Tomas Bata University in Zlín
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Doctoral Thesis

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 a 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 (Suska, Mänz and Zitzen, 2014; Stewart, 2015). SSCs are one of the primary drivers of Foreign Direct Investments (FDIs) in the region. Establishment of the SSCs 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 (Niehaves and Krause, 2010; Meijerink and Bondarouk, 2013), 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 Višegrádské 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 vypracovaní strategie k zavedení Lean metodiky v prostředí center sdílených služeb.

Výzkum si klade za cíl přinést nové poznatky a z toho plynoucí přidanou hodnotu společnostem 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 nízko nákladové destinace na ekonomicky rozvinuté podnikatelské společenství.

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LIST OF ABBREVIATIONS

SSC	Shared Service Center
CI	Continuous Improvement
CS	Customer Satisfaction
CR	Cost Reduction
CEE	Central and Eastern Europe
FDI	Foreign Direct Investments
BPO	Business Process Outsourcing
TQM	Total Quality Management
SEM	Structural Equation Modeling
fsQCA	fuzzy-set Qualitative Comparative Analysis
PRI	Proportional Reduction in Inconsistency
RG	Research Goal
PRG	Partial Research Goal
RQ	Research Question
H	Hypothesis
AVE	Average Variance Extracted
PCA	Principal Component Analysis
EFA	Exploratory Factor Analysis
SSON	Shared Services and Outsourcing Network
ABSL	Association of Business Service Leaders
S.E.	Standard Error

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, Dufour and Andiappan, 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 (Kulhánek *et al.*, 2016)), the industry remains largely understudied.

Shared service centers (SSCs) are organizational arrangements for service delivery (Knol, Janssen and Sol, 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. To retain their interconnectedness, no core business processes, neither customer contacts, nor sales points, are put into SSCs (Schulman *et al.*, 1999). Hence, process and non-strategic activities are bundled in SSCs.

The most necessary characteristic of the SSC is the provision of a commonly used service by a single organizational entity for two or more business units. The providing entity is called a shared services center. The ultimate goal of the SSC solution is to increase both efficiency and effectiveness of the support services activities. Achieving this goal depends on the ability to leverage existing or potential knowledge, technology, or specialization within the

organization (Institute of Management Accounts, 2000). Schulz and Brenner (2010) conducted thorough analysis of the most cited publications in the area of SSCs and, based on the received results identified the following important aspects of SSCs:

- consolidates processes within the group in order to reduce redundancies;
- delivers support processes as its core competency;
- has cost cutting as a major driver for implementation;
- has a clear focus on internal customers;
- is aligned with external competitors;
- is a separate organizational unit within the group; and
- is operated like an independent business.

It is important to distinguish between SSCs, outsourcing and centralization as these organizational forms share similarities. Table 1.1 compares the organizational forms and demonstrates that SSCs are independent internal providers of supporting services.

Table 1.1. Comparison of SSCs, outsourcing and centralization. Source: developed by author based on Quinn *et al*. (2000) and Moller *et al*. (2011).

Characteristics	**SSC**	**Outsourcing**	**Centralization**
Provider of the supporting services to the organization	Internal service provider	External service provider	Headquarters
Type of IT system integration	Fully integrated with the parent company	Partially integrated with the company	Managed and operated by the parent company
Independent of the company-recipient of services?	Yes	Yes	No, support services are part of corporate functions
Main performance goals	Cost reduction, service excellence and continuous improvement	Cost reduction, service excellence and continuous improvement	Cost reduction and centralization

SSCs are often called "internal outsourcing providers" due to the similarities shared between two organizations. However, SSCs are located within the organization and are considered as an independent business unit (Amiruddin *et al.*, 2013). Another important aspect of SSC operations is a strive for constant continuous improvement with a goal of cost reduction and customer satisfaction. SSC starts with customer needs and requirements and with a goal to improve the service level. SSCs balance effort and costs with customer satisfaction and external benchmarks of performance to ensure that cost/quality tradeoffs are made without jeopardizing customers' needs. SSCs solution relies on a radical redesign of how work is delivered as well as where staff is located and used to ensure that waste and nonessential activities are removed to make way for the increase in the amount of value created for customers.

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. Because of the need of every corporate department for the same services, these functions offer a common opportunity for SSC (Janssen, Joha and Grinsven, 2013). Figure 1.1 explains the process of transformation from a distributed to a shared services center model of organization. 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. To ensure communication between departments and SSC, control mechanisms in form of market control or Service Level Agreements (SLAs) are established (Amiruddin *et al.*, 2013). The control mechanisms are needed in order to guarantee delivery of services to the internal departments (recipients) in the allocated time and resources according to the agreement. The control mechanisms ensure quality of the received operations. Additionally, during and after the transfer of the operations to SSCs, service processes are analyzed to reduce redundancy and improve transparency of operations. Consequently, implementation of the SSC leads to more transparent and manageable operations.

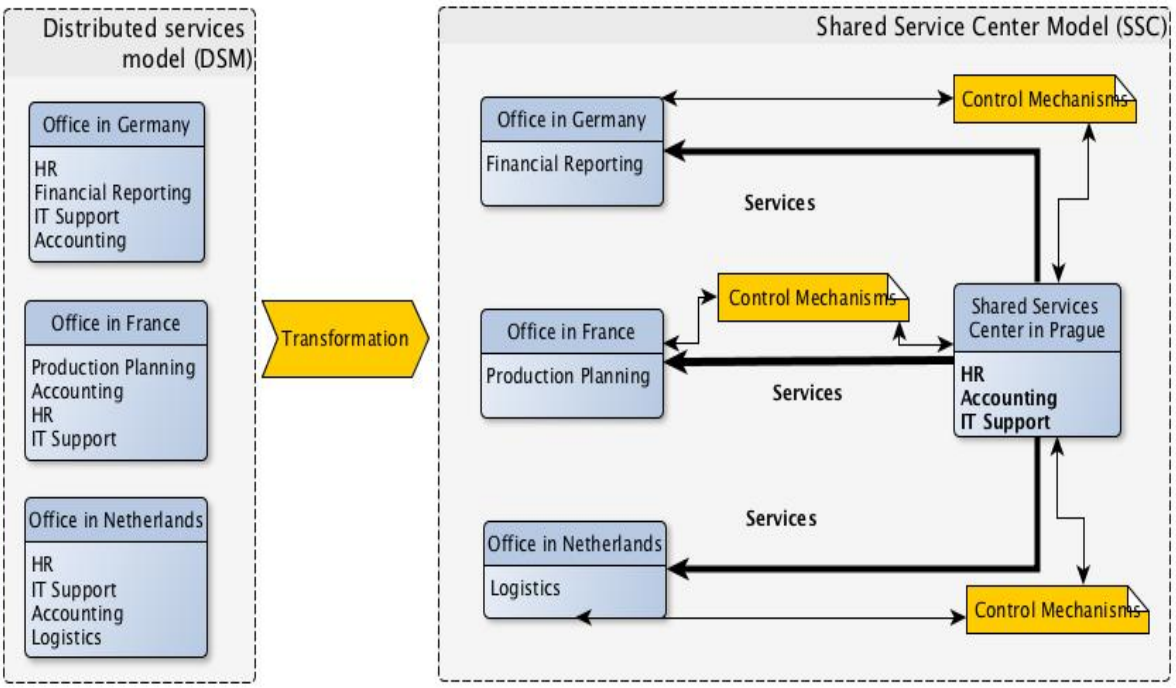

Figure 1.1. Transformation from distributed services model to the shared services model. Source: developed by Author based on Bangemann (2005).

Many of the savings come from standardizing technology and processes on a national and regional basis, making it easier to provide support for multiple business units, reduce personnel and improve the speed and quality of service (Fersht *et al.*, 2011). Furthermore, SSCs provide a valuable ground for harmonization of the processes between different departments of the organizations. Additionally, due to the position of the SSC as an independent service provider for the organization, SSCs are forced into delivering higher customer satisfaction as compared to the departments of the organization. However, the seemingly independent position of the SSC creates unique challenges for delivery of the expected performance. While companies strive to ensure complete independency of the SSC from the parent company and to establish proper contractual agreements, SSCs still highly depend on the parent company. Furthermore, SSCs need to establish effective communication with the departments-recipients of the provided services, which may not always be possible due to the organizational hierarchies and geographical remoteness. The complex communication structures complicate transfer of processes and comprehensive improvement of the operations. Furthermore, regardless of the SSCs position as an independent "organization within organization", SSCs usually have limited right to influence internal processes in the parent company. SSCs do not always provide end-to-end processes: in many cases, SSCs handle only several steps from the entire process. Thus, SSCs have limited power to

affect end-to-end operations. Such arrangements complicate implementation of process improvement initiatives, what compromises effectiveness of SSC processes and their ability to deliver declared performance objectives. Thus, SSCs provide a special and interesting case for investigation of application of Continuous Improvement.

1.1.3 Growth of SSCs industry in Visegrad Countries

The concept of SSC was introduced in the late 1980s when large US corporations moved their back-office functions into one single location. SSCs became increasingly popular in late 1990s as an organisational approach aimed at improvement of support functions (Ulbrich, 2006). The shared service initiative then spread to Europe and Asia (Redman *et al.*, 2007). Central and Eastern Europe (CEE), and the Czech Republic in particular, represents one of the most attractive destinations for SSCs globally (Tholons, 2015). Based on a recent report, business services in CEE will continue to grow at an average of 30% annually, creating approximately 100,000 new jobs in the region (Labaye *et al.*, 2013).

According to estimates, there are 4900 SSCs operating globally, with 52% of them located in Europe (Hackett Group, 2009). Association of Business Service Leaders in the Czech Republic (ABSL) estimates that 1000 of them are located in CEE, where 60% represent Polish SSCs. The SSC industry employs 270-300 thousand individuals on a 20% yearly growth (Drygala, 2013). CEE region is by far the most popular location for shared service centers established by companies with headquarters located in Western Europe, accounting for 20% of all SSCs globally (Suska, Mänz and Zitzen, 2014). In the Czech Republic in 2017, the business services segment employed over 75,000 people (CzechInvest, 2017). According to different estimates in Hungary SSCs create up to 2,5% of the total domestic employment (Marciniak, 2014).

SSCs along with business process outsourcing (BPO) experienced remarkable growth in the CEE in the recent years. According to Gartner's 30 Leading Locations for Offshore Services report, almost a third of global top destinations for business process outsourcing and SSC establishment is located in CEE region (Marriott, 2014). The most promising destinations in CEE are Krakow, Poland, Prague, Czech Republic, and Budapest, Hungary (Tholons, 2015). SSCs in the CEE report high savings through low-cost labor, however, still rank low on process improvements and process optimization. The image of the Visegrad countries as a low-cost destination attracts Foreign Direct Investments (FDIs) but does not attract high-value, advanced services that can bring technological advances to the region. The recent economic downturn provided companies with a clear evidence that there is a need for development of more flexible and resources-wise organizations. The direct consequence of the urge

for efficiency and responsiveness to changes in market conjuncture is a growing number of SSCs worldwide.

1.2 Continuous Improvement in SSCs

1.2.1 Definition of Continuous Improvement

The CI term is not strictly defined, and it is used as an integrating term for multiple attributes of the well-known quality initiatives (Savolainen, 1999; Bhuiyan and Baghel, 2006). In the early research works on CI, scholars tended to highly differentiate between improvement initiatives; however, lately there is a strong trend for complementarity of the improvement methods united under the umbrella of CI (Bhuiyan and Baghel, 2006; Anand *et al.*, 2009; Bozdogan, 2010; Oprime, Henrique de Sousa Mendes and Lopes Pimenta, 2011). 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 (Vecchi and Brennan, 2011; Ashkenas, 2012; Sabella, Kashou and Omran, 2014). During the last decades CI initiatives have been applied within different industries, especially in manufacturing and health care (Carlborg, Kindström and Kowalkowski, 2013; D'Andreamatteo *et al.*, 2015).

Bessant and Francis (1999) establish that CI, which is also often referred to as "kaizen" (Gonzalez and Martins, 2016), can be defined as an organization-wide process of focused and sustained incremental innovation that offers mechanism for advancing businesses to "learning organizations" (Milner and Savage, 2016). CI assumes continuous search for alternative ways of waste elimination. CI enhances organizational performance through sustainable small-step improvements as well as elimination of wastes from processes and systems with active participation of employees (Anand *et al.*, 2009). An effective CI approach challenges and empowers every employee to use their innovative ideas to achieve improvements that lead to measurable results (Graban and Swartz, 2012).

CI initiatives ensure company competitiveness and survival (Deming, 1986; Imai, 1986). CI is one of the core concepts in quality improvement and assumes an ongoing revision of the processes with the goal of complexity reduction and customer satisfaction improvement (Anand *et al.*, 2009; Kornfeld *et al.*, 2013). The history of modern improvement initiatives has its roots in the 1800s, when several companies in Italy encouraged employee-driven improvements. Opposite to the early days principles of work improvement, modern-day CI is an organized and comprehensive methodology that involves multiple, if not all, departments of the company (Bhuiyan and Baghel, 2006). 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 (Teece, Pisano and Shuen, 1997; Anand *et al.*, 2009; Su *et al.*, 2014). 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).

In the majority of the SSCs of the Visegrad countries the Lean based tools, such as Lean, Six Sigma or Lean Six Sigma are deployed (Koval, O. and Chromjakova, 2015). Lean methodology starts its history from the Toyota Production System that was developed based on the thirty years of practice and experiments in Toyota Company. The Lean approach is usually associated with identification and elimination of non-value added activities and inefficiencies such as excessive inventory, wait time, delivery etc. Six Sigma was developed in Motorola Company in 1980s and largely utilizes statistical theory. Six Sigma is defined as "an organized, parallel-meso structure to reduce variation in organizational processes by using improvement specialists, a structured method, and performance metrics with the aim of achieving strategic objectives" (Schroeder *et al.*, 2008). The methodology assumes that every process factor can be characterized by a statistical distribution curve. The objective of the methodology is to develop processes, transactions and products that prevent and minimize number of defects. Therefore, according to the methodology process is the main tool "to achieve error-free products and services with maximum profitability" (Taghizadegan, 2006).

During the 1980s Six Sigma grew into a distinct manufacturing discipline. It now has a wide range of applications including transportation, administration, manufacturing, healthcare, and other operating processes. Six Sigma methodology is able to deliver strong performance improvement in terms of quality enhancement and decrease in number of defects, which consequently leads to increased savings. Motorola Company and General Electric became the brightest examples of companies that employed the methodology, the latter of which reached level of $4 billion of savings per year through implementation of Six Sigma (Taghizadegan, 2006). However, it was General Electric Company that added lean principles to its program in 2000 to have a stronger focus on customer needs. The necessity to combine Six Sigma with Lean methods is explained by the fact that Six Sigma focuses on decrease of defects in products through improved variance in lead time for processes, and, as a result, deliver better customer experience, while Lean enables to remove non-value added activities from operations (George, 2002). Definitions of Lean Six Sigma methodology differ due to the variations in mix of applied tools as well as different authors' opinions on the primary goal of the methodology. However, in some cases, methodology is still viewed as more focused in decrease of defects and quality variation than the methodology for removing non-value added activities from the operations (Taghizadegan, 2006).

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 (Bond, 1999; Zatzick, Moliterno and Fang, 2012). Scholarly publications on effect of CI on firm performance cover a wide range of measures:

- financial (e.g. Agus, A., Krishnan, S.K. and Kadir (2000); Adam *et al*. (2001); Rust *et al.* (2002); Pinho (2008); Münstermann *et al*. (2010); Anand *et al. (*2012); Näslund (2013); Fullerton *et al.* (2014)),
- quality (Hendricks and Singhal (2001); Pinho (2008); Netland and Aspelund (2013); Zeng, Phan and Matsui (2013); Su *et al*. (2014)),
- operating (Anderson, Jerman and Crum (1998); Agus, Krishnan and Kadir (2000); Kaynak (2003); Shah and Ward (2003); Fuentes, Montes and Fernández (2006); Nair, Malhotra and Ahire (2011); Phan, Abdallah and Matsui (2011); Prajogo, Oke and Olhager (2016)),
- customer-oriented (Sila (2007); Peng *et al.*, (2014); Kassinis and Soteriou (2015)).

The majority of the studies on CI effect on firm performance evaluate performance of the firm as a composite variable that contains set of the multiple measures (see Appendix A). There is, however, evidence that CI can influence various types of performance measures differently (e.g. Kaynak (2003); Prajogo and Brown (2006); Prajogo *et al*. (2012)). Thus, when performance measures evaluated "in bulk", it is challenging to single-out the effect of CI and associated organizational practices on the individual performance measures. In light of the fact that multiple goals may not be achieved simultaneously, it is reasonable to assess impact of CI on firm performance measures solitarily (Rust, Moorman and Dickson, 2002; Sila, 2007).

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 (Bessant and Francis, 1999; Dahlgaard-Park and Dahlgaard, 2007; Schroeder *et al.*, 2008; Wickramasinghe and Wickramasinghe, 2011). The scholars have long studied improvement initiatives and received blended findings regarding how CI affects firm performance (Boyer, Gardner and Schweikhart, 2012; Kim, Kumar and Kumar, 2012; Klingenberg *et al.*, 2013; O'Neill, Sohal and Teng, 2016). 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 (see Sadikoglu and Zehir (2010); Dow *et al.* (1999); Zeng *et al.* (2015); Prajogo and Brown (2006); Agus

et al. (2000); Mallick *et al*. (2013); Kaynak (2003)). More than two decades later the researchers still did not gather enough evidence to reach a consensus on this question.

1.2.3 Application of Continuous Improvement in SSCs

As the competitive pressure on profit margins increases, the interest of SSCs to re-examine their productivity and apply CI grows (Rust, Moorman and Dickson, 2002; Carlborg, Kindström and Kowalkowski, 2013; Milner and Savage, 2016). At the same time the research on CI in services is considerably scarce. Publications on implementation of CI in the non-manufacturing industries are largely focused on healthcare (George, 2003; Graban and Swartz, 2012; McFadden *et al.*, 2014; D'Andreamatteo *et al.*, 2015) and financial services (Hendricks and Singhal, 2001; Williams, 2006; Delgado, Ferreira and Castelo Branco, 2010). The routine nature and repetitiveness of tasks in call centers made them a focus of CI implementation research too (Piercy and Rich, 2009a, 2009b; Laureani, Antony and Douglas, 2010; Teehan and Tucker, 2010). However, the topic of CI implementation in non-routine and complex services remains understudied to a great extent. Many studies on CI application in services are case-oriented and are based on the assessment of a single firm (Delgado, Ferreira and Castelo Branco, 2010; Laureani, Antony and Douglas, 2010; Teehan and Tucker, 2010). Just like two decades ago Powell (1995) called for a large scale study in manufacturing, today there is the same need for extensive research of CI in services.

The scant research on improvement of service operations can be explained by difficulties associated with CI implementation in this field. Service processes are prone to errors due to their complexity, leading to long waiting times and high production costs (George, 2003). The service processes are harder to map and to analyze, as compared to manufacturing; thus, it becomes more challenging to identify saving opportunities (Chakravorty, 2009). Service offerings can also significantly vary to cater to different type of clients, adding complexity (Carlborg, Kindström and Kowalkowski, 2013; Silvestro and Lustrato, 2015). Arguably, customer has a stronger immediate influence on the service than on manufacturing process due to the direct customer participation in the service production (Babbar, 1992; Zomerdijk and de Vries, 2007; Grönroos and Helle, 2010; O'Cass and Liem Viet, 2011). To respond to the changing customer priorities, organizations need to re-design and incrementally innovate their services to ensure quality and efficiency (Silvestro and Lustrato, 2015; Zeng, Anh Phan and Matsui, 2015).

CI tools including Lean, Six Sigma and their combination can be successfully transferred from industry to the services environment through selection of specific tools and their customization to meet process improvement needs of the

organization. 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 and human resources — into a shared operation. By creating a stand-alone or semi-autonomous SSC, companies can eliminate redundant activities and improve efficiency, services and customer satisfaction.

Consolidation of processes from the different departments 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. Intensive process improvement of consolidated processes under continuous improvement (CI) has become a priority for SSCs (Banoun, Dufour and Andiappan, 2015; Ford and Webb, 2015; Hodge, 2015; SSON, 2015). Recent report by the Shared Services and Outsourcing Network (SSON) features CI as the top trend in shared service centers. 71% of the respondents representing 450 SSCs worldwide, cited continuous improvement as the main drive for process excellence in the organization (Hodge, 2015). 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).. Development of the SSC usually drastically impacts back office functions, structures and processes that involve thousands of employees. The change in support operations also involves changes in the tightly integrated IT infrastructure with business processes further compounding these challenges. Complexity of the SSCs makes process changes time-consuming and expensive (Tanriverdi, Konana and Ge, 2007; Lacity and Fox, 2008). Likewise, this brings lesser than expected performance improvements (Piercy and Rich, 2009a; Longbottom and Hilton, 2011; Milner and Savage, 2016); thus, organizations face considerable challenges in enhancing the strategic value of the retained functions (Tanriverdi, Konana and Ge, 2007; Lacity and Fox, 2008).

1.2.4 Overview of Continuous Improvement trends in the SSCs of Visegrad Countries

SSCs worldwide tend to adopt Lean approaches (Suska, Mänz and Zitzen, 2014). In the Visegrad countries, 45% of SSCs report to adopt Lean Six Sigma, thus, making Lean the leading CI methodology in the region. In Slovak market the tendency towards Lean Six Sigma implementation is even higher than average in the Visegrad region – 72% of companies claim to be using it. Slovak business service centers also have wider support for other methodologies and

Lean in particular. High popularity of the Lean methodologies in the SSCs of Visegrad countries differs from the global trends in CI (Jennings *et al.*, 2014).

SSCs in Central and Eastern Europe report lower levels of process standardization, as compared to the average global rankings. Percentage of standardized processes in CEE is lower than the global average (66% vs. 76%). Over 90% of BSCs worldwide report to achieve some to major process improvements (Suska, Mänz and Zitzen, 2014). The share of centers that achieved these levels of improvements in CEE is considerably lower – only 2/3 of the SSCs companies report to achieve significant process improvements (Jennings *et al.*, 2014). SSC companies in Central and Eastern Europe report to constantly search for opportunities to improve and optimize processes. SSCs admit high optimization potential in the areas of process improvement and standardization (Jennings *et al.*, 2014).

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 (Calvo-Mora *et al.*, 2013; Bortolotti, Boscari and Danese, 2015; Dubey, Singh and Ali, 2015; Zeng, Anh Phan and Matsui, 2015). The soft dimension corresponds to social and behavioral practices, and the hard dimension to technical practices associated with CI design, implementation and management (Prajogo and Brown, 2006; Calvo-Mora *et al.*, 2013). The hard or technical practices are generally focused on controlling established processes to ensure conformance with the established requirements (Bortolotti, Boscari and Danese, 2015). The majority of the studies indicates the need to consider both "soft" (e.g. organizational culture, communication, training) and "hard" factors (project management, information technology support etc.) (Poon and Wagner, 2001; Oprime, Henrique de Sousa Mendes and Lopes Pimenta, 2011). In any respect, lack of consensus among researchers regarding classification of the practices into soft and hard domains leads to the difficulties in distinguishing them (Black and Porter, 1996; Zairi and Alsughayir, 2011).

Previous studies assessed soft dimension through study of the role of:

- leadership (Anderson *et al.* (1995); Sila and Ebrahimpour (2003); Anand, Chhajed and Delfin (2012)),
- quality-oriented culture (Calvo-Mora *et al. (*2013); Sabella, Kashou and Omran (2014); Zeng, Anh Phan and Matsui (2015)),
- training and employee development (Kaynak (2003); Sila and Ebrahimpour (2003); Pollitt (2013); Sabella, Kashou and Omran, (2014)),

- and employee engagement (Anand *et al. (*2009); Swartling and Poksinska (2013); McDermott and Venditti (2015)).

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 (Saraph, Benson and Schroeder, 1989; Anderson *et al.*, 1995; Flynn, Schroeder and Flynn, 1999). Quality information is another important practice, since the improvement methodologies assume data-driven decision making that requires updated and comprehensive information (Saraph, Benson and Schroeder, 1989; Boyer, Gardner and Schweikhart, 2012; Kim, Kumar and Kumar, 2012). With the development of the information technologies more research into the impact of the practice appeared in academic literature (Ray, Barney and Muhanna, 2004; Kim, Kumar and Kumar, 2012; Bortolotti, Boscari and Danese, 2015).

In addition, there is a debate regarding the role of the two dimensions in the performance of CI. The early studies on the conditions fostering CI effectiveness tend to focus on either hard or soft CI practices, whilst current studies attempt to find relationships between the two sides of CI. There are mixed findings regarding the direct or indirect impact of the practices, their importance and which dimension or practice is cardinal to achieving high performing CI program. At the same time, there is evidence that systematic implementation of both soft and hard practices is the prerequisite for CI effectiveness (Wickramasinghe and Wickramasinghe, 2011; Hadid, Mansouri and Gallear, 2016).

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, Reinhardt and Gurtner, 2014; Mehralian *et al.*, 2016). According to Powell (1995) and Dow *et al.* (1999), only soft practices ensure high performance of CI. More recent studies also confirm the exclusive role of soft practices for CI effectiveness (Sadikoglu and Zehir, 2010; Abdullah and Taríb, 2012; Dubey, Singh and Ali, 2015). However, studies of Rungtusanatham *et al.* (1998), Calvo-Mora *et al*. (2013) and Zeng *et al.* (2015) assert the major role of the hard practices for CI performance. Many studies tend to model relationships between soft, hard practices and performance through mediation (Anderson *et al.*, 1995; Flynn, Schroeder and Flynn, 1999; Kaynak, 2003; Nair, Malhotra and Ahire, 2011). However, this approach assumes presence of the causal rather than equal relationship between practices.

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 (McIvor, McCracken and McHugh, 2011). SSCs creation usually drastically impacts back office functions, structures and processes that involve thousands of employees. Process improvement that involves existing systems and procedures can be extremely time consuming and expensive (Tanriverdi, Konana and Ge, 2007). Organisations face considerable challenges in enhancing the strategic value of the retained function (Lacity and Fox, 2008).

SSCs in CEE have the highest cost savings achieved globally, with the Czech Republic SSCs reporting an average of 32 % savings on operating costs delivered. Service levels in Czech centres are rated as highly as in Western European ones and significantly higher than in other parts of the world (Drygala *et al.*, 2015). At the same time, CI results in SSCs of Visegrad countries are lower as compared to the results of the SSCs worldwide. The prevalence of Lean methodologies in the Visegrad SSCs, coupled with expected growth of the industry, makes V4 region an interesting case for a research. Lower process improvement and process standardization levels mean that the cost saving and efficiency potential of the SSCs are not fully reached. SSCs with more standardized and optimized processes would enable V4 countries to received

higher-value-added services that will also bring know-how to the region (Hodge, 2015).

Multiple organizations implement CI in the SSCs to reduce costs and improve customer satisfaction (Janssen and Joha, 2006; Herbert and Seal, 2012). With the growing pressure on margins, SSCs look for the new approaches to customer satisfaction, since this may lead to their inability to sustain balance between the two, arguably, contradictory goals – keep customers satisfied and reduce costs. The cost reduction hype coupled with a lack of customer focus may hurt firm competitiveness in the long term (Helms and Mayo, 2008; Bonaccorsi, Carmignani and Zammori, 2011). However, there is a growing evidence of failure of the CI initiatives, and scholars report difficulties in identifying conditions that can ensure CI effectiveness. The investigation of the practices that condition effectiveness of CI initiatives in services sector is 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:

PRG_1: To study impact of CI on firm performance.

PRG_2: To study impact of organizational practices on CI – firm performance relationship.

2.4 Research Questions

Taking into account literature review as well as inputs from the pilot studies conducted during the theoretical framework validation stage, the following firm performance measures were selected for the further study: customer satisfaction and cost reduction. Consequently, first, the study concerns itself with studying the strategies leading to achievement of either of the firm performance measures. However, taking into account need of industry for the strategies leading to simultaneous improvement of both cost reduction and customer satisfaction, the thesis explores the strategies for achievement of both cost reduction and customer satisfaction.

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 affect 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?

Figure 2.1 provides a summary of the research goals and corresponding research questions.

2.1 Continuous Improvement Practices and Hypotheses Development

Organizations achieve competitive advantage through incremental innovation by developing a set of practices related to CI (Caffyn, 1999). Dynamic capability research suggest that organizational infrastructure, in the form of the practices, is important to sustain CI. The CI practices are hard to implement because of the difficulties faced when breaking traditional habits and introducing practices, needed to drive CI in the organization (Bateman, 2005; Bhuiyan and Baghel, 2006; Galeazzo, Furlan and Vinelli, 2016). Often CI fails to take root in the organization which embarks on the improvement journey (Taylor, Taylor and McSweeney, 2013; McLean and Jiju, 2014; Jurburg *et al.*, 2015; McLean, Antony and Dahlgaard, 2017). Arguably, the cause of CI practices failure to take root in the organization could be a problem in the management of CI initiatives; thus, calling for the in-depth studies of practices

that have levers of influence on CI effectiveness (Bessant and Francis, 1999; Galeazzo, Furlan and Vinelli, 2016).

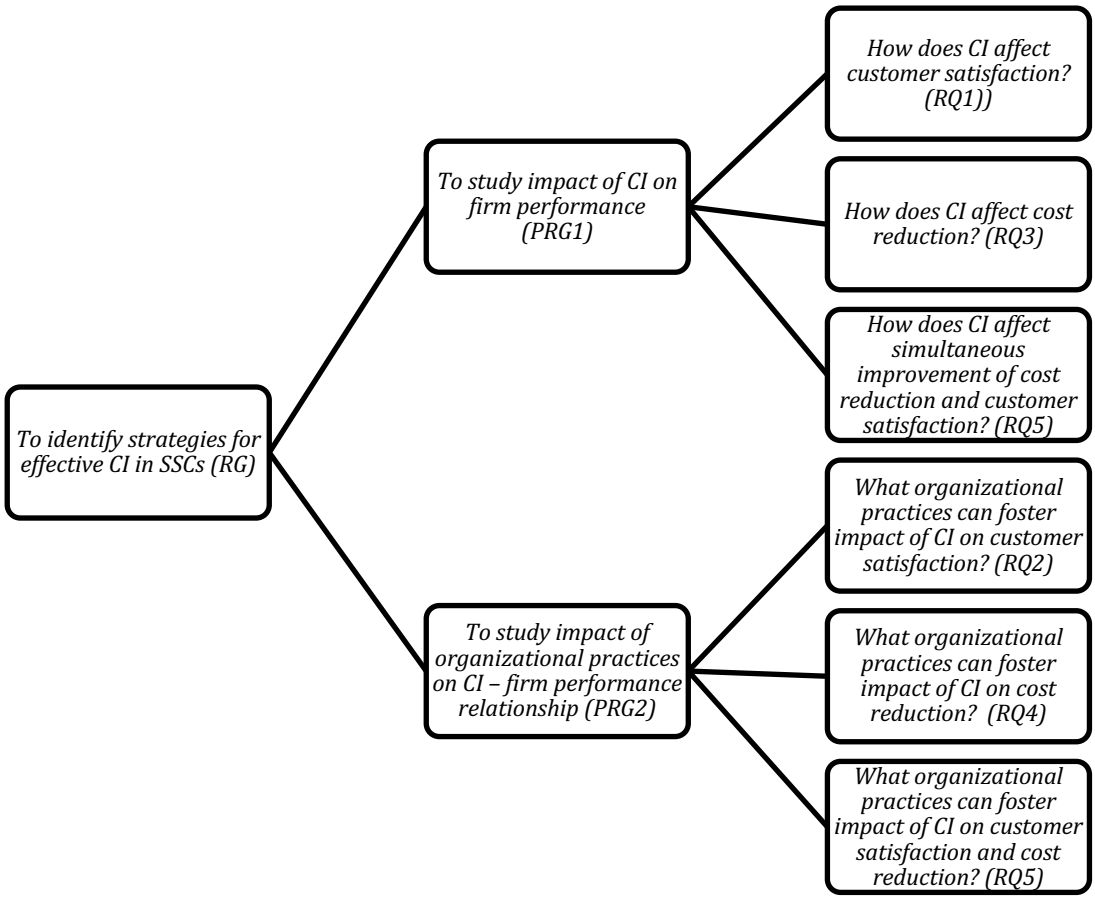

Figure 2.1. Graphical depiction of research objectives and research questions hierarchy. Source: Author.

As in the case with the effectiveness of CI, the researchers have not yet reached conclusion regarding the final list of practices, principles and factors required for the implementation of improvement initiative. Many researchers report difficulties in defining the conclusive list of practices (Fuentes, Montes and Fernández, 2006; Audretsch, Martinez-Fuentes and Pardo-del-Val, 2011; McCracken and McIvor, 2013). Ribeiro de Jesus, Antony, Lepikson and Peixoto (2016) posit that there exists up to 25 CI practices. In the analysis of 37 empirical studies Karuppusami and Gandhinathan (2006) identify as many as 56 practices. Borman and Janssen (2012) established that practices that condition efficiency of SSCs included standardized processes, unified IT systems, flexibility, committed leadership and comprehensive training. This variety of the practices challenges the prioritization of the efforts aimed at CI implementation, which hinders effectiveness of CI; thus, researchers suggest identifying relevant CI practices and further recommendations for prioritization of investment efforts

for specific industries (Hietschold, Reinhardt and Gurtner, 2014; Mehralian *et al.*, 2016).

CI induces strategy development and formation (Bessant and Francis, 1999; Fuentes, Montes and Fernández, 2006). Interestingly, in many studies CI plays a mediating, rather than major influencing role (see Rungtusanatham *et al*. (1998); Pont *et al.* (2009); Dubey *et al.* (2015); Zeng *et al.* (2015); Al-Dhaafri *et al.* (2016); Habtoor (2016)). In light of the CI strategic role, CI should be assessed as a variable of influence, rather than mediating variable. The development of CI must be accompanied by the system of organizational practices (Bateman, 2005; McLean and Jiju, 2014; Gonzalez and Martins, 2016). CI initiatives, not supported by appropriate coordination, resource allocation and employee involvement, lose their effectiveness over time (Wruck and Jensen, 1998; Choo, Linderman and Schroeder, 2007; McLean, Antony and Dahlgaard, 2017).

The extensive CI literature review permits to identify the following practices affecting CI implementation (see Appendix B):

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

The research is based on the multidimensional view of CI; thus, the practices are attributed to the hard and soft dimensions of CI. In the literature, the soft dimension corresponds to social and behavioral practices, and the hard dimension – to technical practices associated with CI design, implementation and management (Prajogo and Brown, 2006; Calvo-Mora *et al.*, 2013). Consequently, in the proposed study the soft dimension of practices includes *Quality Culture, Management Commitment* and *Training*, and hard dimension – *Goal-setting* and *Project Management.* Researchers assert that implementation of the complete set of CI practices is the prerequisite for CI effectiveness (Shah and Ward, 2003; Shah, Chandrasekaran and Linderman, 2008; Pont, Furlan and Vinelli, 2009; Wickramasinghe and Wickramasinghe, 2011). However, the previous research shows a pattern of overly focus on hard rather than soft practices. Fryer *et al.* (2013) assert that soft practices, including corporate quality culture, communication, teamwork and empowerment come into the focus of researchers in public sector, rather than in manufacturing or mixed sector studies. In the next sub-sections evidence for the hypotheses development is provided. Appendix B provides a more detailed evidence of literature to support the proposed hypotheses.

2.1.1 Customer satisfaction and Cost Reduction

CI is a multidimensional process embedded within many functions, and influences performance of the SSCs at the multiple levels. CI practices need to provide a supporting context that enables organizational systematic improvement (Anand *et al.*, 2009). 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 (Anand *et al.* (2009); Boyer *et al.* (2012); Taylor *et al.* (2013); Zeng *et al.* (2013, 2015) among others).

The three priori models that depict relationships of the CI practices, customer satisfaction and cost reduction were developed to reflect the complexity of interaction between the variables. 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 three proposed models (Figure 2.2, Figure 2.3 and Figure 2.4) aim to disentangle the complex relationships between CI, related practices and firm performance.

As focus of the study is to investigate the effect of CI on firm performance in the complex system of CI practices, a positive relationship between CI and the two operational performance measures, that are the focus of the study – customer satisfaction and cost reduction are hypothesized. These relationships are further reinforced by the CI practices. The proposed thesis is built upon the notion of positive impact of CI on firm performance:

H_1: The greater the level of Continuous improvement in the company, the greater Customer Satisfaction can be obtained.

H_7: The greater the level of CI in the company, the higher Cost Reduction can be achieved.

H_{13}: The greater the level of CI in the company, the higher Cost Reduction and Customer Satisfaction can be achieved.

Both of the selected performance measures have been in the focus of industrial management scholars for a long period of time. However, cost reduction and customer satisfaction are rarely studied individually and on the same data-set, even though in foundational works on CI customer satisfaction and cost reduction are cornerstones of CI performance (Deming, 1986; Imai, 1986; Liker and Morgan, 2006). In many studies on the effect of CI on firm performance, the evaluation of cost reduction and customer satisfaction is carried out with multivariate techniques as a part of the composite variable (see Fullerton *et al*. (2014); Dubey *et al.* (2015); Zeng *et al.* (2015); Habtoor (2016) among others). In other studies CI is a mediating, rather than independent

variable; that is, rejecting the strategic role of CI (see Rungtusanatham *et al.* (1998); Pont *et al*. (2009); Dubey *et al.* (2015); Zeng *et al.* (2015); Al-Dhaafri *et al.* (2016); Habtoor (2016); Bond (1999)). The previous studies do not lead to the explicit understanding of CI influence on the operational performance, and the proposed research attempts to provide concise findings that can be applicable in the practical setting.

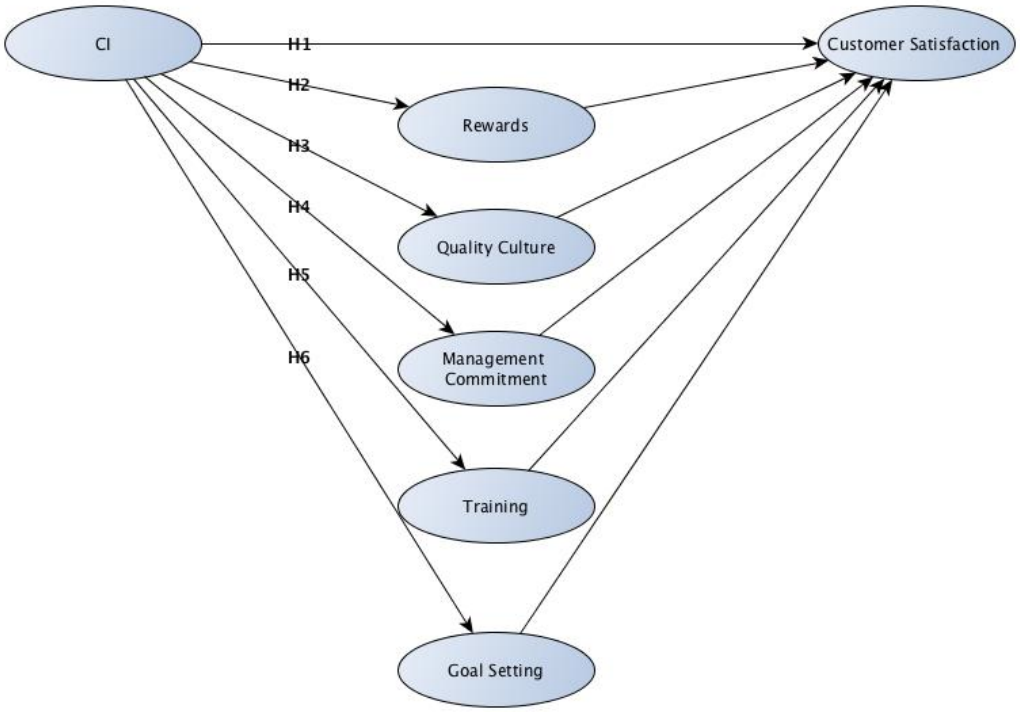

Figure 2.2. Priori model of CI – Customer satisfaction relationship. Source: Author.

2.1.2 Rewards

Rewards and employee recognition play an important motivational role in CI implementation (Gonzalez and Martins, 2016). Employee participation is at the heart of every CI initiative (Deming, 1993; Bessant and Francis, 1999; McFadden *et al.*, 2014; Galeazzo, Furlan and Vinelli, 2016), since changes that take place in organization with implementation of CI require employee involvement (Little and Dean, 2006; Anand *et al.*, 2009; Lam, O'Donnell and O'Donnell, 2015), and may be stressful for employees (Conti *et al.*, 2006; Taylor, Taylor and McSweeney, 2013). When not rewarded appropriately, employees may sabotage the CI initiative (Tronvoll *et al.*, 2011; Wan Ahmad *et al.*, 2016). At the same time, organizations that have designed employee rewards

and recognition systems that ensure high level of employee involvement, report better results from CI (Yang, Lee and Cheng, 2014; Habtoor, 2016).

The motivational aspect is one of the understudied areas in management of CI initiatives, and this area piques research interest in the face of the growing notion of the soft or "human" side of CI among scholars. The research on influence of motivational factors on CI is limited to the studies that assess influence of the motivational practices on the "hard" or "technical" ones, omitting the possibility of direct influence of motivational aspects on CI effectiveness (Flynn, Schroeder and Flynn, 1999; Rahman and Bullock, 2005; Habtoor, 2016). Thus, the positive effect of Rewards on the relationship between CI and operational performance is hypothesized:

H_2: Rewards increase impact of CI on Customer Satisfaction.

H_8: Rewards increase impact of CI on Cost Reduction.

H_{14}: Rewards increase impact of CI on Cost Reduction and Customer Satisfaction

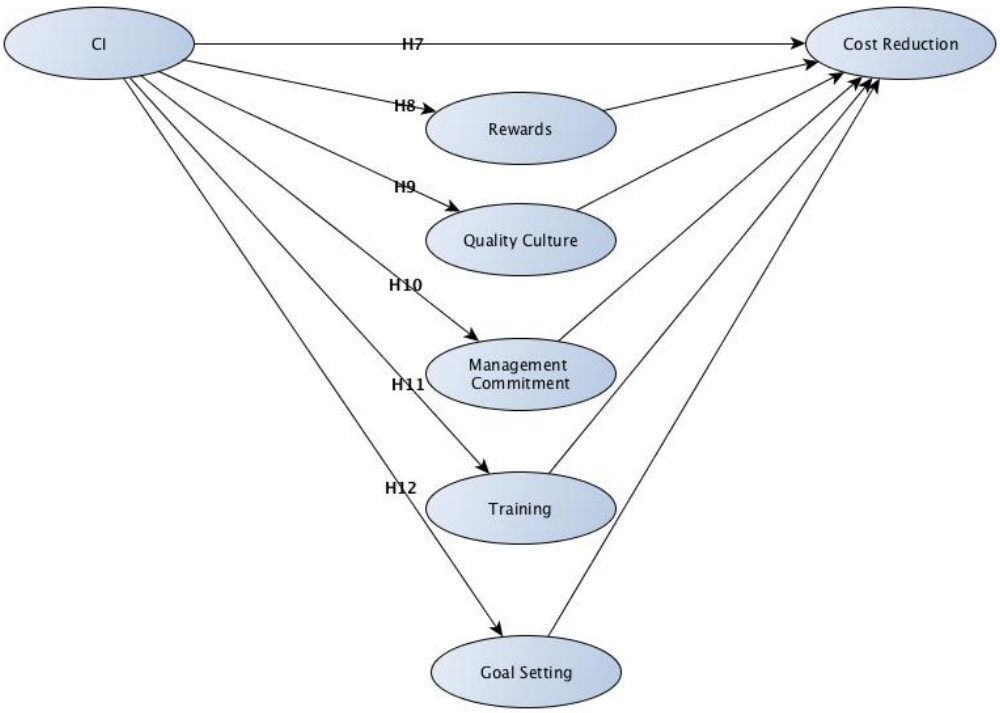

Figure 2.3. Priori model of CI – Cost Reduction relationship. Source: Author.

2.1.1 Quality Culture

Implementation of CI encompasses more than application of certain tools and techniques (Bessant, Caffyn and Gallagher, 2001; Fryer, Ogden and Anthony, 2013): CI requires an organizational culture to support and encourage improvements. The implementation of CI should subsequently lead to changes

in the culture and how the organizations operate (Fryer, Ogden and Anthony, 2013). CI embedment in the firm, therefore, must take into account the development of a culture for CI that involves all employees (Bhuiyan and Baghel, 2006; Garcia-Sabater and Marin-Garcia, 2011). Successful implementation of any CI initiative demands introduction and sustaining of customer focus through CI that enforces changes in organizational culture (Maleyeff, 2006; Teehan and Tucker, 2010).

Researchers acknowledge the fundamental role of the quality-oriented culture for effectiveness of CI (Ahmed, Pervaiz, Loh, Ann and Zairi, 1999; Calvo-Mora *et al.*, 2013; Swartling and Poksinska, 2013; Habtoor, 2016). Quality culture directly influences involvement of employees in organizational aspect of CI (Psychogios, Atanasovski and Tsironis, 2012; Tsironis and Psychogios, 2016). Sophisticated quality culture serves as an integrating tool for organizations, and helps them to conquer implementation barriers (Dow, Samson and Ford, 1999; Detert, Schroeder and Mauriel, 2000; Prajogo and Brown, 2006). The quality culture engages employees at every level and every process by promoting shared value of customer focus and commitment to continually improve quality (Dubey, Singh and Ali, 2015).

Scholars still vary in opinion regarding applicability of the universal quality culture across organizations. Lillrank *et al.* (2001) suggest that the quality culture required for CI may vary greatly depending on organizational context. Bortolotti *et al*. (2015) observed CI implementation in the different manufacturing plants, concluding that the successful CI initiative tends to focus more on the development of the culture of quality improvement, regardless of the organizational context. The researchers recognize quality culture as one of the major instruments of managing resistance to change, and, consequently as one of the major influencers on the effectiveness of CI (Detert, Schroeder and Mauriel, 2000; Delgado, Ferreira and Castelo Branco, 2010; Swartling and Poksinska, 2013). Thus, the positive influence of Quality Culture on the effectiveness of Continuous Improvement is hypothesized:

H_3: Quality culture increases impact of CI on Customer Satisfaction.

H_9: Quality culture increases impact of CI on Cost Reduction.

H_{15}: Quality culture increases impact of CI on Customer Satisfaction and Cost Reduction.

2.1.2 Management Commitment

The issues of management commitment and organizational culture are often emphasized as especially critical (Chakravorty, 2009; Bon and Mustafa, 2013; Näslund, 2013; Dubey, Singh and Ali, 2015). Effective CI requires management of the organization to establish solidifying goals, assign resources and directly participate in the CI process (Chakravorty, 2009). CI emphasizes human effort,

commitment and discipline. This way, this process requires the commitment and involvement of the senior management, performed steadily to ensure success. To be effective, CI initiative should involve employees from different organizational levels, from shop floor to top-level management (Liker and Morgan, 2006; Swartling and Poksinska, 2013).

The leaders should exemplify the core CI values and ensure that the resources, required for CI implementation are allocated and provide direction for CI development (Imai, 1986; Kaye and Anderson, 1999). Researchers view management of the organization as a driving force behind CI (Powell (1995); Bessant and Francis (1999); Bortolotti *et al.* (2015); Habtoor (2016) among others). Managers are expected to define, promote and launch CI at the strategic level, and provide resources at the operational level (Haikonen, Savolainen and Järvinen, 2004). Anand *et al.* (2009) find that management commitment to CI facilitates trust in leadership among employees and fosters employee autonomy as well as proactive process improvement. Heavey *et al.* (2014) argue that leadership plays a connecting role between strategic goals, employees and CI initiative. The proposed thesis is built upon the previous studies that hypothesize that management commitment has a positive mediating role between CI and operational performance of the organization:

H_4: Management commitment increases impact of CI on Customer Satisfaction.

H_{10}: Management commitment increases impact of CI on Cost Reduction.

H_{16}: Management commitment increases impact of CI on Customer Satisfaction and Cost Reduction.

2.1.3 Training of employees

Implementation of CI initiative requires employees to go through the training on improvement methodology (Guarraia *et al.*, 2008; Pinho, 2008; Pollitt, 2013). Training of employees and management in the CI methodology facilitates strategic alignment of the employee efforts, improvement projects and long-term goals (Laureani, Antony and Douglas, 2010; Tsironis and Psychogios, 2016). Training is a complex practice that can involve training on the improvement method and training on the professional skills. The previous studies largely focus on the job-related, rather than on specific training on improvement techniques and tools (Pont, Furlan and Vinelli, 2009; Zeng, Phan and Matsui, 2013). Pont *et al.* (2009) stated that training has a positive significant effect on operational performance and CI. While general skills training is important in aiding employees in in-depth understanding of the processes, training in CI methodology specifically trains employees to find and implement improvements. Pollitt (2013) in the case study of CI implementation observed the foundational role of training for the CI success.

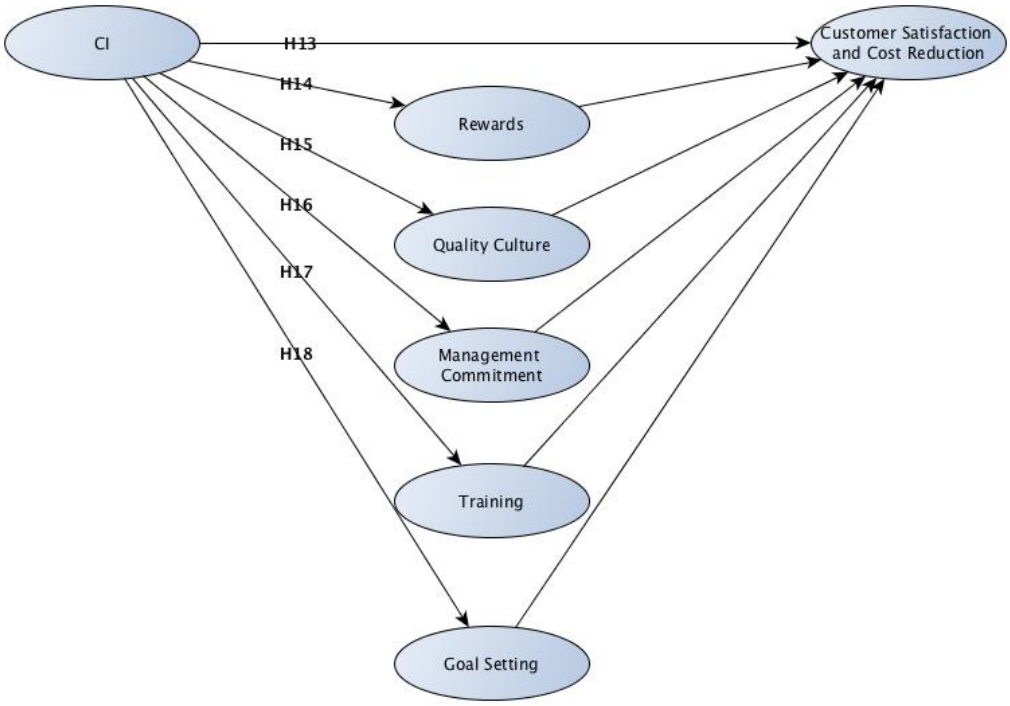

Figure 2.4. Priori Model of CI influence on Cost Reduction and Customer Satisfaction. Source: Author.

There is a lack of the studies assessing the effect of CI-related training on CI performance. The proposed study is set to assess the effect of the training on improvement methodology on the effectiveness of CI, rather than studying impact of the general vocational training. The study is built upon assumption of Training of employees in CI methodology has a significant impact on operational performance by providing employees with the tools for identification of improvements:

H_5: Training of employees in the improvement techniques increases impact of CI on Customer Satisfaction.

H_{11}: Training of employees in the improvement techniques increases impact of CI on Cost Reduction.

H_{17}: Training of employees in the improvement techniques increases impact of CI on Customer Satisfaction and Cost Reduction.

2.1.4 Goal-setting

Researchers have observed that effectiveness of CI methodologies depends on the adequate coordination of the improvement projects (Powell, 1995; Kaynak, 2003; Choo, Linderman and Schroeder, 2007). The proper goal-setting can fulfill an important role of CI coordination. The developed implementation plan with the system of the goals for CI projects may help sustain CI beyond initial

rollout (Anand *et al.*, 2009). The goal-setting plays the interconnecting role between strategic priorities of the organization and CI initiative (Calvo-Mora *et al.*, 2013). Firms with a high strategic alignment are more effective in driving resources to the priority projects to overcome problems that threaten the overall firm performance. The organizations with strategically aligned projects and goals are more integrated; consequently, the functions of the organization tend to work closely with each other and avoid implementing changes that may hinder achievements of the other departments (Galeazzo, Furlan and Vinelli, 2016). For a long-term CI effectiveness, the organization needs to rigorously establish goals that meet customers' needs (Jääskeläinen, Laihonen and Lönnqvist, 2014; Prajogo, Oke and Olhager, 2016); otherwise, failure to adopt the customer-focused approach may lead to deterioration of firm performance (Snee, 2010).

Studies have focused on the direct effect of strategic alignment on firm performance (O'Leary-Kelly and Flores, 2002; Piercy and Rich, 2009b; Turkulainen and Ketokivi, 2012) but there is no evidence of its direct or indirect effect on CI effectiveness. The timely exchange of information about goals, resources and progress achieved are important prerequisites for management of CI projects; thus, Goal-setting and project selection are usually implemented at the early stages of CI rollout (Delgado, Ferreira and Castelo Branco, 2010). Researchers emphasize the necessity of a unified coordination and goal-setting of CI initiatives and ascertain impact of project management on CI effectiveness (Antony *et al.*, 2007; Psychogios, Atanasovski and Tsironis, 2012; Gonzalez and Martins, 2016). The thesis hypothesizes that Goal-setting strengthens impact of CI on operational performance, because firms with clear objectives unite employees to drive critical improvement projects forward (Gustafsson, Nilsson and Johnson, 2003; Zeng, Anh Phan and Matsui, 2015):

H_6: Goal-setting increases impact of CI on Customer Satisfaction.

H_{12}: Goal-setting increases impact of CI on Cost Reduction.

H_{18}: Goal-setting increases impact of CI on Customer Satisfaction and Cost Reduction.

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) . The study is built upon similar research on the practices that condition effectiveness of CI. The concept of assessing key practices or factors that condition certain phenomena gained

wide acceptance and was applied in many industries, including manufacturing, health care and aeronautics to understand the key drivers for success or failure of projects and organizations (Bergeron and Bégin, 1989; Pinto and Mantel, 1990; Poon and Wagner, 2001; Umble, Haft and Umble, 2003).

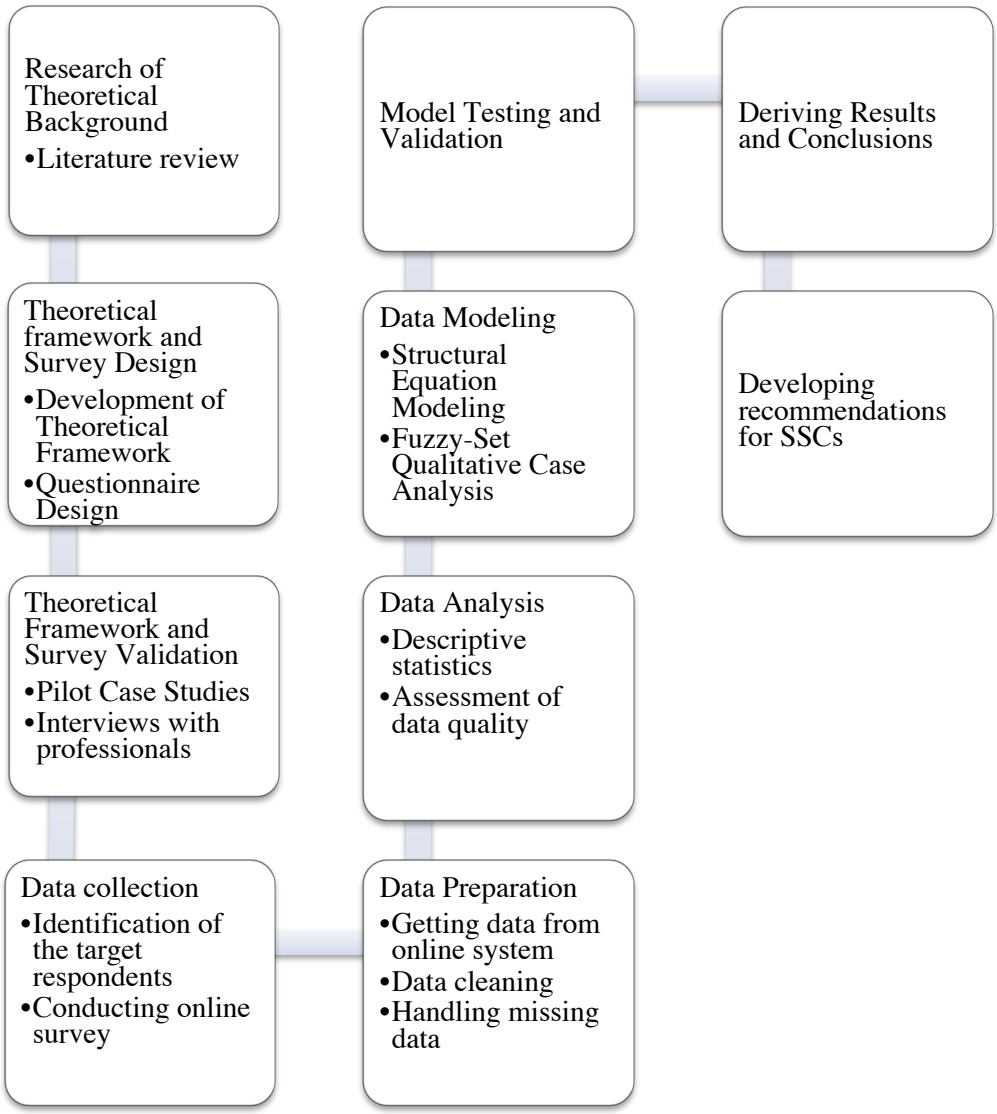

Figure 3.1. Overview of the research design. Source: Author

The research uses a multi-method approach to respond to the research questions and gain a deep understanding of the research domain (Figure 3.1). 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. The proposed theoretical framework includes three priori models to study impact of CI on Customer Satisfaction, Cost Reduction and their multiplication. Such approach enables to explicitly compare effect of CI on the firm performance as well as the mediating effects of the practices. The developed models are tested on the same data set, which provides for another

methodological advantage of the study. 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 the measurement item

Following Shah and Goldstein (2006) multiple mediators are introduced to reflect the complexity of CI interaction with organizational environment. To operationalize the constructs, suitable measurements were adapted from the research literature (see Appendix B). The survey items serve as a basis for construct measures. In line with the literature review research participants were asked to evaluate performance of CI in reducing costs and improving customer satisfaction on the 1-5 Liker-type scale, where 1 is for Strongly Disagree and 5 for Strongly Agree. Further, the research participants were asked to rate importance of each of the selected practices for CI effectiveness on the same scale.

The measurement item includes five practices that were conceptualized in the study as the following variables: *Quality Culture*, *Employee Training*, *Management Commitment*, *Rewards* and *Goal-setting*. Appendix B provides substantiation for selected variables as well as corresponding survey items. CI is assessed through evaluation of the company's strive for quality improvement, standardization and elimination of non-value added activities. The company's strive for improvement as well as availability of CI program (for example Lean, Six Sigma, TQM) was considered to be an important measure of CI in past research. CI measure is operationalized from Prajogo and Brown (2006), Sila (2007), Sadikoglu and Zehir (2010), Näslund (2013), and Dubey *et al.* (2015). Standardization of the operations is another important aspect of CI, since it allows to reduce complexity and bring transparency to the organization – important components of CI (Berger, 1997; Münstermann *et al.*, 2010). Standardization is contextualized as a component of CI from Bessant and Francis (1999), Anand *et al.* (2009), Gonzalez and Martins (2016). CI application assumes elimination of non-value added activities from the operations to improve their cost effectiveness.

Quality culture is one of the hallmark developments within organizations, engaging in CI. Implementation of CI boosts development of quality-oriented culture, which means that employees and departments of the organization focus on delivering better quality of the product or service. *Quality culture* mediator is conceptualized based on Detert *et al*. (2000), Bortolotti *et al.* (2015), Jayanth

and Xu (2016). Training in improvement methods can significantly impact performance in CI; thus, *Employee Training* is included as a mediator in the model (Hietschold, Reinhardt and Gurtner, 2014; Habtoor, 2016; Jayanth and Xu, 2016). *Management commitment* to CI program is an important prerequisite for "buy in" of the changes, caused by CI from multiple stakeholders and can significantly impact effectiveness of CI. *Management commitment* mediator was adapted from Anand *et al*. (2012), Swartling and Poksinska (2013) and Habtoor (2016). Researchers assert the need to engage employees into the CI process through design of the appropriate *Rewards* for employees that participate in CI projects (Sabella, Kashou and Omran, 2014; Yang, Lee and Cheng, 2014; Habtoor, 2016). To ensure strategic alignment of CI and its ability to achieve declared goals, it is important to select appropriate improvement projects that are strategically aligned and contribute to the company goals. Thus, the effective CI requires appropriate goal-setting approach to respond to the organizational needs. The mediator *Goal-setting* is adapted from Kaynak (2003), Sabella *et al.* (2014), Galeazzo *et al.* (2016).

3.3 Validation of the Survey Instrument

To ensure appropriateness and comprehensiveness of the survey instrument for the declared research objectives the following steps were taken: 1) the early and revised drafts of the survey instrument were consulted with two faculty members that have experience of conducting survey-based research in CI domain; 2) the survey instrument was reviewed by two senior consultants that have experience of doing survey-based research in the SSCs with CI program in place. As a final step in preparation of the survey, a pilot study of four service companies to confirm feasibility of the selected approach and instrument was conducted (Dillman, Smyth and Christian, 2014).

During the pilot studies, in addition to testing the survey, four in-situ semi-structured interviews (60-90 minutes long) with the managers, leading CI initiatives, were conducted (see Appendix C for summary of the findings and description of the studied companies). To complement the design of the study and deepen knowledge on the topic, secondary data such as internal documents on CI and other publicly available information on the companies, participating in the pilot study, were assessed. The manifold feedback resulted in a series of changes to the instrument prior to the large-scale study. Throughout the interviews, the respondents also highlighted that they experience challenges in in engagement of top management to support CI as well as in attraction of required resources to support CI implementation.

3.1 Research Ethics

Collected data is stored on a custom web-server with a password-protected access. To protect privacy of the research participants, company names were substituted with "Case 1", "Case 2", "Case 3". Individual names and contact information of the participants is not stored and not mentioned in the research-related publications.

3.2 Description of data collection procedure and the research sample

The data was collected in four countries: Czech Republic, Poland, Slovak Republic and Hungary, that form a Visegrad Four (V4) group (Capik and Drahokoupil, 2011). The databases from the national investment and development agencies to identify initial contacts in the SSCs were used (see CzechInvest 2015; Dzieran et al. 2015; HIPA 2015; PITA 2015; SARIO 2015), and further snowballing technique was applied to reach wider research sample (Edmondson and McManus, 2007). To gather data from the SSCs with sufficient number of managers, SSCs with more than 100 employees were selected for the study. Experience in CI or availability of established improvement program in the SSC was another selection criterion. The SSCs were solicited to participation by email, calling or personal visit when appropriate.

To collect research data, a custom web-survey was used. Customized online survey enables to prevent breach of data by third parties and to achieve security and privacy of the research participants. The survey contained closed questions with a 1-5 Liker-type scale. The online tool generated and sent a separate link to the respondents for each participating company to avoid errors in assigning collected survey responses to the cases later (Dillman, Smyth and Christian, 2014). The final response rate accounted for 42%. Similar response rates and sample sizes are not uncommon in the survey studies aiming to study phenomena in the business environment (see, for example, Hadid *et al.* (2016) and Kim *et al.* (2012)).

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. Since Visegrad group experienced economic transition and increased participation in the international services trade (Melikhova *et al.*, 2015; OECD, 2015), a pronounced variability in the CI performance and practices is expected (Schroeder and Flynn, 2001; Zeng, Phan and Matsui, 2013). Table 3.1 and Table 3.2 provide overview of the participating SSCs as well as respondents.

Out of the 304 SSCs, 86.5% tend to remove non-value-added activities from their processes, 70.5% standardize processes between served clients, and 60.9%

have well-established running improvement programs. The percentage distribution on the responses of these CI latent variables inform of an interesting outcome regarding customer satisfaction and cost reduction. To decipher a clearer picture, mediating variables are used. The responses on these mediating variables indicate that, 58.1% have effective reward systems, 67.3% have a quality culture, 64.9% report to have commitment of management to the improvement initiative, 30.6% deliver proper training and learning on improvement methods for project participants and 87% develop clear goals and objectives for the improvement programs.

Table 3.1. Distribution of participating SSCs per country. Source: Author.

Services Branch	Czech Republic	Slovak Republic	Hungary	Poland
Finance	17	6	12	14
Accounting	16	5	15	15
Human Resources	12	5	9	14
Logistics	10	3	7	17
Information Technology	15	5	10	15
Customer Support	18	5	19	13
Procurement	9	3	7	8
Total	97	32	79	96

Table 3.2. Distribution of respondents based on the position. Source: Author.

Position	Czech Republic	Slovak Republic	Hungary	Poland	Total
# of cases	97	32	79	96	304
Top-level managers	14	3	9	12	38
Middle-level managers	13	4	27	19	63
CI Managers	27	7	17	41	92
Team Leaders	27	11	17	13	68
Specialists	16	7	9	11	43

3.3 Structural Equation Modeling

Structural equation modelling (SEM) is a set of multivariate analysis techniques that enables to test for causation, correlation and covariance within a set of observable and latent variables (variables, that are not directly observed but are inferred from observable variables) (DELL, 2015). SEM consists of a structural model representing the relationship between the latent variables of interest, and measurement models representing the relationship between the latent variables and their manifest or observable indicators (Nachtigall *et al.*, 2003). SEM was developed by geneticists (Wright, 1921) and economists (Haavelmo, 1943; Koopmans, 1950) with a goal to combine qualitative cause-effect information with statistical data in order to estimate cause-effect relationship among variables of interest (Pearl, 2000). SEM provides an advantage of testing the complete theories and concepts and has been embraced in multiple business studies (Hair, Ringle and Sarstedt, 2011).

In the proposed study, SEM is used to test the effect of selected mediating variables (practices) on the cause-effect relationship between CI and operational firm performance. To test priori models presented in Figure 2.2 and Figure 2.3 the dependent variables of Customer Satisfaction (CS) and Cost Reduction (CR) respectively were selected. To test the assumption of the positive effect of CI on both Cost Reduction and Customer Satisfaction (Figure 2.4), first the variable *Overall Firm Performance* is introduced and the model is further tested:

$$Overall\ Firm\ Performance = \\ = Cost\ Reduction * Customer\ Satisfaction \quad (3.1)$$

To respond to the research questions SEM is applied to analyse a set of equations that describe relationships between independent (CI) and dependent variable (either CS, CR or Overall Firm Performance) and selected mediating variables Rewards (C1), Quality Culture (C2), Management Commitment (C3), Employee Training (C4) and Goal-setting (C5). Appendix B provides survey questions corresponding to the research variables.

3.4 Fuzzy-Set Qualitative Comparative Analysis

The data collected from respondents was analysed with fsQCA to produce a combination of practices that condition effectiveness of CI (Ragin, 1987). Qualitative Comparative Analysis (QCA), including fsQCA, is a set-theoretic approach for examination of possible combinations of the causal conditions and their effect on the variable of interest (Ragin, 2008). The fsQCA method is an analytic technique that uses Boolean algebra to bring the logic and empirical intensity of qualitative approaches to studies that normally call for the use of

variable-oriented, quantitative methods (Ragin, Drass and Davey, 2006). The fsQCA is a novel method, especially suited for the study of phenomena with complex causality. Taking advantage of the both case-oriented and variable-oriented analysis (Ragin, 1987), QCA is increasingly used in management research (Seny Kan *et al.*, 2016), and suits the examination of different causal combinations leading to an outcome. In fsQCA, variables are transformed into sets and then the formed subsets (combinations of variables) are studied. Collected cases are assigned membership scores in every dimension. The data is then analyzed with the fsQCA software to identify influence of every of the selected practices on the outcome variable. In the proposed study, causal combinations leading to the high performance of CI in the SSCs are examined.

FsQCA provides certain advantages over traditional correlation analysis: 1) fsQCA can explore associations (subset relationship) between independent (causal) conditions and dependent variable (outcome) in small case series as opposite to the conventional statistical methods that could overlook these relationships, 2) fsQCA identifies combinations of causal measures that lead to the outcome instead of the net effects of the variables, 3) method identifies multiple combinations of the causal conditions to the same outcome (Hsiao *et al.*, 2016). In this study, the fsQCA is used to scrutinize potential strategies or combinations of the practices to an effective CI program. fsQCA is deemed more suitable for study of CI impact on the firm performance expressed as a composite variable, since it enables to overcome limitations of the multivariate-based research discussed previously. The proposed approach is feasible to study the CI phenomena in its full complexity and develop findings that reflect the intricate nature of the preconditions for the effective CI programs. The SSCs may find it challenging to focus their efforts on pursuing and improving all relevant practices that lead to the improvement of both CS and CR simultaneously; thus, it necessary to study different combinations of these practices to determine which of these combinations contribute to the higher performance of CI in service firms.

4. ANALYSIS

4.1 Reliability Test of the Item Sets for SEM

For assessment of internal consistency, reliability and the relationship between item sets, the Cronbach Alpha was used. For variables to be reliable and consistent, a Cronbach's coefficient (α) of more than 0.7 were considered for both latent variables of CI and mediators. The higher the value of Cronbach's coefficient α or the closer alpha is to 1.0, the higher the reliability of the measurement item. From Table 4.1, Cronbach's alpha is 0.900 for CI and 0.768 for the mediators. The values recorded for all the constructs signify a very

strong internal consistency measurement of components and a guaranteed reliability of results in SEM and other analysis.

Table 4.1. Reliability Statistics for Items. Source: Author.

Construct	**Cronbach's Alpha (α)**	**Cronbach's Alpha Based on Standardized Items**	**N of Items**
Continuous Improvement	0.900	0.910	3
Mediators	0.768	0.834	5

4.2 Exploratory Factor Analysis

To condense data, deduce the convergence level of items, hypothesize concepts in the initial analysis and reduce data lengths into smaller units, Exploratory Factor Analysis (EFA) was performed. Factor loadings greater than 0.30 are significant, 0.40 are important while 0.50 or more are very significant (Hair *et al.*, 1998). In line with that, factor loadings of 0.50 or greater are considered very significant and such variables can be used for further analysis. The factor loadings of 0.50 or greater to be very significant were adopted and further the selected variables were used in path analysis to respond to the hypotheses. An apriori analysis using Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and the Bartlett's Test of Sphericity was first carried out to determine the suitability of EFA (Hair, Ringle and Mena, 2012). From Table 4.2, the Bartlett's Test of Sphericity is statistically significant at a P=0.00, a KMO of 0.769 and a correlation matrix between variables of 0.30 or above.

The Principal Component Analysis (PCA) was used to generate the values in the factor loadings table. For further analysis, eigenvalues with total factor loadings of 1 or above were highly retained. However, due to the fewer nature of measurement variables, other variables with total factor loadings closer to 1 were also considered. For CI, all the three measurement variables produced total factor loadings of above 1 with the first two accounting for 75.79% of total variance. However, among the mediator measurement variables, three variables accounted for 89.34% total variance as indicated in Table 4.2. Both constructs/dimensions satisfied prior requirements for convergent and discriminant validity with factor loadings greater than 0.50.

Table 4.2. Total Variance Explained. Source: Author.

Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
Continuous Improvement						
We tend to remove non-value added activities from the processes (CI1)	1.763	45.234	45.234	1.763	45.234	45.234
We tend to standardize processes between served clients (CI2)	1.365	30.556	75.790	1.365	30.556	75.790
We strive for quality improvement and have an improvement program in place (CI3)	1.003	24.210	100.00			
Mediators						
Our company has established an effective reward system to stimulate employee participation in Continuous	1.384	40.180	40.180	1.384	40.180	40.180

Improvement (C1)						
Our company has a strong corporate culture oriented on quality and supports associated cultural changes (C2)	1.261	31.150	71.330	1.261	31.150	71.330
Management of the company shows a strong commitment to CI through regular communication about CI, participation in the improvement events and visible support to the CI program (C3)	1.075	18.011	89.341	1.075	18.011	89.341
Our company ensures that employees, participating in CI projects, received proper training and learning opportunities (C4)	0.920	7.920	97.261	.920	7.920	97.261
Our company sets goals and improvement projects that focus on customer needs (C5)	0.543	2.739	100.0			
KMO and Bartlett's Test						

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.769
Bartlett's Test of Sphericity	Approx. Chi-Square	2836.024
	df	91
	Sig.	.000

Extraction Method: Principal Component Analysis.

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

For hypotheses on Cost Reduction (CR) and Customer Satisfaction (CS) with regards to Continuous Improvement, two separate assessments were first established. The mediation variables (rewards, quality cultures, management commitment, training and goal-setting) were further introduced to establish the effect of such mediators on the outcomes. To test for the mediation effect of selected variables, an approach proposed by Baron and Kenny (1986) was applied. A comparative analysis was then performed between the outcomes of CR and CS.

Table 4.3. Correlation of Variables. Source: Author.

Variables	**Continuous Improvement**		
	CI1	CI2	CI3
Cost reduction	0.343**	0.500**	0.134
P-Value	*0.000*	*0.000*	*0.051*
Customer Satisfaction	0.245**	0.493**	0.424**
P-Value	*0.000*	*0.005*	*0.000*

*Note: **,*Correlation is significant at 0.01 and 0.05 levels (two tailed), respectively*

Based on the results in Table 4.3, two latent variables of CI (*removing non-value added activities from the processes (CI1)* and *standardizing processes between served clients (CI2)*) significantly relate to the outcome variable of Cost

Reduction. *Established improvement program (C13)* is closer to significance in affecting cost reduction. However, all three measurement variables are highly positively correlated with Customer Satisfaction.

The model was assessed to authenticate the internal consistency reliability, convergent and discriminant validity. According to Hair *et al*. (2011), to be suitable and reliable for the advanced research, composite reliability of the construct should exceed 0.70. To validate the convergent validity of the latent variables, the Average Variance Extracted (AVE) was used. Table 4.4 presents all measurement variables above the threshold of 0.5 by rule of thumb. Discriminant validity of the construct can be assessed by comparing the amount of the variance captured by the construct and the shared variance with other constructs (Fornell and Larcker, 1981). Thus, to confirm discriminant validity of the construct, the square root of AVE of the given construct should be greater than its correlations with the other constructs in the model (Hair, Ringle and Mena, 2012). The square root of AVE, using the Fornell-Lacker Criterion Discriminant Validity Test, has a high diagonal result of 0.759, which confirms the discriminant validity of the model.

Table 4.4. Quality criteria for latent variables in SEM analysis. Source: Author.

Latent Variable	**Symbol**	**Bootstrapped T-Value (loadings)**	**Loadings**	**Composite Reliability**	**Cronbach's Alpha**	**AVE**
Continuous Improvement	CI1	4.268	0.867	0.866	0.900	0.577
	CI2	4.043	0.769			
	CI3	3.432	0.733			

Note: CI1 – strive for removal of non-value added activities from the processes, CI2 – strive for standardization of processes between served clients, CI3 – availability of stablished improvement program.

4.3.1 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_{on}, n=1…6) were established and further tested (Table 4.5). For testing null hypotheses, the significance level of 0.05 was applied. Thus, the null hypotheses was rejected, when p-value was less than significance level, and accepted otherwise. The decision on rejection/acceptance of alternative (research) hypotheses was made based on the outcome of null hypotheses testing. Accordingly, when null hypothesis was rejected or accepted, the decision about acceptance or rejection of alternative hypothesis was made.

Table 4.5. Hypotheses Testing for Customer Satisfaction. Source: Author.

Number	Hypothesis	P-Value	T-Statistics	Decision
H_{01}	Increase in Continuous Improvement does not lead to the increase of Customer Satisfaction.	0.000	3.224	**Rejected**
H_1	The greater the level of Continuous improvement in the company, the greater Customer Satisfaction can be obtained.			**Accepted**
H_{02}	Rewards do not increase impact of CI on Customer Satisfaction.	0.002	2.985	**Rejected**
H_2	Rewards increase impact of CI on Customer Satisfaction.			**Accepted**
H_{03}	Quality culture does not increase impact of CI on Customer Satisfaction.	0.000	3.722	**Rejected**
H_3	Quality culture increases impact of CI on Customer Satisfaction.			**Accepted**
H_{04}	Management commitment does not increase impact of CI on Customer Satisfaction.	0.000	3.554	**Rejected**
H_4	Management commitment increases impact of CI on Customer Satisfaction.			**Accepted**

H_{05}	Training of employees in the improvement techniques does not increase impact of CI on Customer Satisfaction.	0.058	2.790	**Accepted**
H_5	Training of employees in the improvement techniques increases impact of CI on Customer Satisfaction.			**Rejected**
H_{06}	Goal-setting does not increase impact of CI on Customer Satisfaction.	0.071	3.684	**Accepted**
H_6	Goal-setting increases impact of CI on Customer Satisfaction.			**Rejected**

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 4.6 present the findings. Using the measurement and latent variables with mediators presented previously, the model in Figure 4.1 incorporates Customer Satisfaction (CS) as the output variable.

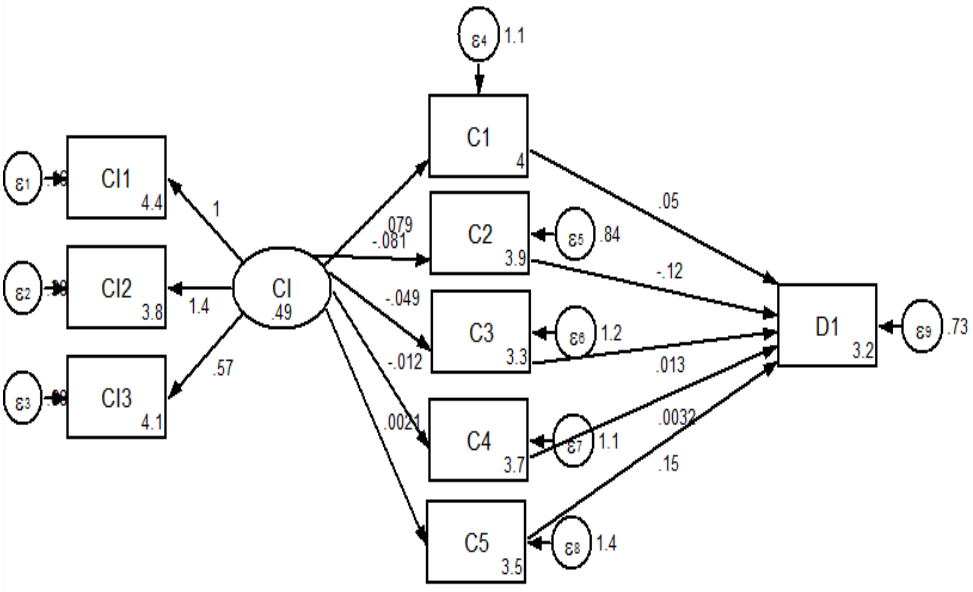

Figure 4.1. CI model with mediators for Customer Satisfaction. Source: Author.

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

To establish whether mediating variable has a positive influence on the relationship between CI and Customer Satisfaction, a comparison of the model with mediating variable to the base model without mediating variables was

conducted. The results demonstrate that CI has a direct positive impact on CS, supported by coefficient of 0.456, further confirming the research hypothesis H_1. Table 4.6 demonstrates that for all mediators, except *goal-setting* (H_6) and employee training (H_5), 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. The research findings further indicate that *goal-setting* has an adverse effect on CI – Customer satisfaction relationship. The SEM model further demonstrates that *employee training* has the potency to decrease the positive direct impact of CI on Customer Satisfaction. On the fitness of the model, statistics in Table 7 signify that the model is highly fit for generalization and deployment. The fit indices in Table 4.6 indicates a non-significant chi-square, an RMSEA< 0.05, an R^2 of 0.980 and a CFI of 0.960.

Table 4.6. 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			

4.3.2 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 ($H_{on,\ n=7\ldots12}$) were established and further tested (Table 4.7). For testing null hypotheses, the significance level of 0.05 was applied. Thus, the null hypothesis was rejected, when p-value was less than significance level, and accepted otherwise. Accordingly, when null hypothesis was rejected or accepted, the decision about acceptance or rejection of alternative hypothesis was made. 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.

Table 4.7. Hypotheses testing for Cost Reduction. Source: Author

Number	Hypothesis	P-Value	T-Statistics	Outcome
H_{07}	Increase in Continuous Improvement does not lead to the increase of Cost Reduction.	0.422	2.581	**Accepted**
H_7	The greater the level of CI in the company, the higher Cost Reduction can be achieved.			**Rejected**
H_{08}	Rewards do not increase impact of CI on Cost Reduction.	0.000	2.660	**Rejected**
H_8	Rewards increase impact of CI on Cost Reduction.			**Accepted**
H_{09}	Quality culture does not increase impact of CI on Cost Reduction.	0.001	3.651	**Rejected**
H_9	Quality culture increases impact of CI on Cost Reduction.			**Accepted**

H_{010}	Management commitment does not increase impact of CI on Cost Reduction.	0.212	2.376	**Accepted**
H_{10}	Management commitment increases impact of CI on Cost Reduction			**Rejected**
H_{011}	Training of employees in the improvement techniques does not increase impact of CI on Cost Reduction	0.000	2.471	**Rejected**
H_{11}	Training of employees in the improvement techniques increases impact of CI on Cost Reduction.			**Accepted**
H_{012}	Goal-setting does not increase impact of CI on Cost Reduction.	0.043	3.550	**Rejected**
H_{12}	Goal-setting increases impact of CI on Cost Reduction.			**Accepted**

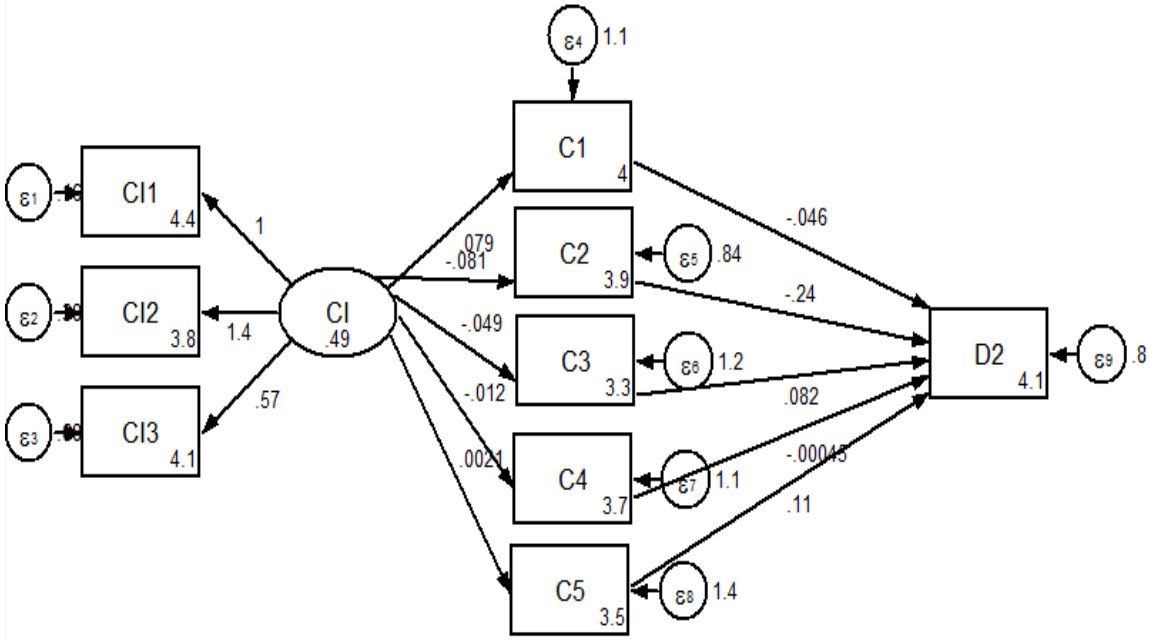

Figure 4.2. CI model with mediators for Cost Reduction. Source: Author

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

To evaluate impact of selected organizational practices on CI – Cost Reduction relationship, a Structural Equation Model (SEM) was developed. Table 4.8 and Figure 4.2 summarize the results of SEM. The model has a good fit since the results in the fit analysis in Table 4.8 meet the criteria for assessing fitness. The model fit results in Table 4.8 indicate a non-significant chi-square, An RMSEA< 0.05 and a CFI of 0.930, which is closer to 1.

To establish whether mediating variable has a positive influence on the relationship between CI and Cost Reduction, a comparison of the coefficient for a path with mediating variable to the path without mediating variable (CI -> CR) was conducted. The results demonstrate that CI has no direct positive impact on Cost Reduction, demonstrated by coefficient of 0.079, further rejecting the research hypothesis H_7. The results indicate that CI itself does not improve Cost Reduction without certain form of influence from mediators. In addition, H_{10} is also not supported. Furthermore, the negative coefficient in Table 4.8 indicates the potential adverse effect of *Management Commitment* on CI – Cost Reduction relationship. Valid Statistical figures support the results in Table 4.8. The analysis indicates that *Rewards, Quality Culture, Employee Training* and *Goal-setting* should be implemented to achieve benefits of Cost Reduction.

Table 4.8. 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			

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

Qualitative Comparative Analysis (QCA), including fsQCA, is a set-theoretic approach for examination of possible combinations of the causal conditions and their effect on the variable of interest (Ragin, 2008). The proposed approach is feasible to study the CI phenomena in its full complexity and develop findings that reflect the intricate nature of the preconditions for the effective CI programs. In this study, the fsQCA is used to scrutinize potential strategies or combinations of the practices to an effective CI program (Ragin, 1987). The organization may find it challenging to focus their efforts on pursuing and improving all relevant practices that lead to the effective CI simultaneously; thus, it necessary to study different combinations of these practices to determine which of these combinations contribute to the higher performance of CI in service firms. To identify strategies for effective implementation of CI, collected survey responses were analyzed with fuzzy-set Qualitative Comparative Analysis (fsQCA).

4.4.1 Reliability and Validity Test of Selected Variables for fsQCA

Table 4.1 demonstrates quality criteria of variables for fsQCA analysis. To test reliability and validity of the selected constructs, exploratory factor analysis (EFA) was conducted, followed by examination of factor loadings, composite reliability (CR) and average variance extracted (AVE) (Jöreskog, 1969; Hair, Ringle and Sarstedt, 2011). The EFA was conducted using lavaan package (version 0.5-23.1097) in R 3.3.3 (Rosseel, 2012). The reported model fit indices are: chi-square over degrees of freedom (χ^2/df), Root Mean Square Error of Approximation (RMSEA) with the 90% Confidence Interval (CI), Comparative Fit Index (CFI).

The measurement model provides for a good model fit (Hu and Bentler, 1999): χ^2/df = 1.60, RMSEA = 0.053 with CI (0.037; 0.055), CFI = 0.95). According to Hair *et al.* (2011), to be suitable and reliable for the advanced research, composite reliability of the construct should exceed 0.70. Table 4.9 confirms that selected constructs are suitable for further study due to the composite reliability being greater than 0.7, and the studied practices load on the respective constructs is higher than 0.7. Convergent validity of the model was examined based on the value of AVE. For the fsQCA analysis, items with the AVE above 0.5 were selected (Hair, Ringle and Sarstedt, 2011).

Table 4.9. Quality Criteria for fsQCA variables. Source: Author

Latent Variable	Symbol	Bootstrapped T-Value (loadings)	Loadings	Composite Reliability	Cronbach's Alpha	AVE
Continuous Improvement	CI1	4.268	0.867	0.866	0.900	0.577
	CI2	4.043	0.769			
	CI3	3.432	0.733			
Overall Firm Performance	CR	4.476	0.83	0.843	0.860	0.731
	CS	4.593	0.87			

Note: CI1 – strive for removal of non-value added activities from the processes, CI2 – strive for standardization of processes between served clients, C3 – availability of stablished improvement program.

Table 4.10. Correlation of latent variables for fsQCA. Source: Author

Latent Variable	Cronbach's Alpha	CI	Outcome
CI	0.90	**0.759***	0.42
Outcome	0.86	0.42	**0.855**

*Note: *Diagonal values represent the square root of AVE*

To ensure discriminant validity of the selected constructs, the Fornell-Larcker criterion was used (Fornell and Larcker, 1981). Discriminant validity of the construct can be assessed by comparing the amount of the variance captured by the construct and the shared variance with other constructs. Thus, to confirm discriminant validity of the construct (Table 4.10), the square root of AVE of the given construct should be greater than its correlations with the other constructs in the model (Hair, Ringle and Mena, 2012). Finally, Cronbach's alpha for each factor to confirm scale reliability was calculated. Alpha scores were higher than 0.75, indicating good scale reliability. Table 4.9 and Table 4.10 indicate that the

selected variables meet the validity and reliability requirements and are acceptable for further assessment.

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

Prior to fsQCA, testing of null hypotheses with path analysis 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 4.11 confirms the ability of Continuous Improvement to increase Overall Firm Performance, expressed as a multiple of Cost Reduction and Customer Satisfaction. Furthermore, H_{14}, H_{15} and H_{16} are also supported.

Table 4.11. Hypotheses testing for Overall Firm Performance. Source: Author

Number	Hypothesis	P-Value	T-Statistics	Outcome
H_{013}	Increase in Continuous Improvement does not lead to the increase of Overall Firm Performance.	0.000	2.731	**Rejected**
H_{13}	The higher the level of CI in the company, the higher Overall Firm Performance can be achieved.			**Accepted**
H_{014}	Rewards do not increase impact of CI on Overall Firm Performance.	0.000	3.420	**Rejected**
H_{14}	Rewards increase impact of CI on Overall Firm Performance.			**Accepted**
H_{015}	Quality culture does not increase impact of CI on Overall Firm Performance	0.000	2.134	**Rejected**
H_{15}	Quality culture increases impact of CI on Overall Firm Performance.			**Accepted**

H_{016}	Management commitment does not increase impact of CI on Overall Firm Performance.	0.000	3.356	**Rejected**
H_{16}	Management commitment increases impact of CI on Overall Firm Performance.			**Accepted**
H_{017}	Training of employees in the improvement techniques does not increase impact of CI on Overall Firm Performance.	0.324	3.267	**Accepted**
H_{17}	Training of employees in the improvement techniques increases impact of CI on Overall Firm Performance.			**Rejected**
H_{018}	Goal-setting does not increase impact of CI on Firm Performance.	0.062	2.440	**Accepted**
H_{18}	Goal-setting increases impact of CI on Overall Firm Performance.			**Rejected**

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

Table 4.12. Fit indices and impact of mediating variables on Overall Firm Performance. Source: Author

Model Path	**Coefficient**	**S.E.**	**Impact on CI – Overall Firm Performan**
CI -> Overall Firm Performance	0.381	0.048	**Positive**
CI -> Rewards -> Overall Firm Performance	0.421	0.062	**Positive**
CI -> Quality culture -> Overall Firm Performance	0.493	0.083	**Positive**

CI -> Management commitment -> Overall Firm Performance	0.543	0.045	**Positive**
CI -> Employee training -> Overall Firm Performance	0.335	0.037	**Neutral**
CI -> Goal-setting -> Overall Firm Performance	0.378	0.041	**Neutral**
FIT INDICES Chi2 = 823.021; P>chi2 = 0.059; R^2 = 0.961; RMSEA = 0.053; df = 304; CFI = 0.950			

Table 4.12 provides results of impact of selected organizational practices on the Overall Firm Performance. The analysis confirms positive impact of *Management Commitment, Rewards,* and *Quality Culture* on the CI – Overall Firm Performance Relationship. To further complement these findings, the fsQCA is used to explore combinations of the practices that lead to the effective CI program in the SSCs.

Table 4.13. Calibrating threshold for fsQCA. Source: Author.

Variable	**Full membership**	**Cross over point**	**Full non-membership**
	75th percentile	*50th percentile*	*25th percentile*
C1	4.00	2.00	1.00
C2	4.00	2.00	1.00
C3	4.00	2.00	1.00
C4	4.00	2.00	1.00
C5	4.00	2.00	1.00
Overall Firm Performance	21.5	16	12.5

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

4.4.3 Transforming data into fuzzy set with the calibration procedure

As a first step in fsQCA, data is calibrated and then analyzed. The calibration procedure was applied to the collected data to generate a fuzzy-set for further analysis. The condition and outcome variables were transformed from the 1-5 Likert-based measurements to set membership by 1) calculation of the sum value of the items composing each variable and 2) application of the 75^{th}, $50^{th,}$ and 25^{th} percentiles as respective anchors for full membership, cross-over point, and full non-membership (Fiss *et al.*, 2011) (Table 4.13).

To calibrate selected condition variables (*C1- Rewards, C2 – Quality Culture, C3 – Management Commitment, C4 – Employee Training, C5 – Goal-setting,* and *Overall Firm Performance*, the piecewise-defined logistic membership function suggested by Ragin (2008) was applied. Through the calibration procedure, six sets of the five-condition variables were created. To conduct fsQCA analysis, QCA package in R v.3.3.3 was used (Thiem and Du, 2013).

4.4.4 Truth table for high performance of CI program

Truth table is central in the QCA procedure. The five conditions of interest in this study constitute corners of the vector space (i.e., logical combinations of causal conditions) (Rihoux and Ragin, 2009). This means that in this study the truth table is a five-dimensional vector space. With the five conditions, the truth table for CI performance has 2^5 corners (with 5 corresponding to the number of condition variables). This results in 32 causal arguments. At this stage of the truth table construction, two important decisions were made. One has to deal with the important empirical evidence (consistency) that the degree of membership in each row of the truth table (corner or logical combinations of the conditions) is a subset of degree of membership in the outcome (*Overall Firm Performance*). The consistency captures this empirical evidence with a strong consistency expected to be higher than 0.75 (Ragin, 2008). The consistency threshold (minimum sufficiency inclusion score for an output value of 1) was established at the level of 0.75. Furthermore, the maximum sufficiency inclusion score for an output value of "0" was established at the level of 0.4. Configurations that fall within the range of 0.4 – 0.75 are considered to be contradictions (Dusa, 2018). The other decision of importance is about threshold of number of the cases that represent instances of the logical combinations of conditions. In the given study, it was decided that logical combinations of conditions should have at least 5 empirical instances (Table 4.14). Thus, the 4 or combinations of conditions that do not meet the decision criteria were treated as the logical remainders and the 7 combinations were treated as contradictions in the subsequent analysis. These decisions lead to a drop from 32 to 17 in the number of the causal arguments included in the minimization of the truth table.

Abundance of the remainders and contradictions is typical to the study of the complex social and economic phenomena (Ragin, 2008).

The truth table itself is an insightful source of information. The Outcome Value (OUT) provides evidence to either confirm or reject initially established hypothesized relationship. Configurations with the OUT value of "1" fully support established hypotheses and with the OUT value of "0" fully reject hypothesis. OUT value of "C" provides mixed evidence for established hypotheses and configurations with OUT value of "CI" are treated as contradictions. If a configuration has too few cases, it's OUT value is "?" and it is treated as a logical remainder (Thiem and Du, 2013). Figure 4.3 demonstrates set distribution of the configurations, identified in the truth table. The consistency of the configurations is assessed through inclusion measure (incl). For the research purposes, the configurations with inclusion level of 0.75 is selected (Ragin, 2008). Proportional reduction in inconsistency (PRI) is a measure that serves to identify to which extent configurations are sufficient for an outcome (variable of interest) as it is for the negation of outcome (Thiem and Baumgartner, 2016). Schneider and Wagemann (2012) suggest the following cut-out values: a value of 0.65 as high and 0.35 as low. To be suitable for further research, configurations should have PRI of 0.65 or higher. As demonstrated by Table 4.14, configurations, selected for further analysis meet the established criteria for inclusion (consistency) as well as PRI.

Table 4.14. Truth table of high Overall Firm Performance in CI program.
Source: Author

Configuration, C_i	**C1**	**C2**	**C3**	**C4**	**C5**	**OUT**	**# of cases with membership in the causal combination > 0.5**	**incl**	**PRI**
1	0	0	0	0	0	C	8	0.691	0.463
2	0	0	0	1	0	C	6	0.753	0.589
3	0	0	0	1	1	0	15	0.704	0.556
4	0	0	1	0	0	1	8	0.750	0.621
5	0	0	1	0	1	1	7	0.841	0.743
6	0	0	1	1	0	1	6	0.797	0.676
7	0	0	1	1	1	C	12	0.785	0.624
8	0	1	0	0	0	0	5	0.742	0.560

9	0	1	0	0	1	1	8	0.754	0.599
10	0	1	0	1	1	1	14	0.786	0.633
11	0	1	1	0	0	1	6	0.843	0.743
12	0	1	1	0	1	1	7	0.777	0.623
13	0	1	1	1	0	C	16	0.795	0.664
14	0	1	1	1	1	C	15	0.762	0.595
15	1	0	0	0	1	0	5	0.728	0.556
16	1	0	0	1	1	0	11	0.742	0.557
17	1	0	1	0	0	1	13	0.814	0.716
18	1	0	1	0	1	1	7	0.830	0.708
19	1	0	1	1	0	1	8	0.848	0.752
20	1	0	1	1	1	1	12	0.811	0.647
21	1	1	0	0	0	1	6	0.820	0.705
22	1	1	0	0	1	1	13	0.765	0.625
23	1	1	0	1	0	1	5	0.834	0.696
24	1	1	0	1	1	1	13	0.768	0.595
25	1	1	1	0	0	C	9	0.879	0.800
26	1	1	1	0	1	1	15	0.832	0.724
27	1	1	1	1	0	C	8	0.836	0.697
28	1	1	1	1	1	1	33	0.828	0.712
29	0	0	0	0	1	?	4	0.692	0.528
30	0	1	0	1	0	?	4	0.801	0.641
31	1	0	0	0	0	?	1	0.824	0.702
32	1	0	0	1	0	?	4	0.751	0.543

Note: C1- Rewards, C2 – Quality Culture, C3 – Management Commitment, C4 – Employee Training, C5 – Goal-setting, OUT – Outcome Value, incl – sufficiency inclusion score (above 0.75), PRI – proportional reduction in inconsistency.

Table 4.14 demonstrates that configurations $C_4 – C_6$, $C_9 – C_{12}$, $C_{17} – C_{24}$ as well as C_{26} and C_{28} support previously established notion of the positive impact of selected conditions on the performance of CI. Only 4 configurations (C_3, C_8, C_{15}, and C_{16}) reject the previously established notion of positive impact of

selected practices on CI performance. Interesting insights provides analysis of the 7 contradiction configurations (C_1, C_2, C_7, C_{13}, C_{14}, C_{25}, C_{27}). First of all, configurations C_1 and C_2 as well as C_{25} and C_{27} provide a potential contradiction to the notion of full non-implementation and full implementation of all practices accordingly. The four selected configurations demonstrate that in certain cases either extreme may not lead to the desired *Overall Firm Performance*. Furthermore, the selected seven configurations give a hint to the role of the Rewards (C1) for the effectiveness of CI. Configurations C_1, C_2, C_7, C_{13} and C_{14} show that in certain cases, implementation of the Rewards practice could be offset by emphasis on the other practices. However, more research is needed to assess and confirm this claim.

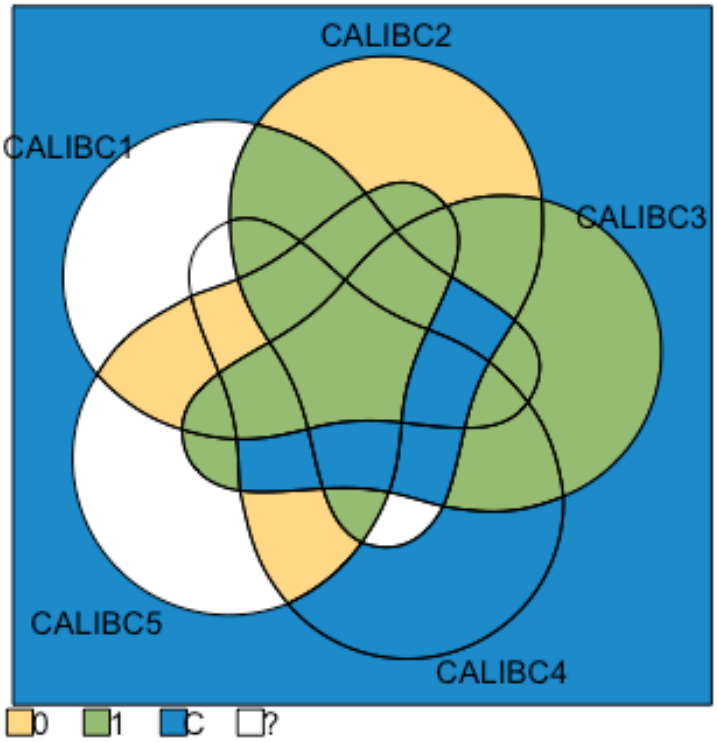

Figure 4.3. Venn diagram of configurations distribution from truth table. Source: Author.

Note: Calib1- Rewards, Calib2 – Quality Culture, Calib3 – Management Commitment, Calib4 – Employee Training, Calib5 – Goal-setting. Out Value of "1" (green color) – support hypotheses, "0" – reject hypotheses, "C" – contradictions, "?" – remainders.

4.4.5 The fsQCA solution

Logical remainders are the potential counterfactual cases in the logical simplification (minimization) of the truth table. Indeed, the fsQCA generates three types of solutions: complex, parsimonious and intermediate solutions. In

the complex solution the logical remainders are not taken into consideration while the parsimonious one includes all the logical remainders without any consideration of the plausibility into the solution. Finally, the intermediate solution incorporates the plausible logical remainders regarding the final solution. To identify fsQCA solutions, Boolean minimization of truth table with the use of enhanced Quine-McCluskey function was conducted (Dusa, 2010).

The complex solution produced by fsQCA provides the minimal union M1 (set of the solutions) leading to the effective CI program (Table 4.15). The set of solutions M1 covers 0.715 (cov = 0.715) of the cases leading to effective CI, thus confirming good coverage. 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 4.15):

$$M1 = c1*C3*c4 + C1 + C2*c3 + C1*C3*C5 + c2*C3*c5 + C2*c3*C5 \Rightarrow Outcome \quad (4.1)$$

Table 4.15. Complex solution for CI effectiveness. Source: Author

#	**Combination**	**inclS**	**PRI**	**covS**	**covU**	**Observations that support combination (number)**
1	c1*C3*c4	0.748	0.759	0.196	0.058	1,18,23,39,69,108,164,283; 6,74,148,169,171,203,255; 96,107,113,182,189,277; 56,100,168,175,251,259,290
2	C1*C2*c3	0.734	0.798	0.225	0.040	25,88,264,276,291,293; 42,102,109,122,123,125,134,146, 184,199,204,219,234; 11,36,105,106,260; 37,45,46,68,83,95,103,158,167,176,191,207,216
3	C1*C3*C5	0.792	0.895	0.287	0.098	2,34,99,170,226,237,266, 41,47,51,62,93,114,130,138,186,215,223,271; 4,15,67,80,172,179,183,188,190,194,246,250,257,268,282; 7,9,10,19,24,40,72,86,94,97,110,111,115,119,128,129,131,132,133, 139,142,157,173,185,206,212,235,239,254,270,273,281,298

4	c2*C3*c5	0.748	0.837	0.217	0.075	1,18,23,39,69,108,164,283; 58,61,82,218,261,295; 22,64,161,166,192,225,227,231,247,248,249,265,272; 28,44,57,59,65,101,288,303
5	C2*c3*C5	0.720	0.779	0.237	0.058	16,38,43,120,149,214,269,302; 35,49,53,87,92,116,151,160,187,205,213,236,263,296; 42,102,109,122,123,125,134,146,184,199,204,219,234; 37,45,46,68,83,95,103,158,167,176,191,207,216
Overall Solution		incl	PRI	cov		
M1		***0.868***	***0.756***	***0.715***		

Note: C1- Rewards, C2 – Quality Culture, C3 – Management Commitment, C4 – Employee Training, C5 – Goal-setting, inclS – inclusion of combination, PRI - proportional reduction in inconsistency, covS – raw coverage by combination, covU – unique coverage, incl – inclusion of solution M1, cov – coverage of solution M1.

Table 4.16 provides a table of prime implicants for the previously established configurations. Prime implicant is a sufficient condition for the output variable (Rohwer, 2011). The prime implicants are the combinations that cannot be left out of the truth table in any of the solutions (Legewie, 2013) and are used to derive fsQCA solution in Table 4.16.

The solution in Table 4.17 demonstrates that there are 5 alternative combinations of practices that lead to the effective CI program. The upper and lower case of the variable in the solution signalize the importance of the variable in a given combination. For example, in the combination 1, the core practice for CI effectiveness is Management Commitment (C3), accompanied to a lesser extent by Rewards (c1) and Employee training (c4). 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 4.17 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. This combination also has the highest number of supporting observations. However, the overall solution demonstrates

that there are different ways to achieve the desired effect. In order to provide a visualization of the derived solution as well as simplified interpretation for further practical application, Table 4.17 was developed.

Table 4.16. Table of prime implicants for configurations. Source: Author

Prime Implicant	**Configuration**																
	5	*6*	*7*	*10*	*12*	*13*	*14*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*30*	*32*
c1*C3*c4	+	+				+	+										
C1*c2*C3								+	+	+	+						
C1*C2*c3												+	+	+	+		
C1*C2*C5													+		+	+	+
C1*C3*C5									+		+					+	+
c2*C3*c4	+	+						+	+								
c2*C3*c5	+		+					+		+							
C2*c3*C5				+	+								+		+		
C2*c4*C5					+		+						+			+	
C3*c4*C5		+					+		+							+	

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

From Table 4.17 it can be concluded, that to achieve improvement in customer satisfaction and cost reduction (the outcome variable analyzed in fsQCA solution), SSCs need to implement practice *Management commitment,* since it is present in all solutions. Interestingly, practice *Employee training* is present in only one combination and plays a peripheral role, even though many researchers assert high importance of training for CI effectiveness (Oprime *et al*. (2011); Pollitt (2013); Garavan *et al*. (2008) among others). Furthermore, the combination of high *Management Commitment, Rewards* and *Goal-setting* condition effectiveness of CI program to the greatest extent (combination #3).

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.

Table 4.17. 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
Rewards	●	●	●	Ø	Ø
Quality Culture	Ø	●	Ø	•	●
Management Commitment	●	•	●	•	•
Employee Training	•	Ø	Ø	Ø	Ø
Goal-setting	Ø	Ø	●	•	●
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
*Solution coverage**: **0.715***					
Solution consistency: **0.868***					

**Consistency – the extent, to which a certain solution leads to the desired outcome.*	***Legend***
***Raw coverage – indicates share of the outcome explained by a certain alternative combination.*	● Core practice • Supporting practice
****Unique Coverage – indicates share of the outcome exclusively explained by a certain alternative path.*	Ø Not required

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

5. RESULTS

5.1 General discussion of the research results

In the face of growing importance of SSC industry globally, the question of the efficiency of service operations receives an increased attention in the academic and professional literature. The specifics of service operations lead to the comparably low efficiency and increased complexity induced by the need to adapt to customer needs. However, the research on the improvement of SSC operations is comparably scarce. Thus, the proposed research contributes to the limited field of knowledge on service operations improvement by evaluating effect of Continuous Improvement on Cost Reduction and Customer Satisfaction, and further assessing impact of multiple organizational practices on these relationships. 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 study aims to provide recommendations for companies depending on the goal of their CI program to ensure declared goals are met. 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, Furlan and Vinelli, 2009; Zeng, Phan and Matsui, 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 (Rust, Moorman and Dickson, 2002; Piercy and Rich, 2009a; Paagman *et al.*, 2015). Cost reduction is considered as one of the main motives for introduction of CI initiatives in the companies (Reicheld and Sasser, 1990; Ashkenas, 2012) and the research findings demonstrate that CI implementation without development of the supporting organizational practices is not able to attain benefits of 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, further suggesting the need to balance soft and hard dimensions of organizational practices to achieve *Cost Reduction*.

Another interesting finding is associated with the organizational practice *Management Commitment*. While multiple previous studies ascertain the need of management commitment for effectiveness of CI (Calvo-Mora *et al.*, 2013; Bortolotti, Boscari and Danese, 2015; Habtoor, 2016), the conducted analysis demonstrates that increased management commitment may have an adverse impact on CI – Cost Reduction. Since management commitment may negatively affect CI – Cost Reduction, further research is needed to explore the possibilities and mechanisms of management involvement in the CI initiative. The research findings provide guidelines for investment allocation and management of CI initiatives in the services environment.

The SEM analysis further suggests that CI has a positive direct influence on customer satisfaction, thus confirming previous similar studies (Lin *et al.*, 2005; Sila, 2007; Habtoor, 2016; Jayanth and Xu, 2016). 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 (Anand *et al.*, 2009; Jääskeläinen, Laihonen and Lönnqvist, 2014; Galeazzo, Furlan and Vinelli, 2016). Interestingly, *rewards* as well as *management commitment* are found to have the strongest ability to impact 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). One of the interesting findings of the study lies in the mediator *Goal-setting for improvement projects,* which was found to have an adverse impact on the CI - Customer Satisfaction relationship. The *Goal-setting* itself may not be able to provide enough motivation for employees to engage in complex improvement

projects, which is suggested in the earlier studies by Galeazzo *et al*. (2016) and Oldham and Cummings (1996). A more sophisticated reward system may yield better outcomes than the use of the *Goal-setting* only. *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; Chakravorty, 2009; Näslund, 2013).

Goal-setting for improvement projects was found to not have a significant impact on the CI-customer satisfaction relationship, as opposite to CI-cost reduction. The fact that Goal-setting lacks impact on CI results provides an interesting perspective on the issues of motivation in human resource literature. Further research is needed to explore the effect of CI on the employee motivation and intentions, and the ways it affects employee behavior. Another peculiarity of the results is the difference in the impact of management commitment: while management commitment is important to improve customer satisfaction, the role of management in driving cost reduction is not important. These findings provide an interesting case for further scholarly work, since previous studies largely support the major role of management commitment in the effectiveness of CI (Liker and Morgan, 2006; Chakravorty, 2009; Bon and Mustafa, 2013; Näslund, 2013; Swartling and Poksinska, 2013; Dubey, Singh and Ali, 2015). The different role of the organizational practices in the effectiveness of CI for cost reduction and customer satisfaction provides peculiar insights for further research.

Multiple organizations driven by business needs and market conjuncture attempt to reach two goals simultaneously. Interestingly, initial hypothesis testing demonstrated that ability of CI to improve both performance measures is lower than for customer satisfaction. Thus, it is reasonable to implement other supporting practices to realize greater benefits for cost reduction and customer satisfaction. In an attempt to respond to the need of the businesses for the strategies that lead to the achievement of both cost reduction and customer satisfaction, fsQCA solution was deployed. 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. The analysis clearly demonstrates, that to achieve both cost reduction and customer satisfaction, *Management Commitment* practice needs to be implemented. *Rewards* and *Quality Culture* are another two practices that were included in the combinations most often. Taking into account the interviews that were conducted during the theoretical framework development stage, it is worthy to mention that the interviewees several times emphasized challenges associated with involvement of top management from the headquarters to support and finance the CI initiative. Further research should be done to explore and develop mechanisms for effective involvement of management into CI initiative in the SSCs.

The present research corroborates findings of the previous studies on the need to implement both soft and hard practices to achieve comprehensive performance of CI initiatives (Shah and Ward, 2003; Pont, Furlan and Vinelli, 2009; Wickramasinghe and Wickramasinghe, 2011; Hadid, Mansouri and Gallear, 2016). Due to the high fit of the models, the results are suitable for further generalization and deployment in the SSCs. The findings provide guidance for the companies, embarking on CI journey regarding performance assessment of the CI progress as well as the organizational practices that can potentially improve outcome of CI implementation. The study confirms varying impact of organizational practices the ability of CI to improve customer satisfaction. The analysis demonstrates that to achieve different results from CI implementation, it is necessary to implement different sets of the practices.

5.2 Practical Recommendations for effective CI programs in the SSCs

Companies are still struggling to achieve benefits from implementation of Continuous Improvement. Many report difficulties in achieving declared goals and report high failure rates. As the present study demonstrates, there are multiple ways in which companies can deploy organizational practices to benefit from CI. Further, the research emphasizes that company should consider the fact that CI has different effect on different performance measure. From the practical point of view, it leads to the conclusion that it is reasonable to track multiple performance measures for CI evaluation. Furthermore, it is recommended to assess effect of CI on the single firm performance measure, instead of developing indexes or composite variables based on the multiple performance measures in the practical settings. The composite variables tend to hide the exact

effects of CI on the firm performance measure, thus, making it harder to understand to what extant each of the measures was achieved.

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 of 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 different requirements 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				
			Rewards	*Quality Culture*	*Management Commitment*	*Employee Training in CI methodology*	*Goal-setting*
Improve Customer Satisfaction	1	No	★★	★	★★	x	x
Improve Cost Reduction	1	Yes	★★	★★	x	★★	★
Improve Customer Satisfaction and Cost Reduction	1	Yes*	★	Ø	★★	★	Ø
	2		★★	★★	★	Ø	Ø
	3		★★	Ø	★★	Ø	★★
	4		Ø	★	★	Ø	★
	5		Ø	★★	★	Ø	★
Legend	★★ high impact ★ medium impact Ø not required x negative impact		*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.*				

6. BENEFITS OF THE STUDY

6.1 Benefits for science

CI methodologies have been deeply studied and it resulted in a huge variety of publications, however, the issue of methodology application in SSCs was not researched in detail. The proposed study is one of the first attempts to research the specifics of CI application in the SSCs. SSCs provide a compelling and specific case for the research. SSCs are specific types of organizations, since their goal is to consolidate and improve processes of the multiple globally distributed operations of the company. Thus, SSCs face a number of unique challenges, including complex communication structures that may further hinder effectiveness of CI. For this reason, more research in the area is required, and proposed thesis attempts to fill in this gap. To evaluate effect of CI on firm performance, three models that include cost reduction, customer satisfaction and their multiplication as dependent variables were developed. The developed models incorporate multiple mediators to reflect complexity of the organizational environment and to identify practices that can further promote impact of CI on the firm performance.

The research results yield several valuable contributions to the industrial management, operations management, strategic management and human resource management literature. In particular, the study demonstrates that CI is capable of improving customer satisfaction in the firms. However, cost reduction can only be achieved, when CI is supported by a developed infrastructure of organizational practices. The study contributes to strategic management literature, in particular, to the dynamic capability view of CI. The research contributes to the operations management literature, namely to the multidimensional view of CI. The study confirms importance of both soft and hard practices for the effectiveness of CI, however, further investigates the difference the practices play in attainment of the selected goal.

One of the peculiarities of the included mediators lies in the mediator *Training*. In the study, the impact of the training on improvement methods on the CI-firm performance relationship is assessed, while previous studies mainly studied impact of the general, job-related training (Pont, Furlan and Vinelli, 2009; Zeng, Phan and Matsui, 2013). The study contributes to human resource management literature on vocational training and motivation. The research identifies varying effect of rewards, goals-setting and management commitment for realization of CI benefits, thus providing evidence for further research in the role of motivation for CI.

Another important contribution lies in the proposed methodology. The developed models include the same set of mediating variables and are tested on

the same dataset for comparability of the results. Further research should be done to explore the applicability of this approach to other areas. The proposed methodology of comparing models based on the same mediators could be applied to explore the sets of organizational practices that condition other performance measures. Furthermore, the study employs fsQCA to develop strategies for the effective CI and it is one of the first studies on application of fsQCA in industrial and operations management literature, apart from Galeazzo and Furlan (2018). However, the main contribution of the study lies in development of one of the first models of CI in the SSCs.

6.2 Benefits for practice

Shared Service Centers industry is a hidden driving force of the many economies globally, including Visegrad Four countries. Evidence suggests that the growing number of companies resort to establishment of the SSCs or the system of SSCs to support their operations. Development of the shared service centers is a growing trend in CEE, and the issue of CI is of a great interest due to the need to develop effective solutions to improve their competitiveness. Implementation of CI methodologies in SSCs is still associated with high costs and inability to demonstrate a compelling performance of the program in a long run.

At the same time, the SSCs as a research object have not been studied extensively. However, the present study provides evidence of the unique challenges that the industry faces, including complex communication structures, challenges in engagement of top management to support CI as well as challenges in attracting required resources to support CI implementation. The research shows that to reduce costs and improve customer satisfaction, SSCs can effectively use CI. However, the two performance measures can only be achieved at the presence of the system of organizational practices.

The research provides valuable findings on the role of management for CI effectiveness in the SSCs. Management commitment is cardinal to improvement of customer satisfaction and cost reduction simultaneously. Taking into account the relative remoteness of SSCs from top management of the organizations and the communication challenges associated with the multilevel hierarchies, typical to the international organizations and corporations that adopt SSCs, the research calls for a pronounced support to CI initiative in the SSCs from management of organizations.

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 raises awareness of the concept, analyzes the results of CI implementation in SSCs and assists in adding more value for the customers.

6.3 Benefits for the academy

The knowledge acquired through the research was presented and shared with students who were interested in the topic during conferences, summer schools and at the lectures or seminars. The research raises awareness of the growing industry sector and the challenges associated with the SSCs operations.

Increase in awareness about SSCs can have an extra effect of attracting more researchers to the field. Taking into account the growth of SSCs in the higher education, understanding of SSC operations and CI in particular would be beneficial to the implementation of SSCs in the educational institutions (Irish Department of Education and Skills, 2017).

The research results can be used to develop study materials that can be further used to prepare students for a career in the SSCs. 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. In conjuncture with Hietschold *et al.* (2014) the proposed study assesses practices for the specific industry to ensure relevance of the results and applicability in the practical setting. The data was collected from the representatives of the SSCs in the Visegrad countries. 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, following seminal works on operations management by Deming (1986), Imai (1986), and Liker and Morgan (2006). 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. The context and approach to the questions may affect the quality of the research: respondents may interpret the questions based on their own experience and judgments that may differ from the researcher's views. Therefore, collected answers may contain certain bias. Additionally, responses from company representatives may not represent the situation in the company to a full extent, since representatives of the SSCs may also tend to provide unrealistically good results of the centers' performance.

Another limitation may be related to the interview method that was used to develop a theoretical framework: during the conversations study participants may not be eager to share their own opinions (especially negative ones) due to the company politics. However, since the survey data was collected in anonymous way, it is strongly believed that the study would provide reliable results.

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 and improve 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.

The complex communication structures and limited ability to influence end-to-end process complicate effective improvement of SSC operations. SSCs in the CEE face another important issue: the region attracts new SSCs due to the low labor costs, however, there is a lack of knowledge-intensive service processes due to the low levels of CI implementation as compared to other regions of the world. Thus, higher rates of CI implementation in the SSCs of Central and Eastern Europe will ensure effectiveness and competitiveness of the region on the global SSC landscape as well as attraction of the advanced service offerings and knowledge transfer.

As the main drivers for implementation of SSC arrangement in the organization are cost reduction and improvement of customer satisfaction, SSCs implement Continuous Improvement methodologies to deliver declared goals. CI is an important ingredient of SSC arrangement. However, the research findings on effectiveness of CI are inconclusive. Organizational practices that condition effectiveness of CI received even less attention in the literature. The

specifics of SSC operations create a landscape full of unique challenges for CI implementation, which creates an interesting case for academic studies.

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. Based on the literature review and validation through the initial pilot case studies, the research identifies practices that have the potency to foster impact of CI on firm performance. Thus, the study assesses impact of Rewards, Quality Culture, Management Commitment, Training of Employees in improvement methodology and Goal-setting on CI – firm performance relationship. The sample of the study consists of 304 survey responses collected from the SSCs in the Visegrad region. In terms of the methodology, the study uses Structural Equation Modeling as well as fuzzy-set Qualitative Comparative Analysis to respond to the research objectives.

The application of fsQCA enables for a study of CI phenomenon in its full complexity. Another advantage of the study is analysis of the strategies for effective CI based on the similar set of variables and the same data set, ensuring high comparability and reliability of the results. The developed models demonstrate a good fit and can be successfully implemented in practice and further generalized. Table 8.1 provides summary of the research findings. In addition to the practical relevance of the findings, the thesis contributes to the advancement of quality management literature in the field of dynamic capability view on continuous improvement as well as provides recommendations for further research in strategic management and human resource management literature.

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 supporting organizational practices is necessary. The organizational practices have dissimilar degree of influence in attainment of different performance measures, which is an important finding for management of CI initiatives and SSCs.

However, as opposite to the previous studies, the present study takes into account the complex and changing nature of CI – firm performance relationships and delivers different strategies that lead to the improvement of the firm performance measure as well as provides recommendations on CI management for SSCs.

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 findings provide evidence for the established partial research goal and the main research goal. Consequently, the study resolved all of the research goals (Table 9.1). Table 9.2 provides a summary of the findings that respond to the established research questions and partial research goals. Table 5.1. in the Results section provides a summary of the findings to respond to main research goal (to identify strategies for effective CI).

Table 9.1. Verification of the research goals. Source: Author

Research Goal	Wording	Status	Primary references in the dissertation thesis
RG	*To identify strategies for the effective CI program in the SSCs*	Resolved	Table 5.1
PRG1	*To study impact of CI on firm performance*	Resolved	Table 4.5 Table 4.7 Table 4.11
PRG2	*To study impact of organizational practices on CI – firm performance relationship*	Resolved	Table 4.6 Table 4.8 Table 4.12 Table 4.17

Table 9.2. Summary of the research objectives, methods and findings. Source: Author

Partial research goal	Research Question	Method	Findings
PRG1: To study impact of CI on firm performance.	RQ1: How CI affects customer satisfaction?	SEM	CI has a positive impact on Customer Satisfaction. Thus, implementation of CI itself is able to improve customer satisfaction in the SSCs. However, organizational practices strongly reinforce this relationship.
	RQ3: How CI affects cost reduction?	SEM	CI has a neutral impact on cost reduction. To ensure that benefits of cost reduction from CI are achieved, it is necessary to implement supporting organizational practices.
	RQ5: How CI affects an effort of simultaneous improvement of cost reduction and customer satisfaction?	SEM	CI has a positive impact on cost reduction and customer satisfaction. However, organizational practices strongly reinforce this relationship.
PRG2: To study impact of organizational practices on CI – firm performance relationship	RQ2: What organizational practices can foster impact of CI on customer satisfaction?	SEM	Rewards, Quality culture and Management Commitment.
	RQ4: What organizational practices can foster impact of	SEM	Rewards, Quality Culture, Employee Training and Goal-setting.

	CI on cost reduction?		
	RQ6: What organizational practices can foster impact of CI on customer satisfaction and cost reduction?	SEM, fsQCA	The study identified five combinations of practices that lead to achievement of cost reduction and customer satisfaction. All combinations require implementation of Management Commitment practice.

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List of Publications

Stankalla, R., **Koval, O.,** Chromjakova, F (2018) . 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., Seny Kan, 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.

Bakhtieva, E., **Koval, O.** (2016) Combining Process Optimization Techniques And Maturity Models In Digital Marketing: Assessment Of Opportunities. *Proceedings of the 3rd International Conference on Finance and Economics ICFE 2016*, HCM City, Vietnam, Ton Duc Thang University, pp. 49 -63.

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.

Koval, O., Nabareseh, S. (2016) Czech Students' Perceptions of Careers in the Shared Services Industry. *Proceedings of the 6th Industrial Engineering and Operations Management Conference IEOM 2016*. Southfield, MI, USA: Lawrence Technological University, pp 258 – 266.

Marciniak, R., **Koval, O.** Student's Perceptions About Shared Service Organizations At University Of Miskolc. *Proceedings of 15th International Scientific Days.* „Challenges and Prospects for Innovation between 2014-2020". Gyöngyös, Hungary: Károly Róbert College Gyöngyös

Koval, O., Chromjakova F. (2015) Continuous improvement trends in business service centers in Czech Republic and Slovakia. *Proceedings of DOKBAT Conference*. Zlin, Czech Republic: Tomas Bata University.

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http://doi.org/http://dx.doi.org/10.1016/j.jbusres.2016.04.033

Koval, O. (2014). Cost Optimization in Services through Virtualization of Business Processes. *Journal of Chernigiv State Technological University.* Series "Economic Science" № 1 (72), pp. 62-67. Chernihiv: 2014 Chernigiv, Ukraine: Chernigiv State Technological University

Koval, O. (2015). Theoretical Basics of Business Virtualization. *The Economic Discourse: International Collection of Scientific Papers.* Ternopil, Ukraine: Podolskiy State Agrarian Technical University

Koval, O., Oliychenko, M. (2015). Specifics of Registration and Regulation of Virtual Enterprises in Ukraine. *Proceedings of International Scientific Conference „Socio-economic aspects of regional economy restructurization".* Vinnytsya, Ukraine: Vinnytsya Finance and Economics University

Koval O., Butko M. Process virtualisation in enterprises as a way to improve competitiveness of the Ukrainian economy (2013*). Proceedings International Scientific Conference* "Modern Management: practices and approaches". Poltava, Ukraine.

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)** • 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)** • 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)** • 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)** • 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** • Optimization of the operations in manufacturing and sales with Lean Six Sigma methodology (received White Belt Training) • Author of the Best Practice "*Water consumption decrease in the brewery",* 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** • 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** • Researched international markets for technical and innovation products • Developed business directories for strategic economic sectors

Volunteering and Extra-Curricular Activities

- 2016 – 2017 Ukrainian European Education Research Association – Founding member and Fundraiser.
- 2015 AIESEC Czech Republic – Team Leader of the Global Entrepreneurship Internships program (GEP) in Zlin.
- 2012 CFA (Chartered Financial Analysts) Institute Research Challenge in Ukraine – Team Leader of the participating team and author of investment report.

- 2010 – 2011 Enactus USA (former SIFE USA) – Team Member of the projects and presentation team at the US National competition.

Training

May 2017 – April 2018: **Yellow Belt Certification Training** (Technische Universität München, Executive Education Center)

April – May 2017: **VBA (Visual Basic for Applications) in Excel: Programming Course for Macros Writing** (Prague, Czech Republic)

July 2016: **Statistical Programming with R** (Utrecht Summer School, Utrecht, Netherlands)

Grants and Awards

- 2015-2016, 2017-2018 Visegrad Scholarship (Visegrad Fund, Slovak Republic)
- 2017 Grant from the Society for Advancement of Management Studies (UK)
- 2015, 2016, 2017 Grant of Internal Grant Agency of Tomas Bata University (Czech Republic)
- 2014-2018 Scholarship for Ph.D. studies at Tomas Bata University (Czech Republic)
- 2013 AB InBev Best Practice Award for the "Decrease of Water Consumption in the Brewery" (Ukraine)
- 2012 CFA Outstanding Investment Research Award
- 2011 Outstanding Academic Achievements (Lincoln University, USA)
- 2010-2011 US Department of State grant for studies in Lincoln University (USA)

Language Skills	Computer Skills	Other
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	• White Belt and Yellow Belt Lean Six Sigma certification • Driving License

Appendix A. Selected publications on Continuous Improvement–Performance relationship

Note: Studies were selected based on the purpose of the study (to assess influence of CI on various performance measures) and methodology (multivariate methods).

Reference	Industry	Influence of CI on Customer Satisfaction (CS)	Influence of CI on Cost Reduction (CR)	Other Findings
Rungtusanatham *et al.* (1998)	Manufacturing	Continuous Improvement does not have a positive effect on Customer Satisfaction	Not studied	• Process Management is an important influencing factor on Continuous Improvement
Agus *et al.* (2000)	Manufacturing	Implementation of quality initiative leads to improvement of customer satisfaction	Not studied	• To gain or improve customer satisfaction a manufacturing company should emphasize product quality, product features and product delivery
Rahman and Bullock (2005)	Manufacturing	Not studied explicitly. Customer satisfaction is assessed as a part of the composite variable Performance. CI has an indirect effect on	Not studied	• Soft Quality Improvement factors have a direct significant effect on the firm performance • Hard quality improvement

		Customer satisfaction		factors have a direct significant effect on soft quality improvement factors
Lin *et al.* (2005)	Manufacturing	Not studied explicitly. Customer satisfaction is a part of the composite variable Organizational Performance. There is no direct influence of CI on Organizational Performance	Not studied explicitly. Cost Reduction is a part of the composite variable Organizational Performance. There is no direct influence of CI on Organizational Performance	• Quality practices have positive influence on tangible performance results
Sila (2007)	Various	Positive influence of CI on the composite variable Customer Results	Not studied explicitly. Positive influence of CI on the composite variable Organizational effectiveness that includes Cost	• CI performance does not depend on the contextual factors
Pont *et al.* (2009)	Manufacturing	Not studied	Cost is studied as a part of the Performance variable. CI has a strong, direct effect on the firm Performance	• HRM has a mediated effect on operational performance

Fotopoulos and Psomas (2009)	Various	CI has a significant effect on Customer Satisfaction	Not studied	• Soft quality practices have a primary influence on the firm' market position consolidation
Sadikoglu and Zehir (2010)	Various	CI has a positive influence on reduction of customer complaints and customer satisfaction improvement	Not studied	• Employee performance and innovation performance partially mediate the relationship between CI practices and firm performance. • CI has positive influence on the firm performance
Calvo-Mora *et al*. (2013)	Various	Not studied	Not studied explicitly. Quality practices have positive influence on the composite variable Financial Metrics (includes maintenance cost)	• Identify soft-hard TQM factors (management and human resources, strategic management of partnerships and resources and processes management) • Process management has a significant impact on the key business metrics

Zeng *et al.* (2013)	Manufacturing	Quality management practices have a positive influence on Customer Satisfaction	Not studied	• Quality management practices within the company positively affect quality management practices in the supply chain (both up- and down-stream)
Sabella *et al.* (2014)	Healthcare	Not studied explicitly. Customer Satisfaction is a part of the composite Performance variable. Quality practices positively affect hospital performance	Not studied	• TQM positively affects hospital performance • Three critical success factors: people management, process management, and information and analysis
Fullerton *et al.* (2014)	Manufacturing	Not studied	Not studied explicitly. Lean Accounting practices have positive influence on operational performance. Operational performance is a composite variable consisting of decrease in cycle time, machine downtime, scrap and	• Find positive influence of Lean Accounting Practices on firm operational performance

			rework, machine setup time, lot sizes, queue time	
Dubey *et al.* (2015)	Manufacturing	Not studied	Not studied explicitly. Performance is measured as a composite variable of ROI, waste reduction, and quality of product. CI positively affects firm performance	• HR has a strong mediation effect between leadership and firm performance • Quality culture and HR help improve company performance
Zeng *et al.* (2015)	Manufacturing	Not studied explicitly. Quality performance is assessed as a degree of conformance to the standards	Not studied	• Soft quality practices do not have a strong direct impact on the quality performance • Hard factors do have a strong impact on the quality performance
Habtoor (2016)	Manufacturing	Not studied explicitly. Quality improvement positively mediates relationship between human factors and	Not studied explicitly. Quality improvement positively mediates relationship between human factors and	• Human factors positively influence quality improvement practices and organizational performance. • 30 per cent of organizational

		company performance. Company performance is a composite variable that includes customer satisfaction	company performance. Company performance is a composite variable that includes defects reduction and productivity improvement	performance is explained by quality improvement practices as the strongest contributor, and human factors as secondary contributor
Jayanth and Xu (2016)	Service	Not studied explicitly. Customer perception of quality and conformance of service to customer standards are a part of composite variable Quality Performance	Not studied explicitly. Cost is a part of the composite variable Efficiency Performance	• Customer Orientation has a positive influence on Efficiency and Quality Performance

Appendix B. Measurement item.

Measurement Item*	Item Code	Item Description (Survey Question)	Supporting Literature
Independent Variables			
CI	CI1	We tend to remove non-value added activities from the processes	Liker and Morgan (2006); Ponsignon *et al*. (2014); Kim *et al.* (2012); Swartling and Olausson (2011); Jurburg *et al.* (2015); Rahman and Bullock (2005); Powell (1995); Deming (1993); Fotopoulos and Psomas (2009)
	CI2	We tend to standardize processes between served clients	Bessant and Francis (1999); Allway and Corbett (2002); Liker and Morgan (2006); Anand *et al.* (2009); Fotopoulos and Psomas (2009); Münstermann *et al.* (2010); Gonzalez and Martins (2016)
	CI3	We strive for quality improvement and have an improvement program in place	Deming (1993); Rahman and Bullock (2005); Prajogo and Brown (2006); Sila (2007); Piercy and Rich (2009b); Sadikoglu and Zehir (2010); Teehan and Tucker (2010); Netland and Aspelund (2013); Dubey *et al.* (2015)

Mediators			
Rewards	C1	Our company has established an effective recognition and reward system to stimulate employee participation in Continuous Improvement	Deming (1993); Bessant and Francis (1999); Samson and Terziovski (1999); Rungtusanatham (2001); Nair *et al*. (2011); Heavey *et al*. (2014); Sabella *et al*. (2014); Yang *et al.* (2014); Habtoor (2016)
Quality Culture	C2	Our company has a strong corporate culture oriented on quality and supports associated cultural changes	Dow *et al.* (1999); Rungtusanatham (2001); Lin *et al.* (2005); Prajogo and Brown (2006); Zhang *et al.* (2008); Calvo-Mora *et al.* (2013); Swartling and Poksinska (2013); Sabella *et al.* (2014); Fullerton *et al*. (2014); Bortolotti *et al.* (2015); Zeng *et al.* (2015); Gonzalez and Martins (2016); Habtoor (2016); Jayanth and Xu (2016)
Management Commitment	C3	Management of the company shows a strong commitment to CI through regular communication about CI, participation in the improvement events and visible support to the CI program	Powell (1995); Hays (1996); Samson and Terziovski (1999); Lin *et al.* (2005); Rahman and Bullock (2005); Nair *et al.* (2011); Anand *et al.* (2012); Zeng *et al.* (2013); Calvo-Mora *et al.* (2013); Hietschold *et al.* (2014); Bortolotti *et al.* (2015); Habtoor (2016)
Employee training	C4	Our company ensures that employees, participating in CI projects, received	Bond (1999); Dow *et al.* (1999); Rahman and Bullock (2005); Lin *et al.* (2005); Pont

		proper training and learning opportunities	*et al*. (2009); Fotopoulos and Psomas (2009); Näslund (2013); Zeng *et al.* (2013); Yang *et al.* (2014); Hietschold *et al*. (2014); Bortolotti *et al.* (2015); Jurburg *et al.* (2015); Laux *et al.* (2015); Habtoor (2016); Jayanth and Xu (2016)
Goal-setting	C5	Our company sets goals and improvement projects that focus on customer needs.	Kaynak (2003); Anand *et al.* (2009); Fotopoulos and Psomas (2009); Kim *et al*. (2012); Calvo-Mora *et al.* (2013); Zeng *et al.* (2013); Sabella *et al.* (2014); Galeazzo *et al.* (2016)
Outcome Variables			
Cost Reduction	D1	We have decreased the cost of the processes through continuous improvement projects in our company.	Agus *et al.* (2000); Adam *et al.* (2001); Angell and Chandra (2001); Pont *et al.* (2009); Münstermann *et al.* (2010); Taylor *et al.* (2013); Fullerton *et al.* (2014); Heavey *et al.* (2014)
Customer Satisfaction	D2	We have improved customer satisfaction through continuous improvement projects in our company.	Anderson *et al.* (1995); Rungtusanatham *et al.* (1998); Agus *et al*. (2000); Fotopoulos and Psomas (2009); Piercy and Rich (2009b); Teehan and Tucker (2010); Zeng *et al.* (2013); Heavey *et al*. (2014); Habtoor (2016); Jayanth and Xu (2016)

Appendix C – Findings from the pilot case studies of four SSCs.

Case	Demographic description				Findings from the pilot study: survey and interviews		
	Industry	Number of employees	Location	Experience in CI (years)	Primary performance measure for CI program	Practices that have positive impact on CI performance	Illustrative verbatim
Case 1	Professional technology and digital services	300	Czech Republic	7 years	Customer satisfaction improvement	Training of employees, commitment of management at all levels to CI program	"*We strongly rely on automation and rank among top companies in the area of process automation*" (CI Manager, Case 1)
Case 2	IT support and Network support	500	Poland	4 years	Cost reduction, customer satisfaction, process stability	Quality-oriented culture, reward system for employees	*"We invest into development of the corporate quality culture, since it is far more important for CI success than any other factor. At the same time, people can be trained rather quickly, but cultural change can take*

							years to happen" (CI manager, Case 2).
Case 3	IT support and Network Support	500	Czech Republic	3 years	Lead time reduction, cost reduction, customer satisfaction improvement	Quality culture, commitment of management to CI at all company levels, project selection	*"Clear goals and a set of projects aligned with these goals are important to keep us on track and demonstrate to management and employees that the investments in program are really worth it"* (CI Manager, Case 3).
Case 4	Human Resources and Financial services	1200	Hungary	10 years	Cost reduction	Standardization and appropriate process documentation, quality data and regular reporting	"*We standardize processes among our clients in different industries and countries. This way we can deliver better performance results"* (CI manager, Case 4).

Oksana Koval

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