountability and voluntary activities that promote positive change in the way departments within the organization operate. Thus, in an organization implementing GHRM, recruited employees tend to protect the environment (Renwick et al., 2013). Then, with the process of training employees in environmental protection knowledge and encouraging them through policies such as rewards for implementing environmental protection activities, GHRM will have a positive impact on whether employees will implement environmental protection initiatives. Besides, GHRM and eco-initiatives both address practicality. These eco-initiatives, according to Boiral and Paille (2012), for example, suggest how to use paper economically and use energy efficiently. Initiatives like this further promote the sharing of ideas. awareness of environmental protection among employees. So, we proposed the following hypothesis:

*H7: There is a mediating effect of eco-initiatives on the relationship between GHRM and green knowledge sharing.*

Environmental leadership is defined by the actions of leaders to motivate their employees to achieve environmentally related goals. At the same time, they also motivate employees to not only meet but also exceed performance expectations in environmental protection activities (Chen & Chang, 2013). In today's era, when the world faces environmental problems that threaten our lives, environmental leadership is more important than ever. These environmental issues are also leading to unprecedented changes in cultural and social norms, as well as the significant impact that environmental challenges are having on businesses (Boiral et al., 2009). Effective environmental leaders often have a deep and clear understanding of the importance of protecting the environment. These leaders are committed to making the necessary



changes within the organization to ensure environmental sustainability. In their roles, excellent environmental leaders often possess a set of values and a progressive mindset that drives them and their employees toward continuous improvement. They not only lead employees toward new and broader perspectives on environmental issues but also inspire them to find creative solutions to the environmental challenges they face. This goes beyond providing emotional support and includes providing the necessary resources, such as investment in new technology and innovation, to enhance the organization's environmental performance. Thus, the role of effective environmental leaders is undeniable in building a sustainable organization. They make a big impact by showing concern for the environment and devising positive strategies to create an environmentally friendly work environment while encouraging creativity and innovation at all levels of the organization (Boiral et al., 2009; Dubey et al., 2015). In an organization, GHRM implementation has a positive impact on employees' environmental protection behaviors, such as green knowledge sharing behavior (Kim et al., 2019; Pham et al., 2019). Environmental leaders take action and make decisions that support green policies, guidelines, and processes within their organizations. So, employees fully understand these actions, and they are willing to perform them. Therefore, when leaders have a positive tendency to protect the environment, they will motivate the organization's employees to implement GHRM and share knowledge about environmental protection. Conversely, if a company has a low level of environmental leadership, employees will be less likely to comply with company policies, and the influence of GHRM practices on employees' green knowledge sharing will be reduced. So, we proposed the following hypothesis:

*H8: There is a moderating effect of environmental leadership on the link between GHRM and green knowledge sharing.*

As analyzed in the above sections, implementing GHRM in an organization will increase environmental knowledge as well as eco-initiatives. In turn, when employees have more and more profound knowledge about environmental protection, they tend to share more green knowledge. Likewise, when employees are conscious of proactively implementing eco-initiatives, they will also be more inclined to share green knowledge with colleagues. Here, we want to consider the role of environmental leadership in the above relationships.

Social learning theory (Bandura, 1977) provides detailed insight into how leadership can influence the pro-environmental behavior of employees within an organization. . From this perspective, people working in organizations are seen to be influenced by the behavioral patterns they observe in leaders at different levels, from team leaders to middle managers and supervisors. head of the organization. Workers' behavior is not just a reaction to their work but is also shaped and adjusted based on the leadership examples they observe and learn in the work environment (Ahmad et al., 2021).

Therefore, according to social learning theory (Bandura,1977), and social exchange theory (Blau, 2017), it can be seen that in any organization, the attention and priority that the leadership devoted to environmental protection coupled with the adoption of high levels of GHRM policies will significantly increase the impact of environmental leadership on enhancing environmental knowledge and promoting eco-initiatives within the organization (Konovsky & Pugh, 1994). This will naturally have a positive influence on the process of sharing green knowledge among employees, promoting a positive work culture towards the environment and sustainability.

Conversely, in situations where leaders do not prioritize environmental factors or where GHRM policies are not fully and aggressively implemented, the impact that environmental leadership can have on expanding environmental knowledge and developing eco-initiatives will not achieve maximum effectiveness. In this case, although environmental knowledge and eco-initiatives can still encourage the sharing of green knowledge among employees, a lack of implementation of environmental leadership and GHRM policy will result a decreasing trend in the extent and efficiency of this process.

Thereby, it can be affirmed that the commitment and specific actions from leadership along with the effective implementation of GHRM policies in the organization not only create a solid foundation for raising awareness and knowledge. environment but also strongly promotes eco-initiatives and green knowledge sharing, thereby creating a working environment that is sustainable and positive for the environment.

As a result, the following hypotheses are assumed:

*H9: There is a moderating effect of environmental leadership on the mediating role of environmental knowledge toward the relationship between GHRM and green knowledge sharing.*

*H10: There is a moderating effect of environmental leadership on the mediating role of eco-initiatives toward the relationship between GHRM and green knowledge sharing.*

As analyzed in the previous sections, implementing GHRM in an organization will encourage employees in that organization to share knowledge about environmental protection with each other. In recent times, a trend in environmental sustainability research has been increased interest in psychological contract breach (Paille et al., 2014; Paille & Raineri, 2015). From a research perspective, we emphasize that understanding psychological contract breach (PCB) in an organization is essential. PCBs can cause significant obstacles within an organization, especially in specific circumstances.

When employees realize that tacit or informal agreements with their leaders have not been fulfilled, the consequence is that they will have reduced trust in their leaders, reduced job satisfaction, and reduced enthusiastic motivation at work (Zhao et al.,

2007; Bal & Vink, 2011). In these circumstances, employees may not feel motivated or inspired to invest in green initiatives, which often require voluntariness and a strong commitment to the organization's larger goals. They may perceive that any additional effort put into implementing green behaviors will be fruitless or unappreciated, leading to a decline in performing these actions (Paillé et al., 2014). Therefore, according to social exchange theory, when employees do not perceive the psychological contract breach and perceive that the organization has fulfilled its promises and commitments to them, they will respond with attitudes and positive behavior. Conversely, if employees perceive a breach of the psychological contract, they will respond with negative behavior. Therefore, it can be said that when PCB is high, the influence of GHRM on GKS will decrease, and vice versa, when PCB is low, the influence of GHRM on GKS will increase. So, from the above arguments, we propose these hypotheses:

*H11: There is a moderating effect of PCB on the link between GHRM and green knowledge sharing.*

As mentioned in the above sections, GHRM implementation has a positive impact on the environmental knowledge and eco initiatives of employees in the organization. Subsequently, employees with good environmental knowledge and employees who carry out many eco initiatives will increase the sharing of green knowledge. During extensive research and analysis, we have realized that the presence of PCBs brings negative effects to the work process and work efficiency of employees. Through reviewing previous studies, SET is often applied to evaluate the effects of PCBs on workers in organizational settings (Lee et al., 2014). According to this principle, when employees feel that psychological connection with the organization - or in other words, when PCB is at a low level - they will develop strong trust in the organization. In such a situation, the influence of GHRM on enhancing environmental knowledge and encouraging eco-initiatives will be significantly improved. This, by natural law, will encourage the process of sharing green knowledge among employees.

However, this relationship is completely reversed when employees perceive that the organization has not complied with the psychological contract established between them and the company (Zhao et al., 2007). In this case, workers may become apathetic or even react negatively, becoming unresponsive or even hindering the organization's efforts. This means that in a situation where PCBs are identified at high levels, employees will lose trust in the organization, leading to a decline in GHRM adoption, weakening environmental knowledge and eco-initiatives. As a result, workers will be less likely or not at all interested in sharing green knowledge, causing negative consequences not only for themselves but also for the organization and the surrounding environment.

As a result, the following hypotheses are assumed:

*H12: There is a moderating effect of PCB on the mediating role of environmental knowledge in the relationship between GHRM and green knowledge sharing.*

*H13: There is a moderating effect of PCB on the mediating role of eco-initiatives toward the relationship between GHRM and green knowledge sharing.*

In summary, we gather all 13 hypotheses in Table 1.

Table 1: Summary of Research hypotheses

H1	There is a positive effect of GHRM on green knowledge sharing.
H2	There is a positive effect of GHRM on environmental knowledge
H3	There is a positive effect of GHRM on eco-initiatives.
H4	There is a positive effect of environmental leadership on green knowledge sharing.
H5	There is a negative effect of PCB on green knowledge sharing
H6	There is a mediating effect of environmental knowledge on the relationship between GHRM and green knowledge sharing
H7	There is a mediating effect of eco-initiatives on the relationship between GHRM and green knowledge sharing
H8	There is a moderating effect of environmental leadership on the link between GHRM and green knowledge sharing
H9	There is a moderating effect of environmental leadership on the mediating role of environmental knowledge toward the relationship between GHRM and green knowledge sharing.
H10	There is a moderating effect of environmental leadership on the mediating role of eco-initiatives toward the relationship between GHRM and green knowledge sharing.
H11	There is a moderating effect of PCB on the link between GHRM and green knowledge sharing
H12	There is a moderating effect of PCB on the mediating role of environmental knowledge toward the relationship between GHRM and green knowledge sharing
H13	There is a moderating effect of PCB on the mediating role of eco-initiatives toward the relationship between GHRM and green knowledge sharing

*(Source: The author's works)*

### 3.2 Research Framework

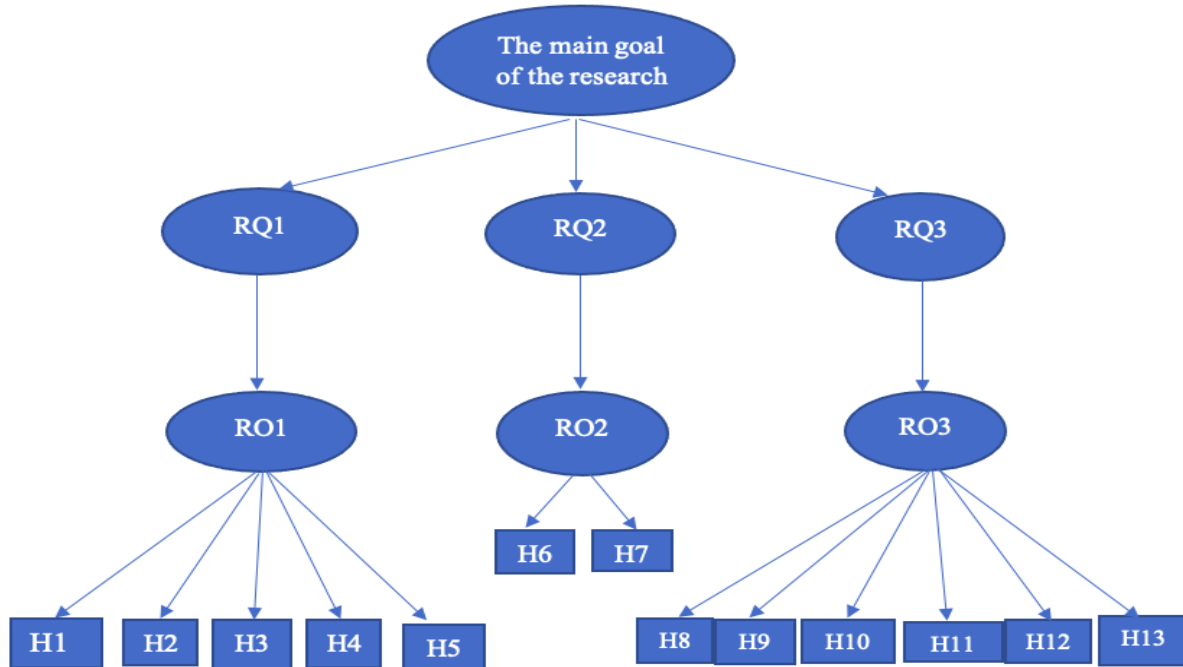


Figure 3: Research question, Research objective, and Hypotheses

(Source: The author’s works)

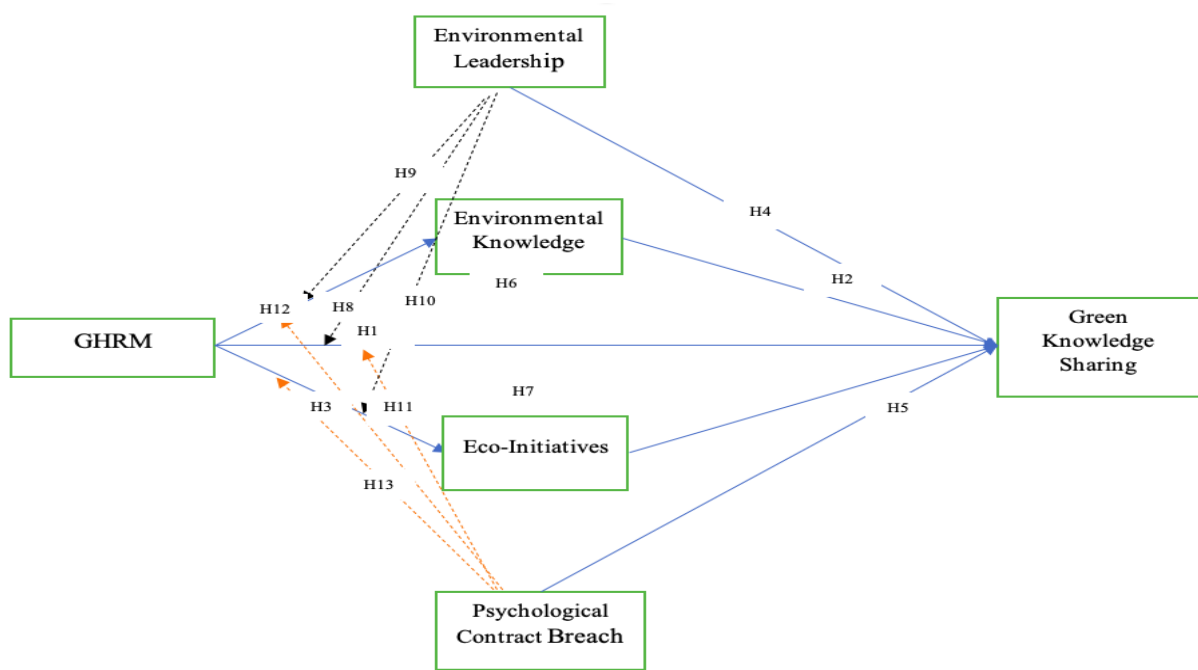


Figure 4: The Conceptual framework

(Source: The author’s works)

## 4. RESEARCH DESIGN AND METHODOLOGY

The primary aim of this study is to investigate the correlation between GHRM and the GKS information within the aviation sector. Since 1986, Vietnam has experienced an economic transformation towards a market-based economy. As a component of this procedure, novel market regulations were enacted, facilitating the emancipation of the business milieu, the expansion of market access, and the privatization of state-owned enterprises (Nguyen et al., 2018). As a result, several advantageous prospects have emerged for the overall growth of the Vietnamese economy, specifically within the aviation sector. In 1993, the Vietnamese government enacted an environmental protection law with the aim of promoting the growth of enterprises that prioritize environmental sustainability. In 2022, the Vietnamese government has enacted the most recent Environmental Protection Law (2022) after undergoing several modifications and adaptations. This demonstrates the Vietnamese government's keen interest and unwavering dedication to implementing measures for environmental conservation. The aviation sector will have a significant role in attaining a harmonious equilibrium between the environment and economic growth.

### 4.1 Research approach

In this research, a positivist approach is adopted, grounded in the belief in an objective reality. Epistemologically, it is predicated on the positivist view that objective facts offer the most robust scientific evidence. It is important to note, however, that our research methodologies extend beyond merely quantitative methods. Within this positivist paradigm, our study predominantly utilizes quantitative and deductive methods (Saunders et al., 2019). The research design for this study involves a mixed-methods approach, placing a stronger focus on surveying. The mixed-methods approach is an investigative strategy that encompasses the collection and integration of both quantitative and qualitative data. This approach employs diverse research designs, potentially incorporating varying philosophical assumptions and theoretical frameworks. The core premise of this approach is the belief that integrating quantitative and qualitative data provides deeper insights than could be achieved through solely quantitative or qualitative data (Creswell & Creswell, 2017; Saunders et al., 2019).

The present study utilizes mixed methods, encompassing both in-depth interviews and the administration of surveys via questionnaires. Additionally, the study employs primary time-lagged data, incorporating elements of both qualitative and quantitative nature. The research is structured into two principal phases: the qualitative phase (Phase 1) and the quantitative phase (Phase 2).

Table 2: Mixed-methods

<b>Research approach</b>	<b>Phase 1</b>	<b>Phase 2</b>
Research design	Qualitative (inductive)	Quantitative (deductive)

<b>Research approach</b>	<b>Phase 1</b>	<b>Phase 2</b>
Research paradigm		Positivism
Research method	In-depth interview	Survey
Data collection technique	Semi-structured in-depth interview	Questionnaire
Sampling technique	Purpose	Convenient
Study context	Aviation industry	Aviation industry
Data analysis	Document analysis	Structural equation modeling

(Source: The author's works)

## 4.2 Qualitative research

Through the process of evaluating previous quantitative studies, a research model linking GHRM and related variables has been formed, along with identifying appropriate measurement scales. However, to gain a deeper understanding of how GHRM is applied and its impact in the aviation industry context, a qualitative study was conducted (Saunders et al., 2009). The aim is to thoroughly analyze how GHRM and other variables such as, EL, EK, ECO, PCB are implemented and their relationship to environmental knowledge sharing, thereby helping to clarify the processes and relationships that may arise (Eisenhardt & Graebner, 2007; Corley & Gioia, 2004).

Based on the results obtained from previous research, a questionnaire with six variables and 30 items was drafted to collect opinions from experts in the field. Feedback from experts was then used to refine the questionnaire, to ensure it accurately and fully reflects the important elements of GHRM in the aviation industry.

Finally, a pilot test will be implemented as a step to test the effectiveness and feasibility of the selected scales, ensuring they provide reliable and accurate results for the study.

## 4.3 Quantitative research

In this dissertation, the adopted research methodology is quantitative in nature, aiming to dissect and enhance the comprehension of how independent, mediating, and moderating variables collectively impact dependent variables. This investigative approach incorporates rigorous control measures within its framework, thereby bolstering the precision and legitimacy of the data (Saunders et al., 2019). The primary objective of this study revolves around the examination of GHRM's direct effect on GKS, along with exploring the intermediary roles of EK and ECO, and discerning the moderating influences of EL and PCB within the aviation sector.

For data acquisition, the employed strategy involves a questionnaire developed on a 7-point Likert scale, its design influenced by insights drawn from preceding

qualitative research. This instrument is crafted using Google Docs, which facilitates accessibility across various platforms including personal computers and mobile devices. The questionnaire's dissemination strategy is underpinned by the cooperation of management personnel in the aviation sector, ensuring a targeted and efficient outreach to a participants comprising aviation professionals and employees, thus aligning with the study's objectives.

### 4.3.1 Sample size

In academic research, the method for determining the minimum sample size based on the inverse square root method of the ratio between the path coefficient ( $\beta$ ) and its standard deviation (Hair et al., 2021). This involves determining the minimum sample size ( $n_{min}$ ) for the PLS path model at predetermined significance levels of 1%, 5%, and 10% with different  $\beta_{min}$  ranges, as described in Table 3 of their research. According to Hair et al. (2017), in the field of management, a significance level of 5% is often used as a standard, while a significance level of 10% is often applied to exploratory studies.

Therefore, according to Hair et al. (2021), in case the research target sets  $\beta_{min}$  between 0.05 and 0.10, the minimum required sample size will be 1004, 619, or 451, corresponding to a 1% significance level, 5%, or 10%. Similarly, if  $\beta_{min}$  is expected to be in the range 0.11 to 0.20, the minimum sample size needed would be 251, 155, or 113 for significance levels of 1%, 5%, and 10%, respectively.

Table 3: Sample size for different  $\beta$  and significance levels

$\beta_{min}$	Sample size for different significant levels		
	1%	5%	10%
<b>0.05 – 0.1</b>	1004	619	451
<b>0.11 – 0.2</b>	251	155	113
<b>0.21 – 0.3</b>	112	69	51
<b>0.31 – 0.4</b>	63	39	29

(Source: Hair et al., 2021)

In the field of academic research, determining a-priori sample size for structural equation models is an important aspect. The following paragraphs will present and analyze three different computational methods applied to determine the a-priori sample size for these models. Each method will be described thoroughly, with the presentation of specific computational steps and how they can be applied in different research situations, providing a comprehensive overview of how to select and apply them. Appropriate sample size in studies using structural equation modeling (Soper, 2024).

Error function:



$$\text{erf}(x) = \frac{2}{\sqrt{\pi}} \int_0^x e^{-t^2} dt.$$

Lower bound sample size for a structural equation model:

$$n = \max(n_1, n_2)$$

where:

$$n_1 = \left\lceil 50 \left(\frac{j}{k}\right)^2 - 450 \left(\frac{j}{k}\right) + 1100 \right\rceil$$

$$n_2 = \left\lceil \frac{1}{2H} \left( A \left( \frac{\pi}{6} - B + D \right) + H + \sqrt{\left( A \left( \frac{\pi}{6} - B + D \right) + H \right)^2 + 4AH \left( \frac{\pi}{6} + \sqrt{A} + 2B - C - 2D \right)} \right) \right\rceil$$

$$A = 1 - \rho^2$$

$$B = \rho \arcsin\left(\frac{\rho}{2}\right)$$

$$C = \rho \arcsin(\rho)$$

$$D = \frac{A}{\sqrt{3-A}}$$

$$H = \left( \frac{\delta}{z_{1-\alpha/2} - z_{1-\beta}} \right)^2$$

In this research context, 'j' is defined as the number of observed variables, while 'k' represents the number of latent variables. In particular, 'ρ' is used to refer to the Gini correlation, which is estimated for a standard random vector with two variables. Another aspect of the analysis includes 'δ', which is defined as the size of the expected effect. In statistical analysis, 'α' refers to the Type I error rate, corrected by the Sidak method, while 'β' represents the Type II error rate. Finally, 'z' is used to represent the standard normal score, an important component in determining the accuracy of the analysis.

*Normal distribution cumulative distribution function (CDF):*

$$F(x; \mu, \sigma^2) = \frac{1}{2} \left[ 1 + \text{erf} \left( \frac{x - \mu}{\sigma\sqrt{2}} \right) \right],$$

where  $\mu$  is the mean,  $\sigma$  is the standard deviation, and *erf* is the error function.

### ***A-priori Sample Size Calculator for Structural Equation Models***

In this calculation, a calculation method is developed to determine the required sample size for a research project using Structural Equation Modeling (SEM). This includes considering the quantity of both observed and latent variables in the model. In addition, the expected effect size as well as the desired level of probability and statistical power are other important factors to be taken into account. This formula provides information about the minimum sample size needed not only to detect the

identified effect but also based on the complexity of the study model structure. Please enter the necessary parameter values, and then click 'Calculate'.

With 31 observed variables and 6 latent variables, at probability level 0,05; it is appeared to the following results:

- Minimum sample size to detect effect is 236.
- Minimum sample size for model structure is 110.

So, recommended minimum sample size is 236.

Besides, the minimum sample size of analysis by SEM is 200 (Hoogland, & Boomsma, 1998). From three kind of selection sample size above, the minimum sample size of this study is 236.

#### **4.3.2 Data analytical process**

In this research, the technique of Structural Equation Modeling (SEM) has been utilized for data analysis. Recognized as a foundational instrument and preferred methodology within social science research (Hu & Bentler, 1999), SEM enables the delineation, estimation, and hypothesis testing concerning intricate interrelations among various variables. This is further elaborated in the studies of Hu and Bentler (1999), Suhr (2006), and Ullman & Bentler (2012). The application of SEM is driven by dual objectives: firstly, to enhance the comprehension of correlation or covariance patterns amongst a set of specified variables, and secondly, to endeavor in explaining the maximal quantum of variance within the confines of a designated theoretical framework.

The procedural implementation of SEM encompasses two critical stages: the validation of the measurement model and the development of the structural model. Consequently, in the ambit of this study, exploratory factor analysis (EFA) along with multiple confirmatory factor analyses (CFA) were conducted. This approach is instrumental in corroborating the structure of the pre-defined observed variables under investigation.

As part of the present study, an exploratory factor analysis (EFA) was performed on green HRM, using half of the study sample. This process has proven that all factor loadings have values exceeding the threshold of 0.30. This, together with the Kaiser-Meyer-Olkin value of 0.80 and the significant result from the Barlett's Sphericity test ( $p < 0.001$ ), supports the support for factoriality of the correlation matrix. Principal axis analysis discovered a factor with an eigenvalue greater than 1, specifically 3.05, explaining 44.34% of the total variance. The individual loading coefficients of the observed variables all exceed 0.70, which shows a high level of reliability of the results (Tabachnick & Fidell, 2007).

In the study, confirmatory factor analysis (CFA) was also applied. CFA was used to confirm the structure of the identified observed variables, while evaluating the general fit index (GFI) and performing discriminant validity testing, as described by Suhr

(2006). This approach aims to ensure that the model being tested is an accurate reflection of the structure of the observational data.

In the current research, we employed the concept of discriminant validity, to ascertain whether certain measures, presumed to be unrelated, indeed exhibit no significant relationships. To this end, specific indices within confirmatory factor analysis (CFA) were utilized, encompassing GFI, Chi-squared ( $\chi^2$ ), CFI, IFI, RMSEA, and AIC. The purpose of conducting CFA was to evaluate whether the dependent variables represented distinct constructs. Byrne (2012) notes that CFA serves as a foundational tool for determining model fit and for the validation of correlational structures. This facilitated an in-depth examination of dependent, moderating, and mediating variables, and their distinctive roles within the scope of the study. The findings revealed that each variable investigated embodied a unique construct, guiding our decision to retain the model that exhibited optimal performance.

In the realm of goodness-of-fit indices, Hu and Bentler (1999) categorize these into two distinct types: absolute and incremental fit indices. These indices are instrumental in assessing how well variables align on a continuum. Absolute fit indices, including RMSEA and AIC, are utilized to gauge the fidelity with which the hypothesized model replicates the data collected. On the other hand, incremental fit indices such as NFI and CFI are employed to measure the improvement in fit by comparing the proposed model against a more constrained or nested model. Bentler and Bonett (1980) have highlighted the importance of these indices in contributing to the accumulation of practically valuable information, particularly in identifying impacts of statistical significance.

Beauducel and Wittmann (2005) suggest that a CFI value approaching 1.0 is deemed acceptable, and an RMSEA value below 0.06 indicates good model performance. Moreover, indices like IFI should approximate or exceed a value of 0.95 to signify a good fit (Bentler & Bonett, 1980). Akaike (1987) posited that the model with the lowest AIC value is typically the most refined. The Chi-square test, referenced by Suhr (2006), enables the researcher to evaluate disparities in sample proportions across different studies or against previously analyzed populations, as elucidated by Pallant (2011). A chi-square value nearing zero denotes minimal discrepancies between hypothesized or existing studies and the observed data in relation to the covariance matrix, as discussed by Suhr (2006).

In this research, the initial phase of evaluating reflective measurement models focuses on the analysis of external loading values. Hair et al. (2017, 2019) have suggested that to establish convergent validity of a construct, these loadings should be at least 0.708. This threshold ensures that the construct accounts for more than 50% of the variance (AVE) or aligns with other acceptable criteria. Subsequently, the second step involves using Cronbach's alpha and composite reliability to ascertain the internal consistency of indicators within a given construct. According to Hair et al. (2017, 2019), the

measurement model is deemed consistent if the Cronbach's alpha coefficient attains a minimum of 0.70 (or 0.60 in exploratory studies) and does not exceed 0.95, while the composite reliability should lie within the range of 0.60 to 0.95.

The third step of the process involves assessing discriminant validity, an important aspect of evaluating reflective measurement models. After the study, Hair et al. (2019) identified HTMT as the most accurate measure for this assessment. HTMT, defined as the average of the mean correlations of items measuring the same construct, becomes an important indicator in this context. High HTMT values indicate issues with discriminant value. Therefore, Hair et al. (2019) advocate a threshold of 0.90 for HTMT to ensure discriminant validity in reflective measurement models.

## 5 . RESULTS AND FINDINGS – QUALITATIVE PHASE

### 5.1 In-depth interview

From previous studies, the measurements of all constructs are identified as in Table 4. Then from these measurements a semi-structured interview was prepared for the interviews (see Appendix 2)

Table 4: The measurements

Items	Code	References
<b>Green human resource management</b>	GHRM	(Dumont et al., 2017)
My Company sets green goals for its employees.	GHRM1	
My Company provides employees with green training	GHRM2	
My Company provides employees with green training to develop employees' knowledge and skills required for green management.	GHRM3	
My Company considers employees' workplace green behavior in performance appraisals	GHRM4	
My Company relates employees' workplace green behaviors to rewards and compensation	GHRM5	
My Company considers employees' workplace green behaviors in promotion	GHRM6	
<b>Environmental knowledge</b>	EK	(Ellen et al., 1997)
I know that I buy and use products that are environmentally safe	EK1	
I know about recycling products/items.	EK2	
I know how to select products that reduce the amount of waste.	EK3	
I understand the environmental phrases and symbols on the product package	EK4	
I am very knowledgeable about environmental issues.	EK5	
<b>Eco-initiatives</b>	ECO	(Boiral & Paillé, 2012)
In my work, I weigh the consequences of my actions before doing something that could affect the environment.	ECO1	
I voluntarily carry out environmental actions and initiatives in my daily work activities	ECO2	
I make suggestions to my colleagues about ways to protect the environment more effectively, even when it is not my direct responsibility.	ECO3	

<b>Items</b>	<b>Code</b>	<b>References</b>
<b>Environmental Leadership</b>	EL	(Chen & Chang, 2013)
My leader inspires the company employees with environmental plans.	EL1	
My leader gets the company employees to work together for the same environmental goals	EL2	
My leader encourages company employees to achieve environmental goals.	EL3	
My leader provides a clear environmental vision for the company employees to follow.	EL4	
My leader considers the environmental beliefs of the Company employees.	EL5	
My leader stimulates the Company employees to think about green ideas	EL6	
<b>Psychological contract breach</b>	PCB	(Robinson & Morrison, 2000)
Almost all the promises made by my Company during recruitment have not been kept so far	PCB1	
I feel that my Company has come through in fulfilling the promises made to me when I was hired (reversed)	PCB2	
So far my Company has not done a good job of fulfilling its promises to me	PCB3	
I have not received everything promised to me in exchange for my contributions	PCB4	
My Company has broken many of its promises to me even though I've upheld my side of the deal	PCB5	
<b>Green Knowledge Sharing</b>	GKS	(Wong, 2013)
I enjoy sharing my environmental knowledge with colleagues.	GKS1	
I enjoy helping colleagues by sharing my environmental knowledge.	GKS2	
It feels good to help my colleagues by sharing my environmental knowledge	GKS3	
Sharing my environmental knowledge with colleagues is pleasurable	GKS4	
I believe environmental knowledge sharing can benefit all parties involved	GKS5	

(Source: Summarized from previous studies)

In the process of designing and implementing a quality research strategy, applying in-depth interviews is an important factor to ensure the accuracy and depth of the data collected. Creswell and Creswell (2017) emphasizes that choosing the right team of experts to conduct these interviews is a factor that cannot be ignored, because it directly affects the quality and reliability of the information obtained. Saunders et al. (2009) also assert that, in the context of qualitative research, researchers need to access non-standardized interview methods such as semi-structured interviews and in-depth interviews, to be able to a deeply exploration of "how" and "what" happens in specific situations.

In-depth and semi-structured interviews were therefore chosen as the main means of data collection, with the goal of fully exploiting the knowledge and experience of experts, while ensuring flexibility and adapt to each specific case. Selecting interview participants, therefore, becomes the most important stage of the research process, with the goal of creating a multidimensional and in-depth picture of the researched issue.

In this particular study, the selection of experts to interview was based on three specific criteria, designed to ensure that the participants not only possessed highly specialized knowledge and experience in the field researched, but also has the ability to provide in-depth and multi-dimensional insight into the topic. These criteria aim to ensure a level of expertise and experience in the particular field, the ability to reflect and analyze the complexity of the research problem, as well as the willingness to share knowledge and experience in an open manner. opening and details. Thereby, selecting interview participants is not only an important step in collecting high-quality data but also a foundation for ensuring the accuracy and reliability of research results, contributing to the development of theory and practice in the field of interest.

First, we chose experts who has been working in the aviation industry for three years or more. We chose three years or more because employees will be promoted to management positions after two or three years.

Second, each of them, as a supervisor or in the human resources management department, possesses sufficient knowledge and information to provide accurate answers and appraise the content of the questionnaire. Furthermore, with their position and experience, they also understand the importance of complying with environmental protection requirements and are able to grasp the sustainable practice strategies that the organization has applied.

Third, they must be 25 years old or older. Management positions often require college graduation, meaning they will start working at age 22.

To collect data for the study, the author carried out a detailed research process that included many steps, starting with initial selection and outreach to managers and supervisors. During this initial phase, the goals of the research are clearly presented to potential subjects, and the author also shares with them related research documents and asks them to schedule an appointment to conduct the interview. Invitations to

participate were sent to 10 managers and supervisors, targeted based on specific criteria (Yin, 2014), to ensure that participants had in-depth knowledge and understanding about Environmental Management and GHRM along with related factors.

Next, after the experts agreed to participate and chose a schedule and location for the interview, 7 out of 10 agreed to conduct the interview, either by using face-to-face means or by other means. Online platforms like Google Meet, show flexibility in approach. In this phase, the main method of data collection is through semi-structured interviews, designed to explore the research topic extensively through an open-ended approach, based on a set of prepared questions (Saunders et al., 2009)

The interview process is organized in three main parts: introduction, development and conclusion of the interview (Chan & Hawkins, 2012), to facilitate a coherent and natural flow of the conversation, from introducing to diving deeper into the topic and finally summing up the interview. Not only does this help collect data effectively, but it also facilitates the development of a trusting relationship between researcher and participant, thereby opening up the possibility of collecting data more accurate.

Specifically, the author has provided the interviewer with the purpose and meaning of this interview, which is purely for the purpose of academic research for the individual's doctoral project. Ensure the confidentiality of personal information and company information, such as the company name and specific activities. This information will be encoded in the research paper.

Creating a trustworthy and comfortable dialogue space is an indispensable factor to ensure the success of each meeting. Before entering the main part of the interview, the author takes time to learn and review important personal information of the participants, including the name of the organization they represent, age, experience work experience, and work position. This helps the author gain a deeper overview of each participant's professional context and personal experiences, thereby establishing a solid foundation for the conversation.

Next, in the development portion of the interview, participants were asked a series of diverse questions, aimed at exploring and clarifying how and why GHRM policies and practices are applied in the aviation industry. These questions are designed not only to gather information about specific activities, but also to focus on understanding the causes and processes of implementing GHRM initiatives, with an emphasis on answering the "why " These measures are important and "how" they are effectively implemented in an airline company environment. Thereby, the interview is not only an opportunity to collect data but also an opportunity to further analyze the nature and impact of GHRM on sustainable development in the aviation industry.

These contents are shown in Appendix 2. In addition, interviewees are also encouraged to add additional questions to the questionnaire if they feel they are lacking.



The question is designed not only to stop at one variable but also to expand into other areas such as sharing knowledge about the environment, environmental leadership management, knowledge about environmental protection and eco-initiatives. The final stage of the process involves asking questions to verify and enrich the information collected. After the data collection phase, the research team thoroughly synthesized and analyzed information from each specific case. To ensure accuracy and enhance the quality of the final research report, a process known as member checking is used (Baxter & Jack, 2008). This process includes contacting individuals who participated in interviews again to gather additional information and confirm important details, thereby enhancing the reliability and accuracy of the research data.

Table 5: Characteristics of participants

No	Participant	Age	Position	Experience
1	Participant A	49	Academic expert	25
2	Participant B	44	Human Resource Manager	22
3	Participant C	51	Service & training Manager	25
4	Participant D	34	Training manager	10
5	Participant E	50	Vice Director	25
6	Participant F	51	Human Resource Manager	25
7	Participant E	40	Academic expert	15

(Source: The author's works)

During the discussion about the independent variable GHRM, the researcher asked the participants' opinions on whether they had ever heard of the concept of GHRM, and if so, how it was implemented at their workplace. For those unfamiliar with the concept, the researcher will provide a concise and clear explanation, describing GHRM as a combination of environmental management and human resource management. Participants are then encouraged to share their thoughts about GHRM, including insights and examples they know. For those who were familiar, they were asked to describe GHRM in more depth and give specific examples to confirm understanding.

The 6-item GHRM scale was presented, and participants were asked to review each item carefully to ensure their complete and accurate understanding. They were also encouraged to give feedback to the researcher if there was any ambiguity or to suggest improvements in wording. An additional question was asked to encourage participation from participants: "Are there any other items you would like to add to the questionnaire?" The purpose of this question is to determine if there are any other factors that should be added to the GHRM scale to increase its accuracy and reflect

the research environment. The same procedures are applying with the five left variables: EK, ECO, PCB, EL and GKS. Some example questions in this stage are shown in table 6 below.

Table 6: Selected results of qualitative research

	<b>Example questions</b>	<b>Selected opinions</b>	<b>Remark</b>
GHRM	<p>Have you ever heard of the term GHRM? How are the GHRM practices in your company? Do you know GHRM practices?</p> <p>Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily?</p> <p>May you suggest some more items of GHRM</p>	<p>‘We practice GHRM for a long time. Some workers understand this as ‘economic activities’.</p> <p>‘Our airline performs environmental protection activities in KPI’</p>	
EK	<p>Have you ever heard of EK? How are the EK practices in your company? Do you know the environmental protection symbols on the package? Such as can be recycled...</p> <p>Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily?</p> <p>May you suggest some more items of EK</p>	<p>I know how to sort waste after use.</p> <p>‘Sometimes people confuse how to sort waste in a right way.’</p>	One plus item
ECO	<p>Have you ever heard of ECO? How are the ECO practices in your company?</p> <p>Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily?</p> <p>May you suggest some more items of ECO</p>		

	<b>Example questions</b>	<b>Selected opinions</b>	<b>Remark</b>
EL	<p>Have you ever heard of EL ? Do you think the leaders in your company are EL? Can you specify some actions of your EL? Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily? May you suggest some more items of EL?</p>	<p>“Leader here means all supervisors, managers, leaders..., so in the questionnaire you need to clarify this idea. If not, people may consider them as top management”</p>	
PCB	<p>Have you ever heard of a PCB? What are PCB in your company? When PCB happened, what did you feel? Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily? May you suggest some more items of PCB</p>	<p>‘Psychological problems exist, but they are not always speaking out following the collective culture’.</p>	
GKS	<p>Have you ever heard of GKS? Do you enjoy sharing green knowledge with your colleagues? Do you think that this activities give benefits for any parties? Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily? May you suggest some more items of GKS</p>	<p>May we pay more attention to share experience or ideas on environmental protection with my colleagues? Does it overlap with other items?</p>	

(Source: The author’s works)

After getting the result from an in-depth interview, we gather and adjust information into one questionnaire and then ask the experts one more time checking this

measurements. Here, A stands for experts from aviation industry, B stands for academics.

Table 7: Results of in-depth interview: Agreeing responses

Constructs and Items	Matching responses			Percentage (%)
	A	B	Total	
<b>Green human resource management</b>				
GHRM1	5	2	7	100.00
GHRM2	5	2	7	100.00
GHRM3	5	2	7	100.00
GHRM4	4	2	6	85.71
GHRM5	4	2	6	85.71
GHRM6	5	2	7	100.00
<b>Environmental knowledge</b>				
EK1	5	2	7	100.00
EK2	5	2	7	100.00
EK3	5	2	7	100.00
EK4	4	1	5	71.43
EK5	5	1	6	85.71
EK6	5	2	7	100.00
<b>Eco-initiatives</b>				
ECO1	5	2	7	100.00
ECO2	5	2	7	100.00
ECO3	5	2	7	100.00
<b>Environmental leadership</b>				
EL1	5	2	7	100.00
EL2	4	2	6	85.71
EL3	5	2	7	100.00
EL4	5	1	6	85.71
EL5	5	2	7	100.00
<b>Psychological contract breach</b>				
PCB1	5	2	7	100.00
PCB2	5	2	7	100.00
PCB3	4	2	6	85.71
PCB4	5	1	6	85.71
PCB5	5	2	7	100.00
<b>Green knowledge sharing</b>				
GKS1	5	2	7	100.00
GKS2	5	2	7	100.00
GKS3	5	2	7	100.00
GKS4	4	2	6	85.71
GKS5	5	2	7	100.00

(Source: The author's works)

## 5.2 Pilot Test

Before providing the questionnaire to respondents in the quantitative phase, it needs to be tested in a pilot. According to Saunders et al. (2009), this stage aims to refine the questionnaire so that participants will have fewer misunderstandings or unpleasant replying the questions and avoid problems in recording the data. The processes for conducting a pilot test are illustrated as follows:

First, more than fifty respondents working at aviation companies were invited to read a draft questionnaire translated into Vietnamese in order to find out the mistakes, receive comments, and check how long a questionnaire needs to be completed before developing a final version. There are 53 respondents who completed the questionnaire. Their feedback points out that:

- The instructions for the questionnaire were not clear.
- Some items were not well translated into Vietnamese.
- Some items confuse the respondent.
- It takes around 13–20 minutes to complete a questionnaire.

Second, based on this feedback, the author revised the questionnaire. Then it was provided to respondents who worked at aviation companies. The author received fifty-three valid questionnaires, which were used for Cronbach's alpha test and exploratory factor analysis (EFA). The analytical result at this stage aims to eliminate items that did not meet the rule of thumb for examining such two tests in order to propose a robust questionnaire for the quantitative study. The data analyzed from the Cronbach alpha test and EFA is summarized in Table 8.

In this phase, testing the GHRM measure is the most important, as very few published studies have applied the GHRM measure to the aviation industry. Table 8 illustrates that Cronbach's alpha values for all constructs exceed a threshold of 0.7. Due to a pilot test, adding and removing any items must be careful, and thus EFA's results must be considered. From the results analyzed in Annexure 4, all Bartlett's tests were significant, and the KMO values were greater than 0.5, suggesting that there are sufficient correlations between items (Hair et al., 2019a). The factor loading, understood as the correlation between each item and a factor, should be better than 0.5 (Hair et al., 2019a) to ensure that an item is correlated to the factor.

Table 8: EFA for pilot test

Items	Code	Factor loading	CrA
<b>Green human resource management</b>	GHRM		0.92
“My Company sets green goals for its employees”.	GHRM1	0.76	0.91

Items	Code	Factor loading	CrA
“My Company provides employees with green training”	GHRM2	0.78	0.92
“My Company provides employees with green training to develop employees' knowledge and skills required for green management”	GHRM3	0.88	0.90
“My Company considers employees' workplace green behavior in performance appraisals”	GHRM4	0.85	0.91
“My Company relates employees' workplace green behaviors to rewards and compensation”	GHRM5	0.82	0.90
“My Company considers employees' workplace green behaviors in promotion”	GHRM6	0.78	0.91
<b>Environmental knowledge</b>	EK		0.93
“I know that I buy and use products that are environmentally safe”	EK1	0.85	0.92
“I know about recycling products/items”	EK2	0.77	0.93
“I know how to select products that reduce the amount of waste”	EK3	0.81	0.92
“I understand the environmental phrases and symbols on the product package”	EK4	0.83	0.92
“I know how to sort waste after use”	EK5	0.82	0.92
“I am very knowledgeable about environmental issues.”	EK6	0.80	0.92
<b>Eco-initiatives</b>	ECO		0.83
“In my work, I weigh the consequences of my actions before doing something that could affect the environment”	ECO1	0.71	0.84
“I voluntarily carry out environmental actions and initiatives in my daily work activities”	ECO2	0.89	0.70
“I make suggestions to my colleagues about ways to protect the environment more effectively, even when it is not my direct responsibility”	ECO3	0.75	0.75
<b>Environmental Leadership</b>	EL		0.92
“The leader inspires the company employees with environmental plans”	EL1	0.76	0.90

<b>Items</b>	<b>Code</b>	<b>Factor loading</b>	<b>CrA</b>
“The leader gets the company employees to work together for the same environmental goals”	EL2	0.79	0.89
“The leader encourages company employees to achieve environmental goals”	EL3	0.74	0.90
“The leader provides a clear environmental vision for the company employees to follow”	EL4	0.88	0.90
“The leader considers the environmental beliefs of the company employees”	EL5	0.80	0.89
“The leader stimulates the company employees to think about green ideas”	EL6	0.65	0.91
<b>Psychological contract breach</b>	PCB		0.80
“Almost all the promises made by my Company during recruitment have not been kept so far”	PCB1	0.54	0.79
“I feel that my Company has come through in fulfilling the promises made to me when I was hired (reversed)”	PCB2	0.70	0.76
“So far my Company has not done a good job of fulfilling its promises to me”	PCB3	0.82	0.72
“I have not received everything promised to me in exchange for my contributions”	PCB4	0.66	0.76
“My Company has broken many of its promises to me even though I've upheld my side of the deal”	PCB5	0.63	0.78
<b>Green Knowledge Sharing</b>	GKS		0.94
“I enjoy sharing my environmental knowledge with colleagues”	GKS1	0.84	0.93
“I enjoy helping colleagues by sharing my environmental knowledge”	GKS2	0.76	0.93
“It feels good to help my colleagues by sharing my environmental knowledge”	GKS3	0.86	0.93
“Sharing my environmental knowledge with colleagues is pleasurable”	GKS4	0.90	0.92
“I believe environmental knowledge sharing can benefit all parties involved”	GKS5	0.92	0.91

(Source: The author's works)

## **6. RESULTS AND FINDINGS - QUANTITATIVE PHASE**

### **6.1 Research sampling**

In this study, the unit of analysis is the individual. To get data, the author conducted a survey through questionnaires. Each individual will answer each questionnaire. The criteria for selecting respondents are: employees who have worked for at least 1 year, and only employees of aviation companies, working in departments such as reservations and ticketing, sales departments and marketing, airport passenger service, administration, cargo handling service.

Outsourced employees will not be included in this study sample. To perform the analysis, the minimum number of samples was determined to be 236, as mentioned in Section 3.2 of the study. Data collection for this study primarily took place in Vietnam, including the participation of four major domestic airlines: Vietnam Airlines, Vietjet Air, Pacific Airlines, Bamboo Airways, along with several other companies operating in the aviation sector.

For the selection of participants, the convenience sample method will be applied. Next, after contacting the airlines and companies mentioned above, the author plans to send the questionnaire to participating individuals via email, internet or hard copy, depending on the method which is the most convenient for them.

### **6.2 Research Strategy and Data Collection**

In this research work, the approach chosen is the survey strategy, a quantitative research method that is highly appreciated for its ability to systematically collect data. According to Saunders et al. (2019), this strategy is very suitable for the goal of collecting quantitative data for the purpose of analyzing and measuring relationships between research variables, as well as supporting the construction and testing of research variables. define the relationship models between them. Creswell and Creswell (2017) also emphasizes that, through the use of survey design, researchers can gain a clear quantitative view of the trends, attitudes and opinions of a specific population, or segment Analyze the correlation between variables through surveying a representative population sample.

This survey design allows for three basic types of questions to be asked and answered:

- (a) Descriptive questions, which aim to describe the characteristics or opinions of the population being studied;
- (b) Questions about the relationship between variables, to determine the extent and how the variables interact with each other;
- (c) Questions about predictive relationships, which explore the possibility of variables influencing each other over time in the case of longitudinal studies.

This method also has the benefit of retaining control over the research process, allowing the researcher to achieve representative and highly objective results.



Primary data for this study was collected through a survey of employees working in Vietnam's aviation industry. To do this, a self-administered questionnaire was designed with a seven-point Likert scale, allowing the assessment of participants' level of agreement or disagreement with a series of statements related to the topic. This questionnaire is divided into two main parts, through which the study hopes to provide an in-depth and comprehensive insight into how and to what extent GHRM affects environmental protection behavior in the aviation industry. Part I focuses on basic statistics and the socio-demographics of the respondents, for example, age, years of employment, job position, and education level, while Part II presents questions for variables in the research model. This questionnaire was originally written in English. Because the majority of respondents were Vietnamese, the questionnaire was then translated into Vietnamese using a backward process. It is important that we carefully check the information on the questionnaire to ensure it meets the requirements of accuracy and reliability.

To minimize the risk of common method bias (Podsakoff et al., 2012), we conducted separate surveys at two distinct time periods. Before starting the survey process, an important preparatory step was to contact the heads of relevant departments to clearly inform and present the objectives of the study, to ensure understanding and support from their side. The fieldwork took place between April and June 2022, demonstrating a clear and organized schedule.

In the first survey (T1), we focused on collecting information about Green Human Resource Management (GHRM) policies and practices, environmental knowledge and eco-initiatives being implemented at aviation companies. This time, with the aim of collecting data effectively and widely, we distributed a total of 1,000 questionnaires to participants, and the result was 600 carefully and completely filled-in responses. The difference between the number of questionnaires sent and the number of responses received not only reflects the level of interest and willingness of respondents to participate, but is also an important basis for evaluating and analyzing data more accurately during the research process. This process plays an essential role in ensuring the accuracy, objectivity and reliability of the data collected, thereby contributing to the achievement of valuable and meaningful research results.

After carefully checking the ballots sent by respondents, there were some invalid ballots because some data was missing. We have removed these invalid votes because they cannot be processed.

During the data collection process of this round (T1), a total of 593 respondents completed the survey. Next, one month after the first survey (T1), we conducted the second survey (T2) with the main goal of collecting information related to topics such as green knowledge sharing, environmental leadership, and psychological contract breach. This wave of the survey was sent to participants of wave T1 to collect follow-up information. In this round, we received 443 completed and valid questionnaires from respondents.

This split data collection process allowed us to collect information from different sources, an approach designed to minimize bias due to Common Method Variance (Podsakoff et al., 2012). By conducting data collection in two distinct phases and focusing on different topics, we sought to create a more diverse and accurate research framework, thereby enhancing credibility and the value of research results.

### 6.3 Measurement

This study identified six constructs. The detailed concept of each variable is shown in table 9.

Table 9: The Concept of Variables

<b>Variables</b>	<b>Definition</b>	<b>Author</b>
Environmental leadership	"behaviors of leaders who motivate followers to achieve environmental goals and inspire followers to perform beyond expected levels of environmental performance"	(Chen & Chang, 2013)
Environmental knowledge	„General knowledge of facts, concepts, and relationships concerning the natural environment and its major ecosystems."	(Fryxell & Lo, 2003)
Eco-initiatives	“Discretionary behavior and suggestions to improve environmental practices or performance”	(Boiral & Paillé, 2012)
Green HRM	“The integration of EM strategy in HRM is known as green human resource management (GHRM)”	(Renwick et al., 2013)
Psychological contract breach	„ psychological contract breach is a cognitive perception that an employee has not received everything that was promised formallAy or informally by the organization“	(Robinson & Morrison, 2000)
Green knowledge sharing	Green knowledge sharing is viewed as individuals' behaviors enjoy sharing with each other knowledge about environmental protection	(Author's synthesis )

*(Source: summaried from previous studies)*

The questionnaire was designed for the purpose of data collection. This helps support the achievement of research objectives. The six factors in this study are environmental knowledge, environmental leadership, GHRM, Eco-initiatives, PCB, and green

knowledge sharing. These items will be formulated as a seven-point Likert scale, in which, 1 means "strongly disagree", then 7 means "strongly agree."

Measurements: The measures items for variables/constructs (01 independent, 01 dependent, 02 mediators, and 02 moderator variables) were considered for scale reliability. The internal consistency of a set of items was given by Cronbach's Alpha. The questionnaire contained 31 items, which are shown in Table 10.

The questionnaire was carefully designed to collect necessary information for quantitative analysis, thereby contributing to achieving the goals set out in the study. Within the framework of this study, six main variables are taken into consideration including: environmental knowledge, environmental leadership, GHRM, eco-initiatives, PCB and green knowledge sharing. These variables include: one independent variable, one dependent variable, two mediating variables, and two moderating variables, creating a diverse and complete research structure. To measure each variable/construct accurately, we used a seven-point Likert scale, with a range from 1 means "strongly disagree" to 7 means "strongly agree".

During the measurement process, each item related to variables - including one independent variable, one dependent variable, two mediating variables and two moderating variables - is scrutinized for the reliability of the measured scale. This ensures that the assessments obtained from the questionnaire accurately and reliably reflect the opinions and experiences of participants, thereby providing a solid foundation for analysis and insight more about how these variables interact and influence each other in the research context.

Table 10: Measurements

Items	Code	References
<b>Green human resource management</b>	GHRM	(Dumont et al., 2017)
"My Company sets green goals for its employees"	GHRM1	
"My Company provides employees with green training"	GHRM2	
"My Company provides employees with green training to develop employees' knowledge and skills required for green management"	GHRM3	
"My Company considers employees' workplace green behavior in performance appraisals"	GHRM4	
"My Company relates employees' workplace green behaviors to rewards and compensation"	GHRM5	
"My Company considers employees' workplace green behaviors in promotion"	GHRM6	
<b>Environmental knowledge</b>	<b>EK</b>	(Ellen et al., 1997)
"I know that I buy and use products that are environmentally safe"	EK1	

<b>Items</b>	<b>Code</b>	<b>References</b>
“I know about recycling products/items”	EK2	
“I know how to select products that reduce the amount of waste”	EK3	
“I understand the environmental phrases and symbols on the product package”	EK4	
“I know how to sort waste after use”	EK5	
“I am very knowledgeable about environmental issues”	EK6	
<b>Eco-initiatives</b>	<b>ECO</b>	(Boiral & Paillé, 2012)
“In my work, I weigh the consequences of my actions before doing something that could affect the environment”	ECO1	
“I voluntarily carry out environmental actions and initiatives in my daily work activities”	ECO2	
“I make suggestions to my colleagues about ways to protect the environment more effectively, even when it is not my direct responsibility”	ECO3	
<b>Environmental Leadership</b>	<b>EL</b>	(Chen & Chang, 2013)
“The leader inspires the company employees with environmental plans”	EL1	
“The leader gets the company employees to work together for the same environmental goals”	EL2	
“The leader encourages company employees to achieve environmental goals”	EL3	
“The leader provides a clear environmental vision for the company employees to follow”	EL4	
“The leader considers the environmental beliefs of the Company employees.”	EL5	
“The leader stimulates the Company employees to think about green ideas”	EL6	
<b>Psychological contract breach</b>	<b>PCB</b>	(Robinson & Morrison, 2000)
“Almost all the promises made by my Company during recruitment have not been kept so far”	PCB1	
“I feel that my Company has come through in fulfilling the promises made to me when I was hired (reversed)”	PCB2	
“So far my Company has not done a good job of fulfilling its promises to me”	PCB3	
“I have not received everything promised to me in exchange for my contributions”	PCB4	

Items	Code	References
“My Company has broken many of its promises to me even though I've upheld my side of the deal”	PCB5	
<b>Green Knowledge Sharing</b>	GKS	(Wong, 2013)
“I enjoy sharing my environmental knowledge with colleagues”	GKS1	
“I enjoy helping colleagues by sharing my environmental knowledge”	GKS2	
“It feels good to help my colleagues by sharing my environmental knowledge”	GKS3	
“Sharing my environmental knowledge with colleagues is pleasurable”	GKS4	
“I believe environmental knowledge sharing can benefit all parties involved”	GKS5	

(Source: Summarized from previous studies)

## 6.4 Demographic Information and Measurement model Test

SEM using in R are utilized to analyze collected data. Data analysis is mainly conducted through the following main steps:

### *Step 1: Descriptive Statistic Analysis*

Description statistics are intended to describe the characteristics of the sample. Statistics of the frequency, percentage, average and standard deviation of each research variable and a cross-tabulation of demographic variables have been presented.

Table 11: Demographic and Descriptive Information

Demographic Variables		Frequency (N=443)	%
Gender	Male	205	46.30
	Female	238	53.70
Title	Staff	270	60.94
	Executive	133	30.02
	Supervisor	40	09.02
Academic qualification	High school/vocational school	61	13.77
	College's degree	62	14.00
	Bachelor's degree	284	64.11
	Master's degree or higher	36	08.12
Age	23-30 years	160	36.12
	31-40 years	173	39.05
	41-50 years	78	17.61
	>51 years	32	07.22
Exp	1-5 years	193	43.57

<b>Demographic Variables</b>	<b>Frequency (N=443)</b>	<b>%</b>
6-10 years	85	19.18
11-15 years	72	16.25
16-20 years	50	11.29
21-25 years	22	04.97
>26 years	21	04.74

(Source: The author's works)

Previous studies have shown that demographic information such as age and gender play an important role in evaluating environmentally related behavior. For this reason, in the present study, both of these factors were given importance and included in the analysis to better understand their influence on pro-environmental behavior.

Age diversity in the organization will increase the need for knowledge sharing and make knowledge sharing more effective. And focusing on HRM functions such as training and development plans, evaluation and reward systems in this age diversity makes knowledge sharing even better (Sammorra et al., 2017).

In studies of environmental behavior and attitudes, there is evidence that women tend to exhibit higher levels of environmental behavior, attitudes, and concerns than men (Lee, 2009). This is reflected in the studies of Luchs and Mooradian (2012), as well as Scannell and Gifford (2013), emphasizing gender differences in approach and behavior towards the environment. These conclusions confirm the importance of considering demographic characteristics when studying environmental behavior, providing greater insight into how these factors influence attitudes and actions. environmental protection.

At the same time, Zelezny et al. (2000) also pointed out, when compared to men, women often demonstrate a greater level of concern for environmental issues. To explain this gender difference in environmental behavior, Zelezny et al. (2000) proposed the social role hypothesis. It is said that, women, due to history and socialization, are often raised and shaped with characteristics such as care, compassion, cooperation, and the ability to help others. Han et al. (2016), as well as Jain and Kaur (2006), also highlight that these characteristics may play a vital role in shaping more positive environmental attitudes and behaviors in women. compared to men.

During the process of socialization, there are some notable differences in the way boys and girls are raised and guided. Eagly and Crowley (1986) have shown that boys are often encouraged to develop characteristics such as courage and heroism and are guided to perform useful and useful work for society. Meanwhile, girls are often not integrated into society in the same way. This show that the way people act and view the environment can be influenced by gender roles and socialization processes. (Boeve-de Pauw & Van Petegem, 2010). Therefore, in the context of this study, age and gender were identified as important demographic variables that need to be

considered. From the data shown on table 11, it is clear that the distribution between men and women is quite balanced, with 46.0% being men and 53.70% being women, which reflects the gender balance. In terms of age, participants are from 23 to over 51 years old, indicating the participation of a wide range of different age groups. Notably, a large portion of the participants, namely 333 people, were between the ages of 23 and 40, representing the young and middle-aged group, which may reflect interest and awareness of the research topics in these age groups. These group may show their strong behaviour of sharing knowledge ((Samarra et al., 2017). This distribution provides a general view of the demographic factors.

Table 12: Descriptive Analysis for Items

Indicators	Observations	Mean	Median	Min	Max	Std. Deviation
GHRM1	443	5.600	6.000	3.000	7.000	0.912
GHRM2	443	5.680	6.000	3.000	7.000	0.899
GHRM3	443	5.680	6.000	4.000	7.000	0.916
GHRM4	443	5.700	6.000	4.000	7.000	0.894
GHRM5	443	5.660	6.000	4.000	7.000	0.894
GHRM6	443	5.650	6.000	4.000	7.000	0.898
EK1	443	5.730	6.000	3.000	7.000	0.863
EK2	443	5.680	6.000	3.000	7.000	0.877
EK3	443	5.740	6.000	3.000	7.000	0.970
EK4	443	5.700	6.000	3.000	7.000	0.932
EK5	443	5.740	6.000	3.000	7.000	0.913
EK6	443	5.750	6.000	3.000	5.000	0.901
ECO1	443	3.647	4.000	3.000	7.000	0.991
ECO2	443	3.635	4.000	2.000	7.000	0.962
ECO3	443	3.708	4.000	3.000	7.000	0.912
EL1	443	5.600	6.000	1.000	5.000	1.064
EL2	443	5.560	6.000	1.000	5.000	1.026
EL3	443	5.590	6.000	1.000	5.000	1.013
EL4	443	5.660	6.000	1.000	5.000	1.004
EL5	443	5.580	6.000	1.000	5.000	1.004
EL6	443	5.570	6.000	1.000	5.000	1.062
PCB1	443	3.810	4.000	1.000	7.000	1.542
PCB2	443	3.780	3.000	1.000	7.000	1.555
PCB3	443	3.790	3.000	2.000	7.000	1.534
PCB4	443	3.770	3.000	1.000	7.000	1.484
PCB5	443	3.760	3.000	2.000	7.000	1.448
GKS1	443	5.680	6.000	3.000	7.000	1.173
GKS2	443	5.770	6.000	3.000	7.000	1.180
GKS3	443	5.660	6.000	2.000	7.000	1.203
GKS4	443	5.160	5.000	2.000	7.000	1.106

Indicators	Observations	Mean	Median	Min	Max	Std. Deviation
GKS5	443	5.330	5.000	2.000	7.000	1.262

(Source: The author's works)

The results of 443 qualified observations are presented in Table 12, and their results are all positive. For GHRM, all mean and median values are 6 of 7, which means almost all respondents agree that GHRM practices in the aviation industry are rather good. For EK, they have rather the same value as GHRM and also highly support the opinions shown in the questionnaire. Besides, the results of the mean of EL and GKS are also close to 6, which means leaders in these companies show their environmental concern, and their employees can recognize that. Then, employees in these organizations usually share their environmental knowledge with each other. However, the values of ECO and PCB are lower than the others, only close to 4. So maybe these employees tend to agree with these statements, but it may need more initiatives. Then the PCB is also following the trend, but it is not as strong. In summary, the statistical mean values of the data are in the range of 3.635 to 5.750, and the standard deviation values range from 0.863 to 1.555. With a median from 3 to 6, in which almost all are from 5 to 6, it means that respondents mostly choose "agree" answers.

### **Step 2: Reliability and Validity Measures**

To assess the dimensionality and reliability of constructs, the following processes are conducted: internal consistency analysis (Cronbach's Alpha) and factor analysis. Cronbach's alpha analysis is also evaluated with both the item-to-total correlation and the alpha value to determine the internal consistency and reliability of the structures. Factor analysis can be carried out to confirm the dimensionality of each research construction, to select questions with high factor loads, and to compare the selected items with the theoretically suggested elements. The value of the latent root (eigenvalue) is used to determine the number of dimensions extracted from the analysis of the main factor component. According to Hair et al. (2019a), the following criteria must be satisfied: the loading of factors (0.6), the Eigenvalue (1.0), the cumulative explained variance (60%), the total correlation of items (0.3), and the coefficient alpha (0.7). Questions that do not meet these criteria are excluded from further analysis.

Table 13: Factor Analysis and Reliability Test

Research Items	Factor Loading	Eigenvalue	Cumulative Explained Variance	Item-to-total correlation	Cronbach's Alpha ( $\alpha$ )
		1.024	0.77		
<b>GHRM</b>					0.92
GHRM1	0.76			.725	0.91
GHRM2	0.85			.792	0.90
GHRM3	0.82			.788	0.90



<b>Research Items</b>	<b>Factor Loading</b>	<b>Eigenvalue</b>	<b>Cumulative Explained Variance</b>	<b>Item-to-total correlation</b>	<b>Cronbach's Alpha (<math>\alpha</math>)</b>
GHRM4	0.79			.782	0.90
GHRM5	0.76			.765	0.91
GHRM6	0.85			.783	0.90
<b>EK</b>					0.91
EK1	0.66			.696	0.90
EK2	0.76			.742	0.90
EK3	0.84			.771	0.89
EK4	0.80			.775	0.89
EK5	0.79			.796	0.89
EK6	0.79			.742	0.90
<b>ECO</b>					0.93
ECO1	0.87			.882	0.86
ECO2	0.69			.857	0.89
ECO3	0.75			.838	0.91
<b>EL</b>					0.96
EL1	0.83			.877	0.95
EL2	0.83			.869	0.95
EL3	0.78			.845	0.95
EL4	0.84			.875	0.95
EL5	0.90			.868	0.95
EL6	0.85			.864	0.95
<b>PCB</b>					0.97
PCB1	0.90			.907	0.97
PCB2	0.92			.930	0.96
PCB3	0.89			.927	0.96
PCB4	0.91			.916	0.97
PCB5	0.95			.917	0.97
<b>GKS</b>					0.97
GKS1	0.96			.932	0.96
GKS2	0.92			.936	0.95
GKS3	0.91			.917	0.96
GKS4	0.70			.853	0.97
GKS5	0.88			.898	0.96

(Source: The author's works)

### **Step 3: Common Method Variance Issue**

The variance of the common method (CMV) refers to the overlap of variance between two variables resulting from the form of measurement as opposed to a true relationship between the variables (Teo, 2011). Campbell and Fiske (1959) stated that one

consequence of CMV is an amplification of the observed correlations, which may provide erroneous support for the hypotheses. Initially, a Harmon one-factor test is implemented, which inserts all variables into a principal component factor analysis (Podsakoff & Organ, 1986). Secondly, the discriminated validity is evaluated by comparing the square root of the AVE (average variance extracted) to the Pearson correlations between the constructs. According to Hair et al. (2019a), all AVE estimates should be greater than the corresponding inter-construct square correlation estimates.

Table 14: Convergent validity and Consistency reliability

Constructs and Items		Convergent validity		Internal consistency reliability		
		Loadings ≥0.708	AVE >0.50	Composite Reliability 0.60 - 0.95	Cronbach's Alpha 0.60-0.95	Rho_A 0.70-0.95
<b>GHRM</b>	GHRM1	0.76	0.715	0.938	0.920	0.927
	GHRM2	0.85				
	GHRM3	0.82				
	GHRM4	0.79				
	GHRM5	0.76				
	GHRM6	0.85				
<b>EK</b>	EK1	0.66	0.695	0.932	0.91	0.914
	EK2	0.76				
	EK3	0.84				
	EK4	0.80				
	EK5	0.79				
	EK6	0.79				
<b>EL</b>	EL1	0.83	0.825	0.966	0.96	0.958
	EL2	0.83				
	EL3	0.78				
	EL4	0.84				
	EL5	0.90				
	EL6	0.85				
<b>ECO</b>	ECO1	0.87	0.879	0.956	0.93	0.932
	ECO2	0.79				
	ECO3	0.75				
<b>PCB</b>	PCB1	0.90	0.900	0.978	0.97	0.973
	PCB2	0.92				
	PCB3	0.89				

Constructs and Items		Convergent validity		Internal consistency reliability		
		Loadings ≥0.708	AVE >0.50	Composite Reliability 0.60 - 0.95	Cronbach's Alpha 0.60-0.95	Rho_A 0.70-0.95
	PCB4	0.91				
	PCB5	0.95				
<b>GKS</b>	GKS1	0.96	0.886	0.975	0.97	0.968
	GKS2	0.92				
	GKS3	0.91				
	GKS4	0.70				
	GKS5	0.88				

(Source: The author's works)

Table 15: Correlation and Discriminant validity

Constructs	AVE	CR	CA	MEAN	SD	GHRM	EK	EL	ECO	PCB	GKS	Age	Gen
GHRM	.715	.938	.92	5.661	.7632	-							
EK	.695	.932	.91	5.724	.7583	.363**	-						
EL	.825	.966	.93	5.594	.9346	.107*	.556**	-					
ECO	.879	.956	.96	5.574	.8748	.220**	.566**	.736**	-				
PCB	.900	.978	.97	3.781	1.4349	.018	-.416**	-.571**	-.547**	-			
GKS	.886	.975	.96	5.520	1.1152	.173**	.471**	.773**	.691**	-.573**	-		
Age				35.341	8.185	-.269**	-.312**	-.177**	-.237**	.167**	-.233		
Exp				9.284	7.4549	-.163**	-.369**	-.256**	-.320**	.424**	-.294	.848**	
Gender				1.537	.4992	.315**	.144**	.131**	.153**	.019	.115	-.167**	-.097

Note: \*p < 0.05; AVE: average variance extracted; CR: Composite Reliability; CA: Cronbach's Alpha, SD: Standard Deviation (Source: The author's works)

Table 16: Comparison of measurement models

Models	$\chi^2$	df	CFI	TLI	NFI	AGFI	RMR	RMSEA	SRMR
6 factors model GHRM+EK+ECO+EL+PCB+GKS	934.845	419	.965	.962	.939	.859	.039	.053	.034
5 factors model GHRM+EK	2430.781	424	.865	.852	.842	.566	.174	.103	.168
5 factors model GHRM+EL	4180.474	424	.748	.724	.728	.421	.331	.141	.278
5 factors model GHRM+ECO	2379.758	424	.869	.856	.845	.689	.212	.102	.196

<b>Models</b>	<b><math>\chi^2</math></b>	<b>df</b>	<b>CFI</b>	<b>TLI</b>	<b>NFI</b>	<b>AGFI</b>	<b>RMR</b>	<b>RMSEA</b>	<b>SRMR</b>
5 factors model GHRM+PCB	4208.276	424	.746	.722	.726	.510	.433	.142	.242
4 factors model GHRM+EK+EL	3889.133	264	.720	.682	.706	.338	.394	.176	.323
4 factors model GHRM+ECO+PCB	5637.207	428	.651	.621	.634	.369	.459	.166	.292
1 factors model	7573.566	.434	.521	.487	508	262	.195	.193	.161

(Source: The author's works)

GHRM: green human resource management, EK: environmental knowledge, ECO: eco-initiatives, EL: environmental leadership, PCB: psychological contract breach, GKS: green knowledge sharing.

The table show that 6 factors model with  $\chi^2 = 934.845$ ,  $df = 419$ ,  $CFI = 0.965$ ,  $TLI = 0.962$ ,  $NFI = 0.939$ ,  $AGFI = 0.859$ ,  $RMR = 0.039$ ,  $RMSEA = 0.053$ ,  $SRMR = 0.034$  is the most suitable model.

## 6.5 Research findings

### 6.5.1 Direct effects

*RQ1: Are there **direct effects** of GHRM, environmental knowledge and eco-initiatives, environmental leadership, and PCB on green knowledge sharing?*

*H1: There is a positive effect of GHRM on green knowledge sharing*

*H2: There is a positive effect of GHRM on environmental knowledge*

*H3: There is a positive effect of GHRM on eco-initiatives.*

*H4: There is a positive effect of environmental leadership on green knowledge sharing*

*H5: There is a negative effect of PCB on green knowledge sharing*

Table 17: Evaluation of hypotheses testing direct effect

Variables	Model 1 (GKS)	Model 2 (EK)	Model 3 (ECO)	Model 4 (GKS)	Model 5 (GKS)
Gender	0.134	0.037	0.156	0,008	-0.047
Age	0.018	0.015	0.024	-0.003	0.042
Exp	-0.057	-0.046	-0.055	-0.009	.215
GHRM	0.188**	0.323***	0.201***	-	-
EL	-	-	-	0.849 ***	-
PCB	-	-	-		-0.493***
Adjusted R2	0.1016	0.2303	0.1424	0.484	0.3677
F - statistic	13.5	34.06	19.34	102.80	65.27

(Source: The author's works)

P value <0.1 \*, p value < 0.05 \*\*, p value <0.01 \*\*\*. GHRM: green human resource management, EK: environmental knowledge, ECO: eco-initiatives, EL: environmental leadership, PCB: psychological contract breach, GKS: green knowledge sharing.

As Table 17 exhibits, green human resource management demonstrated a significantly positive association with green knowledge sharing ( $\beta = 0.188$ ,  $p < 0.05$ ) showing support for H1. Green human resource management also demonstrated a significantly positive association with environmental knowledge ( $\beta = 0.323$ ,  $p < 0.001$ ) showing support for H2. Besides, green human resource management demonstrated a

significantly positive association with eco-initiatives ( $\beta = 0.201$ ,  $p < 0.001$ ), showing support for H3.

Moreover, environmental leadership was positively and significantly related to green knowledge sharing ( $\beta = 0.849$ ,  $p < 0.001$ ). So, hypothesis H4 was supported. Then, psychological contract breach was positively and significantly related to green knowledge sharing ( $\beta = -0.493$ ,  $p < 0.001$ ). So, hypothesis H5 was supported.

### 6.5.2 Indirect effects - Mediating role of environmental knowledge and of eco-initiatives

*RQ2: Are there the **mediating roles** of environmental knowledge and eco-initiatives towards the effect of GHRM on green knowledge sharing?*

*H6: There is a mediating effect of environmental knowledge on the relationship between GHRM and green knowledge sharing*

*H7: There is a mediating effect of eco-initiatives on the relationship between GHRM and green knowledge sharing*

Table 18: Evaluation of Hypotheses testing indirect relationship

Variables	Model 6 (GKS)	Model 7 (GKS)
Gender	0.111	0.001
Age	0.009	-0.002
Exp	-0.029	-0.010
GHRM	-0.010	0.018
EK	0.612***	-
ECO	-	0.846***
EL	-	-
PCB	-	-
GHRM:EK	0.221***	-
GHRM:ECO	-	0.213***
GHRM x EL	-	-
GHRM x PCB	-	-
Adjusted R2	0.233	0.4783
F - statistic	27.86	82.05

(Source: The author's works)

P value  $< 0.1^*$ , p value  $< 0.05^{**}$ , p value  $< 0.01^{***}$ . GHRM: green human resource management, EK: environmental knowledge, ECO: eco-initiatives, EL: environmental leadership, PCB: psychological contract breach, GKS: green knowledge sharing

Let look at table 18. In model 6, the regression results also showed that GHRM positively and indirectly influenced green knowledge sharing via environmental knowledge ( $\beta = 0.221$ ,  $p < 0.01$ ). Besides the direct effect show that environmental knowledge significantly and positively influences green knowledge sharing ( $\beta =$

0.612,  $p < 0.01$ ). So, we have initial evidence supporting the mediating role of environmental knowledge. Thus, Hypothesis 6 was supported.

And then, in model 7, the regression results also present that green human resource management positively and indirectly influenced green knowledge sharing via eco-initiatives ( $\beta = 0.213$ ,  $p < 0.01$ ). Eco-initiatives significantly and positively influence green knowledge sharing ( $\beta = 0.846$ ,  $p < 0.01$ ). So, we have initial evidence supporting the mediating role of eco-initiatives. Thus, Hypothesis 7 was supported.

### **6.5.3 Moderating role of environmental leadership and of psychological contract breach**

*RQ3: Are there the moderating roles of environmental leadership and PCB to the connections from environmental knowledge, GHRM, and eco-initiatives to green knowledge sharing?*

*H8: There is a moderating effect of environmental leadership on the link between GHRM and green knowledge sharing.*

*H9: There is a moderating effect of environmental leadership on the mediating role of environmental knowledge toward the relationship between GHRM and green knowledge sharing.*

*H10: There is a moderating effect of environmental leadership on the mediating role of eco-initiatives toward the relationship between GHRM and green knowledge sharing*

*H11: There is a moderating effect of PCB on the link between GHRM and green knowledge sharing*

*H12: There is a moderating effect of PCB on the mediating role of environmental knowledge toward the relationship between GHRM and green knowledge sharing*

*H13: There is a moderating effect of PCB on the mediating role of eco-initiatives toward the relationship between GHRM and green knowledge sharing.*



Table 19: Indirect relationships and Interactional relationships

<b>Variables</b>	<b>Model 8 (GKS)</b>	<b>Model 9 (GKS)</b>	<b>Model 10 (GKS)</b>	<b>Model 11 (GKS)</b>	<b>Model 12 (GKS)</b>	<b>Model 13 (GKS)</b>
Gender	-0.042	-0.043	-0.050	0.093	0.085	0.005
Age	-0.005	-0.005	-0.007	-0.046	-0.043	-0.035
Exp	-0.009	-0.009	-0.003	0.041	0.043	0.035
GHRM	0.105**	0.112**	0.064	0.143**	0.057	0.031
EK	-	-0.027	-	-	-	-
ECO	-	-	0.289***	-	-	-
EL	0.880***	0.890***	0.696***	-	-	-
PCB	-	-	-	-0.431***	-0.381***	-0.237***
GHRM x EL	0.002**	0.002**	0.001**	-	-	-
GHRMx PCB	-	-	-	-0.008***	-0.007***	-0.006***
Moderated mediation	-	0.0008 [-0.0096: 0.0124]	0.0268** [0.0067:0.0557]	-	-0.0250** [-0.0490:-0.0067]	-0.0842** [-0.1369:-0.0367]
Adjusted R2	0.6251	0.6244	0.6444	0.4295	0.4534	0.5615
F - statistic	123.8	106	115.4	56.46	53.37	81.87

(Source: The author's works)

P value <0.1\*, p value < 0.05 \*\*, p value <0.01 \*\*\*. GHRM: green human resource management, EK: environmental knowledge, ECO: eco-initiatives, EL: environmental leadership, PCB: psychological contract breach, GKS: green knowledge sharing

Hypothesis 8 proposed the moderating effect of environmental leadership on the relationship between green human resource management and green knowledge sharing. As indicated in Table 20, the interaction term (GHRM \* EL) was significantly related to green knowledge sharing ( $\beta = 0.002$ ,  $p < .05$ ), which indicated that the moderating influence of environmental leadership on the green human resource management and green knowledge sharing association was positive and significant. Hypothesis 8 was supported. Despite this, the moderating influence is significant at p-value 5% only, and insignificant at p-value 1% and 0.1%. Thus, this influence is small.

The indirect effect of GHRM on green knowledge sharing via environmental leadership was .002,  $p < .05$ . The 95% CIs with bootstrapping 10 000 samples for the indirect effect ranged between -.0096 and 0.0124, so it contains zero. Therefore, the results provided evidence that does not support Hypothesis 9.

Hypothesis 10 proposed the moderating effect of environmental leadership on mediating effect of eco-initiatives on the relationship between green human resource management and green knowledge sharing. As indicated in Table 20, the interaction term (GHRM \* ECO) was significantly related to green knowledge sharing ( $\beta = 0.001$ ,  $p < .05$ ), which indicated that the moderating influence of environmental leadership on the green human resource management and green knowledge sharing association was positive and significant. The 95% CIs with bootstrapping 10,000 samples for the indirect effect ranged between 0,0067 and 0.0577, so it does not contain zero. Thus, Hypothesis 10 was supported.

Hypothesis 11 proposed the moderating effect of PCB on the relationship between green human resource management and green knowledge sharing. As indicated in Table 20, the interaction term (GHRM \* PCB) was significantly related to green knowledge sharing ( $\beta = -0.008$ ,  $p < .01$ ), which indicated that the moderating influence of environmental leadership on the green human resource management and green knowledge sharing association was negative and significant. Therefore, Hypothesis 11 was supported.

Hypothesis 12 proposed the moderating effect of PCB on the mediating effect of environmental knowledge on the relationship between green human resource management and green knowledge sharing. As indicated in Table 20, the interaction term (GHRM \* PCB) was significantly related to green knowledge sharing ( $\beta = 0.007$ ,  $p < .05$ ), which indicated that the moderating influence of environmental leadership on the green human resource management and green knowledge sharing association was positive and significant. The 95% CIs with bootstrapping 10,000 samples for the indirect effect ranged between -0.0490 and -0.0067, so it does not contain zero. Therefore, Hypothesis 12 was supported.

Hypothesis 13 proposed the moderating effect of PCB on mediating effect of eco-initiatives on the relationship between green human resource management and green knowledge sharing. As indicated in Table 20, the interaction term (GHRM \* PCB)

was significantly related to green knowledge sharing ( $\beta = 0.006$ ,  $p < .05$ ), which indicated that the moderate influence of environmental leadership on green human resource management and green knowledge sharing association was positive and significant. 95% CIs with bootstrapping 10,000 samples for the indirect effect ranged between -0.1369 and 0.0367, so it does not contain zero. Thus, Hypothesis 13 was supported.

Table 20: Summary of Hypotheses testing

Hypothesis		$\beta$	p-value	Remarks
	Direct			
H1	GHRM $\rightarrow$ GKS	0.188	0.025	Supported
H2	GHRM $\rightarrow$ EK	0.323	0.000	Supported
H3	GHRM $\rightarrow$ ECO	0.201	0.002	Supported
H4	EL $\rightarrow$ GKS	0.849	0.000	Supported
H5	PCB $\rightarrow$ GKS	-0.493	0.000	Supported
	Mediators			
H6	GHRM*EK $\rightarrow$ GKS	0.221	0.000	Supported
H7	GHRM*ECO $\rightarrow$ GKS	0.213	0.000	Supported
	Moderators			
H8	GHRM*EL $\rightarrow$ GKS	0.002	0.013	Supported
H9	GHRM*EL $\rightarrow$ EK $\rightarrow$ GKS	0.0008	-	Not supported
H10	GHRM*EL $\rightarrow$ ECO $\rightarrow$ GKS	0.0268	**	Supported
H11	GHRM*PCB $\rightarrow$ GKS	-0.008	0.000	Supported
H12	GHRM*PCB $\rightarrow$ EK $\rightarrow$ GKS	-0.0250	**	Supported
H13	GHRM*PCB $\rightarrow$ ECO $\rightarrow$ GKS	-0.0842	**	Supported

(Source: The author's works)

## 7. DISCUSSION

Regarding the first question (RQ1: Is there a direct impact of GHRM on environmental knowledge and eco initiatives and on green knowledge sharing? Is there a direct impact of environmental leadership and PCB on green sharing knowledge? The study confirms that green human resource management is an important factor in enhancing the sharing of green knowledge, environmental knowledge, and eco initiatives with H1, H2, H3, H4, H5 are all supported According to Yong et al. (2020), GHRM includes green recruitment, green selection, green training and development, green performance management, and green compensation and rewards. Also, according to Yong et al. (2020), green training is considered the most important and beneficial factor. This is quite obvious, because when an employee is educated and trained in environmental protection, their environmental knowledge will gradually increase. According to social exchange theory, employees will also increase the exchange and sharing of environmental knowledge among themselves when the company provides them with environmental knowledge training. In addition, not only green training but also other aspects of GHRM, such as green recruitment, also help companies recruit employees with green tendencies.

The more knowledge they have about environmental protection, the more opportunities they have to carry out environmental protection activities actively. Other GHRM practices, including green rewards and incentives, also motivate employees to participate in more eco-initiatives. This, over time, will improve the sharing of environmental knowledge within the organization. These results are consistent with previous studies (Bhatti et al., 2020), found that human resource management is the most important factor determining how employees share their expertise. Fong et al. (2011) showed a significant and positive correlation between HRM processes and employee behavior related to green knowledge sharing. Recent research provides further evidence of the beneficial role of GHRM in encouraging green knowledge sharing behavior, shedding light on the importance of integrating environmental protection principles into HRM strategies to promote a green and sustainable work culture (Rubel et al., 2021; Darvishmotevali & Altinay, 2022).

The findings from this study shed light on the important role of environmental leadership in promoting green knowledge sharing among employees within an organization. Environmental leaders regularly establish and communicate clear environmental protection policies, for example by publishing these policies on the organization's website or through posters at workplace. This not only helps employees be clearly aware of the organization's goals and direction towards the environment, but also creates conditions for them to exchange and share environmental knowledge with each other, creating an active and informative working environment (Khan et al., 2023).

Continuing, environmental leaders are often also leading in implementing environmental protection initiatives, thereby becoming role models that employees

can follow. Through the lens of social learning theory, the actions and attitudes of these leaders not only impart knowledge but also become a source of inspiration for employees, encouraging them to adopt similar practices in their daily work. Support from previous research, such as the work of Graves et al. (2013), further strengthens this view by highlighting that environmental leadership improves employee communication about environmental issues, thereby enhancing understanding and cooperation among members of the organization.

Next, psychological contract breach was shown to have a negative effect on the green knowledge sharing process within the organization. This finding is consistent with previous studies (Conway & Briner, 2009), which indicate that psychological contract breach occurs when employees feel that managers are non-compliant or disrespectful with previous commitments. In cases where employees perceive a breach of the agreement on the part of the employer, they often feel dissatisfied with their work, reduce their commitment to the organization, lose trust in their managers and even considering leaving the company (Zhao et al., 2007). This negative impact is not limited to daily work aspects but also affects environmental protection efforts within the organization.

Thus, in the context of efforts toward environmental sustainability, psychological contract breach create significant psychological barriers that inhibit employees' willingness to engage in friendly actions with the environment, including sharing green knowledge. This breach not only affects the relationship between employees and managers, but also creates negative consequences for the development of a sustainable culture in the organization, reducing the ability to implement initiatives effectively green. This highlights the importance of maintaining and respecting the psychological contract between employees and the organization as a key factor in promoting pro-environmental behavior within the organization.

Second question (RQ2: Is there a mediating role of environmental knowledge and eco initiatives on the impact of GHRM on green knowledge sharing?). With research question number 1, this study shows us that green human resource management with key aspects such as green recruitment, green training, and green rewards will contribute to improving environmental knowledge and strengthening employee eco-initiatives. And then, the more knowledge and understanding each company employee has about the environment, the more they will share green knowledge with each other. The more each employee implements eco initiatives, the more opportunities they have to share green knowledge with each other. Thus, we see that environmental knowledge as well as eco initiatives play a mediating role in the relationship between GHRM and green knowledge sharing, specifying by H6 and H7 are confirmed.

The above results receive support from previous research works such as that of Ramus and Killmer, (2007), along with the research of Daily et al., (2009). Both have contributed to clarifying the connection between GHRM strategies and environmental protection behaviors in organizations. However, the special feature of the current

study is the exploration of the mediating role of eco-initiatives in the relationship between GHRM and green knowledge sharing. This is the first time a study has focused on specifically assessing the importance of eco-initiatives as a bridging factor, thereby clarifying how GHRM can promote green knowledge sharing within the organization. This study opens a new research direction, adding to the existing knowledge base on GHRM by emphasizing the role of eco-initiatives. This not only helps managers better understand how to facilitate the sharing of green knowledge, but also contributes to the development of more effective HRM strategies, aimed at maximizing benefits from environmental protection activities in the organization. This environmental knowledge even has an impact on improving internal operations and establishing carpooling programs (Boiral & Paillé, 2012). Therefore, employee initiatives that occur at the individual level will promote the exchange of employee ideas, creating a dynamic co-worker and work group relationship (Raineri et al., 2016).

Third research question (RQ3): Is there a moderator role for environmental leadership in the connection between GHRM and green knowledge sharing, with environmental knowledge and eco-initiative acting as a mediator? Is there a role for PCB in the connection between GHRM and green knowledge sharing, with eco initiatives acting as a mediator? gave us many interesting findings. PCBs can also be considered internal barriers in some contexts. According to research by Zhao et al. (2007), when employees realize that their company has violated and failed to fulfill previous commitments, they will become disappointed. However, due to psychological factors, these frustrations may be less likely to be voiced but more likely to turn into action.

In cases where employees perceive that their manager is unreliable or lacks commitment, they tend to reduce their commitment to work, because they perceive that the leader does not keep their commitment or do not meet their expectations. This leads to the thinking that they will be willing to leave their jobs if they find a better opportunity. According to social exchange theory, this suggests that when employees experience PCB feelings, they may become hesitant to enter into a reciprocal relationship with the organization, and it is likely that they will respond to breaches by reducing effort and contribution to the job. This may also influence their participation in environmental protection initiatives, as these efforts are often viewed as a extra-role behavior, which can be influenced by the level of commitment and job satisfaction (Ramus & Killmer, 2007).

Our perspective expands from the recognition that employee participation in environmental sustainability activities can be hindered if they feel their employer is not meeting its commitments has given. The findings from this study also clarify the negative role of PCBs in moderating the relationship between environmental knowledge, GHRM, eco-initiatives and knowledge sharing green. When PCB is high, the effectiveness of GHRM in encouraging green knowledge sharing is significantly reduced. Even if employees are environmentally knowledgeable and committed to eco-initiatives, they do not feel responsible for sharing their green knowledge if they

feel their manager is not keeping their promises (Conway & Briner, 2009). On the contrary, when PCB levels are low, employees feel happier and more satisfied with their work, leading to them being more proactive in proposing and sharing ideas and knowledge to protect the natural environment. This shows that a positive working environment and good labor relations can facilitate the development of environmental protection actions and green knowledge sharing within the organization (Wong, 2013).

Regarding the moderating role of environmental leadership, the results confirm that when leadership have a higher tendency to protect the environment, they will increase and facilitate the implementation of GHRM in enterprises. This will help increase the company's employees' eco initiatives, leading to increased sharing of environmental protection knowledge. This is also consistent with Tuan (2022) on green leaders motivating employees to practice green behaviors. On the contrary, if the leaders do not care about environmental protection, they will not promote GHRM activities in a substantive way. At that time, employees will not have the conditions to increase the opportunity to carry out eco-initiatives. This is also consistent with the research of Dirks and Ferrin (2002) and Konovsky and Pugh (1994), who argue that employees are influenced by their environmental leadership. While H8 and H10 were supported, H9 was rejected. Contrary to the author's expectation, environmental leadership does not have a moderating influence on the relationship between GHRM and GKS through the mediator EK. Although H6 is supported, that is, GHRM has a beneficial effect on GKS through the mediation of EK. This is probably explained by the fact that the application of GHRM has already had a good effect on hypothesis H6, so the moderating influence of EL is not clearly seen.

## **8. CONTRIBUTIONS OF THE STUDY**

The main purpose of this study is to delve into the analysis and understanding of the impact of GHRM on outcomes related to green behavior in the aviation sector, with a particular focus on green knowledge sharing. We aim to determine how GHRM impacts the process of sharing and disseminating environmental knowledge among individuals within the organization. In addition, the study explores the role of environmental knowledge and eco-initiatives as mediating factors that bring positive influence, thereby improving understanding and promoting actions to protect the environment.

In addition, the study also emphasizes the importance of environmental leadership and PCB as a moderating variable in supporting and strengthening the relationship between GHRM and green knowledge sharing. By creating a working environment where leaders not only demonstrate commitment to the environment through actions but also encourage and support employees to implement and share environmental protection initiatives, environmental leadership is considered a positive adjustment factor, improving the effectiveness of GHRM.

However, in addition to studying factors that positively impact employee behavior in the organization, it is also necessary to pay attention to factors that have a negative influence. In this study, another adjusting factor, PCB, also had a negative impact on the above relationship. When employees feel the organization or manager is not meeting their commitment or expectations, this can lead to a decline in green knowledge sharing due to reduced commitment and job satisfaction. Therefore, the perception of a breach of psychological contract may hinder GHRM's efforts to promote a work environment towards sustainability and green knowledge sharing. These findings have made contributions to both theory and practice.

### **8.1 Theoretical contributions**

Within the framework of the stated objectives, this study aims to extensively study the factors that influence the sharing of environmental knowledge in organizations. This study was designed to fill the gaps in current research, especially to gain a deeper understanding of the link between GHRM and green knowledge sharing. The research results have made academic contributions.

First, based on social exchange theory, this study marks an important step forward in clarifying the link between GHRM and green knowledge sharing, an area that remains little explored in research. before. Although there are studies that have shown the influence of HRM on knowledge sharing in general (Bhatti et al., 2020; Aklamanu et al., 2016), these studies often focus on the application of knowledge sharing practices. Human resource management practices in the corporate environment. Therefore, identifying the direct and positive relationship between GHRM and green knowledge sharing becomes an important contribution of this study, opening up new research



directions in applying GHRM to promote green behavior in the organization (Ansari et al., 2021; Ahmad et al., 2022)

Second, this study extends theory by using social exchange theory and social learning theory to explore the role of environmental leadership and psychological contract breach (PCB) as a moderating factor in the relationship between GHRM and green knowledge sharing. By analyzing the role of environmental leadership and the impact of PCBs, this study provides insight into how these factors impact the capacity and willingness to share environmental knowledge in organizations. organizations, thereby contributing to the development of more effective human resources strategies in encouraging and supporting environmental protection activities.

Leadership is an important factor in studies of organizational performance. The same is true in the green context. Therefore, in the past, there have been many studies on the impact of leadership on employee behaviors. Previous studies have shown that environmental leadership directly increases employees' sharing of environmental knowledge (Bryant, 2003). Environmental leadership also has a moderating effect between HRM and employee outcomes (Vasilaki et al., 2016). There is also research mentioning that the impact between leadership and knowledge sharing is indirect (Han et al., 2016).

Drawing on social learning theory (Bandura, 1977), this study explores how environmental leadership behavior and attitudes can become a source of inspiration for employees. Specifically, leaders' green and advanced behaviors are not only observed by employees but also imitated and applied in daily practice. This demonstrates the spread of environmental protection culture within the organization, where environmental leaders not only set an example through their actions but also encourage and support employees to participate in environmental protection activities and share knowledge and experience related to the environment with colleagues. Li et al. (2014) also noted that environmental leadership not only facilitates knowledge sharing at the individual level but also at the collective level, enhancing interaction and cooperation among employees in the organization. This emphasizes the role of leadership as an important factor in building a work environment where the sharing of environmental knowledge is valued and encouraged (Su et al., 2020). Therefore, the important contribution of this study lies in providing empirical evidence that environmental leadership not only plays a positive moderating role in promoting GHRM and employee green behavior but also in encouraging the sharing of environmental knowledge. Thereby, the study sheds light on the link between environmental leadership, GHRM, and employees' green behavior, especially in sharing environmental knowledge, thereby contributing to sustainable development in the context of increasing attention to environmental issues.

Although Bal et al. (2008) confirmed that PCBs have a negative impact on employee performance both in terms of their job performance (in-role) and their behavior (voluntary), this study is examined in a green context. This study shows that PCBs

can influence employees' green behavior, such as sharing green knowledge, as explained by social exchange theory (Blau, 2017). PCBs may have an impact on employees' desire to participate in environmentally friendly activities, such as sharing knowledge. When employees of a company perceive that their organization has failed to deliver on commitments related to what was previously promised, they will also not participate in green knowledge sharing due to the principle of reciprocity.

Third, this study sheds light on how environmental knowledge and eco-initiatives mediate the impact of GHRM on green knowledge sharing. Eco-initiatives refer to intentional actions and proposals aimed at improving environmental performance or engagement. (Boiral & Paillé, 2012). According to previous research, employees with better environmental knowledge achieve individual and team green performance goals (Fawehinmi et al., 2020). It is clear that actions to protect the environment will come from people with a better understanding of the environment.

Because eco-initiatives have high practical value, there is good reason to expect that, over time, they will bring improvements and positive results in environmental protection (Boiral & Paillé, 2012). Thus, this study fills the research gap in assessing the indirect influence of environmental knowledge and eco-initiatives in promoting GHRM to support green knowledge sharing. Based on logical reasoning combined with social exchange theory, it can be understood that these impacts also play a significant role. Therefore, this study marks an important step forward in understanding for the first time the influence of eco-initiatives on green knowledge sharing.

This is evidenced by the view that an individual voluntarily participating in activities to protect the natural environment not only reflects a level of commitment and deep concern for environmental issues but also demonstrates willingness to share knowledge and experience about the environment with others. Thereby, this study not only broadens the understanding of the impact of GHRM and eco-initiatives on green knowledge sharing but also emphasizes the importance of facilitating and encouraging such practices. Active eco-initiatives and environmental knowledge within the organization contribute to building a sustainable working environment and developing towards the goal of environmental protection.

Finally, this study strengthens theory by examining how GHRM affects green knowledge sharing in the aviation industry. Both ICAO and the Vietnam Civil Aviation Administration consider the environment a top priority. For the aviation industry, they prioritize the concept of green aviation with technical solutions. For example, activities aimed at creating aircraft that consume less fuel, release fewer emissions into the sky, and make less noise include the production and development of modern machinery to help pilots perform their effective flight operations. Additionally, to fulfill the global goal of developing carbon-neutral air transportation, they are working to develop new technologies and processes in the field of systems engineering (Weeks et al., 2011). Taking this into consideration, the findings of this

study indicate that GHRM has the potential to help the aviation industry in both indirect and direct ways to enhance its green performance.

## **8.2 Practical implications**

From a management perspective, this study extensively analyzes the positive impact that GHRM brings to the process of sharing green knowledge. Specifically, applying GHRM in a comprehensive way, spanning from the recruitment process to training, performance management and engagement, helps improve employees' environmental knowledge and eco-initiatives.

Starting with building a green employer image, this image is also a natural factor that attracts equally environmentally conscious people to apply to the company. Additionally, by integrating green values and competencies into the recruitment process, organizations will be able to attract attention from applicants who can demonstrate positive results of green behavior and compliance organizational green policy (Renwick et al., 2013; Pless et al., 2012) in the green recruitment process, organizations/companies in the aviation industry can attract green candidates by providing recruitment information online, minimizing the need for paper records. Thereby minimizing the amount of emissions that candidates may emit into the environment by having to go to the company to submit their application, demonstrating their commitment to protecting the environment right from the first step. In fact, there are many companies apply these green recruitment, but they do not clearly emphasize this green recruitment policy. So the meaning of GHRM has not been fully communicated and promoted as expected.

Next, through green training courses, employees are equipped with both knowledge, professional skills and environmental protection skills, from energy saving to recycling and waste reduction, helping them integrate into their habits to protecting the environment (Chinander, 2001; Hameed et al., 2020). Therefore, aviation organizations need to develop continuous and diverse training programs, from formal training courses with certificates to informal coaching activities such as discussions during tea, coffee breaks. An effective environmental training program can begin by providing detailed information about saving energy and water and using materials, tools, and machinery in the workplace effectively. Training programs can be even more extensive, not only training on environmental protection activities in the workplace but also on activities in daily life. For example, reading environmental protection symbols on household product packaging or how to recycle common products... This will help employees feel interesting, feel the benefits and increase satisfaction when sharing knowledge about environmental protection. Training programs play an important role in motivating employees, enhancing their understanding and awareness and emotions. This gives them strong support for the organization's environmentally friendly policies (Huertas-Valdivia et al., 2018). The goal is to enrich employees' knowledge, skills and awareness about environmental protection, while encouraging them to participate in these activities and share

knowledge with colleagues. In the aviation industry, there are many professional courses that employees must refresh, recurrent every year, or every 2 years. Therefore, it is very convenient to integrate environmental knowledge training into these professional training courses. Environment knowledge can be clearly integrated into employee handbooks, on the company website and in the workplace through visible and easy-to-follow signs.

Effective management of environmental protection activities based on environmental criteria and a green compensation system encourages employees to apply and propose environmental protection initiatives (Ababneh, 2021). Thereby creating a working environment where green knowledge is shared voluntarily. This is exemplified by providing financial rewards or other benefits to employees who take the lead in implementing pollution reduction or energy saving activities . Organizations can conduct periodic reviews, perhaps every three or six months, to identify and recognize employees who perform excellent environmental work, thereby encouraging healthy competition and commitment to the environment within the organization.

Besides, employee participation in proposing and implementing environmental projects is also an important part of GHRM, helping employees feel appreciated and empowered. For example, organizations can encourage employees to participate in a tree-planting program or improve workplace recycling systems. By integrating eco-initiatives into every aspect of HRM, from recruitment to training, performance management and incentives, GHRM creates a work environment full of potential for employees not only improve environmental knowledge and practice but also share this knowledge with colleagues. This is also consistent with the study by Harvey et al. (2013), which suggests that the aviation industry is an area where HRM has the potential to promote green performance. Harvey et al. (2013) also seen that human resource management (HRM) can indirectly influence an organization's environmental performance through the application of flexible HRM strategies to enhance employee loyalty and satisfaction. member at work. This indirect influence of HRM contributes to enhanced job satisfaction and organizational commitment, helping to reduce dissatisfaction (and thereby, reduce the risk that dissatisfaction has may cause, including actions that may negatively affect the environment).

In addition, the implementation of eco-initiatives is not only limited to compliance with company regulations but also encourages employees to innovate and apply environmental protection solutions suitable to the specific conditions of the company. This requires aviation leaders to be shining examples of environmental protection, thereby inspiring employees to learn and share green knowledge. Leaders need to have specific and practical plans for environmental protection activities, and the company's communications team needs to ensure that information about these activities is clearly known by all employees. Company leaders also need to participate in environmental protection campaigns and projects with their employees, thereby creating the most positive influence.

With Boiral et al. (2009), it is worth noting that top leadership is often closely related to the way an organization responds to environmental challenges. However, another important factor that needs to be emphasized is the commitment of top or middle managers towards the successful implementation of environmental protection policies in the organization (Zhu & Sarkis, 2004). This leads to the observation that, while top leaders often focus on representative role and overall strategy in protecting the environment, the role of middle managers is also extremely important in implementing within the organization. Middle managers play a vital role in leading internal environmental efforts, implementing environment-related policies and programs in the day-to-day practice of the organization. They are often the bridge between strategy and action, ensuring that environmental goals are understood and applied effectively throughout the organization. Their commitment and actions can have a major impact in promoting and maintaining a culture of environmental protection, as well as in the development and implementation of specific environmental initiatives. Therefore, aviation industry leaders when considering their organization's environmental strategy need to evaluate and respect the role of middle managers in leading and implementing these policies.

In contrast to environmental leadership, PCBs have a significant negative impact on the behavior and commitment levels of employees in the organization. When employees feel that the company is not living up to its commitments or promises regarding working conditions, advancement opportunities, that means they perceive the psychological contract breach, they may begin to reduce their commitment and effort in the work. At that time, their common reaction is to express a negative attitude, and in many cases, they begin to think about leaving the company. However, Zhao et al. (2007) point out that there is a difference between intending to quit and actually taking that action. They often only terminate their employment contracts when they receive other job offer (Rousseau, 1989). Therefore, Zhao et al. (2007) also highlight that in cases where employees continue their work at the organization while maintaining a negative attitude, this can seriously harm the organization. Their strongly negative reactions not only negatively affect themselves but also negatively impact the morale of other colleagues in the company environment. To minimize psychological contract breach, organizations, especially in the aviation industry, need to take some specific steps as follows:

**Set Realistic Expectations:** Right from the recruitment process, companies need to clearly and accurately communicate tasks, responsibilities, development opportunities and working conditions at the company. This helps minimize the gap between expectations and reality that employees may experience after joining.

**Periodic Evaluation and Communication:** Managers should hold regular meetings with employees to evaluate progress and discuss the extent to which commitments are being met. As Tekleab and Taylor (2003) suggest, research should be done on communication opportunities between leaders and employees to have the opportunity to understand and exchange information to minimize psychological violations. For

example, in the aviation industry, a manager can organize meetings 2-3 times per year to discuss with employees about policies related to flight safety and update environmental knowledge, or discuss advancement and training opportunities.

**Adjust Expectations:** During meetings, if it is found that some commitments cannot be fulfilled due to changes in the business situation or work environment, both managers and employees should adjust expectations together. to match the actual situation. This helps ensure that both parties have a common understanding of the work conditions and goals.

**Transparent and Continuous:** The company should maintain an open channel of communication where employees can share their views and concerns. In the airline industry, this can be done through online platforms, bulletin boards, or through face-to-face meetings, helping to increase trust and commitment between employees and the company.

By taking the above steps, the aviation industry can build a work environment based on mutual respect and trust, minimize the mentality of breach of contract, and encourage employees to perform better in their jobs.

The findings from this study provide aviation managers and practitioners with a roadmap for how GHRM can facilitate employees to share green knowledge with each other and support others. In light of this, aviation HR leaders are encouraged to facilitate the situation for their employees sharing green knowlegd. The aviation industry is an industry where time pressure is huge. Flights operate almost around 24 hours per day, seven days per week, and services for these flights, therefore, operate similarly. Therefore, meetings involving all employees are often less organized. However, with the development of today's internet and technology era, aviation industry leaders can create digital playgrounds that help aviation industry employees share information and environmental knowledge together. In addition, although difficult, aviation leaders can also organize meetings on a smaller scale, for example, meetings of winners from online environmental knowledge competitions. Aviation organizations can also enhance communication by providing information and knowledge about environmental protection through social networks, thereby creating channels to share environmental knowledge not only among employees, but also between employees and their customers. This creates open, familiar communication to increase sharing green knowledge.

In summary, the study shows that GHRM implementation in aviation enterprises is very effective in promoting employees' green behavior, especially green knowledge sharing. Therefore, in addition to investing in technical improvements to create new machines and technologies that are more environmentally friendly, the aviation industry should also pay attention to applying GHRM in its operations like other businesses. other. Implementing these policies will help the aviation industry quickly achieve its environmental protection goals, in addition to providing technical solutions.

## 9. CONCLUSIONS

### 9.1 Conclusions

This study aims to reach the following three objectives:.

- RO1: To investigate the direct effects of GHRM, environmental knowledge and eco-initiatives, environmental leadership, and PCB on green knowledge sharing.
- RO2: To investigate the mediating roles of environmental knowledge and eco-initiatives towards the effect of GHRM on green knowledge sharing.
- RO3: To investigate the moderating roles of environmental leadership and PCB in the connection from GHRM to green knowledge sharing.

To solve these, the study goes through nine chapters.

The first chapter of the thesis opens with an overview of the content and purpose of the research. This section places special emphasis on the motivation and necessity of conducting research, and clearly presents the research questions and goals to be achieved. In addition, the introductory chapter also briefly describes the overall structure of the thesis, thereby helping readers understand the flow and approach of the research.

The second chapter provides a theoretical overview, where key concepts such as GHRM, green knowledge sharing, as well as environmental knowledge, eco-initiatives and environmental leadership are introduced. The field is defined and analyzed in detail. This chapter also explores in depth important theories such as social learning theory, social exchange theory and psychological contract theory, thereby providing a solid theoretical foundation for the study.

In the third chapter, the research framework is established and hypotheses are developed based on the presented theoretical basis. This chapter goes into detail about how hypotheses are formulated and the relationships between study variables are predicted.

The fourth chapter turns to methodology, introducing and explaining in detail a mixed approach that includes both qualitative and quantitative research. This section discusses the reasons for choosing mixed methods as the research strategy, as well as specifically describes the steps involved in data collection and analysis.

The fifth chapter focuses on qualitative research, describing the process of conducting in-depth interviews and designing the questionnaire. This section also explains how findings from qualitative research contribute to a deeper understanding of the research topic.

The sixth chapter continues with the presentation of results from the quantitative study, analyzing the data obtained to evaluate the level of support of the hypotheses. This section specifically focuses on the relationship between GHRM and green

knowledge sharing, as well as the impact of other factors such as environmental knowledge and eco-initiatives. As a result, 12 hypotheses including 1-8,9-13 are confirmed, of which hypothesis 9 is rejected.

The seventh chapter discusses the implications of the results, providing an overview of the supported and unsupported hypotheses, thereby reflecting deeply on the impact of GHRM in the aviation industry.

The eighth chapter provides the contributions of the study to both theory and practice, while the final chapter concludes the entire thesis, including mentioning the limitations of the study and suggesting for the future research.

## **9.2 Limitations and further studies**

Like all other research, this work also encounters some limitations from which we would like to propose future research directions.

First, although this study observed and collected data through time-lagged data over two time periods, adopting a longitudinal research design would provide more in-depth and accurate information. more about how and to what extent fluctuations over time influence each other.

Second, this study was conducted in the air transport industry so it can be generalized to the transport industry in general. However, in the future, studies can conduct further surveys and analyzes in other transportation industries such as rail, road and maritime to confirm the results with certainty. Or a multi-industry survey, covering the transport, hospitality and tourism industries, would provide a rich and comprehensive view of how these industries apply GHRM and promote green knowledge sharing. This opens up new insights and opportunities for more effective environmental cooperation. protection strategies in these industries. This not only helps compare and clarify the impact and effectiveness of GHRM and share green knowledge in many different environments, but also contributes to generalizing research results in a more convincing way.

Third, this study implemented a qualitative method with data collection through questionnaires. Although statistical measures suggest that CMV was not a problem in our study, future studies could use research with large data sets to fully understand the results. Especially for hypothesis 9, in this study we did not find the moderating impact of environmental leadership on the relationship between GHRM and GKS through the mediating variable of environmental knowledge. Therefore, it is necessary to conduct further qualitative research with in-depth interviews to learn more thoroughly about whether environmental leadership has an impact on the above relationship. Besides, it is possible to explain why this result is not as expected.

Fourth, this study was conducted in Vietnam, a very typical developing country. Currently, environmental protection is of concern at all levels, from the government level to each business. The State of Vietnam has issued many legal documents to guide



businesses in their implementation. However, future studies should be conducted in other developing countries to compare and confirm the results.

Finally, our study investigated a dual moderator, EL and PCB, and its impact on employee green behavior. Future studies should also examine other relevant moderating variables, for example, the role of relevant organizations such as labor unions.

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## APPENDIX 1: Summary of selected previous studies

Authors, year, journal	Theory	Method	Independent variables	Mediator variables	Moderator variables	Dependent variables
1. Pinzone, M., Guerci, M., Lettieri, E., & Redman, T. (2016). Progressing in the change journey towards sustainability in healthcare: the role of 'Green'HRM.	AMO theory	Quantitative, Sample size 82 hospital Sustainability Managers	-Green' Competence Building, -Green' Performance Management, -Green' Employee Involvement	affective commitment to Environmental Management change		collective OCBEs
2. Kim, Y. J., Kim, W. G., Choi, H. M., & Phetvaroon, K. (2019). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance	Social identity theory	Quantitative: 177 hotels 14 hotels: 390 employees	Employees' organizational commitment GHRM	Employees' eco-friendly behavior		Hotel environmental performance
3. Fawehinmi, O., Yusliza, M. Y., Wan Kasim, W. Z., Mohamad, Z., & Sofian Abdul Halim,	NAM and AMO theory		GHRM	<i>Personal moral norm</i>		<i>Employee Green Behavior</i>

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
M. A. (2020). Exploring the Interplay of Green Human Resource Management, Employee Green Behavior, and Personal Moral Norms. .						
4. Ren, S., Tang, G., & Jackson, S. E. (2020). Effects of Green HRM and CEO ethical leadership on organizations' environmental performance.	Resource-based theory, social exchange theory	three different surveys addressed to the firm's CEO, HR manager and CFO respectively 96 HR, CEO. 80 CFO	<i>GHRM</i>	TMT green commitment(top management teams)	Ethical leadership	<i>environmental performance.</i>
5. Singh, S. K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and	AMO theory		Green transformational leadership	Green innovation Green HRM		<i>environmental performance.</i>

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
environmental performance: The role of green transformational leadership and green human resource management. .						
6. Yusliza, M. Y., Norazmi, N. A., Jabbour, C. J. C., Fernando, Y., Fawehinmi, O., & Seles, B. M. R. P. (2019). Top management commitment, corporate social responsibility and green human resource management.	social exchange theory	Quantitative, 87 HR director, senior HR manager or HR manager	Top Management Commitment, Corporate Social Responsibility			GHRM Practices <ul style="list-style-type: none"> <li>• Green Analysis and Job Description of Position</li> <li>• Green Performance Assessment</li> <li>• Green Recruitment</li> <li>• Green Rewards</li> <li>• Green Selection</li> <li>• Green Training</li> </ul>
7. Fawehinmi, O., Yusliza, M. Y., Mohamad, Z., Faezah, J. N., &	AMO theory		Green HRM Practices	Environmental Knowledge		Employee Green Behaviour

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
Muhammad, Z. (2020). Assessing the green behaviour of academics: The role of green human resource management and environmental knowledge.						
8. Ahmad, I., Ullah, K., & Khan, A. (2022). The impact of green HRM on green creativity: Mediating role of pro-environmental behaviors and moderating role of ethical leadership style.	social identity theory	quantitative	Green HRM	Pro-environmental behaviors	Ethical leadership	Green Creativity
9. Ahmad, S., Islam, T., Sadiq, M., & Kaleem, A. (2021). Promoting green behavior through ethical leadership: a	social learning theory		Ethical leadership	GHRM	Environmental Knowledge	Employees green behavior

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
model of green human resource management and environmental knowledge.						
10. Chen, Y. S., & Chang, C. H. (2013). The Determinants of Green Product Development Performance: Green Dynamic Capabilities, Green Transformational Leadership, and Green Creativity	The resource-based view	Quantitative	Green Dynamic Capabilities Green Transformational Leadership	Green Creativity	Environmental Knowledge	Green Product Development Performance
11. Chaudhary, R. (2020). Green human resource management and employee green behavior: an empirical analysis.	social identity theory	Quantitative 301 responses	GHRM		Environmental value Gender	Organizational Identification (task-related green behavior, voluntary green behaviors)
12. Rubel, M. R. B., Kee, D. M. H., & Rimi, N. N. (2021).	social identity theory	Quantitative, 365 responses.	GHRM	Green knowledge sharing		In-role green service behavior, Extra-role



<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
The influence of green HRM practices on green service behaviors: the mediating effect of green knowledge sharing.						
13. Muisyo, P. K., & Qin, S. (2021). Enhancing the FIRM'S green performance through green HRM: The moderating role of green innovation culture.	AMO theory		GHRM practices		Green product innovation, Green process innovation	Green performance
14. NT Pham, Z Tučková, CJC Jabbour (2019) Greening the hospitality industry: How do green human resource management practices influence organizational	AMO	Mixed methods	Green training		Green performance management Green employees involvement	OCBE

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
citizenship behavior in hotels? A mixed-methods study						
15. Ghouri, A. M., Mani, V., Khan, M. R., Khan, N. R., & Srivastava, A. P. (2020). Enhancing business performance through green human resource management practices: an empirical evidence from Malaysian manufacturing industry. .	RBV theory	Quantitative, 179 responses	GHRM	Environmental performance		Business performance
16. Luu, T. T. (2019). Employees' green recovery performance: the roles of green HR practices and serving culture.	attitude theory	Quantitative 1408, 1261	GHRM practices	employee environment commitment	Serving culture	employees' green recovery performance

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
17. Al Kerdawy, M. M. A. (2019). The role of corporate support for employee volunteering in strengthening the impact of green human resource management practices on corporate social responsibility in the Egyptian firms. <i>European Management Review</i> , 16(4), 1079-1095.	social exchange theory	Quantitative, 326 responses	GHRM		Corporate support for employee volunteering	CSR
18. Pham, N. T., Thanh, T. V., Tučková, Z., & Thuy, V. T. N. (2020). Enhancing the organizational citizenship behavior for the	Social exchange theory, AMO theory	Quantitative	<i>Green training</i>	<i>Green organizational culture</i>		<i>organizational citizenship behavior for the environment</i>

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
environment: the roles of green training and organizational culture. .						
19. Ansari, N. Y., Farrukh, M., & Raza, A. (2021). Green human resource management and employees pro-environmental behaviours: Examining the underlying mechanism.	social identity theory The attitude theory	Quantitative Questionnaire survey	GHRM	Green commitment		Pro environmental behavior
20. Song, W., Yu, H., & Xu, H. (2021). Effects of green human resource management and managerial environmental concern on green innovation. <i>t.</i>	human capital theory	Quantitative Questionnaire survey	GHRM	<i>Green human capital</i>	Managerial environmental concern	Green innovation

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
21. Moin, M. F., Omar, M. K., Wei, F., Rasheed, M. I., & Hameed, Z. (2020). Green HRM and psychological safety: how transformational leadership drives follower's job satisfaction.	social exchange theory, supplies-values fit theory	Survey 3-times	Transformational leadership	GHRM Psychological safety		Job satisfaction
22. Shen, J., Dumont, J., & Deng, X. (2019). <i>Green Human Resource Management in Chinese Enterprises</i> .	job characteristics theory	Quantitative 206 hotels 508 employees				
23. Hameed, Z., Khan, I. U., Islam, T., Sheikh, Z., & Naeem, R. M. (2020). Do green HRM practices influence employees' environmental performance?	supplies-values fit (SVF) theory AMO theory	Quantitative 378 responses	GHRM	Green employee empowerment	Individual green value	OCBE

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
24. Mousa, S. K., & Othman, M. (2020). The impact of green human resource management practices on sustainable performance in healthcare organisations: A conceptual framework		Mixed method: Qualitative Quantitative	Green hiring, Green training and Involment, Green performance			Environmental performance, Economic, Social
25. Khan, R. U., Saqib, A., Abbasi, M. A., Mikhaylov, A., & Pinter, G. (2023). Green Leadership, environmental knowledge Sharing, and sustainable performance in manufacturing Industry: Application from upper echelon theory. <i>Sustainable</i>	social exchange theory		Green leadership	Environmental knowledge sharing		Sustainable performance

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
<i>Energy Technologies and Assessment</i>						
26. Jabbour, C. J. C., Jugend, D., de Sousa Jabbour, A. B. L., Gunasekaran, A., & Latan, H. (2015). Green product development and performance of Brazilian firms: measuring the role of human and technical aspects.	ecological modernization	Quantitative	Technological aspects (TA) and human/organizational aspects (HOA) of environmental management, Practices of Green Product Development			firms' performance
27. Singh, S. K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green	AMO theory		Green transformational leadership	GHRM practices	Green innovation	Environmental performance

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
human resource management.						
28. Daily, B. F., & Huang, S. C. (2001). Achieving sustainability through attention to human resource factors in environmental management		Systematic review	Human resources factors ÉMS-HR factors model			
29. Wong, S. K. S. (2013). Environmental requirements, knowledge sharing and green innovation: Empirical evidence from the electronics industry in China.		Quantitative Sample size 203	Green requirements	Knowledge sharing Green product innovation Green process innovation		New green product success
30. NT Pham, TV Thanh, Z Tučková, VTN Thuy(2020). The role of green human resource management in	AMO	Quantitative research	Green training Green performance management			Employee environmental commitment OCBE



<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
driving hotel's environmental performance: Interaction and mediation analysis			Green employees involvement			Corporate environmental performance
31. Mittal, S., & Dhar, R. L. (2016). Effect of green transformational leadership on green creativity: A study of tourist hotels.		Quantitative : 250 employees and 250 supervisors	Green Transformational Leadership	Green Organizational Identity	Resource Commitment	Green Creativity
32. Graves, L. M., Sarkis, J., & Zhu, Q. (2013). How transformational leadership and employee motivation combine to predict employee proenvironmental behaviors in China.	self-determination theory	Quantitative 294 responses	Environmental transformational leadership	Autonomous motivation External motivation		Proenvironmental behavior

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
33. Lee, J. J., Chaudhry, A., & Tekleab, A. G. (2014). An interactionist perspective on employee performance as a response to psychological contract breach	social exchange theory	Quantitative: 186 responses	psychological contract (PC) breach, perceived organisational support (POS), and exchange ideology			Work behavior: Task performance and OCB
34. Dumont, J., Shen, J., & Deng, X. (2017). Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values	Supplies-values fit theory	Mixed methods 59 employees in 3 focus group 388 responses	Green HRM	Psychological green climate	Individual green values	In-role and Extra-role Employee Green Behavior
35. Aboramadan, M., Kundi, Y. M., & Becker, A. (2022). Green human	Social exchange theory, organizati	Quantitative method with 408 employees	GHRM	Perceived green organizational support		Green voice behavior, green knowledge sharing behavior,

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
resource management in nonprofit organizations: Effects on employee green behavior and the role of perceived green organizational support	onal support theor					green helping behavior
36. Tabrizi, R. S., Karatepe, O. M., Rezapouraghdam, H., Rescalvo-Martin, E., & Enea, C. (2023). Green human resource management, job embeddedness and their effects on restaurant employees' green voice behaviors. <i>International Journal of Contemporary Hospitality Management</i>	Social exchange theory, JEM theory , attribution theory and reformulat ion of attitude theory	Quantitative with 130 employees at 11 restaurants	GHRM	job embeddedness		Green voice behavior

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
37. Roscoe, S., Subramanian, N., Jabbour, C. J., & Chong, T. (2019). Green human resource management and the enablers of green organisational culture: Enhancing a firm's environmental performance for sustainable development.	HRM theory	Quantitative method with 204 respondents	GHRM practices	Enablers of organizational green culture		Environmental performance
38. Fryxell, G. E., & Lo, C. W. H. (2003). The Influence of Environmental Knowledge and Values on Managerial Behaviours on Behalf of the Environment: An Empirical Examination of Managers in China		Quantitative method 305 respondents	Environmental knowledge Environmental value			Managerial behavior

<b>Authors, year, journal</b>	<b>Theory</b>	<b>Method</b>	<b>Independent variables</b>	<b>Mediator variables</b>	<b>Moderator variables</b>	<b>Dependent variables</b>
39. Paillé, P., Chen, Y., Boiral, O., & Jin, J. (2014). The impact of human resource management on environmental performance: An employee-level study		Quantitative 212 TMT members, 198 CEOs, and 2,250 frontline workers	Strategic human resource management	Organizational citizenship behaviour toward environment	Internal environmental orientation	Environmental performance
40. Paillé, P., & Mejía-Morelos, J. H. (2014). Antecedents of pro-environmental behaviours at work: The moderating influence of psychological contract breach	Social exchange theory	Quantitative 449 respondents	Perceived organizational support	Job attitude	PCB	Pro-environmental behavior
41. Darvishmotevali, M., & Altinay, L. (2022). Green HRM, environmental awareness and green behaviors: The moderating role of servant leadership	Social learning theory	Quantitative 220 respondents	GHRM	Environmental awareness	Servant leadership	Pro-environmental performance



## Appendix 2: Interview guidelines (for qualitative research)

### I. Introductory

- Researcher self-introduction
- Inform about the purpose of the interview.
- Researcher commitment: (1) confidential for all information provided (answer recorded to be destroyed after transcribed); (2) obtain approval of superior before data published; (3) no harm to any individual or organization.

### II. Open statement and instructions

- Why an interviewee is selected (experience, position relating to the research area and objectives)
- How to answer the questions
- Valued answers/ contribution (with agreement rate of 60%) to be added to the research for further learning and to be shared with your company/ store for further improvement (if necessary or required)

### III. Interviewee process

- ◆ The semi-structured interview protocol (in the form of questions and relevant probes in Vietnamese and English) will be sent to interviewees for reference and preparation before interview conducted.
- ◆ Appointments will be confirmed by interviewees before interview is conducted.
- ◆ Interview conducting:
  - Time: no longer than one hour
  - Language: Vietnamese
  - Type of interview: Face-to-face, online via Google meet or Microsoft team

	Example questions	Remark
GHRM	Have you ever heard of GHRM? How are the GHRM practices in your company? Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily? May you suggest some more items of GHRM	
EK	Have you ever heard of EK? How are the EK practices in your company? Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily?	

	<b>Example questions</b>	<b>Remark</b>
	May you suggest some more items of EK	
ECO	<p>Have you ever heard of ECO? How are the ECO practices in your company?</p> <p>Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily?</p> <p>May you suggest some more items of ECO</p>	
EL	<p>Have you ever heard of EL ? Do you think the leaders in your company are EL?</p> <p>Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily?</p> <p>May you suggest some more items of EL?</p>	
PCB	<p>Have you ever heard of a PCB? What are PCB practices in your company? If you perceive PCB, what are your feeling?</p> <p>Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily?</p> <p>May you suggest some more items of PCB</p>	
GKS	<p>Have you ever heard of GKS?</p> <p>Please read these sentences carefully and may you let me know if you can understand and fill out the questionnaire easily?</p> <p>May you suggest some more items of GKS</p>	



## Hướng dẫn phỏng vấn (nghiên cứu định tính)

*Giới thiệu và giải thích với người được phỏng vấn*

- ❖ Giới thiệu bản thân người phỏng vấn;
- ❖ Giới thiệu nghiên cứu ẩn danh: danh tính và cơ quan làm việc (trường) của người được phỏng vấn không được tiết lộ dưới bất kỳ hình thức nào; xin phép được thu âm, đồng ý tham gia nghiên cứu.
- ❖ Sơ lược về nội dung phỏng vấn:
  - Tìm hiểu mối quan hệ tương quan giữa ....
  - Phát triển thang đo.

### ***Phần A: Câu hỏi làm quen***

1. Công việc của anh/chị tại công ty
2. Thời gian công tác
3. Các thông tin khác (chuyên ngành, đào tạo, bồi dưỡng...)

### ***Phần B: Nội dung phỏng vấn***

#### **1. Quản trị nguồn nhân lực thân thiện với môi trường**

*Các gợi ý:*

- Bạn có nghe nói tới quản trị nguồn nhân lực xanh bao giờ chưa ạ? Giải thích thêm GHRM là sự tích hợp quản trị môi trường vào quản trị nguồn nhân lực: đưa nội dung môi trường vào các thành phần của QTNNL như đánh giá hiệu suất, khen thưởng, đào tạo, phát triển...
- Các hoạt động GHRM bao gồm những hoạt động gì ạ?
- Giới thiệu thang đo GHRM và hỏi họ đọc có hiểu câu hỏi không? Có bổ sung câu từ gì hay không?
- Ngoài các ý nêu trên, thì họ có bổ sung thêm ý nào không?

#### **2. Kiến thức về môi trường**

*Các gợi ý:*

Khi chọn mua các sản phẩm, bạn có để ý đến các vấn đề về môi trường của sản phẩm đó không?

Giới thiệu thang đo và hỏi xem họ có hiểu rõ nội dung các câu hỏi không?

- Tôi biết cách mua và sử dụng các sản phẩm thân thiện với môi trường
- Tôi biết về việc tái chế sản phẩm/vật dụng
- Tôi biết cách chọn sản phẩm sao cho giảm lượng rác thải
- Tôi hiểu các bước và ký hiệu về môi trường trên bao bì sản phẩm
- Tôi rất hiểu biết về các vấn đề môi trường

Ngoài ra thì họ có bổ sung thêm câu hỏi nào không?

#### **3. Lãnh đạo có xu hướng bảo vệ môi trường**

*Các gợi ý:*

Ở công ty của bạn, cấp lãnh đạo đã truyền cảm hứng về bảo vệ môi trường cho nhân viên ntn?

- Người lãnh đạo truyền cảm hứng cho nhân viên công ty với các kế hoạch về môi trường
- Người lãnh đạo cùng thực hiện các hoạt động bảo vệ môi trường cùng với nhân viên của họ.
- Người lãnh đạo gắn kết nhân viên công ty làm việc cùng với nhau cho cùng một mục tiêu môi trường.

Giới thiệu thang đo, hỏi người được phỏng vấn đọc hiểu góp ý thang đo.

#### **4. Sáng kiến bảo vệ môi trường**

*Các gợi ý:*

- Trong công việc hàng ngày, trong từng hành động của mình, bạn có quan tâm, cân nhắc đến các sáng kiến liên quan đến bảo vệ môi trường không?
- Bạn thực hiện các sáng kiến này như thế nào?
- Giới thiệu thang đo, hỏi người được phỏng vấn đọc hiểu góp ý thang đo

#### **5. Sự vi phạm hợp đồng tâm lý**

*Các gợi ý:*

Từ khi bạn vào làm việc ở công ty đến nay thì bạn thấy những lời hứa, những cam kết của công ty đối với bạn có được thực hiện toàn bộ không? Hay chỉ một phần? Nếu chỉ được thực hiện một phần thì bạn cảm thấy như thế nào? Cảm giác và sau đó, tinh thần thái độ của bạn đối với công việc ra sao?

Giới thiệu thang đo, hỏi người được phỏng vấn đọc hiểu góp ý thang đo.

#### **6. Chia sẻ kiến thức bảo vệ môi trường**

- Bạn có hay chia sẻ các kiến thức bạn biết về bảo vệ môi trường cho bạn bè đồng nghiệp hay không?
- Bạn có cảm thấy hào hứng, vui vẻ khi chia sẻ các kiến thức về bảo vệ môi trường với bạn bè đồng nghiệp hay không?
- Giới thiệu thang đo, hỏi người được phỏng vấn đọc hiểu góp ý thang đo

***Phần C: Cảm ơn và tạm biệt***

## Appendix 3: Questionnaire (for quantitative research)

Ladies and gentlemen!

I am now doing a scientific research about green human resources management and green knowledge sharing in aviation industry. Before delivering the questionnaire to aviation employees, I would like to ask you for a favor? May you read the following variables and give me some comments that all these items are easy to understand and answer or not? And these items are enough to measure the variables or not? May you give me more items if any.

I promise that all of this questionnaire is for scientific purpose. Thank you very much.

### I. Respondent's background

❖ Your Gender:

Male

Female

❖ Your Title:

Staff

Executive

Supervisor

❖ Your Academic qualification:

High school/vocational school

College's degree

Bachelor's degree

Master's degree or higher

❖ Your Age

23-30

41-50

31-40

>55

❖ Working experience:

0-5 years

6-10 years

11-15 years

16-20 years

21-25 years

>26 years

### II. 7-Liker-Questions

① Strongly Disagree

② Disagree

③ Somewhat disagree

④ Neutral

⑤ Somewhat agree

⑥ Agree

⑦ Strongly agree

Construct	Questions	①	②	③	④	⑤	⑥	⑦
GHRM	My Company sets green goals for its employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	My Company provides employees with green training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Construct	Questions	①	②	③	④	⑤	⑥	⑦
	My Company provides employees with green training to develop employees' knowledge and skills required for green management.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	My Company considers employees' workplace green behavior in performance appraisals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	My Company relates employees' workplace green behaviors to rewards and compensation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	My Company considers employees' workplace green behaviors in promotion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EK	I know that I buy and use products that are environmentally safe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I know about recycling products/items.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I know how to select products that reduce the amount of waste.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I understand the environmental phrases and symbols on the product package	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I know how to sort waste after use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I am very knowledgeable about environmental issues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ECO	In my work, I weigh the consequences of my actions before doing something that could affect the environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I voluntarily carry out environmental actions and initiatives in my daily work activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I make suggestions to my colleagues about ways to protect the environment more effectively, even when it is not my direct responsibility.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Round 2

Construct	Questions	①	②	③	④	⑤	⑥	⑦
GKS	I enjoy sharing my environmental knowledge with colleagues.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I enjoy helping colleagues by sharing my environmental knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	It feels good to help my colleagues by sharing my environmental knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Sharing my environmental knowledge with colleagues is pleasurable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I believe environmental knowledge sharing can benefit all parties involved	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EL	My leader inspires the company employees with environmental plans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	My leader gets the company employees to work together for the same environmental goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	My leader encourages company employees to achieve environmental goals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	My leader provides a clear environmental vision for the company employees to follow.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	My leader considers the environmental beliefs of the Company employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	My leader stimulates the Company employees to think about green ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ECO	Almost all the promises made by my Company during recruitment have not been kept so far	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I feel that my Company has come through in fulfilling the promises made to me when I was hired (reversed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	So far my Company has not done a good job of fulfilling its promises to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	I have not received everything promised to me in exchange for my contributions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	My Company has broken many of its promises to me even though I've upheld my side of the deal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Round 1: Vietnamese

Construct	Questions	①	②	③	④	⑤	⑥	⑦
GHRM	Công ty đặt ra mục tiêu bảo vệ môi trường cho nhân viên.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Công ty cung cấp các khóa hướng dẫn bảo vệ môi trường cho nhân viên.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Công ty cung cấp cho nhân viên các khóa hướng dẫn về môi trường để phát triển kiến thức và kỹ năng cần thiết	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Công ty xem xét hành vi bảo vệ môi trường (xanh) nơi làm việc là một trong những yếu tố trong quy trình đánh giá hiệu suất của nhân viên	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Công ty lưu ý đến hành vi bảo vệ môi trường nơi làm việc là một trong những yếu tố để khen thưởng	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Công ty xem xét đến hành vi bảo vệ môi trường nơi làm việc là một trong những yếu tố khi cất nhắc/bỏ nhiệm nhân viên	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EK	Tôi biết cách mua và sử dụng các sản phẩm/vật dụng/máy móc/trang thiết bị làm việc thân thiện với môi trường.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Construct	Questions	①	②	③	④	⑤	⑥	⑦
	Tôi biết về việc tái chế sản phẩm/vật dụng/máy móc/trang thiết bị làm việc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tôi biết cách chọn sản phẩm/vật dụng/máy móc/trang thiết bị sao cho giảm lượng rác thải.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tôi hiểu các bước và ký hiệu về môi trường trên bao bì sản phẩm/vật dụng/máy móc/trang thiết bị.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tôi biết cách phân loại rác thải sau khi sử dụng.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tôi rất hiểu biết về các vấn đề môi trường	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ECO	Trong công việc, tôi cân nhắc hậu quả các hành động của tôi trước khi tôi làm điều gì đó có thể ảnh hưởng đến môi trường.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tôi tình nguyện thực hiện các hành động và sáng kiến bảo vệ môi trường trong các hoạt động công việc hàng ngày.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tôi đề xuất cho các đồng nghiệp của tôi về cách bảo vệ môi trường hiệu quả hơn, thậm chí cả khi đó không phải là trách nhiệm trực tiếp của tôi.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Round 2: Vietnamese

Construct	Questions	①	②	③	④	⑤	⑥	⑦
GKS	Tôi thích thú với việc chia sẻ kiến thức về môi trường với đồng nghiệp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tôi thích thú với việc giúp đỡ đồng nghiệp bằng cách chia sẻ kiến thức về môi trường	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tôi cảm thấy vui khi chia sẻ kiến thức môi trường với đồng nghiệp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Chia sẻ kiến thức môi trường với đồng nghiệp là niềm vinh hạnh của tôi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Construct	Questions	①	②	③	④	⑤	⑥	⑦
	Tôi tin rằng chia sẻ kiến thức về môi trường có lợi cho tất cả các bên liên quan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EL	Người quản lý/lãnh đạo truyền cảm hứng cho nhân viên công ty với các kế hoạch về môi trường	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Người quản lý/lãnh đạo gắn kết nhân viên công ty làm việc cùng với nhau cho cùng một mục tiêu môi trường.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Người quản lý/lãnh đạo khuyến khích nhân viên công ty đạt các mục tiêu về môi trường.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Người quản lý/lãnh đạo đưa ra một tầm nhìn rõ ràng về bảo vệ môi trường cho nhân viên công ty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Người quản lý/ lãnh đạo quan tâm đến niềm tin về môi trường của nhân viên công ty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Người quản lý/ lãnh đạo khuyến khích/kích thích nhân viên công ty suy nghĩ về các ý tưởng xanh.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCB	Hầu hết các lời hứa của công ty trong lúc tuyển dụng đều không được thực hiện sau đó.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tôi cảm thấy công ty đã thực hiện lời hứa với tôi lúc tuyển dụng tôi.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Từ khi tôi làm việc đến nay, công ty đã không hoàn toàn thực hiện lời hứa với tôi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Tôi không nhận được bất cứ gì đã được hứa cho sự đóng góp của tôi đối với công ty.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Công ty đã phá vỡ lời hứa với tôi ngay cả khi tôi thực hiện đúng trách nhiệm của mình	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Appendix 4: EFA and statistics

### 4.1 EFA for pilot test

	1	2	3	4	5	6
EK1	0.85					
EK2	0.77					
EK3	0.81					
EK4	0.83					
EK5	0.82					
EK6	0.80					
GHRM1		0.76				
GHRM2		0.78				
GHRM3		0.88				
GHRM4		0.85				
GHRM5		0.82				
GHRM6		0.78				
GKS1			0.84			
GKS2			0.76			
GKS3			0.86			
GKS4			0.90			
GKS5			0.92			
EL1				0.76		
EL2				0.79		
EL3				0.74		
EL4				0.88		
EL5				0.80		
EL6				0.65		
PCB1					PCB1	
PCB2					PCB2	
PCB3					PCB3	
PCB4					PCB4	
PCB5					PCB5	
ECO1						0.71
ECO2						0.89
ECO3						0.75

## 4.2 Statistics

		Statistics					
		GHRM1	GHRM2	GHRM3	GHRM4	GHRM5	GHRM6
N	Valid	443	443	443	443	443	443
	Missing	0	0	0	0	0	0
Mean		5.60	5.68	5.68	5.70	5.66	5.65
Median		6.00	6.00	6.00	6.00	6.00	6.00
Std. Deviation		.912	.899	.916	.894	.894	.898
Variance		.832	.807	.839	.800	.800	.807
Minimum		3	3	4	4	4	4
Maximum		7	7	7	7	7	7

		Statistics					
		EK1	EK2	EK3	EK4	EK5	EK6
N	Valid	443	443	443	443	443	443
	Missing	0	0	0	0	0	0
Mean		5.73	5.68	5.74	5.70	5.74	5.75
Median		6.00	6.00	6.00	6.00	6.00	6.00
Std. Deviation		.863	.877	.970	.932	.913	.901
Variance		.745	.769	.942	.868	.834	.812
Minimum		3	3	3	3	3	3
Maximum		7	7	7	7	7	7

		Statistics		
		ECO1	ECO2	ECO3
N	Valid	443	443	443
	Missing	0	0	0
Mean		5.86	4.62	6.24
Median		6.00	5.00	6.00
Std. Deviation		.970	1.034	.793
Variance		.941	1.070	.628
Minimum		3	2	3
Maximum		7	7	7

		<b>Statistics</b>				
		PCB1	PCB2	PCB3	PCB4	PCB5
N	Valid	443	443	443	443	443
	Missing	0	0	0	0	0
Mean		3.81	3.78	3.79	3.77	3.76
Median		4.00	3.00	3.00	3.00	3.00
Std. Deviation		1.542	1.555	1.534	1.484	1.448
Variance		2.377	2.417	2.353	2.204	2.095
Minimum		1	1	2	1	2
Maximum		7	7	7	7	7

		<b>Statistics</b>				
		GKS1	GKS2	GKS3	GKS4	GKS5
N	Valid	443	443	443	443	443
	Missing	0	0	0	0	0
Mean		5.68	5.77	5.66	5.16	5.33
Median		6.00	6.00	6.00	5.00	5.00
Std. Deviation		1.173	1.180	1.203	1.106	1.262
Variance		1.375	1.392	1.448	1.224	1.592
Minimum		3	3	2	2	2
Maximum		7	7	7	7	7

		<b>Statistics</b>					
		EL1	EL2	EL3	EL4	EL5	EL6
N	Valid	443	443	443	443	443	443
	Missing	0	0	0	0	0	0
Mean		5.60	5.56	5.59	5.66	5.58	5.57
Median		6.00	6.00	6.00	6.00	6.00	6.00
Std. Deviation		1.064	1.026	1.013	1.004	1.004	1.062
Variance		1.131	1.053	1.025	1.008	1.008	1.128
Minimum		3	3	3	3	3	3
Maximum		7	7	7	7	7	7

## LIST OF PUBLICATIONS

1. Thi Lan Phuong Nguyen, **Thi Thu Huong Nguyen (2024)**. The Link Between Socially Responsible Human Resource Management And Eco-Helping Behavior In Aviation Industry – A Moderated Mediation Model. *International Journal of Law and Management* (Accepted)
2. Thi Lan Phuong Nguyen, **Thi Thu Huong Nguyen**, & Aleksandr Ključnikov (2023). Influence of Socially Responsible Human Resource Management on Green Behaviours in the Aviation Industry. *Journal of Competitiveness*, 15(2), 188-206.
3. **Nguyen, T. T. H.**, Nguyen T.P.L., Tuckova, Z., & Tran, H.T. (2023). Green Human Resource Management and Employee Environmental Performance in the Aviation Industry: The Role of Gender. *Problems and Perspectives in Management* (Under review)
4. Hoang, S. D., Ngo, N. T., Nguyen, T.N.D., **Nguyen, T. T. H.**, & Tučková, Z. (2022). The Determinants of Loyalty to Ecotourism against the Background of Consumer Satisfaction. *Journal of Environmental Management & Tourism*, 13(8), 2295-2310.
5. Le, H.L. , **Nguyen, T. T. H.**, & Ho, V.A. (2022). Workplace Support and Service-Oriented Organisational Citizenship Behaviour: The Mediating Role Of Psychological Empowerment And Affective Commitment. *Cogent Business & Management*, 9(1), 2131984.
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8. Le, H.L., **Nguyen, T.T.H.**, & Ho, V.A. (2021). Service Innovative Behavior in the Aviation Industry: An Empirical Study of the Contribution of Perceived Organizational Support. *AJMI-ASEAN Journal of Management and Innovation*, 8(1), 75-86.
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10. Ho, V.A., Le, H.L., & **Nguyen, T.T.H.** (2020). Conceptual View of the Relation between Regional Innovation Cluster and Its Innovative Outcomes: the Moderating Role of Knowledge Sharing. *ICFE 2020*, 426

# **AUTHOR'S CURRICULUM VITAE**

## **1. Personal information**

- Full name: Nguyen Thi Thu Huong
- Address: Vietnam Aviation Academy
- Nationality: Vietnamese
- Tel: 84-983343666
- Email: [t2nguyen@utb.cz](mailto:t2nguyen@utb.cz) or [huongntt@vaa.edu.vn](mailto:huongntt@vaa.edu.vn)

## **2. Work experience**

- 2002- Ongoing: Lecturer at Vietnam Aviation Academy, Ho Chi Minh City, Vietnam
- 2002: working for Vietnam Airlines

## **3. Education**

- 2017 – Ongoing : Ph.D. candidate in Management, Tomas Bata University in Zlín, Czech Republic
- 2003-2005: Master degree at Solvay Brussels School Management
- 1992-1996: Bachelor degree at Open University, Ho Chi Minh City

## **4. Research interests**

Green HRM, Aviation management, Organizational learning

Nguyen Thi Thu Huong

**Enhancing green knowledge sharing: the roles of environmental leadership, green human resource management, and psychology contract breach in the aviation industry**

Posílení sdílení “zelených znalostí”: role řízení environmentálně zaměřeného, a to včetně řízení lidských zdrojů dle principů GHRM v leteckém průmyslu

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