

Conception of Continuous Process Improvement in Shared Service Centers Based on Lean Methodologies

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Doctoral Thesis Summary



Tomas Bata University in Zlín
Faculty of Management and Economics

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**Conception of Continuous Process Improvement in
Shared Service Centers Based on Lean
Methodologies**

**Koncepce neustálého zlepšování v centrech sdílených služeb na
základě Lean metod**

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ABSTRACT

Shared Service Centers are an invisible driven force for effectiveness of the companies and organizations globally. Implementation of the shared service centers (SSCs) enhances organizational competitiveness through cost decrease, process standardization, and economies of scale. Implementation of SSCs provides additional benefits including enhanced risk management, consolidation of operations, raise of organizational flexibility, “and bringing value drivers beyond productivity—such as customer service, business agility and support for new capabilities—to the fore” (Dunkan 2009). To achieve declared goals SSCs implement Continuous Improvement (CI) initiatives, regardless of the mixed findings on the effectiveness of CI. CI is top priority for the majority of the SSCs globally, despite the growing evidence of SSCs not being able to realize the benefits and desired results from CI efforts (Hodge, 2015).

Hundreds of top multinational companies (Accenture, SAP, Siemens, IBM, Hewlett-Packard, etc.) have established SSCs in Hungary, Poland, Slovakia, and the Czech Republic. The Visegrad countries attract investors by their convenient location, affordable office spaces, and low-cost educated workforce (Stewart, 2015). SSCs are one of the primary drivers of Foreign Direct Investments (FDIs) in the region. Establishment of the SCCs in the Visegrad country enables companies to save through arbitrage of workforce, however, the region struggles to attract complex knowledge-intensive processes due to the low levels of CI implementation.

Regardless of the growing importance of SSCs for economies globally, the industry remains largely understudied. There is a growing body of research on the drivers for SSC implementation and cases of SSC transformation, however the issues of operations management, and CI implementation in particular, did not receive required attention from the scholars. Nonetheless, the complex environment and contractual agreements, in which SSCs operate, create an interesting case for the research. Furthermore, there is a growing scholarly debate regarding CI effect on firm performance and the organizational practices that can foster this relationship in the services domain. Thus, the present study is set to contribute to the understanding of SSCs operations as well as to the academic debate on the role of CI in service organizations.

The study uses Structural Equation Modeling and fuzzy-set Qualitative Comparative Analysis to identify strategies that condition attainment of the declared performance objectives based on the analysis of 304 survey responses. The priori models for the study were developed based on the manifold inputs, including literature review and pilot case studies. The proposed multi-method approach enables to study CI phenomena in its full complexity and ensure applicability of the research findings to the business setting. More specifically, the study first evaluates ability of CI to improve cost reduction, customer

satisfaction and both performance measures simultaneously. Further, the study proceeds to assess effect of organizational practices on the ability of CI to affect firm performance. The priori models include five mediating organizational practices: Rewards, Quality Culture, Management Commitment, Training of employees in CI as well as Goal-setting.

The research demonstrates that CI is able to achieve customer satisfaction without the supporting organizational practices. The CI – Customer satisfaction relationship can be reinforced by *Rewards, Quality-Oriented Culture and Management Commitment*. However, to achieve cost reduction, the supporting organizational practices are necessary. The study finds that implementation of *Rewards, Quality Culture, Employee Training and Goal-setting* is necessary to achieve cost reduction. The study demonstrates the ability of CI to improve cost reduction and customer satisfaction simultaneously. Nevertheless, the impact of CI in this case is lower as compared to the CI – customer satisfaction effect. Thus, it is recommended to implement supporting practices to achieve benefits of simultaneous cost reduction and customer satisfaction improvement.

Acknowledging the vast practical importance of achievement of both customer satisfaction and cost reduction, the study identifies five combinations of practices that lead to improvement of cost reduction and customer satisfaction through application of fuzzy-set Qualitative Comparative Analysis (fsQCA). The fsQCA analysis provides 5 alternative combinations of practices that lead to the achievement of both cost reduction and customer satisfaction. The first combination is based on the low level of implementation of the practices *Rewards* and *Employee training* combined with high level of *Management Commitment*. The second combination emphasizes implementation of *Rewards* and *Quality culture* at the high levels and *Management commitment* at the low level. The third combination includes high implementation of *Rewards, Management Commitment, and Goal-setting*. The fourth combination is based on the low *Quality Culture, Management Commitment and Goal-setting*. The fifth combination involves high *Quality Culture, low Management Commitment and high Goal-setting*.

The study contributes to the previous similar empirical studies on the impact of CI on firm performance. The proposed study goes one step further and identifies strategies for effective CI based on the assessment of impact of CI and organizational practices on the different firm performance practices on the same data set. The study identifies that to achieve different performance improvements from CI implementation, the SSCs need to adapt different approaches and, consequently, implement different organizational practices. The research findings provide guidelines on strategy development, resource allocation and efforts prioritization for SSCs that embark on CI implementation.

ABSTRAKT

Implementace center sdílených služeb (CSC nebo SSC v angličtině) je efektivní způsob zvyšování konkurenceschopnosti společností prostřednictvím snižování nákladů, standardizace procesů, zlepšování výkonnosti a efektivnosti. Poskytují rovněž další výhody, včetně lepší možnosti řízení rizik, konsolidace operací, zvyšování organizační flexibility a přinášejí nositelům procesů větší produktivní hodnotu ve formě zákaznického servisu, obchodní agility a podpory nových procesních funkcí (Dunkan, 2009). Stovky top mezinárodních společností (Accenture, SAP, Siemens, IBM, Hewlett-Packard, atd.) založily svoje střediska v Maďarsku, Polsku, na Slovensku a v České republice. Tyto Víšegrádské země lákají investory zejména pro jejich výhodnou polohu, cenově dostupné kancelářské prostory a levné, vzdělané pracovní síly (Stewart, 2015). CSC jsou jednou z hlavních hnacích sil přímých zahraničních investic (PZI) v regionu. V České republice tento sektor vytváří více než 1 % HDP a vytvoří více než 100,000 pracovních míst v příštích pěti letech (Kulhánek et al., 2016). Podle různých odhadů v Maďarsku sdílené služby vytvoří až 2,5 % z celkové domácí zaměstnanosti (Marciniak, 2014).

Jedním z hlavních hnacích motorů vytváření CSC je snižování nákladů. Zatímco vznik CSC v zemích Visegrádské skupiny umožňuje společnostem ušetřit touto formou organizace procesů pracovní síly, střediska je využívají pro neustálé zlepšování (CI), jako je Lean a Lean Six Sigma s cílem dosažení standardizace a optimalizace procesů. CI je nejvyšší prioritou pro většinu z center po celém světě. Na druhé straně je nutné vidět i fakt, že ve stejné době mnoho středisek oznámilo, že nedosahují požadovaných výsledků CI (Hodge, 2015). Navrhovaná práce analyzuje stav implementace Lean metodiky v CSS Visegrádských zemí, s ohledem na skutečnost, že většina center v regionu používá tyto nástroje zatím jenom v omezené míře (Drygala et al., 2015). První část studie definuje model neustálého zlepšování v centrech sdílených služeb prostřednictvím uplatňování modelování strukturálních vazeb, přičemž vychází z údajů získaných přes online dotazník. Druhá část studie využívá fuzzy set kvalitativních analýz pro vypracování strategie k zavedení Lean metodiky v prostředí center sdílených služeb.

Výzkum si klade za cíl přinést nové poznatky a z toho plynoucí přidanou hodnotu společností sdílených služeb v zemích Visegrádské skupiny s cílem úspěšné implementace CI programů. Schopnost středisek vytvořit účinné postupy jim umožní získat efektivní způsob organizace a řízení komplikovaných služeb s vysokou přidanou hodnotou, která přinese technologický pokrok a know-how do regionu, čímž změní obraz Visegrádského regionu z nízké nákladové destinace na ekonomicky rozvinuté podnikatelské společenství.

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1. STATE OF THE RESEARCH AREA

1.1 Shared Services Model – an “invisible” economic sector

1.1.1 General Characteristics of Shared Service Center model

Promise of 20-35% savings on operational costs coupled with customer satisfaction improvement are the key drivers to consolidate administrative, HR, IT, financial and other back-office processes in the Shared Service Centers (Janssen and Joha, 2008). Intensive process standardization and process improvement of consolidated processes under the umbrella of continuous improvement concept (CI) has become a priority for the Shared Service Centers (Banoun et al., 2015). The Institute of Management Accounts indicates that “Organizations including AlliedSignal, Monsanto, Amoco, Baxter International, Tenneco, Johnson and Johnson, General Electric, IBM, Hewlett Packard, American Express, BFI, New York Times, Case Corporation, and Lockheed Martin are turning to SSCs as a viable alternative to outsourcing, reengineering, organizational restructuring, or other related “solutions” to the staff services cost/performance challenge” (Institute of Management Accounts, 2000, p. 1). Regardless of their importance for companies and governmental organizations, SSCs received scant attention in the research. In terms of academic research, SSCs remain an “invisible” economic sector with a vast importance for practice. Even though economic importance of the SSC sector globally grows (for example, in the Czech Republic, in 2016 SSC industry delivered 1.5% of the national GDP (Kulháněk et al., 2016)), the industry remains largely understudied.

Shared service centers (SSCs) are organizational arrangements for service delivery (Knol et al., 2014). Because of the need of every corporate department for finance and human services, these functions offer a common opportunity for a SSC model. SSCs consolidate, standardize and optimize non-core activities that are required by several departments of a given company (e.g. human resources, information technology (IT) support, accounting, financial reporting etc.). Tasks that are gathered in SSCs are not critical tasks from a competition point of view. Hence, process and non-strategic activities are bundled in SSCs. The ultimate goal of the SSC solution is to increase both efficiency and effectiveness of the support services activities.

1.1.2 Rationale and challenges associated with implementation of Shared Service Centers

The ultimate goal of SSC solution is to increase both efficiency and effectiveness of the support services activities. Cost reduction is often a primary

benefit and driving force for companies to implement SSCs (Ann, 2000; Norling, 2001). Shah (1998) argues that SSCs realize economies of scale, thereby gain efficiencies that are normally reserved to centralized organizations. SSCs reduce costs by consolidating one or more back-office operations used by multiple divisions of the same company such as finance, information technology, customer service, human resources, etc. Upon transfer of processes from the organizational departments, their execution is carried out in the SSC. SSCs are also responsible for continuous improvement of the newly acquired processes.

1.2 Continuous Improvement in SSCs

1.2.1 Application of Continuous Improvement in SSCs

The CI term is not strictly defined, and it is used as an integrating term for multiple attributes of the well-known quality initiatives (Bhuiyan and Baghel, 2006). CI initiatives such as Lean, Six Sigma, Total Quality Management etc. have been now pursued by literally every type of organization, despite inconclusive research findings on their effectiveness. Bessant and Francis (1999) establish that CI, can be defined as an organization-wide process of focused and sustained incremental innovation. Strategic management literature considers CI as a dynamic capability of the firm that systematically changes its resources to ensure process improvement and advances firm's competitive advantage (Anand et al., 2009; Teece et al., 1997). The potency of CI to drive the performance of the SSCs makes CI programs an important ingredient of the successful SSCs (Janssen and Joha, 2008).

Consolidation of processes from the different departments in the SSCs brings in unwanted differences and complexity in the activities. Redundancy in processes possess one of the main barriers for efficiency in the SSCs (SSON, 2015). CI provides SSCs with the tools to tackle excessive complexity. SSCs employ a range of process improvement approaches, including Lean, Six Sigma, TQM, or their own methodologies to meet the demanding requirements (Drygala et al., 2015). CI is employed by SSCs to ensure harmonization of the service operations and it is considered as a best practice for SSCs (Ford and Webb, 2015).

1.2.2 Benefits of Continuous Improvement

The performance of a firm is a multidimensional phenomenon. The CI initiatives affect majority of functions of the organization, and, consequently, it is reasonable to assess impact of CI on multiple measures of the firm performance. Scholarly publications on effect of CI on firm performance cover a wide range of measures, including financial, quality, operating, and customer-

focused. The outstanding feature of industrial management literature on effectiveness of CI is the lack of research consensus on the topic. In part, it could be credited to the constant development of CI initiatives and spheres of their applications (Schroeder et al., 2008). The scholars have long studied improvement initiatives and received blended findings regarding how CI affects firm performance. Since Powell's (1995) study on performance of TQM that sparked interest to the topic, numerous publications have tried to answer the crucial question of how improvement initiatives impact firm performance. More than two decades later the researchers still did not gather enough evidence to reach a consensus on this question.

1.3 Practices for effective Continuous Improvement in SSCs

1.3.1 Multidimensional view on Continuous Improvement

The multidimensional view considers CI as a combination of soft and hard practices has emerged in an attempt to identify the approaches leading to effective CI programs. The soft dimension corresponds to social and behavioral practices, and the hard dimension to technical practices associated with CI design, implementation and management (Calvo-Mora et al., 2013; Prajogo and Brown, 2006). The hard or technical practices are generally focused on controlling established processes to ensure conformance with the established requirements (Bortolotti et al., 2015).

Previous studies assessed soft dimension through study of the role of leadership, quality-oriented culture, training and employee development as well as employee engagement. Process management is one of the most studied hard CI practices, since it ensures the stability of the operations and their ability to deliver the expected results (Anderson et al., 1995; Saraph et al., 1989). Quality information is another important practice, since the improvement methodologies assume data-driven decision making that requires updated and comprehensive information (Boyer et al., 2012).

1.3.2 Practices for effective CI in the SSCs

There are no consistent findings on the relationship between hard and soft practices and their role in determining performance of the CI. Skrinjar and Trkman (2013) suggest a general list of the practices that influence effectiveness of the process improvement programs: top management support, project management, communication and end-user training. Academic and industrial publications further identify training, strategic alignment and project management as the core practices that condition effectiveness of the improvement programs (Näslund, 2013). Brun (2011) proposes a list of twelve practices that includes management involvement and commitment, cultural

change, communication, organizational infrastructure and culture, education and training, project management skills, project prioritization and selection. Borman and Janssen (2012) propose that standardized processes, unified IT systems, flexibility, committed leadership, and comprehensive training play cardinal role for the performance of the SSCs. In the case study of the governmental SSC, Borman (2010) emphasized the need for a high involvement of management and workforce motivation to ensure buy-in of transformation processes from the side of employees. Literature reveals a variety of practices conditioning effectiveness of SSCs and CI programs, which calls for a prioritization of the efforts aimed at improvement of the CI programs performance, and for distinguishing of the factors, relevant for the SSCs (Hietschold et al., 2014).

2. THEORETICAL FRAMEWORK

2.1 Research Problem

One of the main challenges in establishing effective SSCs arrangements is redesigning and standardising processes that are dispersed across different business units and locations. To achieve declared goals, SSCs implement CI regardless of inconclusive findings on the effectiveness of CI. The investigation of the practices that condition effectiveness of CI initiatives in services sector is also an important body of knowledge to drive scientific understanding and practical implementation of CI initiatives forward. Thus, the proposed thesis is set to fill in this gap by identifying the effect of CI on the firm performance as well as assessing impact of organizational practices CI – firm performance relationship. In the study, cost reduction and customer satisfaction are selected as the measures of firm performance due to their prime role as drivers for SSCs implementation. From the practical point of view, the study aims to identify strategies that can lead to the achievement of the performance goals through application of CI.

2.2 Primary Goal of the Dissertation Thesis

The proposed thesis is set to contribute to the debate on the effectiveness of Continuous Improvement in the SSCs. To resolve the existing research problem, the primary and partial goals of the research were identified. The primary goal of the study is *to identify strategies for the effective CI program in the SSCs*. In the study, effectiveness of CI program is assessed as the ability of CI to improve firm performance. Thus, the main goal of the study is to identify strategies leading to the improvement of the selected firm performance measures through application of CI.

2.3 Partial Goals of Dissertation Thesis

In order to resolve the primary objective of the study, the following partial goals (PRG_n) were identified:

PRG₁: To study impact of CI on firm performance.

PRG₂: To study impact of organizational practices on CI – firm performance relationship.

2.4 Research Questions

The proposed study is set out to answer the following questions with regards to CI and established research objective in the shared service centers:

RQ1: How does CI affect customer satisfaction?

RQ2: What organizational practices can foster impact of CI on customer satisfaction?

RQ3: How does CI affects cost reduction?

RQ4: What organizational practices can foster impact of CI on cost reduction?

RQ5: How does CI affect simultaneous improvement of cost reduction and customer satisfaction?

RQ6: What organizational practices can foster impact of CI on customer satisfaction and cost reduction?

2.5 Continuous Improvement Practices and Hypotheses Development

2.5.1 The priori models of CI, practices and firm performance relationship.

CI is as a complicated phenomenon that can be affected by various practices and mediating variables are included in the models for further study of their influence on the firm performance (Baron and Kenny, 1986; Habtoor, 2016). In line with the previous research CI practices are considered within a larger CI – firm performance relationship. The three priori models that depict relationships of the CI practices, customer satisfaction and cost reduction (Figure 2.1, Figure 2.2 and Figure 2.3) were developed to reflect the complexity of interaction between the variables.

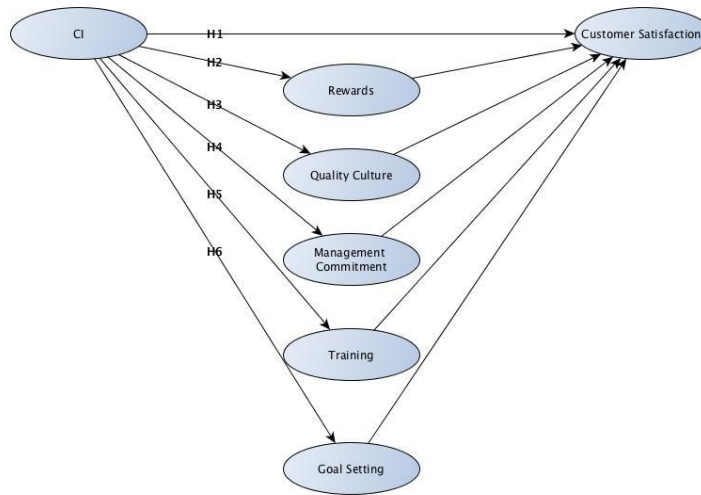


Figure 2.1. Priori model of CI - Customer Satisfaction Relationship. Source: Author.

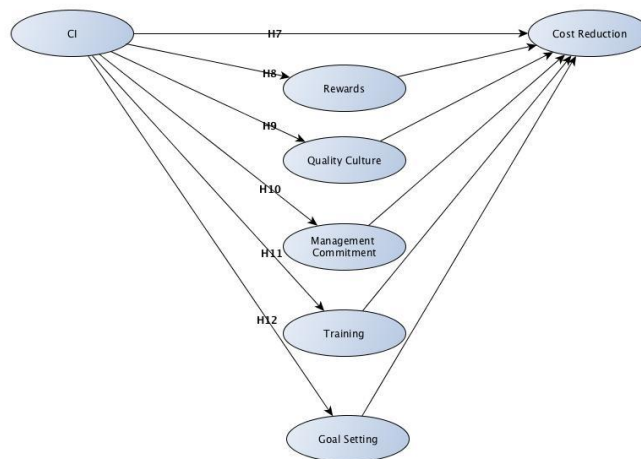


Figure 2.2. Priori model of CI - Cost Reduction relationship. Source: Author

In the proposed study, cost reduction and customer satisfaction are selected as the major measures of the operational performance according to the classic literature on CI (Deming, 1986; Imai, 1986; Liker and Morgan, 2006). The proposed thesis is built upon the notion of positive impact of CI on firm performance. The extensive CI literature review permits to identify the following practices affecting CI implementation:

- *quality culture,*
- *rewards,*
- *management commitment,*
- *training,*
- *goal-setting*
- *project management.*

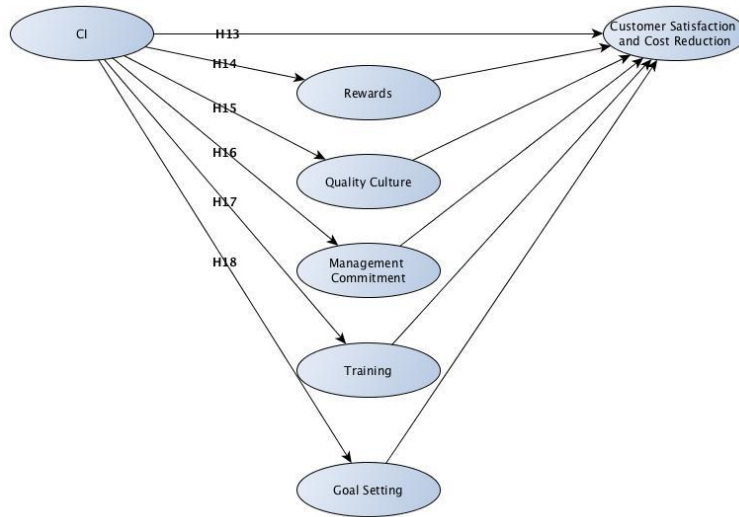


Figure 2.3. Priori Model of CI influence on Cost Reduction and Customer Satisfaction. Source: Author

3. METHODOLOGY

3.1 Overview of the Methodology

The aim of the research is to identify practices and their combination that impact effectiveness of CI. The research model has been adapted from the similar research, aiming to evaluate performance of CI in empirical studies (Powell 1995; Peng et al. 2008; Taylor et al. 2013 among others). The research uses a multi-method approach to respond to the research questions and gain a deep understanding of the research domain. First, literature review was conducted to identify main practices that can affect CI – firm performance relationship. Further, the pilot studies and interviews were conducted on the four SSCs to validate the proposed theoretical framework and survey instrument. Upon validating survey instrument, large-scale data collection with the online survey was conducted. The collected data was analysed with Structural Equation Modeling to test the research hypotheses and evaluate effect of mediators and further analysed with fuzzy-set Qualitative Comparative Analysis (fsQCA) to identify combination of practices leading to the effective CI program in the SSCs.

3.2 Description of data collection procedure and the research sample

The data was collected in four Visegrad countries: Czech Republic, Poland, Slovak Republic and Hungary, that form a Visegrad Four (V4) group. The

databases from the national investment and development agencies to identify initial contacts in the SSCs were used, and further snowballing technique was applied to reach wider research sample. To collect research data, a custom web-survey was used. The survey contained closed questions with a 1-5 Liker-type scale. The final response rate accounted for 42%. The sample consists of 304 SSCs that provide a wide spectrum of services: finance, accounting, human resources, logistics, information technology (including systems support), customer support and procurement.

4. ANALYSIS

4.1 Identification of Continuous Improvement Impact on Customer Satisfaction and Cost Reduction through Structural Equation Models (SEM)

4.1.1 Testing hypotheses on impact of CI on Customer Satisfaction and evaluating impact of Mediators through Structural Equation Modeling

To clarify impact of CI on customer satisfaction and the variables that mediate this satisfaction, the research elicited six research hypotheses in line with CI. In order to determine whether research hypotheses are supported, first, null hypotheses (H_{0n} , $n=1\dots6$) were established and further tested (Table 4.1). For testing null hypotheses, the significance level of 0.05 was applied.

Table 4.1. Hypotheses Testing for Customer Satisfaction. Source: Author

Number	Hypothesis	P-Value	T-Statistics	Decision
H₁	The greater the level of Continuous improvement in the company, the greater Customer Satisfaction can be obtained.	0.000	3.224	Accepted
H₂	Rewards increase impact of CI on Customer Satisfaction.	0.002	2.985	Accepted
H₃	Quality culture increases impact of CI on Customer Satisfaction.	0.000	3.722	Accepted
H₄	Management commitment increases impact of CI on Customer Satisfaction	0.000	3.554	Accepted

H₅	Training of employees in the improvement techniques increases impact of CI on Customer Satisfaction.	0.058	2.790	Rejected
H₆	Goal-setting increases impact of CI on Customer Satisfaction.	0.071	3.684	Rejected

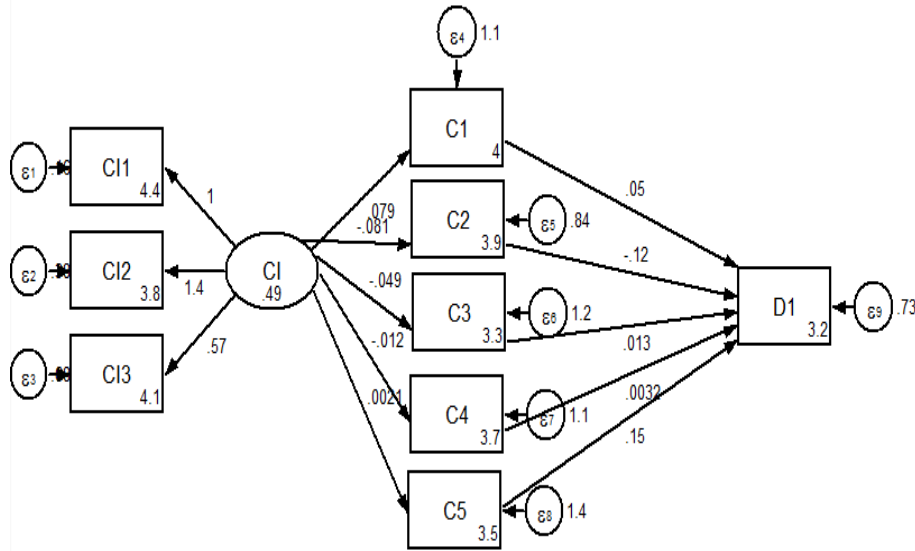


Figure 4.1. CI model with mediators for Customer Satisfaction. Source: Author.

Note: C1- Rewards, C2 – Quality Culture, C3 – Management Commitment, C4 – Employee Training, C5 – Goal-setting, D1 – Customer Satisfaction.

Further, to investigate the effect that mediators have on CI – Customer Satisfaction, the coefficients, describing relationship between selected variables were analyzed. The SEM procedure was used to elicit coefficients and to picture the relationship between variables based on the analysis of the collected data. Figure 4.1 and Table 4.2 present the findings. The results demonstrate that CI has a direct positive impact on CS, supported by coefficient of 0.456, further confirming the research hypothesis H₁. Table 4.6 demonstrates that for all mediators, except *goal-setting* (H₆) and employee training (H₅), the coefficients are higher than the coefficient for base model of CI – Customer Satisfaction relationship (0.456). The model allows for a conclusion that *rewards, quality-oriented culture and management commitment* to improvement initiative reinforce the positive relationship between CI and CS.

Table 4.2. Fit indices and impact of mediating variables on Customer satisfaction. Source: Author

Model Path	Coefficient	S.E.	Impact on CI- Customer satisfaction
CI -> CS	0.456	0.042	Positive
CI -> Rewards -> CS	0.556	0.016	Positive
CI -> Quality culture -> CS	0.484	0.047	Positive
CI -> Management commitment -> CS	0.632	0.021	Positive
CI -> Employee training -> CS	0.145	0.023	Negative
CI -> Goal-setting -> CS	-0.121	0.089	Negative
FIT INDICES			
Chi2 = 829.215, P>chi2 = 0.066, R2 = 0.980, RMSEA = 0.036, df = 304, CFI = 0.960			

4.1.2 Testing hypotheses on impact of CI on Cost Reduction and evaluating impact of Mediators through Structural Equation Modeling

To clarify impact of CI on Cost Reduction, six research hypotheses were elicited to develop a priori model. In order to determine whether research hypotheses are supported, first, null hypotheses ($H_{0n, n=7...12}$) were established and further tested (Table 4.3). For testing null hypotheses, the significance level of 0.05 was applied. The research hypotheses H_8 , H_9 , H_{11} and H_{12} are supported by the results with p-values less than the test statistic of 0.05. To evaluate impact of selected organizational practices on CI – Cost Reduction relationship, a Structural Equation Model (SEM) was developed.

Table 4.3. Hypotheses testing for Cost Reduction. Source: Author

Number	Hypothesis	P-Value	T-Statistics	Outcome
H ₇	The greater the level of CI in the company, the higher Cost Reduction can be achieved.	0.422	2.581	Rejected
H ₈	Rewards increase impact of CI on Cost Reduction.	0.000	2.660	Accepted
H ₉	Quality culture increases impact of CI on Cost Reduction.	0.001	3.651	Accepted
H ₁₀	Management commitment increases impact of CI on Cost Reduction	0.212	2.376	Rejected
H ₁₁	Training of employees in the improvement techniques increases impact of CI on Cost Reduction.	0.000	2.471	Accepted
H ₁₂	Goal setting increases impact of CI on Cost Reduction.	0.043	3.550	Accepted

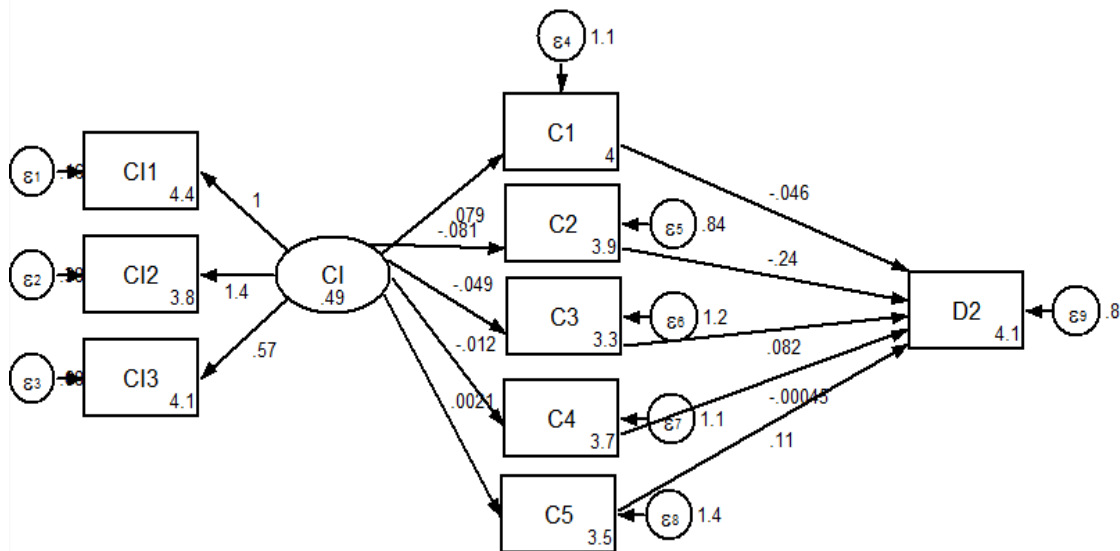


Figure 4.2. CI model with mediators for Cost Reduction. Source: Author

Note: C1- Rewards, C2 – Quality Culture, C3 – Management Commitment, C4 – Employee Training, C5 – Goal-setting, D2 – Cost Reduction.

Table 4.4 and Figure 4.2 summarize the results of SEM. The results demonstrate that CI has no direct positive impact on Cost Reduction, demonstrated by coefficient of 0.079, further rejecting the research hypothesis H₇. The results indicate that CI itself does not improve Cost Reduction without certain form of influence from mediators. In addition, H₁₀ is also not supported. Furthermore, the negative coefficient in Table 4.4 indicates the potential adverse effect of *Management Commitment* on CI – Cost Reduction relationship. Valid Statistical figures support the results in Table 4.4. The analysis indicates that *Rewards, Quality Culture, Employee Training* and *Goal-setting* should be implemented to achieve benefits of Cost Reduction.

Table 4.4. Fit indices and impact of mediating variables on Cost Reduction.
Source: Author.

Model Path	Coefficient	S.E.	Impact on CI – Cost Reduction
CI -> CR	0.079	0.098	Neutral
CI -> Rewards -> CR	0.341	0.045	Positive
CI -> Quality culture -> CR	0.239	0.075	Positive
CI -> Management commitment ->CR	-0.082	0.066	Negative
CI -> Employee training -> CR	0.229	0.052	Positive
CI -> Goal-setting -> CR	0.112	0.057	Positive
FIT INDICES			
Chi2 = 873.070; P>chi2 = 0.053; R ² = 0.965; RMSEA = 0.041; df = 304; CFI = 0.930			

4.2 Identification of Strategies for Effective CI programs based on Fuzzy-Set Qualitative Comparative Analysis (fsQCA)

4.2.1 Testing hypotheses on impact of CI and organizational practices on the Overall Firm Performance

Prior to fsQCA, testing of null hypotheses was conducted in the same manner as in the previous sections. However, in this case, the dependent variable constituted multiplication of Cost Reduction and Customer Satisfaction and

denoted as the *Overall Firm Performance*. Table 4.5 confirms the ability of Continuous Improvement to increase Overall Firm Performance, expressed as a multiple of Cost Reduction and Customer Satisfaction. Furthermore, H₁₄, H₁₅ and H₁₆ are also supported.

Table 4.5. Hypotheses testing for Overall Firm Performance. Source: Author.

Number	Hypothesis	P-Value	T-Statistics	Outcome
H₁₃	The higher the level of CI in the company, the higher Overall Firm Performance can be achieved.	0.000	2.731	Accepted
H₁₄	Rewards increase impact of CI on Overall Firm Performance.	0.000	3.420	Accepted
H₁₅	Quality culture increases impact of CI on Overall Firm Performance.	0.000	2.134	Accepted
H₁₆	Management commitment increases impact of CI on Overall Firm Performance.	0.000	3.356	Accepted
H₁₇	Training of employees in the improvement techniques increases impact of CI on Overall Firm Performance.	0.324	3.267	Rejected
H₁₈	Goal setting increases impact of CI on Overall Firm Performance.	0.062	2.440	Rejected

*Note: Overall Firm Performance = Cost Reduction * Customer Satisfaction*

4.2.2 The fsQCA solution

To identify fsQCA solutions, Boolean minimization of truth table with the use of enhanced Quine-McCluskey function was conducted (Dusa, 2010). Consistency (incl = 0.868) demonstrates the extent, to which a certain solution leads to the desired *Overall Firm Performance*. Following Schneider and Wagemann (2010) the consistency threshold is established at the level of 0.7

The analysis further confirms high consistency (>0.7) of the solution (Table 4.6).

Table 4.6. Combination of practices leading to the high performance of CI program. Source: Author

Practice	Causal combinations				
	1	2	3	4	5
	c1*C3*c4	C1*C2*c3	C1*C3*C5	c2*C3*c5	C2*c3*C5
<i>Rewards</i>	●	●	●	∅	∅
<i>Quality Culture</i>	∅	●	∅	●	●
<i>Management Commitment</i>	●	●	●	●	●
<i>Employee Training</i>	●	∅	∅	∅	∅
<i>Goal-setting</i>	∅	∅	●	●	●
Consistency*	0.748	0.734	0.792	0.748	0.720
Raw coverage**	0.196	0.225	0.287	0.217	0.237
Unique coverage***	0.058	0.040	0.098	0.075	0.058
<i>Solution coverage**</i> : 0.715					
<i>Solution consistency*</i> : 0.868					
<p>*Consistency – the extent, to which a certain solution leads to the desired outcome.</p> <p>**Raw coverage – indicates share of the outcome explained by a certain alternative combination.</p> <p>***Unique Coverage – indicates share of the outcome exclusively explained by a certain alternative path.</p>			<p><i>Legend</i></p> <p>● Core practice</p> <p>● Supporting practice</p> <p>∅ Not required</p>		

Note: C1- Rewards, C2 – Quality Culture, C3 – Management Commitment, C4 – Employee Training, C5 – Goal-setting, “+” – prime implicant for configuration.

The solution demonstrates that there are 5 alternative combinations of practices that lead to the effective CI program. Raw coverage indicates which share of the outcome is explained by a certain alternative combination, and

unique coverage indicates which share of the outcome is exclusively explained by a certain alternative combination (Ragin, 2008; Schneider and Wagemann, 2012). From the Table 4.6 it can be derived that the combination with the high importance of Rewards (C1), Management Commitment (C3) and Goal-setting (C5) has the highest unique coverage, and, accordingly, exclusively explains the highest share of the outcome. However, the overall solution demonstrates that there are different ways to achieve the desired effect.

The varying role of different practices in the identified combinations could partly explain difference in the results received in previous studies on the effectiveness of organizational practices for CI. As analysis in this study demonstrates, there are different combinations that condition effectiveness of CI to a different extent. The study further demonstrates and identifies multiple combinations that can be implemented within organizations depending on their resources and capabilities.

5. RESULTS

5.1 General discussion of the research results

Previous research demonstrates that the effect of CI on the firm effectiveness varies significantly depending on the performance measures used in the studies. The mixed findings on the effect of CI on the firm performance, coupled with the growing evidence of failure of the CI initiatives, create the research field with the vast practical value. The research findings respond to the industrial management research need to study CI-firm performance relationship in the complex SSC environment.

The study first develops three models with the same set of mediators but varying dependent variables (namely, Cost Reduction, Customer Satisfaction and their multiplication – *Overall Firm Performance*) to ensure comparability of the results. The mediators selected for the study include *Rewards*, *Quality Culture*, *Management Commitment*, *Employee Training*, *Goal-setting*. One of the peculiarities of the included mediators lies in the mediator *training*. In the proposed study the impact of the *employee training in improvement methods* on the CI-firm performance relationship is assessed, while previous studies mainly studied impact of the general, job-related training (Pont et al., 2009; Zeng et al., 2013). The proposed models incorporate multiple mediators to reflect complexity of the organizational environment, and to identify practices that can further promote impact of CI on customer satisfaction and cost reduction (Shah and Goldstein, 2006). The results of the study are discussed in the following order: first, the results of SEM analysis are scrutinized, followed by discussion of fsQCA solution. Further, the results from SEM and fsQCA are amalgamated to develop practical recommendations for SSCs.

Based on the analysis of 304 survey responses with Structural Equation Modeling, it can be concluded that Continuous Improvement without the infrastructure of supporting practices is not able to reduce costs, however positive impact of CI on customer satisfaction was established. This is a surprising finding, taking into account multiple previous studies suggesting otherwise (Paagman et al., 2015; Piercy and Rich, 2009; Rust et al., 2002). Cost reduction is considered as one of the main motives for introduction of CI initiatives in the SSCs and the research findings demonstrate that CI itself is not able to deliver cost reduction. Thus, it can be concluded, that CI implementation without development of the supporting organizational practices does not lead to the Cost Reduction. However, Cost Reduction may be achieved, when in addition to CI, a set of organizational practices is implemented. The study demonstrates that CI – Cost Reduction relationship can be facilitated through implementation of the following organizational practices: *Rewards of Employees, Quality Culture, Employee Training and Goal-setting*. The selected mediators provide a mix of soft and hard practices, thus, further suggesting the need to balance soft and hard dimensions of organizational practices to achieve *Cost Reduction*.

The SEM analysis further suggests that CI has a positive direct influence on customer satisfaction, thus confirming previous similar studies (Habtoor, 2016; Jayanth and Xu, 2016; Sila, 2007). The analysis confirms that the following factors impact CI-customer satisfaction relationship positively: *Rewards, Quality Culture, and Management Commitment*. *Goal-setting* and *Employee training* were found to not have a significant positive impact on customer satisfaction, even though numerous previous research suggested otherwise. Interestingly, *rewards* as well as *management commitment* are found to have the strongest impact on customer satisfaction. Further studies should investigate whether only these two factors are able to sustain CI initiative or the complete set of practices is essential, as suggested by Pont et al. (2009) and Shah et al. (2008). *Management commitment* is found to be the most important practice to improve customer satisfaction, which confirms previously established notion of major role of management commitment in the effectiveness of CI (Liker and Morgan, 2006; Näslund, 2013).

The fsQCA analysis provides 5 alternative combinations of practices that lead to the achievement of both cost reduction and customer satisfaction. The first combination is based on the low level of implementation of the practices *Rewards* and *Employee training* combined with high level of *Management Commitment*. The second combination emphasizes implementation of *Rewards* and *Quality culture* at the high levels and *Management commitment* at the low level. The third combination includes high implementation of *Rewards, Management Commitment, and Goal-setting*. The fourth combination is based

on the low *Quality Culture*, *Management Commitment* and *Goal-setting*. The fifth combination involves high *Quality Culture*, low *Management Commitment* and high *Goal-setting*. The identified combinations provide SSCs with the alternatives depending on the availability of certain resources, thus, improving their agility to respond to the changing internal environment.

5.2 Practical Recommendations for effective CI programs in the SSCs

SSCs embarking on CI could also note that in many cases CI needs to be supplemented by varying set of organizational practices to achieve improvement in a certain performance measure. The data showed that CI, not supported by a set of practices, is only able to improve customer satisfaction. However, cost reduction requires a set of practices. As the study demonstrates, organizational practices may have positive impact for achievement of one goal, but an adverse effect for another measure. The finding of the study can serve as guidelines for SSCs with regards to implementation of organizational practices and resources allocation. To provide managers and practitioners dealing with CI on the daily basis with a scheme of organizational practices implementation, Table 5.1 was developed. The research acknowledges that the SSCs may have varying needs and possibilities; thus, the study identifies different combinations of practices to satisfy varying needs of the SSCs.

Table 5.1 provides a simplified summary of the role of different organizational practices for effectiveness of CI for ease of interpretation and practical implementation. The guide in Table 5.1 provides a handy tool for selecting the most appropriate strategy for CI implementation as well as resource allocation for SSCs.

Table 5.1. Guide to selecting CI strategy depending on the goal. Source: Author

Goal	#	Requires organizational practices to achieve goal?	Organizational Practices				
			<i>Rewards</i>	<i>Quality Culture</i>	<i>Management Commitment</i>	<i>Employee Training in CI methodology</i>	<i>Goal-setting</i>
<i>Improve Customer Satisfaction</i>	1	No	★★	★	★★	x	x
<i>Improve Cost Reduction</i>	1	Yes	★★	★★	x	★★	★
<i>Improve Customer Satisfaction and Cost Reduction</i>	1	Yes*	★	∅	★★	★	∅
	2		★★	★★	★	∅	∅
	3		★★	∅	★★	∅	★★
	4		∅	★	★	∅	★
	5		∅	★★	★	∅	★

<i>Legend</i>	★★ high impact ★ medium impact not required ∅ negative impact x	<i>Notes: *Implementation of organizational practices allows to achieve better results from CI in improvement of cost reduction and customer satisfaction simultaneously as compared to the CI without practices. Otherwise, the impact of CI is low as compared to effect on Customer Satisfaction.</i>
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6. BENEFITS OF THE STUDY

The research results yield several valuable contributions to the industrial management, operations management, strategic management and human resource management literature. The research seeks to provide companies with information to help them increase chances of successful CI program implementation.

The study provides companies with the several alternative strategies that can be used to achieve high performing CI in SSCs. Furthermore, the companies are provided with the guidelines on selecting the appropriate strategy to improve certain performance measure (namely, to improve cost reduction, customer satisfaction or both). The different strategies provide SSCs with more agility in terms of decision-making and resource allocation in the domain of CI.

The research results can be used to develop study materials that can be further used to prepare students for a career in the SSCs. Consequently, the present study aims to increase awareness and knowledge about SSCs and CI among students that represent the main hiring pool for the SSCs.

7. LIMITATIONS OF THE STUDY

Despite effort to minimize potential flaws in the study, there are certain limitations that can be explored in the future research. First, present study focuses on the service industry to provide more insights on the application of CI in non-manufacturing environment. While it is considered as an advantage of the study, more research could be done to explore differences in the practices between industries and firms. Second, the present study uses customer satisfaction and cost reduction as the major performance measures. The results of the research could be further explored in the studies, to include financial, quality and innovation measures of the firm performance. Third, mediators in the study are operationalized through the single survey items, following Fuchs and Diamantopoulos (2009). Future research should include a broader set of items to reflect different aspect of the selected variables. Fourth, the data was collected through the survey. Therefore, collected answers may contain certain bias. The study provides findings based on the data collected through the survey in a single point of time. Taking into account the evolutionary theory of CI proposed by Bessant et al. (2001), longitudinal study could complement and expand the research results by providing insights on the dynamics of the CI-firm performance relationship, proposed in the research, over time.

8. CONCLUSIONS

Shared Service Centers is a growing industry that transforms how companies and organizations operate globally. SSCs are internal service providers that bring together, improve and standardize back-office functions. The promise of cost reduction coupled with opportunity to deliver higher customer satisfaction rates, drives growth of the industry. However, regardless of the great importance of SSC for companies and practices, the industry remains “invisible” in terms of research. To respond to the need of the SSCs for effective CI programs, the study identifies strategies for effective CI programs. To achieve the research objective, the proposed study first evaluates impact of CI on the firm performance measures, further explores impact of multiple organizational practices on CI – firm performance relationship, and, based on the conducted analysis, identifies strategies leading to achievement of different performance goals. The study identifies varying strategies for effective CI depending on the ultimate goal of the SSC – to reduce costs, improve customer satisfaction or both. Such an approach ensures higher agility of SSCs in decision-making for CI initiatives. The research provides SSCs with the guidelines for resource allocation that ensures delivery of the required performance measures. Previous research failed to identify a “silver bullet” of practices that ensure effectiveness of CI. The present study demonstrates that different performance goals require implementation of varying sets of practices. The research demonstrates that, indeed, there is no one right way to achieve effective CI that delivers the promised performance improvement, however, implementation of both soft and hard dimensions of organizational practices is necessary.

9. VERIFICATION OF THE DISSERTATION GOALS

The main objective of the study was to identify the strategies leading to the effective CI program. To resolve main research objective, two partial goals for the study were established: 1) to identify impact of CI on the firm performance and 2) to identify organizational practices that are able to foster CI – firm performance relationship. In line with the research objectives, six research questions were elicited. The research thesis resolved all the established research objectives.

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List of Publications

Stankalla, R., **Koval, O.**, Chromjakova, F. A review of Critical Success Factors for the Successful implementation of Lean Six Sigma and Six Sigma in Manufacturing small and medium-sized enterprises. *Quality Engineering*. Doi: 10.1080/08982112.2018.1448933 (*in press*)

Koval O., Anderson K. (2017) Cost Management and Customer Satisfaction as Outcome of Continuous Improvement in Shared Service Centers. *Proceedings 7th GIKA Conference Proceedings "Innovation, Knowledge, Judgment and Decision-Making as Virtuous Cycles"*, Thomson Reuters, Pamplona, Spain, pp. 271-273.

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Nabareseh, S., **Koval, O.**, Klimek, P., Chromjakova, F. (2016) Does Brand Value Influence Attitudes towards Careers in Shared Service Companies? A Study of Students in the Czech Republic. *Proceedings of the 3rd International Conference on Finance and Economics ICFE 2016*, HCM City, Vietnam: Ton Duc Thang University, pp. 366 -380.

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Curriculum Vitae

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Education

2014 – 2018 Tomas Bata University in Zlín (Czech Republic)

Ph.D. in Economics and Management / orientation Industrial Engineering

Thesis topic: Strategies for improving effectiveness of Lean Six Sigma initiatives

2007 – 2012 Chernigiv National Technological University (Ukraine)

MSc in Management and Administration (GPA 5.0 of 5.0, Diploma with Honors)

BSc in Industrial Management (GPA 5.0 of 5.0, Diploma with Honors).

Exchange programs

2016 Dublin Institute of Technology (Ireland)

Visiting Researcher in Supply Chain Excellence Research Group (<http://3sgroupn.weebly.com/>)

2010 – 2011 Lincoln University of Missouri (USA)

Exchange Student in Business Administration (GPA 4.0 of 4.0) – top 1% of the class

Professional Experience

Sep 2016 – Dec 2016	Xpertivity (Dublin, Ireland) http://www.xpertivity.com/ Lean Six Sigma Projects Consultant (internship) <ul style="list-style-type: none">• Coaching Green Belts during implementation of the optimization projects in Telecommunications company
Jun 2015 –Jan 2018	eBusiness Institute (Geneva, Switzerland) http://ebusinessinstitute.com/ Independent Digital Strategy Consultant (fixed term contract) <ul style="list-style-type: none">• Analysis of the digital marketplace for Nestle products in Central and Eastern Europe.• Preparation of the suggestions for digital strategy, reports and presentations for top management
Nov 2015 – Dec 2015	Toyota Peugeot Citroen Automobile (Kolin, Czech Republic) http://en.tpca.cz/ Kaizen Team Member (internship) <ul style="list-style-type: none">• Process optimization of the Welding line• Training on Toyota Production System (TPS) and Kaizen methodology• Achieved 10% time savings on the assigned operation

Jun 2013 – Oct 2013	Anheuser-Busch InBev Business Service Center (Kharkiv, Ukraine) http://www.ab-inbev.com/ Team Lead of Planning and Performance Management Department (Accounts Payable) <ul style="list-style-type: none"> Responsible for performance analysis and reporting of four teams: Distribution, Sales, Trade Marketing, and Merchandising Managed team of 13 people (goal-setting, performance analysis, motivation) Optimization and improvement of the reporting operations (PDCA, process maps, RACI matrices, FMEA, Kaizen events, etc.) Project management of operation transfers from the other departments (preparation of Toll Gate reports, SLAs design, project management and collaboration with the process owners along the transfer process)
Jul 2012– Jun 2013	Anheuser-Busch InBev (multiple locations) http://www.ab-inbev.com/ Global Management Trainee <ul style="list-style-type: none"> Optimization of the operations in manufacturing and sales with Lean Six Sigma methodology (received White Belt Training) Author of the Best Practice “<i>Water consumption decrease in the brewery</i>”, savings of >50 000 EUR annually Preparation of FMEA, PDCA and DMAIC analysis, action plan reports, budget management, project management, improvements implementations. Project management and reporting for improvement initiative
Jun 2011– Feb 2012	Vitaver and Associates, Inc. (Chernigiv, Ukraine) http://www.vitaver.com Business Intelligence Specialist <ul style="list-style-type: none"> Market research on competitors (staffing agencies) and clients (IT and outsourcing companies) Developed sales leads, identified of sales opportunities Prepared RFP (request for proposals) for the outsourcing services of the company Refined and optimized internal documentation
Jan 2011– Apr 2011	Missouri Department of Economic Development (MO, USA) www.ded.mo.gov Intern at Missouri International Trade and Investment Office <ul style="list-style-type: none"> Researched international markets for technical and innovation products Developed business directories for strategic economic sectors

<u>Language Skills</u>	<u>Computer Skills</u>	<u>Other</u>
English – C2, German – C1, Czech – C1, Ukrainian – native, Russian – native	R language for statistical analysis, advanced MS Excel (including macros), MS Visio, MS PowerPoint, MS Access, VBA	<ul style="list-style-type: none"> White Belt and Yellow Belt Lean Six Sigma certification Driving License

Oksana Koval, Ph.D.

**Conception of Continuous Process Improvement in Shared
Service Centers Based on Lean Methodologies**

**Koncepce neustálého zlepšování v centrech sdílených služeb na základě
Lean metod**

Doctoral Thesis Summary

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