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**IMPLEMENTING AUTOMATED PROCURE-TO-PAY:
ORGANIZATIONAL CHANGE AND ORGANIZATION DESIGN**

Examiners: Professor Veli Matti Virolainen
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ABSTRACT

Lappeenranta-Lahti University of Technology LUT
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Implementing Automated Procure-to-Pay: Organizational Change and Organization Design

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With the development of technology, more and more companies are acquiring e-procurement systems that are used for indirect procurement and electronic processing of purchase invoices. Automation of the procure-to-pay (P2P) process aims to improve the company's financial efficiency, e.g. reducing the transaction costs of the company's procurement activities. Implementation of an automated P2P system causes organizational changes in the company, especially in the procurement and finance department (accounts payable). The aim of this study is to find out what these organizational changes usually are. Another aim is to examine needs for development of indirect procurement in the case company (Company X).

The study is performed as a qualitative case study, which includes two separate data collection phases; external and internal. The external data collection is carried out through semi-structured interviews. The interviewees represent companies that have implemented a purchase-to-pay system. Internal data collection is carried out as an internal online survey in the case company.

The research results show that the procurement and finance departments become closer due to P2P automation but boundaries of the departments remain the same. The activities of the both departments become increasingly professional and their work tasks become more technical and complex. As a result, the company needs a new kind of skills, which creates new tasks and positions in the organization. The role of the procurement department in the procure-to-pay process is emphasized and the procurement department usually receives more resources during P2P implementation. The accounts payable department will go through reductions as a result of P2P automation.

The research results also show that Company X should pay particular attention to issues related to supplier relationship management of indirect procurement in connection with the procure-to-pay system implementation project. The special expertise of the procurement department can be utilized in indirect procurement across the company, for example in the search for new suppliers, contract negotiations and contract management.

TIIVISTELMÄ

Lappeenranta-Lahden teknillinen yliopisto LUT
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Hankintojen johtamisen koulutusohjelma

Teemu Peltomaa

Automatisoidun hankinnasta-maksuun -järjestelmän toteuttaminen: Organisaatiomuutokset ja organisaation suunnittelu

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Teknologian kehittymisen myötä yhä useammat yritykset hankkivat sähköisen hankinnan järjestelmiä, joita käytetään epäsuorien hankintojen tekemiseen ja ostolaskujen sähköiseen käsittelyyn. Hankinnasta-maksuun -prosessin automatisoinnilla pyritään parantamaan yrityksen taloudellista tehokkuutta mm. vähentämällä yrityksen hankintatoiminnasta aiheutuvia transaktiokustannuksia. Automatisoidun järjestelmän implementointi aiheuttaa yrityksessä organisaatiomuutoksia erityisesti hankintaosastolla ja talousosastolla (ostolaskuosasto). Tämän tutkimuksen tavoitteena on selvittää millaisia nämä muutokset yleensä ovat. Tavoitteena on myös tutkia, millaisia epäsuoran hankinnan kehitystarpeita tapausyritys X:n organisaatiosta löytyy.

Tutkimus toteutetaan laadullisena tapaustutkimuksena, johon sisältyy kaksi erillistä aineistonkeruuvaihetta; ulkoinen ja sisäinen. Ulkoinen tiedonkeruu toteutetaan puolistrukturoitujen haastattelujen avulla. Haastateltavat edustavat yrityksiä, jotka ovat implementoineet hankinnasta-laskuun -järjestelmän. Sisäinen tiedonkeruu toteutetaan tapausyrityksen sisäisenä kyselynä.

Tutkimustulokset osoittavat, että automaation seurauksena hankinta- ja talousosasto lähenevät toisiaan, mutta osastojen rajat pysyvät ennallaan. Osastojen toiminta muuttuu yhä ammattimaisemmaksi ja niiden työtehtävät muuttuvat teknisemmiksi ja monimutkaisemmiksi. Tästä johtuen yritykseen tarvitaan uudenlaista osaamista, mikä synnyttää uusia tehtäviä organisaatiossa. Hankintaosaston rooli hankinnasta-maksuun -prosessissa korostuu ja osasto saa yleensä lisää resursseja. Ostolaskuosastolta vähennetään henkilöstöä automatisoinnin seurauksena.

Tutkimustulokset osoittavat myös, että Yritys X:n tulee huomioida erityisesti epäsuoran hankinnan toimittajasuhdehallintaan liittyviä asioita hankinnasta-maksuun järjestelmän implementointiprojektiin liittyen. Hankintaosaston erityisosaamista voidaan hyödyntää eri puolilla yritystä tapahtuvassa epäsuorassa hankinnassa, esim. uusien toimittajien etsimisessä, sopimusneuvotteluissa ja sopimushallintaan liittyen.

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Making this thesis was a colourful process that involved many ups and downs. However, now as I write this last part, I feel like climbing all of those upward slopes was worth it. The hardest part of this endeavour is now behind and the road begins to clear for new adventures.

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In Lahti, June 5th 2021

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ABBREVIATIONS

- AP Accounts Payable
- ERP Enterprise Resource Planning
- IS Information Systems
- IT Information Technology
- MIS Management Information System
- P2P Procure-To-Pay
- PO Purchasing Organization
- PSM Purchasing and Supply Management

1 INTRODUCTION

Successful businesses rarely succeed by accident. Success usually means that a company has been able to change with its environment and find new ways to develop its competitiveness. The international business arena is full of companies ready to grab market shares from weaker market participants. To meet the competition of this environment, companies need to improve their operational efficiency in addition to creating superior customer value, and therefore they need to search for new solutions to improve their business processes and their competitive advantage (Faes, Matthyssens & Vandembemt 2000). One area where today's companies can look for new ways to streamline their business is automation, enabled by advances in Information Technology (IT) and Information Systems (IS).

Businesses have become quickly adopters of digitalization and they use it as a tool for gaining market and operational efficiency (Li, Merenda & Venkatachalam 2009; Bharadwaj & Soni 2007; Barnir, Gallagher & Auger 2002). Utilization of digitalization has led to an increase in the number of IS based development projects in companies. In a large company, such projects can be very complex and they require lots of planning, resources and offer quite a bit of challenge for project management. New information systems are deployed to the organization through an implementation project. The project aims at taking into account critical factors contributing to the success of system deployment and preparing the organization for it. Process automation changes the way work is done in an organization and it is likely to cause organizational change. The changes will be biggest to those departments that are responsible for the processes that the new automated system seeks to perform.

This thesis examines one such IS implementation in a Finnish company (Company X). The information system under implementation is an automated procure-to-pay (P2P) system. The main focus of the thesis is to study how the two closest departments to Procure-to-pay process, the procurement and finance departments, change as a result of (or in connection with) the implementation of an automated P2P system.

1.1. Background of the study

Different business departments utilize technology differently as they use it for their own purposes. For example, robotics has become a commonly used technology in many

manufacturing tasks. Automation can be used to streamline many of a company's functions, and gradually automation has moved from production facilities to other business departments as well. However, automation often requires organizational customization as it cannot be integrated into existing operating models and processes or organizational structures. This is not the intention either. Process automation usually aims at economic efficiency and often results in structural changes and reduction of manual work in the organization.

The topic of this thesis is related to the automation of purchase-to-pay process. P2P automation is a quite up-to-date subject for a research as more and more organizations are acquiring these systems. A study performed in 2010 examined then-current situation of P2P automation by addressing 550 CFOs worldwide. The results showed that nearly 72 percent of respondent companies were already implementing or at least planning to start implementing *invoice automation* during the next 12 months. Additionally, 65 percent of the study respondents were implementing automation or planning to automate their *purchasing processes* as well. The motivation to invest in procurement and invoicing functions is clear and shows that companies see potential value in the automation of these processes. (Salonen 2010) Against this background, this thesis is topical; many companies will launch similar P2P automation projects in near future.

The study also has to do with the real-life P2P automation process that is starting in Company X. The company is implementing a new automated P2P system for indirect procurement and invoice processing activities. It should be noted that, the e-procurement functionality of the system will be used only for purchasing belonging to *indirect procurement*. The company has another system in use for direct procurement activities. However, the system will automate the processing of invoices for both *indirect and direct purchase invoices*.

The impact of technology on organizations is well researched subject in the literature. Studies have also discussed designing effective Purchasing and Supply Management (PSM) organizations. This thesis places itself among these research approaches as it focuses on organizational changes due to an automated system for purchasing and invoicing. This study also seeks to contribute to future system implementers by helping them to understand what organizational changes might be needed when P2P automation is deployed.

1.2. Research questions and propositions

The main objective of the study is to find out what types of organizational changes commonly take place when a firm implements an automated procure-to-pay system. The empirical research seeks to identify these organizational change themes from a group of companies. The unit of analysis is organizational change. The other objective is to collect and analyze information from Company X itself and highlight important issues related to organizational change that should be considered in the ongoing implementation project.

The main research question of the study is:

RQ: “What types of organizational changes will implementation of automated P2P cause (or require) in an organization?”

The main question is followed by three sub-questions that focus on more limited areas of the issue. P2P process is a two-part process that takes place at the interface of two organizational departments or business functions; *procurement department* (procurement function) and *finance department* (accounts payable function, AP). These two functions are considered as sub-functions of the P2P process. The P2P process begins in the procurement function when a purchase order is created and sent to the supplier (see figure 1). Once the supplier has delivered the products or services, it sends an invoice to the buyer company. At this point, the finance department (accounts payable function) becomes responsible for the final stages of the process; it processes the invoice and makes the payment to the supplier (see chapter 1.4. for more detailed description of P2P process). This two-functional dimension of P2P is factored in the first two sub-questions (SQ1 and SQ2).

The first sub-question examines what types of organizational changes take place due to automation in both of the sub-functions of P2P:

SQ1: “How does the implementation of automated P2P change the procurement and financial organizations?”

The second sub-question focuses more closely on the changes of tasks and responsibilities within the two sub-functions:

SQ2: “How does the implementation of automated P2P change the roles and tasks within the procurement and financial organizations?”

The third sub-question aims to collect information from the case company itself to support their own implementation project and does not seek to create as much generalizable knowledge. It investigates what internal changes are needed to improve indirect procurement activities in connection with the P2P implementation project. This sub-question focuses more on procurement issues:

SQ3: “What issues should Company X take into account when reorganizing indirect procurement in connection with the P2P implementation?”

The decision to delimit AP function outside of the third sub-question is justified by the fact that Company X had already made plans to reorganize these activities. As there was no need to study these things for Company X, they were left outside of the study to limit the study scope.

Propositions

Yin (2009, 28) suggests that using propositions in a case study can be beneficial as they direct attention to things that should be examined within the study scope. The study includes the two following propositions:

Proposition 1: “Organizational resources will move from AP function to procurement function due to automation of invoice processing”

Proposition 2: “New tasks and new skill requirements will be born as a result of P2P automation”

Proposition 1 relates to the expectation that automated P2P system will require less human labour within accounts payable function but it will increase work load in procurement-end. Effective P2P automation is highly dependent on activities taking place at the procurement-end; the success of the process requires that purchase orders are executed using the e-procurement functions of the P2P system, this also means that the

use of other procurement channels become forbidden. In other words, compliance with the process becomes a key condition without which automation of invoice processing cannot function as intended. As procurement activities become increasingly critical to the entire P2P process, it is expected that resources move to procurement department (function) from financial department (AP function).

Proposition 2 considers the expectation that companies may have to establish new positions or jobs as a result of the automated P2P. It is expected that as tasks within the organization changes and technology level of P2P process increases, it will require new types of skills in the organization. For example, resource reallocation from AP-end to procurement-end may affect job descriptions and required skills. These propositions should not be considered as hypotheses of the study. Their only purpose is to act as guidelines that help concentrating on relevant issues during the study process.

1.3. Limitations

The thesis is limited in many ways as it is impossible to include everything to a study. *The first limitation* concerns the objectives of the study: the study aims to examine first and foremost the organizational changes that result as an automated P2P system is introduced to a business organization. The organization in focus is narrowed to the two departments that collaborate through procure-to-pay process, the procurement and finance departments. The organizational changes in which this thesis is interested include the changes regarding organizational structures, tasks and responsibilities, management, resource allocation, processes, and positions in the procurement and finance departments. This limitation means that many interesting issues regarding organizational change must be excluded from this thesis. This thesis does not, for example, address change management in detailed manner. Naturally, change management is recognized as a highly important part of organizational change and project management in general. This thesis is limited to describing the organizational changes that commonly take place during P2P automation projects and identifying some internal key themes which Company X should consider in their project.

The second limitation concerns the scope in which the P2P system will be used in the case company. As mentioned, the procurement functionality of the automated P2P will be used only for indirect procurement but still the invoicing functionality processes invoices from both the indirect and direct categories. In a sense, the system will be used for a

wider variety of purposes on financial side than on the procurement side. The thesis focuses more on *purchasing and supply management* (PSM) issues but concerns financial aspects to some extent as the finance department is participating with procurement department within the boundaries of the P2P process. General research on organizational change was conducted with both departments in mind, but with regard to the development of the case company's operations, the emphasis was mainly on the development of indirect procurement activities.

1.4. Conceptual framework

Procure-to-Pay process locates in an interface between procurement function and finance function and, in a sense, it is their shared process (Palmer & Gupta 2011). Therefore, it is argued that it should not be seen including two individual functions but rather one common function including two sub-functions, one at procurement-end and another at AP-end. Without this perspective, internal boundaries and differences of opinion between procurement (operational) and financial management (governance) may cause friction regarding the ownership of the procurement (Hawkins 2007). Figure 1 shows the conceptual framework of the P2P process and the "P2P organization".

On procurement side, the P2P process concerns issues such as purchasing processes and protocols, supplier relationship management, supply contracting, sourcing channel selection, tendering, making orders, etc. The way these tasks are organized and performed in a P2P process, will naturally have significant effects on the results of procurement operations and financial performance due to the interrelationship between them. Therefore, procurement-end of the P2P process is extremely important as it establishes a foundation for the entire P2P process performance. On financial side, accounts payable is the closest function to P2P process. AP is a financial function responsible of liabilities generated by purchasing. AP concerns tasks such as managing invoice processes and protocols; checking and accepting invoices, handling invoice exceptions, coding costs, supplier payments, etc. The information used by the finance department when participating in the process is entered mainly at the beginning of the process, at the procurement-end. If the protocols are unclear and data is not entered correctly at the beginning, these inputs are incorrect and this leads to a failed P2P process. Failing process will not be able to produce the benefits of automation that the company expects.

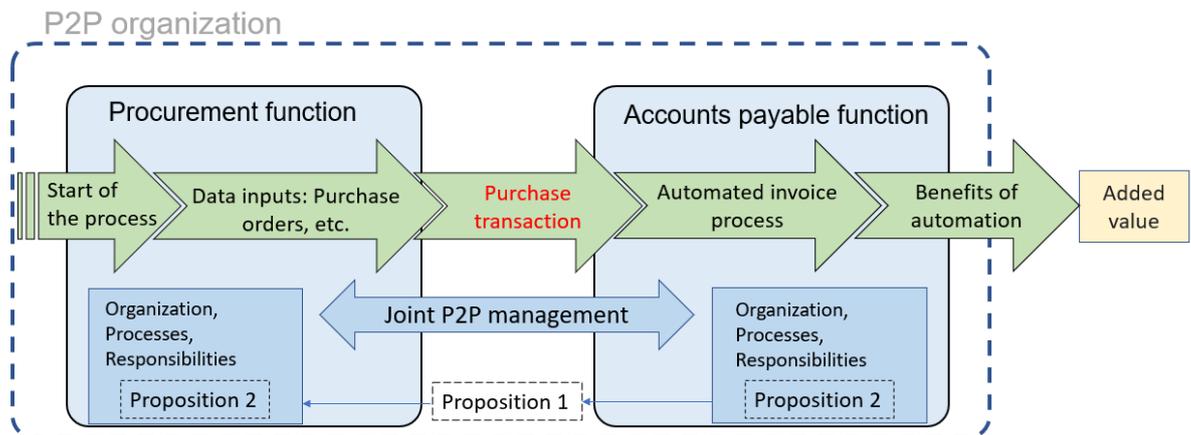


Figure 1. Conceptual framework

Correlation between the two functions can be seen in figure 1. This thesis uses the term “*P2P organization*” referring to an organization formed by the departments on both ends (sub-functions of P2P) when they participate in activities included in P2P process. P2P organization should not be construed as a real tangible organization, the term is only used to underline the importance of managing these interdependent sub-functions as one. Due to the nature of indirect procurement, a single “indirect purchasing organization” with clear boundaries cannot be defined. There are lots of people in a company participating in indirect procurement and vast majority of them are non-purchasing professionals that buy indirect categories as an addition to their main job (Telgen & de Boer 1995). In a wide functional sense, when they perform indirect purchases they belong to the indirect purchasing organization. Therefore, this thesis does not define indirect procurement organization in departmental context but in functional and managerial context instead.

As P2P process is shared between the two business departments with their own structural organizations and as many people participate in the process at some point during its flow, it is understandable that P2P framework becomes quite complex. Both sub-functions within P2P process include situations in which non-professionals participate in the process. On procurement-end of the process, professionalism locates on management level but not so much on operational level as non-purchasing professionals are making purchases at many levels of a company. AP organization is partially different as there is centralized professionalism on every level of the organization. This is due to the fact that these tasks are executed by dedicated personnel to whose central mission these tasks belong to. However, when we think the journey of P2P process from end to end, there are

some points in which less professional actors are involved in tasks that can be considered falling to AP process. For example, usually a person that has put in an order is responsible for checking and approving the invoice for the order and coding the cost to an account, and these tasks belong (procedurally thinking) to AP-end. Understanding this is important for making conceptual clearance: both sub-processes (procurement and AP operations) include a variety of actors that hold different knowledge and skill resources for executing these tasks. In addition, different persons may have significantly different attitudes toward these tasks that lead to varying results. This “randomness” of participating actors within P2P underlines the importance of management of the process. Challenges related to these issues should be overcome by creating functional protocols and processes for these tasks and monitoring that personnel comply with them.

The conceptual framework in figure 1 shows the interdependency between the two departments. The two departments together form a processual organization of P2P as they both are involved in P2P process stages. Procure-to-pay process starts when a purchase order is made at procurement-end (regardless of whom performs the order). Actions as well as protocols and operational structures at this point affect the entire process through the following stages of the process. Therefore, the starting point of the purchasing process is extremely important for the performance of the entire procure-to-pay process. The process rules and operational models make sure that P2P process is able to create added value.

1.5. Research methodology

The study was performed as a case study which is one strategy of qualitative research. During the initial planning stage of the study, Company X announced that they needed a research that was able to find out what other companies had done in similar P2P projects and how they had succeeded in those projects. The case company also wanted to examine internal matters related to indirect procurement that might have some effect on how the P2P implementation should be planned and managed. These included such issues as user experiences from the current P2P process, challenges related to it, user attitudes and general improvement ideas. The study plan was then created and it included two data collection processes, one targeting external sources and another with the internal case company focus.

The external data collection process was focused on other organizations that had implemented the similar automated P2P system. The external data was collected with semi-structured interviews of representatives from six companies. The internal data was collected with an online survey directed at Company X's personnel who were involved in the indirect procurement. The purpose of the survey was to find out both the organizational challenges that may hinder the implementation project and the possibilities to improve indirect procurement with the new automated system. Both of the data sets were then analyzed according to the principles of content analysis. The internal data had some percentage analysis as well but they were a minor factor as the main findings were drawn from written survey responses. Percentages were only used to give a general picture of the responses and opinion distributions within them. The small number of responses made other types of statistical analysis impossible.

1.6. Structure of the thesis

The thesis is structured into six chapters. Chapter 1 includes the introduction with background of the study, research questions and research objectives, limitations, the conceptual framework, research questions, propositions, brief description of the research methodology, the structure of the thesis and the key concepts of the study. Chapter 2 takes a look into the existing literature and theoretical background of the research area. The chapter focuses on the central areas of the study: indirect procurement, e-procurement and organization design. These central issues are combined as the chapter concerns also procurement organization design aspects. Chapter 3 goes through both the data collection and analysis methods in detail. The findings of the empirical research are presented in Chapter 4. The findings from both the external and internal studies are described. The discussion of the study results and other relevant themes that emerged from the research are presented in Chapter 5. The chapter describes the typical organizational changes related to automated P2P and other issues that emerged during the study from the peer group data. Internal survey findings are also discussed. Managerial guidelines for project management based on the study findings are given in Chapter 5. The thesis does not aim to draw any organizational blueprints. The focus is on only pointing out issues which Company X must consider when it is setting up the automated P2P system. Validity and reliability of the study is reviewed, and finally, some topics for future research is presented.

1.7. Key concepts

Procure-to-pay (P2P) process refers to a process that an organization uses to buy goods and services including all tasks related to making purchasing decisions, selecting suppliers to collaborate with, products and services to purchase, channels from which items are bought from, internal processes of managing invoices, and making transactions to pay suppliers accordingly (Business Dictionary 2019). P2P process includes activities from specifying needs, sourcing decisions, contracting, making purchase orders, receipt of material and documents, and finally, settlement and payment (Trkman & McCormick 2010).

Procure-to-pay system refers to an integrated information system that is designed to support P2P process that starts when goods or services are ordered from a supplier and ends when ready-to-pay files related to these purchases are uploaded into an accounts payable system of the purchasing company. Modern procure-to-pay solution includes e-procurement functionality with e-requisitioning, approval workflow and e-catalogue management and it offers automated purchase-order-to-invoice matching and processing of invoices that do not match the purchase order (exception processing). Procure-to-pay system enables suppliers to submit invoices electronically and it may utilize a scan-and-capture service, supplier portal and/or a multi-enterprise network that enables suppliers to provide invoices. (Gartner 2019)

Organization design refers to the process in which the structure of an organization, systems of coordination and communication, division of labour, control, authority and responsibilities are assessed and selected to facilitate the achievement of organizational goals (Trent 1996). Two widely respected definitions for the term listed by Anderson (2019) are cited here to point out the most essential themes that are related to the organization design context:

“Organization design is conceived to be a decision process to bring about a coherence between the goals or purposes for which the organization exists, the patterns of division of labor and interunit coordination and the people who will do the work” (Galbraight 1977, p. 5, In: Anderson 2019).

“Organization design is the deliberate process of configuring structures, processes, reward systems, and people practices and policies to create an effective organization

capable of achieving the business strategy' (Galbraith, Downey & Kates 2002, p. 2, In: Anderson 2019).

Both of these definitions underline the fact that organization design is a *process* that is performed with a purpose of creating an organization that is able to fulfil a certain purpose. The process includes many aspects that must be decided and implemented for an organization to be successful with respect to its purpose and meaning.

Organizational change can be defined differently depending on the contexts in which the term is used. In this thesis, organizational change refers to changes in operational methods, technologies, organizational structure, or strategies (Market Business News 2021). Organizational change happens as a result of deliberate decisions, slow departmental evolution, changes in policy or procedures or external or internal pressure (Mullins 2007). The organizational changes include both structure and task changes.

Indirect procurement refers to sourcing and purchasing goods and services other than those used in organization's primary operations and product manufacturing (de Boer, Holmen & Pop-Sitar 2003). Examples of items and services belonging to indirect category are office equipment, computers, MRO purchases (maintenance, repair and operation), marketing kits and services, travel expenses, insurance, legal assistance, and telecommunications, etc. (Tai, Ho & Wu 2010; Kim & Shunk 2004; de Boer et al 2003)

Multinational company (MNE) refers to a large corporation that has substantial resources and performs a variety of business operations using a network of subsidiaries and partners located in many countries. These companies execute research and development operations, procurement, manufacturing and marketing wherever they can benefit the most from these activities. (Cavusgil, Knight & Riesenberger 2012)

2 THEORETICAL FRAMEWORK

This chapter takes a look into the existing literature on the study subjects. The focus is on dealing with the issues of e-procurement technology and organizational design. Globalization in relations to organizational design is also addressed as it plays a role in the background of procurement environment of multinational enterprises. The chapter also looks into the contingency theory as it is relevant for the context of the study.

2.1. Indirect procurement

Lysons & Farrington (2012) date the start of traditional purchasing around year 1850. For long purchasing was regarded as a reactive and clerical function that focused mainly on transaction processing and lowering purchasing prices (McIvor, Mulvenna & Humphreys 1997; Segev & Gebauer 2001). During that time the strategy of purchasing was unlinked to the organization strategy (Ammer 1974, Lysons & Farrington 2012). Due to certain economic events (e.g. oil crisis in 1970's) the role of purchasing started to evolve as it tried to answer the new types of business needs in challenging situations and changing environment (McIvor et al. 1997; Monczka, Trent & Handfield 2005). Since then it has been increasingly recognized that the purchasing and supply management function may play a significant role in an organization's competitive advantage (Carter & Narasimhan 1996; Carr & Pearson 1999).

As the role of purchasing as one of key drivers in firms' financial success was identified, it started to gather more attention from academics and managers (van Weele 2005). Modern purchasing has evolved into a rather cross-functional business process not managed by a single function as purchasing is increasingly integrated with strategy, decision-making and marketing (Mogre, Lindgreen, & Hingley (2017). At its highest form, procurement is fully integrated to the organization's competitive strategy (Lysons & Farrington 2012, 13). Strategic procurement has to do with making strategic decisions regarding the definition of purchasing policies and portfolio approaches and supplier relationship management (Luzzini et al. 2014). Tai et al. (2010) divide strategic procurement actions into three levels: 1) *performance related strategies with a focus on managing purchasing resources and controlling expenses, and providing service according to users' needs within an organization*, 2) *procurement system related strategies that build links to immediate external environment of the organization with strategic focus on supplier selection, contract duration and value analysis issues*, and 3)

competitive procurement strategies that focus on bargaining power allowing a buyer to leverage purchasing in order to improve the company's competitive advantage. Although the general consensus among PSM researchers is that procurement is strategic function, some researchers still argue that its level of involvement in key strategic activities is quite low (Johnson, Leenders and Fearon 1998).

A firm's procurement function covers two categories of purchases, direct and indirect (Subramaniam & Shaw 2002; Kim & Shunk 2004). The direct purchasing category involves materials and components that are used for manufacturing the finished products. The indirect category includes purchases that are not part of the finished products but are otherwise necessary to support the operations of an organization. Office equipment, computers, MRO (maintenance, repair and operation), travel expenses, marketing kits and services are examples of the indirect purchasing category. (Tai et al. 2010; Kim & Shunk 2004) For long, the focus of both academics and managers were only on direct procurement (Porter 1999; de Boer et al. 2003). The indirect spend was seen less important as it is non-revenue-generating expenditure and it is less likely to impact to the competitive advantage of a company (Cox, Chicksand, Ireland & Davies 2005). Later, as the saving potentials of indirect spend were identified, the managerial focus started slowly turn to indirect procurement as well (Porter 1999). Indirect category can represent up to 50 percent (by value) and 70-90 percent (by number) of the entire spend of a company (de Boer et al. 2003; Cox et al. 2005). With these numbers indirect spend can no longer be ignored when pursued for cost reductions and more efficient use of capital. Therefore, many companies have begun to create more structured approach to managing indirect procurement (Cox at al. 2005)

The nature of indirect procurement compared to direct procurement is different in many ways. Indirect procurement is more diverse function containing a large variety of products often bought in small orders from large number of different suppliers (Telgen & de Boer 1995; Gebauer & Segev 2000). Predictability and purchasing volumes are usually much lower in indirect purchasing and thus it requires a higher number of purchasing transactions (Neef 2001). The processing costs relative to the value of purchases are higher for indirect purchasing (Chopra & Meindl 2007). Compared to direct purchasing, the use of IT has been low in indirect procurement, resulting in non-standardized processes and largely paper-based activities (Kim & Shunk 2004). Given the breadth of materials and services included in the indirect category, and the variety of different

channels which are used to purchase them, indirect procurement is highly complicated function to manage (Cox et al. 2005). Historically, indirect categories have been purchased via phone, fax or traditional mail (Kim & Shunk 2004). Indirect purchasing is often carried out by non-procurement professionals and it takes place virtually everywhere in a firm (Telgen & de Boer 1995). Professional purchasers perform only a minor part of all indirect purchases, other business departments may form over 50 percent of the entire indirect spend of a firm (de Boer et al. 2003). Therefore, indirect spend is fragmented within the organization (Cox et al. 2005). These characteristics make indirect procurement hard to manage (Iloranta & Pajunen-Muhonen 2008; Cox et al. 2005).

2.2. Procurement organization design

The term organizational design refers to the process in which the structure of an organization, systems of coordination and communication, division of labour, control, authority and responsibilities are assessed and selected to facilitate the achievement of organizational goals (Trent 1996). This definition is aligned with Mintzberg's (1980) view that the organizational design focuses on the division of labour of specific tasks created according to an organizational mission, and coordinating those tasks to accomplish the mission in a unified way. Business organizations are designed to accomplish goals and objectives based on their business strategy (Anderson 2019).

According to Mintzberg (1980) an organization can be divided into five basic parts that all have their own tasks and responsibilities: 1) *operating core* (including employees who produce or support the production of basic products), 2) *strategic apex* (top management), 3) *middle line* (middle management), 4) *technostructure* (analysts who analyze the design and maintenance of the structure and the environment of the organization) and 4) *support staff* (groups that provide indirect support to the rest of the organization). Contingency theory studies the relationship between the structure of an organization and its environment, and is based on the idea that structure of the organization determines its performance capabilities (Glock & Hochrein 2011). The theory is described more detailed in the next sub-chapter.

Anderson (2019) emphasizes that the term organizational design should not be mixed with the term organizational structure. Organization structure describes the reporting relationships within the organization and specifies the links between people, functions and processes that are relevant for carrying out the operations (Cavusgil et al. 2012).

Organization design, on the other hand, looks behind the structural dimension and includes other aspects (e.g. organization's priorities, responsibilities, decision-making processes, performance measures and reward policies, etc.) to the context (Anderson 2019). This thesis uses these terms interchangeably and encompasses organizational design/structure to include structural and all other organizational factors that are related to organizational performance. Decisions on organizational design are related to coordinating tasks and resources which are keys to the organization performance and success (Mintzberg 1980). Organizational design process is often described belonging to the highest level of organization (top management) but internal departments have their own designs as well and can benefit from appropriate design process (Anderson 2019).

Changes in supply organizations have been a major theme in literature on procurement (Trent 2004). Major areas concerning change in supply organizations are: *organizational structure*, *responsibilities* and *functional leadership issue* (Johnson & Leenders 2006). Recent research has emphasized the importance of procurement organization design as one enabler of overall business performance. Schneider & Wallenburg (2013) argue that as the importance of the purchasing function increases and its responsibilities enlarges, it is essential to focus examining organizational structures to support purchasing more effectively. They also underlined the importance of structural adaptability of procurement function to support the company's overall competitiveness and market responsiveness in highly dynamic markets. Bals, Laine & Mugurusi (2018) point out that procurement organizational design is becoming increasingly important issue as new goals of PSM often focus on supplier innovation and sustainability. These issues raise questions how PSM functions should be organized to support goals of the firm optimally. Chief Purchasing Officers (CPOs) usually do not have free choice to select the supply organizational structure they would view appropriate and the supply organization is often forced to adapt to the overall corporate structure. Changes in supply organization structure are often a result of a larger corporation organization structure change. (Leenders 2006)

One fundamental issue related to organizational design is the question of centralization / decentralization, i.e. how much decision-making authority should be delegated to subsidiaries (or other individual departments) and how much of it should be retained at the central function (e.g. headquarters) (Cavusgil et al. 2012). The degree of centralization has been one of the most studied subjects regarding procurement organizations as well (Johnson, Shafiq Awaysheh & Leenders 2014). One key challenge related to them has

concerned an issue of distinguishing which procurement activities should be integrated across organizational sites and which ones should be left under the authority of each purchasing location (Faes, Matthyssens & Vandembemt 2000; Matthyssens and Faes 1997). Procurement organization structures are often categorized using the following categories: *centralized*, *decentralized* and *hybrid* structures (Johnson & Leenders 2006; Leenders 2006). Different functional structures are viewed having certain advantages and disadvantage over one another. Leenders (2006) view that the main advantages of central supply structure are high strategic focus, better specialization, coordination of control and policies, effective planning and research, shared base of suppliers, consolidation of purchasing requirements, ability to push down purchasing costs and closeness to major organizational decision makers. Disadvantages of centralization are e.g. lack of business unit focus and recognition of business unit needs, narrow specialization, creation of organizational silos, high visibility of purchasing costs. (Leenders 2006)

Decentralized model includes following advantages: easy coordination and communication with operating department, speed of reaction, ability to use local sources efficiently, autonomy of business unit, undivided authority and responsibility, simple reporting line and broad job definition. Decentral model includes substantial autonomy and decision-making authority for individual units. (Cavusgil et al. 2012) Disadvantages of decentralized model are difficulties to communicate between units, less planning, operational focus instead of strategic, ignoring better supply sources by preferring local sources, sub-optimization and reporting at low level of organization. (Leenders 2006) Organizations usually have more centralized approaches when it comes to their direct procurement and indirect procurement is often more decentralized due to its characteristics (De Boer et al. 2003).

De Boer et al. (2003) researched the issue of involving procurement department in indirect procurement tasks. They summarized that purchasing department's involvement in indirect purchasing could include many benefits for the organization. However, their research showed that this utilization of the procurement department is often very limited and there is some friction between the departments of the organization and the procurement specialists. They also argue that managers often seem to ignore the entire issue of involving the procurement department in indirect buying and therefore, indirect procurement is often organized along (or based on) the lines of clientele or purpose

instead of organizing it according to the lines of general procurement process. (de Boer et al. 2003)

The third structure, a hybrid structure, aims to reap benefits from both above-mentioned structures. In hybrid form, some tasks are maintained at firm level (e.g. responsibility for negotiating long-term contracts) while subsidiaries have certain freedom within which they can operate (e.g. placing orders according to the contracts) (Trautmann, Bals & Hartmann 2009). Hybrid design is usually utilized when an organization has multiple business units and it aims to create benefits of both centralization and decentralization. The question of when to use each approach is often based on expected benefits in a certain situation. The central procurement function collaborates with departmental units when tasks at hand can be more effectively handled on the company level. These central tasks include: 1) creating common procedures, policies, processes, and control mechanisms, 2) recruiting and training, 3) purchasing coordination, 4) supply performance auditing, and 5) planning corporate-wide supply strategies. (Leenders 2006)

The purchasing organization (PO) design cannot be analysed on the basis of centralization-decentralization dimension alone as there are variations in how firms have organized themselves beyond that framework and thus, other dimensions must be taken into account when trying to understand the procurement organization design (Bals & Turkulainen 2017). For example, organizations may design procurement organizations by purchasing categories, geographic area or product lines (Giunipero & Monczka 1997; Karjalainen 2011; Trautmann, Turkulainen, Hartmann & Bals 2009). Some researchers identify *activity* as the fourth structural alternative for the purchasing organization (Bals & Turkulainen 2017). Jia, Lamming, Sartor, Orzes, Nassimbeni (2014) argue that companies can have four levels of purchasing: global commodity team (category), business unit (BU) purchasing, plant purchasing, and International Purchasing Offices (IPOs), from which, the plant level and International Purchasing Offices are geography-based designs.

2.2.1. Contingency theory

This study finds suitable theoretical background in contingency theory which studies the relationship between an organization's structure and its environment (Stanley 1993). According to Kast and Rozenweig (1973, in Shepard & Hougland 1978): "*The contingency view seeks to understand the interrelationships within and among subsystems as well as between the organization and its environment and to define patterns of relationships or*

configurations of variables. It emphasizes the multivariate nature of organizations and attempts to understand how organizations operate under varying conditions and in specific circumstances.” Donaldson (2001, 7) defines the term contingency as “*any variable that moderates the effect of an organizational characteristic on organizational performance*”. The literature has defined many contingencies affecting organizations. Mintzberg (1980) listed age and size, power factors, technical system and environment of an organization as such factors. Other contingencies identified include environmental change, technology, innovation and diversification (Morton & Hu 2008).

Contingency theory is built on the idea that structure follows strategy. The operating environment of the organization is the context that shapes the structure, while structure is the mechanics through which an organization operates. (Bals, Laine & Mugurusi 2018). The theory presents that organizational effectiveness can be achieved by matching organizational characteristics to contingencies (Donaldson 2001; Morton & Hu 2008). According to contingency approach, managers make deliberate decisions on organization design by first analyzing the firm's task environment and internal characteristics of the firm, and then adapting the practices of the firm accordingly (Volberda, van der Weerd, Verwaal, Stienstra & Verdu 2012). If the environment (and contingencies) change, new decisions must be made as these changes require the firm to adjust organizational design to accommodate the new demands (Bals et al. 2018). This adjustment will naturally have effect on the firm's performance trajectory (Donaldson 2001; Prajogo 2016). Contingency theory approaches the organizational design issue with the idea that there are no universal principles that could be applied to all situations, and instead of trying to find such principles, the specific variables of each situation should be identified and then organize operations accordingly (Shepard & Hougland 1978). Therefore, no organizational design ideal for all situations exists (Galbraith 1973; in Surdu & Potecea 2012). The suitable organizational form depends on the firm's task environment (Donaldson 2001).

As this thesis focuses especially on procurement function, it finds the work of Rozemeijer, van Weele and Weggeman (2003) useful as they studied corporate purchasing synergy against the background of contingency theory. Rozemeijer et al. (2003) underscore that there are four contingency factors that have an impact on organization's purchasing synergy, structure and its final performance: 1) *business context* (companies foster purchasing synergy depending on the external pressure in their market, technology, and competitive environment), 2) *corporate strategy* (linking purchasing strategy to

corporation's long-term objectives and strategies), 3) *corporate organizational structure* (anchoring purchasing synergetic initiatives firmly to corporate organization), and 4) *purchasing maturity* (professionalism in purchasing at the business unit level). Theoretical model of Rozemeijer et al. (2003) is shown in figure 2.

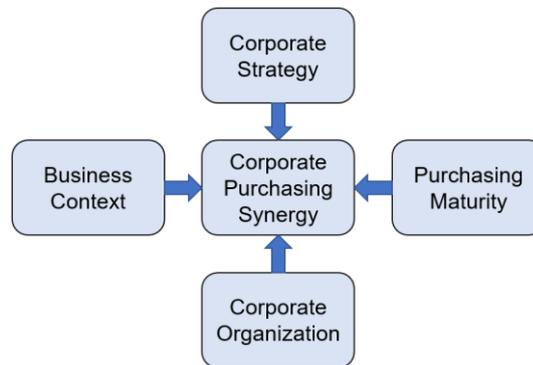


Figure 2. Contingency factors impacting purchasing synergy (Rozemeijer et al. 2003)

Rozemeijer et al. (2003) define purchasing synergy as “*any benefit resulting from any form of cooperation between two or more business units belonging to the same corporation*”. Organizations search for purchasing synergy to achieve certain benefits, e.g. cost savings, stronger negotiation position vis-à-vis suppliers or supply markets, productivity gains and better relationship with suppliers (Rozemeijer et al. 2003).

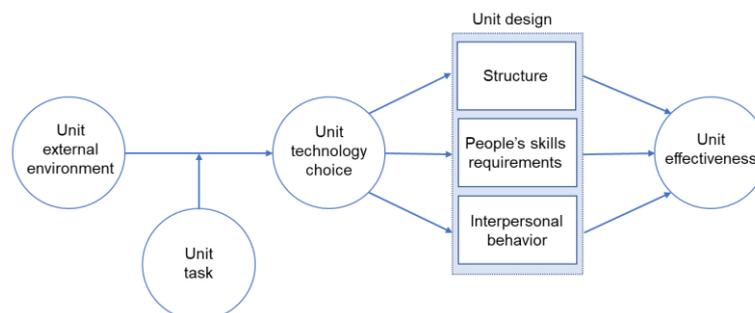


Figure 3. Relationship between external environment, technology, design and effectiveness (Randolph 1981)

Following the fundamentals of contingency theory, Randolph (1981) argues that the organizational unit should be designed by a) first identifying specific tasks for it, b) choosing technology for it, and c) finally designing the unit (structure of the unit, people's

skill requirements, interpersonal behaviour or processes) in correlation with the previous sequences (see figure 3). Randolph (1981) underlines that technology is one topic effecting an organization's design and the design effects on unit effectiveness. Thus, literature on e-procurement technology is reviewed next.

2.3. E-procurement technology

As the importance of PSM for firms' financial success was recognized, organizations began to invest in it more and this motivated tech firms to start developing new technology solutions for procurement and supply management (Monczka et al. 2005). Companies are turning to technology in an effort to streamline their operations and information systems (IS) are often expected to create benefits by rationalizing work, enhancing managerial planning and decision-making, controlling and motivating workforce toward organizational goals, and improving communication and coordination among people in the organization and external participators (customers, suppliers, competitors etc.) (Markus 1983). The rise of the internet in 2000's was an important stage in the evolution as procurement function began increasingly using new technologies (Monczka et al. 2005).

Traditionally, information technology (IT) of supply management had been used for production-oriented procurement operations of large companies. Technology solutions (software etc.) used for these procurement operations consisted of quite complex back-end applications that were fairly hard to use and thus required lots of knowledge and technological understanding from system users. These early systems were mainly designed for purchasing experts. However, more recently a new trend has started to concentrate on providing increasingly user-friendly front-end applications designed for non-purchasing experts and used for non-production-oriented (indirect) procurement. (Gebauer & Segev 2000) New technologies allowed supply organizations to transform from paper-based systems to electronic-based approaches (Ericson & Rycraft 2011).

Purchasing of goods and services included in indirect categories through electronic tools has quickly become an ever-growing reality (Caniato, Golini, Luzzini & Ronchi 2010). New digital technologies and modern marketplace solutions together with very large cost savings potentials in indirect procurement are motivating organizations to acquire technology solutions for indirect procurement tasks (Segev & Gebauer 2001). Promises of benefits such as cost savings, improved relationship with customers and suppliers, improved processes, enhanced performance and new business opportunities opening to

the company are often mentioned motivations for implementing new technologies (Gebauer & Segev 2000). As the lower-cost public network structures become available, traditional EDI (electronic data interchange) e-procurement systems started to evolve into web-based e-procurement (Tai et al. 2010). E-procurement is often defined as organizational procurement using the internet technologies and they aim at streamlining the purchasing processes and improve a firm's competitive advantage (Kim & Shunk 2004; Tai et al. 2010). E-procurement technology is any technology designed to facilitate e-procurement activities of a commercial or a governmental organization over internet (Davila, Gupta & Palmer 2003). Internet-based ordering technologies offer benefits of reducing transaction costs, increasing competitive sourcing opportunities, and improving coordination between inter-organizational parties (Yen & Ng 2003). Some companies are more aggressive adopters of e-procurement than others but regardless of the strategy of a company, the overall consensus is that e-procurement technologies are an important for management that can be used to enhance the performance of supply chains (Davila, Gupta & Palmer 2003).

E-procurement systems are well suited for automating indirect procurement in many ways that can produce significant benefits for the organization, such as increased efficiency resulting in self-service transactions for end-user purchasing and empowerment, time and cost savings, and reduced maverick buying (Kim & Shunk 2004). Maverick buying refers to buying activities outside established procedures or contracts in a way that it does not optimise value for money (Cox et al. 2005). Tai et al. (2010) add that e-procurement systems may improve the firm's search capacity, enable faster and increasingly accurate data transmission, provide more information quicker and more precisely and reduce costs of communication and coordination. Kim & Shunk (2004) view that e-commerce systems can be divided into three categories: *buyer-centric e-procurement systems*, *supplier centric e-procurement systems*, *neutral e-marketplaces*, and *end-to-end electronic document/message exchange systems*.

Effect of technology on organizations has interested researchers for quite some time. The field of Information Systems (IS) has viewed the relationship between information systems and organizational change as one of its central concerns (Markus & Robey 1988). Markus (1983) identified technology as a driver of organizational change as he studied organizational resistance towards management information systems (MIS). However, the literature was criticized to not support reliable generalizations of relationship between the

two phenomena (technology and organizational change) because of unclear conceptual definitions and measures of information technology and organizational structure, and furthermore, for mixed units and levels of analysis that were used in researches (Fry 1982; Bakopoulos 1985; in Markus & Robey 1988). Non-generalizability issues related to technology and organizational change were first approached by starting to focus on the definitions of concepts and normative orientation (Kling 1980). More precise definitions helped researchers to improve the knowledge on the subject. However, even recently the literature on organizational change is sometimes criticized for unclear theoretical definitions of the concept of change (Suddaby & Foster 2016). Technology is one of the major causes of organizational uncertainty (Head 2005). A technology change, in fact, implies process and cultural change (Caniato et al. 2010).

2.3.1. Automated procure-to-pay

The process of buying goods and services has been historically considered a clerical activity divided between procurement and accounts payable departments, in which the procurement department is responsible of executing and processing purchase orders, and AP is in charge of payments to suppliers (Palmer & Gupta 2011). The P2P process may vary from company to company but typically it involves making a purchase order (PO), authorizing the PO, sourcing and selecting the goods or services, provision of the purchase order to the selected supplier, receipt of the goods or services, authorization of the supplier invoice, and paying the supplier (Murphy 2012). The P2P process is a major challenge to firms which strategic business components include global sourcing and distribution activities (Trkman & McCormack 2010). Tasks related P2P such as sourcing, making contracts, ordering, receiving, inspecting, and making payments involve significant amounts of company resources (Palmer & Gupta 2011). Time is also devoted to handle paperwork, to obtain approvals, to input data to different information systems, and to manage reports related to the procurement (Palmer & Gupta 2011). Above-mentioned issues can lead a very labour-intensive procurement-cycle (Murphy 2012).

Automation of procure-to-pay process is evolving rapidly due to new technologies that are making it easier, faster and more efficient for companies to buy and pay for goods and services (Anon; in Managing Accounts Payable 2014). P2P process is a key process impacted by e-procurement (Trkman & McCormack 2010). Companies aim to improve efficiency by reducing the procurement-related transaction costs and invest in software and technology (Palmer & Gupta 2011). Adoption of e-procurement is believed to

decrease costs but also to eliminate paperwork, improve data accuracy, collaboration and transparency of the entire process (Trkman & McCormack 2010). Web-based procurement automation is used for both internal organizational processes and for supplier collaboration in inter-organizational processes. Internal process addresses automated, paperless process in which an end-user makes item selection, the related purchase request is created, routed and approved and the order is received in the end. The inter-organizational use addresses connectivity with suppliers for e-catalogues transaction management and supplier relationship management. (Tai et al. 2010) E-business automates the overall activities of a company and process automation and information sharing help to improve organizational productivity and increase customer responsiveness (Jung, Kim & Kang 2006). The modernization of procure-to-pay processes is seen important as the research has shown that organizations that do not begin to automate their purchasing transactions simply cannot compete in effectiveness to those that do (Partida 2015). However, companies still face the challenge of measuring the efficiency increase of e-procurement implementations and simultaneous organization and strategy changes (Trkman & McCormack 2010).

The automation of entire P2P process from end-to-end requires automation in the procurement department but also in AP department (Kim & Shunk 2004). On the procurement-end, it can be done by using a e-procurement system (or a variety of systems used for individual purposes) that allow end-users to make purchase orders which are sent to the supplier via EDI, XML, e-mail, extranet, or other formats (Kim & Shunk 2004). Automation on the AP department makes it possible to transform AP from cost center to profit center and at the same time to increase the relevance of the AP professional's work (Bohn 2010). Although many tasks in AP function can be automated, Brands & Smith (2016) argue that human resources are still needed in AP as accountants bring the required understanding of the context and culture of the business, and their input is essential to the monitoring and development of appropriate principles and standards of automated accounting.

Adoption of e-procurement can be challenging due to technology related issues and firms find e-procurement implementation to be more expensive, more complex, and more time consuming than they originally envisioned (Davila, Gupta & Palmer 2003). E-procurement requires the compliance of end users towards both e-procurement systems and contracts, and thus the company has to identify the potential causes of non-compliance and design

appropriate control systems to ensure compliance around the organization. In this context, non-compliance refers to the failure of individuals to comply with the e-procurement system (e.g. when making purchase orders) or the failure to use the contracts mandated. (Brandon-Jones & Carey 2011) A company adopting e-procurement has to develop right attitudes, knowledge, skills and technology to implement it (Caniato et al. 2010). Trkman & McCormack (2010) argue that reaping the full benefits from e-procurement requires that the processes connected to procurement are carefully analysed and improved (if necessary) before they become supported with an e-procurement solution. This readiness can be seen to relate to the dimension of organizational maturity (chapter 2.3.2.). Bartolini (2012) adds that key metrics should also be defined before the automation to be able to measure the process and financial improvements by automation. User compliance is important issue to address appropriately during the implementation as number of studies have reported a positive relationship between user compliance and the financial benefits of e-procurement (Brandon-Jones & Carey 2011).

2.3.2. Implementation challenges and organizational maturity

Change is an inseparable part of organizational life as organizational change is an infinite and ongoing process (Van de Ven & Sun 2011). This makes change a consistent and dominant subject of management, as Suddaby & Foster (2016) point out. However, despite the fact that change has become a new organizational normal, only minority of change initiatives truly achieve the outcomes they were supposed to achieve (McDonald 2014). As organizational change has to do with the operational methods, technologies, organizational structure, or strategies of an organization, it affects the entire performance of the organization (Market Business News 2021). The research has shown that organizations do not usually achieve their performance objectives in full as Mankins and Steele (2005) report that companies often realize only 63% of the financial performance promised by their strategies. According to them, 37% of the potential performance is lost due to organizational and managerial issues (e.g. inadequate performance monitoring, inadequate or unavailable resources, poorly communicated strategy, etc.) (Mankins & Steele 2005). Kaplan and Norton (2005) pointed out that even 95% of a company's employees might be unaware of or do not understand the company's strategy. This internal communication issue may harm the performance of the organization as employees act on the wrong information, imagining they are doing the right thing according to the assumed strategy (Kaplan & Norton 2005).

Information Systems projects often lead to disappointing returns for a variety of reasons such as budget overruns, technical problems that delay implementation, resistance against process reengineering, and other reasons that cause projects to fail altogether (Shore 2005). Although, the P2P system is not as central information system than Enterprise Resource Planning (ERP), the excessive literature on ERP implementations can be utilized to study challenges of IS implementations in general. These implementation projects can be challenging, expensive, time-consuming, and can put company resources under tremendous stress (Davenport 1999). Approximately 66-70 percent of ERP implementations failed to achieve the project objectives in some way (Ali & Miller 2017). Ram, Corkindale and Wu (2013) studied critical success factors (CSFs) of ERP system implementations and argue that the implementation success is often judged on the basis of the direct outcomes of the implementation project delivery, e.g. completion on time, completion in budget, completion as expected and completion to user satisfaction are measures often used to evaluate the success of implementation projects. Ari & Miller (2017) note that implementation methodologies vary from organization to organization and no industry standards on implementation methodology has been devised. Ram et al. (2013) argue that the success of the implementation project should be evaluated on the basis of post-implementation performance outcomes as they are more important for a firm in long-term. However, as Ari & Miller (2017) comment, the existing literature is mainly addressing the implementation phase and pre- and post-implementation phase is left outside of the research focus.

Implementation challenges regarding information systems (ERP) are related to a variety of reasons, such as the nature of the information system which treat cross-organizational business processes as the fundamental building blocks of itself, the requirements for organizational restructuring due to the implementation, the resulting organizational changes that can cause conflict in organizations if not carefully managed, and the lacking organizational realignment (Ali & Miller 2017). The most ERP projects seem to fail due to issues related to the organizational context, e.g. organizational culture, the lack of integration, the lack of leadership, and the lack of commitment by senior management. External environment and technological context do not seem to play as important role in the success of implementation projects (Shore 2005). Ram et al. (2013) studied the major claimed critical success factors (CSFs) to ERP success and were able to confirm that *project management, training and education* are critical success factors for the implementation success (implementation phase) but *system integration* and *business process re-engineering* are not. However, they found that *system integration* and *training*

and education influence significantly on organizational performance at the post-implementation phase.

Maturity is an interesting theme for this thesis because it relates to both purchasing organizations and information systems. Purchasing (PSM) maturity is defined as “*the level of professionalism in purchasing function*” (Rozemeijer et al. 2003). Maturity models explaining organizational change related to procurement organizations is commonly accepted approach in PSM literature and there is only a limited amount of literature that approaches the issue from another viewpoint than maturity model (Axelsson, Rozemeijer & Wynstra 2005; Ramsay & Crom 2008; van Weele 2014). Although there are many purchasing maturity models, they all have certain range of similarities (Schiele 2007; Adams, Kaufmann & Khoja 2016). Purchasing maturity of an organization improves through PSM development that Adams et al. (2016) define as “*the process of evolution from an unsophisticated cost-focused action-based function, to a sophisticated form in which purchasing decisions are directly linked to the strategic needs of the firm*”. PSM maturity of an organization is related to the “*levels of advancement in this process*” (Adams et al. 2016). Maturity is portrayed to effect on level of professionalism in PSM operations in an organization (Rozemeijer et al. 2003; Luzzini, Longoni, Moretto, Caniato & Brun 2014). Mature purchasing organizations (compared to less mature and unsophisticated organizations) apply world-class best-practices and therefore, they are assumed to perform better (Schiele 2007).

Benbasat, Dexter & Mantha (1980) define maturity criteria to research organizational Information Systems (IS) skills in organizations. First, they argue that there are maturity differences between organizations regarding the readiness for utilizing IS successfully. They found that more mature IS organizations (compared to less mature) have i.e. bigger spend on hardware, in general more experience with computer technology, have senior management who plays greater role in planning and controlling of IS organization, have more formalized goals that are tied to overall organizational objectives, have evaluation criteria based on overall contribution to those goals and less on clerical cost savings, and have users interested and capable of participating actively in development of the systems. Selecting the right e-procurement solution is difficult for a company as there are different system architectures and technologies in the market (Kim & Shunk 2004). More experienced companies are more likely to find appropriate solutions for their use, and thus perform better. Zhu, Li, Wang & Chen (2010) stress the importance of organizational

readiness and the overall quality of implementation as key influencers of the post-implementation success of IS (ERP) projects. These similar issues arguably affect the other types of IS projects, e.g. P2P projects, as well.

2.4. International dimension of purchasing organization design

International dimension of business strategy affects organization design. Holt & Wigginton (2002; in Head et al. 2010) argue that firms which become international are usually structured differently than their domestic parent organizations because domestic organizations are designed from basis of “standard practices” but international (non-domestic) structures are a result of organizational evolution instead of managerial decisions. This evolutionary approach is aligned with Malnight’s (1995) view that globalization is not a uniform process, but instead it happens with time as a company’s response to external and internal challenges and opportunities. Still many approaches regarding global organization architecture have viewed globalization as a predictable process that follows certain stages, starting from an export department, moving to “international” phase, then moving via multidivisional or multinational phase to the ultimate level of transnationalism, the global matrix (Head et al. 2010).

The majority of firms operate in several countries and in several product markets and thus can be referred as *multinational corporations* or *enterprises* (Ghemawat 2003). In global business context, the interplay between central and decentral strategies constitute the essential elements of adaptative organizational performance (Andersen 2017). As Vahlne, Schweizer & Johanson (2012) conceptualize, global firm is “*a loosely coupled network of far-flung subsidiaries with hierarchically acting headquarters that design a global organization to ensure support of its global strategic agenda*”. This conceptualization emphasizes the complexity of the global organization and the uncertainty related to managing it (Vahlne et al. 2012). For multinational companies, the competition is increasingly based on their abilities to integrate their subsidiary activities and organizations located in a variety of geographical locations (Trautmann et al. 2009). When organizations move to new areas or their environment changes they use their cumulated knowledge on environment issues to design an organization capable of adapting to the surrounding networks and fitting the new environment (Holt & Wigginton 2002; in Head et al. 2010). The international dimension is a potential source of market imperfections, e.g. the limited cross-border integration of markets or, more generally, the possible location-specificity of key activities and resources etc. (Ghemawat 2003).

Globalization has made industrial competition faster and more intense and it is one of the key factors behind the development of procurement (Huuhka 2017, 17). During the last couple of decades, regional supply bases of business organizations have evolved into complex global supply chains and purchasing and supply management has evolved from category management to strategy management as global sourcing has linked procurement decisions to strategic decisions (Brandyberry 2012; den Butter & Linse 2008). Organizations should be designed based on its purpose and the environment it operates in (Mintzberg 1980; Anderson 2019). Designing the purchasing organization means making decisions about centralization and decentralization to balance the forces of global integration and local responsiveness (Faes et al. 2000; Johnson & Leenders 2004).

Purchasing performance of the PO is built on managing purchasing activities according the contingencies of different purchasing environments (Richter, Schlaegel, Midgley & Tressin 2019). Depending on the organizational structure, the decision-making authority and relationships related to it might include different approaches (Cavusgil et al. 2012). Firms are becoming increasingly complex due to globality, and they have to adapt their organization structures and governance to the global competition environment (Trautmann et al. 2009). Glock & Hochrein (2011) identified the most commonly used structural variables regarding purchasing organizations as: *(de)centralization*, *formalization*, *configuration*, *specialization*, *involvement* and *standardization*. Richter et al. (2019) suggest that *centralization*, *standardization*, and *specialization* are three key organizational structure characteristics affiliated with purchasing performance. Increasing number of business units located in various countries may increase the overall spend on indirect procurement as well as off-contract or maverick buying (Avery 2005). Geographical dispersity and work settings including different languages, multiple time zones, and cultures motivates MNEs to use computer-mediated communications (CMC) and traditional face-to-face methods of management cannot be used (Brotheridge, Neufeld & Dyck 2015).

3 METHODOLOGY

Stuart, McCutcheon, Handfield, McLachlin & Samson (2002) suggest that a research process should always start with examining the existing literature as the background information for the following study. Hirsjärvi et al. (1986, 14) argue that the measuring phase of the study should be done only after the existing literature of the subject has been carefully examined. This is a crucially important phase in a research as the scientific knowledge is cumulative by its nature and new knowledge is built upon the existing knowledge (Metsämuuronen 2006). The literature review helps guiding the entire study as researcher gains necessary preunderstanding of the subject through it helps in designing and perform a quality study (Kähkönen 2011).

The research process started with the literature review. At first, there were some difficulties in limiting the literature review as the scope of the research was still a bit unclear. This was due to issues related to the background of the study. The study topic had risen from a “real-life” as the case company needed a research on how to reorganize indirect procurement during the P2P implementation project. The study process started with a certain perception of the relevant issues and the literature review was conducted from that perspective. However, as the P2P project in the case company went forward and made some turns, so did the research process: the conceptual perception of the study topic (organizational change) become more precise and the scope of the literature review had to be adjusted accordingly. The research questions went through the similar changes during the initial study phase as new understanding on the topic helped to focus them more precisely. One challenging issue was to make necessary limitations (i.e. what to include and what to exclude from the study). As long as these things were unclear it was impossible to decide a proper research method for the study. Once limitations and study scope were decided, it was finally possible to make more limited literature review and select suitable research strategy for the empirical study.

3.1. Case study method

The research process followed the structure shown in figure 4. Once the scope of the study was decided, the next phase was to decide study objectives that specify what kind of knowledge the study aims to create. The study was supposed to examine what organizational changes take place when companies implement automated P2P systems. The main RQ, SQ1 and SQ2 were planned from this basis. The study also aimed at

studying what needs/suggestions regarding organizational change exist in the case company and therefore SQ3 was planned to target the case company's internal dimension.



Figure 4. Five stages of research process (Stuart et al. 2002)

Defining the research questions is probably the most important step in any research (Yin 2009). Research questions affect many decisions on the related research as they set certain boundaries to the entire process. Stuart et al. (2002) argue that the study methodology should be selected based on the research questions. Yin (2009, 8-13) agrees and views that the research question is one of the three conditions that should have an effect on selecting the proper research method. According to him, three conditions are: (1) *the type of a research question*, (2) *the extent of control of a researcher over actual behavioural events*, and (3) *the degree of study focus on contemporary or historical events* define situations in which different research methods (experiment, survey, archival analysis, history and case study) can be used. Yin's selection criteria suggested that case study is the most potential research strategy for the study as *the main research question of the study is a "how" question, the researcher has no control over issues being studied and the study focuses on a contemporary event* (the on-going P2P project in the case company). The case study is one of the research strategies for conducting a qualitative research (Kähkönen 2011).

According to Yin (2009, 18), case study is "*an empirical inquiry that investigates a contemporary phenomenon in depth and within real-life context, especially when the boundaries between phenomenon and context are not clearly evident*". The study was supposed to examine what types of organizational changes commonly take place when a firm is automating their Procure-to-pay process (both real-life context and contemporary phenomenon). In addition, the data required for the research was "deep information" that had to be collected in a way that allows analysing it in depth. This fact also supported the selection of the case study method. There are many organizations involved in the study making the study a multiple-case study as (Yin 2009, 19).

The data and study objectives also supported selecting the case study method. The data of the study consisted of interviews of representatives from other P2P implementer companies and the survey responses from Company X's employees. Both data sets were such that it was impossible to examine them statistically. In the beginning of the research process, there was an idea of conducting a quantitative study. However, later it turned out that it was impossible to get sufficient amount of data for a meaningful quantitative analysis (see chapter 3.2.1). Thus, the idea of a quantitative study was dismissed.

Common criticism toward qualitative method includes an opinion according to which the information generated by qualitative method is "deep" but non-generalizable as an opposite of a shallower but generalizable quantitative method (Alasuutari 1999, 231). Criticism is often related to smaller sample sizes and more subjective methods of analysis of qualitative studies. According to Stake (2000) a case study researcher should especially aim to search for what commonplace issues there are within the case but also what is unique in it and the main purpose should be creating understanding on the study subject instead of pursuing for generalizations. The main purpose of this study is to understand what types of changes take place in companies that automate their P2P processes. The target group consists of companies that were interviewed for the study. Analysis aims to point out both similar organizational changes between different companies but also unique changes within the group. Some interest is also directed to consider why these changes happened in the first place. The aim, however, is not to form any profound generalizations on these subjects.

Some percentage analysis is used in the Company X's internal part but still the study is purely qualitative. Percentage values were only used to get an overall picture on challenges the respondents had experienced and what kinds of needs and wishes for organizational changes they had. Another reason for using questions that produce quantitative results was the aim to lower the threshold for answering with questions that could be answered quickly and effortlessly. This aimed at improving the response rate but the main interest was in the free-text answers. These answers were analysed with the qualitative approach. Using both numeric data and qualitative data could be seen making the study a mixed method study (Yin 2009, 19; Creswell 2003). However, numerical data played such a minor role and the main focus was on the analysis of non-numerical data therefore the study is considered qualitative. Ellram (1996) argues that case study is an excellent strategy to examine and explaining "best practise" situations". This also

supported selecting the case study method as one aim of the research was to find these “best practices” of other companies and examine chances of implementing them in the case company.

3.2. Research design and data sets of the study

After the research questions were established and the case study approach selected as the research strategy, it was time to plan data collection processes (see figure 3). As the objectives targeted both external dimension (other automated P2P implementer organizations) and internal (the case company) this required two individual data collection processes, *external* and *internal*. These two data sets constitute the main data of the study. Additionally, the study utilized minorly a consultant report that the case company had purchased a year before as situational background information regarding P2P implementation.

The external part of data collecting was targeted to companies that had implemented (or were currently implementing) the same P2P system (same system provider) that the case company. This study uses the term “peer group” as a reference to this group of companies. The aim was to collect general information on what types of changes organizations go through due to P2P automation, and at the same time perform a “benchmark study” for Company X’s P2P project management. According to Vermeulen (2003) benchmarking is the process to improve performance through identifying, understanding and adapting outstanding practices from other businesses or within the organization. Benchmarking is a process that usually aims to improve a firm’s performance by analysing how others have achieved their (high) performance levels and by determining what types of changes are required to improve performance (Business Dictionary 2019). In this study the term “benchmarking” refers to learning from the experiences of others by examining how others have executed similar P2P projects, what kinds of issues they have faced and what types of decision they have made. The most central aim of the external data collection was to find out what types of organizational changes these peer group companies have gone through during their P2P projects. These benchmarking interviews were executed as semi-structured interviews. The interviewees were selected based on their central position or responsibilities regarding their company’s P2P automation projects.

The internal data collection process addressed the case company itself. This internal part of data collection was done mainly by the web-survey targeted to Company X's personnel that were somehow involved with indirect procurement activities on the basis of their position in the organization. Responses of the survey produced both numeric results (percentages) and written responses. Analytical interest was mainly on written answers and percentage results were only used as a tool create wider view on opinions. One aim was also to examine how opinions and views differ between respondents from different departments and positions. The survey allowed respondents to be classified into different groups (e.g. certain business function / department) and then it was possible to compare differences between the groups. Company X had decided to pilot the new P2P system in Nordic countries before rolling the implementation project out on larger global scale. This target area was also considered suitable for internal survey as organizations in these countries would be the first to come into contact with the new system. Company X had operations in four Nordic countries: Denmark, Finland, Norway and Sweden. The internal web survey was sent to selected staff members in three of these countries (Denmark, Finland and Sweden) countries and it was hoped that the survey would reflect the different views of staff in different countries.

The most important aim of the internal data collection was finding out if there are any challenging issues regarding the indirect procurement processes, organization or activities that should especially be taken into account when reorganizing processes and organizations during the P2P system implementation. In year 2018 Company X had ordered a time study from a private consultant firm to review how different personnel groups or individuals in different positions use their working time for activities belonging under the headline of indirect procurement. The study was a situational report that aimed at pointing out potential development areas of then-current P2P process and estimating how much working time could be saved with P2P automation. The time study report was minorly used as additional background information for this thesis as it was available and it could be used to form a better picture of indirect procurement situation in Company X before P2P implementation project. The report was valuable addition as it broadened the overall data without the need for collecting it during the thesis study. In addition, one semi-structured interview was held during the internal study phase to study the subject a bit more in-depth.

These data sets constitute the official and formal data collected for the study. However, some of the researcher's perceptions were created in less formal situations, such as in discussions with case company representatives / employees during the three months stay at Company X performing the research. Even though it is impossible to cite these discussions in the list of references, it should be noted that these discussions helped to deepen the understanding on the situation. These discussions introduced some new topics that otherwise could have gone unnoticed. It is believed that the informal information improved the validity of the study as it helped to concentrate on those important topics during the data collecting processes, i.e. what information does an implementer organization need to be able to reorganize their organizational structures and responsibilities optimally during P2P implementation project. For example, during the peer group interviews it was easier to focus on right issues based on Company X's information needs that emerged in informal discussions. The data collection processes would have lacked some of this depth without the possibility to spend so much time in the case company. This "invisible" information is estimated as highly valuable for the study reliability and validity.

3.3. Collecting peer group data

At the beginning of the research process, the idea was to collect data through quantitative research targeted at companies that had implemented the same P2P automation system from the same system provider (Provider A). During the planning phase of the data collection discussions were held with Provider A's representative that they could give the list of their P2P system customers for the study purposes. It would have been easy finding the right and suitable companies and ask them to participate as information sources for this study. This would have naturally sped up the data collection process and made it easier to find companies like Company X as benchmarks. The similarity of companies (size, industry, etc.) would have meant better relevancy and higher significance of benchmarking.

However, this plan did not come true as Provider A stated that they were unable to give their customer information to an outside party on basis of EU General Data Protection Rules (GDPR). This meant that companies had to be found by other means. Naturally, this complicated and slowed down data collection. After a lot of work had been done to find suitable companies (by phone calls, e-mails, etc.), it became clear that it was impossible to find enough Provider A's customer firms for a meaningful quantitative

survey. The idea of quantitative study had to be dropped at this point and the study took a turn to be a qualitative study instead. Research strategy had to be developed again from the beginning and data collecting processes had to be completely reorganized at this point. The new idea was to gather information from executives of selected companies through interviews instead. The initial aim was to interview representatives from at least ten *relevant* companies. Relevancy here refers to similarities with Company X (e.g. industry, size, organization structure, only indirect procurement through P2P system, etc.). Without the access to Provider A's customer information, finding enough relevant companies turned out to be more difficult than it was expected.

3.3.1. Selecting peer group companies

The search for contacts began by looking for open information on Provider A's customer references from the company's website. Some of these companies ended up being interviewed for the study. In search for potential interviewees companies were also contacted "blindly" without any knowledge whether they do use Provider A's P2P system or not. These potential but uncertain contacts were first selected mainly based on some characteristic that made them potential sources for benchmarking, e.g. size, internationality or industry, etc. This "blind search" resulted in couple of relevant companies that were contacted later for a closer review.

First contacts were primarily made by calling the companies' call-centers, introducing the study subject and asking for a possibility to discuss the study subject with the relevant people. The relevant people, at this phase, included people that had some role in the target company's P2P project or P2P function. All the people that ended up being interviewed had a very central role regarding the target company's P2P project. First contacts were made via phone as sending general emails with a request to participate in the study was not evaluated to be an effective method for making a contact with the right persons. It would have been impossible to control whether the right people have been reached or not. Direct personal contact via phone was quite effective way to find the right people to which to introduce the study subject and ask for their participation.

17 companies were contacted in total during this search phase and 9 of them were identified as Provider A's P2P system customers. After introducing the study subject verbally to target company representatives, the email with more detailed information about the study and its aims was sent to the representatives. After the request for interview was

accepted and interview scheduled, the interview questions (or question topics) were then sent to the contact person for preliminary examination (Appendix 1). This allowed the respondents to prepare themselves for the interview situation and ensured that the respondent had all the necessary information at hand during the interview. Unfortunately, couple of companies never answered the interview request email even though they were contacted couple of times with reminder emails or they were reached by phone. The schedule of the study made it impossible to keep searching for more interviewees to reach the targeted number of ten participants. After the contacting phase, there were a total of seven interviewees from six companies. Table E shows the list of the interviewees.

Table 1. Peer group information

Company/ interviewee	Industry	Position of the interviewee	Globality	Revenue	Personnel
1	IT	P2P Project owner	Domestic	-	-
2	Logistics	P2P Development manager	Global	3000 M€	6500
3	Energy	P2P Process owner	Domestic	800M€	1000
4	Metal industry	P2P Project manager	Global	9500M€	15000
5	Media and education	Category manager, responsible of P2P	Global	1500M€	4500
6	Technology	Interviewee 6.1: P2P process owner Interviewee 6.2: Manager, Implementations	Global	3300M€	12000

3.3.2. Interview arrangements

All interviews were semi-structured interviews performed via Skype. Interviews were recorded so that they could be analysed later in detail. The longest interview took nearly two hours and the shortest only 50 minutes (on average 90 minutes). Overall, the interviews were successful and they scrutinized the subject in-depth. Semi-structured form ensured that all interviews addressed all the themes that the interviewees held important allowing them to bring forward additional issues of their choosing (e.g. some special issues experienced during P2P project). This openness of structure enriched the study findings and improved reliability and validity of the study.

3.4. Performing internal survey

The internal survey went hand in hand with the case company's P2P implementation project when it comes to the scope of survey. P2P project was planned to be piloted in Nordic countries in which Company X had business organizations (Denmark, Finland, Norway and Sweden). These piloting countries would be the firsts to take the new P2P system into action and therefore they were seen as key sources of information. After the initial pilot phase in these countries, the P2P would be rolled out in larger scale to elsewhere in Company X's global organization. However, before the survey was sent to the selected respondents in these four countries, the scope had to be partially limited as Company X announced that the Norway division had to be excluded from the survey as it was not properly informed of the upcoming P2P implementation at that time. This decision was made to prevent any unnecessary confusion among personnel in Norway division. Fortunately, Norway division represents only a very small part of Company X's business in Nordic countries and therefore this change was estimated to be quite irrelevant for the study results. The internal survey was finally conducted in three country divisions, Finland, Sweden and Denmark.

The internal survey aimed at finding out what organizational or processual needs for change regarding P2P processes there were. The main aim was to find out how different P2P process participants see the current process and its phases, what challenges they experience with it and what types of improvement expectations they do have regarding the automated P2P. The hope was that the study would be able to identify what changes would benefit the company. P2P project management could then use this information to decision-making during the implementation to ensure that the new P2P process and organization is able to create as much value added as possible from day one. The purpose of the study was to find out which factors of the current situation create needs for restructuring, but also what types of opinions the company staff has about how indirect procurement could be carried out more efficiently. The idea was to ask from the people that actually work with these tasks.

3.4.1. Selecting the respondents

The respondents were selected on the basis of their positions related to indirect procurement or invoice processing. The aim was to reach personnel that participate in these tasks in some role, whether as active participants in indirect purchasing tasks or as

managers of such participants. Target group to which survey link was sent were selected in cooperation with a case company's sourcing manager that was responsible for indirect procurement at one of the production sites in Finland. He had good understanding of the company's organization and was able to define to whom the survey should be sent to. Additionally, Workday software was also used to locate potential respondents within the case company organization and especially from country divisions of Denmark and Sweden. After the selection was done, the target group consisted of 176 people in three countries.

3.4.2. Survey design

The survey was voluntary and anonymous. The questionnaire was designed as structured survey that included both multiple choice questions and free text questions and it had two language choices: English and Finnish (see Appendix 2). At first, respondents were asked about their position and participation in indirect procurement and invoice processing. These questions handled issues such as the respondent's home country, organizational department, position in the organization, work experience, and their participation in indirect purchasing activities and invoice processing. These questions were used as background information that built an overall picture of the data sample but they also had another function as they allowed categorization of responses into groups based on different respondent variables. Categorization allowed comparing different groups to one another for studying any possible similarities or differences between different groups. The survey was designed to ask respondents only relevant questions according to their participation in P2P process. It was designed to show certain questions only to respondents with certain respondent characteristics, i.e. some respondents were shown more questions than others depending on their level of participation in the P2P process. The idea was to improve answering motivation as respondents were not required to answer questions that were completely irrelevant to them. According to Company X's representative, some earlier internal surveys had been unable to motivate personnel to answer in large numbers. For this reasons, making this survey as light and easy-to-answer as possible was seen as a priority. Very low response rate would not have supported the management of P2P project in any significant way. Lowering the threshold of answering by showing only relevant questions was believed to encourage respondents to use more time to give in-depth answers on any issues they feel as crucial improvement areas.

The next set of survey questions considered indirect procurement (purchasing tasks). The questions looked at which tasks involved in indirect procurement are the most challenging or resource-consuming according to respondents. The respondents were able to answer either by selecting their answers from a ready-made list or by typing their own answers if they felt that the list did not include a suitable option. This was hoped to ensure that the survey was able to uncover all the important issues and perspectives related to the indirect procurement activities that were considered challenging. Once the respondents had determined certain tasks as challenging or resource-consuming, they were asked to describe why they experience them as such. The aim was to find out how different functional departments experience challenges and are there any similarities regarding how different functions see these challenges. The most frequently mentioned challenges should be given special consideration in the P2P implementation project.

Next, the respondents were asked for opinions on to which tasks (if any) they would like to get support from the sourcing department. This question had to do with opinions on whether to delegate more indirect procurement tasks to the procurement department or not. Additionally, respondents were asked how could the procurement department support the organization better related to these tasks. Once again, the study was interested to find what kinds of similarities and differences there are between different respondent groups. The main focus of the internal part of the study was the issue of organizational redesign and therefore respondents were directly asked what adjusting regarding indirect procurement processes and responsibilities they would feel needed so that the automated P2P could be able to create additional value compared to the current situation. Naturally, these questions tried to dig up the most critical issues to be addressed during the implementation project.

To this point, the questions had only considered procurement-end of P2P process. However, as P2P process includes two ends, the next set of questions turned the focus onto the opposite AP-end by addressing issues included to invoice processing. These questions approached potential challenges regarding invoice processing quite similarly than the previous questions had approached procurement-end. One aim was to find out in general how many of the respondents had experienced invoice processing challenging. The respondents that reported experiencing challenges were then asked what the challenges had been. As before, they were given a list of invoice processing tasks from which to choose but they were also able to add new tasks to the list. The respondents

were allowed to write their views on why they have felt these issues challenging. All the respondents (also the ones that had not reported having experienced challenges) were asked about ideas on how invoice processing could be improved to better serve the organization in the future. The meaning of the question was to give voice to the organization and find out what improvement ideas come up from people in different positions. Finally, the last question was open feedback that hoped to find out if any important issues or themes had been left outside the survey questions.

The survey links with instructions were sent to target persons via company e-mail. The target group was given two weeks response time. It was believed that extending the time would certainly not have had a significant effect on increasing the number of responses. A reminder message was sent to all target persons that had not yet answered after one week of waiting.

3.4.3. Response rate

Table 1 shows response rates of the internal study. The study collected in total 74 responses out of 176 survey links sent, making the total rate of response 42 %. The response rates of individual countries vary within a range from 40.7 % in Finland to 47.1 % in Sweden, Denmark with a response rate of 42.1 % is in the middle. All of the countries are within the range of 6.4 percent and this shows that the relational sample sizes of different countries are quite similar. This also shows that the survey got similar amount of attention in different countries and the motivation for answering (and participating in improving the processes of indirect procurement and invoice processing) seems to have been quite the same in each of the three countries, at least among the targeted persons.

Table 2. Internal survey response rates

Country	Denmark	Finland	Sweden	Total
Number of links sent	19	123	34	176
Number of respondents	8	50	16	74
Response rate	42,1 %	40,7 %	47,1 %	42,0 %
	10,8 %	67,6 %	21,6 %	

The overall response rate of the survey was 42 %. According to the study supervisor (sourcing manager in Company X), the rate was acceptable (normal) compared to other studies conducted in the case company. According to the manager, internal studies have not produced high response rates in general in the company.

In all three countries, the survey collected a relatively equal number of responses (response rates ranged from 40.7 % to 47.1 %), however the following limitation about the results should be noted. The country organizations are significantly different in size: Finland has the largest organization, Sweden the second largest and Denmark is the smallest of the three. The sample sizes of each country (shown in Table 3) mirror these size differences. Table 3 also shows percentage proportions of responses from each country (proportion of all responses). Finland represents almost 68 percent of all the responses given in the survey, making it by far the largest sub-group (Sweden 21,6 % and Denmark 10,8 %). Differences in sample sizes and relative proportions of countries must be taken into account when analyzing these results so that the conclusions drawn from them would not be completely “Finland-focused”.

The survey design aimed at improving answering motivation through relevancy. What this means is that there was couple of issues that tried to ensure that all respondents would feel the subject relevant for themselves. *First*, target people were selected based on their involvement with indirect procurement and/or invoice processing. *Secondly*, the survey was adaptable and reactive so that it only showed questions that were relevant to respondents according to their involvement (based on their answers to questions during the survey). This reduced the need answering completely irrelevant questions and it was hoped to encourage to use more time and thought answering the relevant ones. *Third* thing that aimed at pushing up the response rate was the motivational message that was included in the survey link e-mail. In the message, respondents were kindly requested for their help in improving indirect procurement and invoice management of the company. This was believed to motivate the “right” people, in other words the people who were involved in these functions and who had some ideas on what could be changed to make the processes better serving for the entire organization.

One issue that might have weakened the response rate was related to the internal communication about upcoming P2P implementation. The P2P project was led from Company X's headquarters and they had not performed any internal communication about the upcoming P2P project at the time when the survey was getting ready to be sent to target people. The wider organization did not have any clue about the upcoming P2P automation and the implementation project related to it and therefore the subject had to be opened a little bit in message attached to survey link emails. However, short emails were unsuitable for describing the entire P2P project. The subject was far too broad for them. In fact, the communication department of the case company limited the information in the covering letters and the project was to be mentioned only in "headline-level" without giving any detailed information about it. They feared that too much information would cause unnecessary confusion about the P2P project in people who are still completely ignorant about it. They had their own plans and schedules for communication about the project and they did not want to take the risk that survey would ruin those plans. Thus, the covering letters only included the general note that this survey is related to the upcoming P2P automation project. It was not possible to provide further information by order of Company X's Communications Department.

Due to the lack of information, the survey may have been confusing for some people because they did not have a clear idea of what this study is about, as they may not have heard of the P2P project before this. While the survey was still in the planning stage, discussions were held on initiating internal communication related to the project. Proactive communication was considered important because it would make the survey relevant to more people and would have potentially motivated people to give their opinions in support of the P2P project. This however, was not possible based on the case company's internal communication plan. Therefore, the survey had to be conducted without giving the potential respondents all the information they could have benefitted from. This might have made the survey confusing to some people. It is believed that some responses were lost because of this.

3.5. Data analysis

The both data sets were analyzed using the inductive content analysis approach. The data was examined without theoretical assumptions to see what kind of issues related to organizational change it contains. Propositions of the study were kept in mind as the data was analyzed but the approach was kept objective. The analysis process followed the

structural model suggested by Tuomi & Sarajärvi (2009, 109) and included the following phases:

- 1) Listening interview recordings and making transcriptions
- 2) Reducing text by concentrating on answering research questions
- 3) Coding text into subcategories (themes)
- 4) Examining subcategories and combining them to larger categories
- 5) Forming common concepts from the categories

First, all the interviews were listened and transformed into text form. The six external interviews produced 96 pages of text in total, on average 16 pages per interview. The next phase was reducing unnecessary parts from the text. Transcriptions were read through several times to get familiar with them and to examine what types of themes had come up during the interviews. Search focus was on themes and expressions that had something to do with the research question of the study. Themes that had some relations with organizational change (unit of analysis) were identified and collected by using color coding; one color represented the specific theme. Color coding helped in collecting and categorizing all mentions of one particular study subject into one united data set. Similarly, it allowed identifying which themes were non-relevant and which parts of the interviews could be left outside of closer analysis phase. After identifying the focal themes from the data, work concentrated on finding out what kinds of interrelationships there are between different themes. Based on these interrelationships, themes were combined into larger categories and analyzed in detail to find common concepts/themes from the interviews. All analysis (both external and internal data) was done with the content analysis approach. The internal survey produced some numeric results but those percentage values were only used to form the big picture and to compare the opinions of different respondent groups. The main interest was to find out what themes and issues respondents had brought forward in written answers.

4 EMPIRICAL FINDINGS

This chapter describes the findings from the empirical data. The case company is briefly presented in chapter 4.1. The empirical findings are divided into two sections in the same way as the research data collection process; the peer group interviews and the internal survey. The first section (chapter 4.2.) focuses on describing what organizational change themes related to the automated P2P emerged in the peer group company interviews, and more specifically, what changes organizations had undergone as a result of or in connection with their P2P projects. The findings of the internal survey are described in the second section (chapter 4.3.). This section describes the development ideas related to indirect procurement that emerged through the internal survey. The findings are examined on a department-by-department basis and the aim is to highlight the priorities of the different departments.

4.1. Description of the case company

Company X is a large Finnish company operating in the industrial manufacturing and service industry. The company's main business areas include Europe and the United States but overall, the company has some operations (e.g. sales organization or agency, production facilities, service operations, etc.) in more than 30 countries around the world. The company operates on global scale through subsidiaries and it can be labelled as a multinational enterprise (MNE).

The company has a background purely in the manufacturing industry, but over time the volume of service production as part of its overall business has increased. The company has innovative approach to the development of the industry. The company believes it needs to develop new products and services to be able to maintain and enhance its competitive capabilities. Customers of the company include both consumer customers and large organizational customers. In its home market, the position of Company X is stable and the market share of the company is quite significant. The firm has a few domestic competitors for basic products. Internationally, Company X faces competition from other globally operated companies and local firms located in different countries. The competition environment of the case company is quite complex and multidimensional (Trautmann et al. 2009). The environment and organization structure include high number of both internal and external contingencies that pose challenges for Company X regarding

the indirect procurement organization and its management and the implementation of P2P system in the global organization of the company (Avery 2005).

4.2. Findings from the external interviews

Analysis of external interviews revealed that companies are undergoing a wide range of changes as a result of automated P2P. In particular, the changes that appear to be typical or common in organizations as a result of P2P automation are described in this chapter. There were also differences regarding the change themes between companies. These differences are likely related to differences in corporate organizations and some background factors (e.g. organizational design before the project). This thesis does not seek to examine the reasons for these differences, but leaves it to subsequent studies and confines itself to stating that not all the changes that emerged were generalizable among the companies interviewed. This chapter focuses on addressing the themes of change that unite the companies interviewed. All of the six companies reported these changes at some level even though some companies were in such early stages of their P2P projects that they have not yet conducted them but were anticipating them to happen in near future.

Before addressing the actual themes of change that emerged, it is important to highlight one interesting issue. The interviews revealed that there were differences about how different interviewees locate automated P2P process in the organization and under which management they seem it belonging to. Some view it purely as a financial function and place it under the responsibility of the finance department. However, some others placed it to procurement department and under its management. The location of automated P2P seemed to correlate with whether the project manager was selected from the financial department or the procurement department. What was interesting was that every interviewee seemed to think that it was totally natural that P2P was positioned as it was in their organization. In a way, it can be said that companies did not seem to have a common understanding of the nature of automated P2P. It was a financial matter for some and a procurement matter for others. The different opinions were linked to differences in the backgrounding motives and goals of P2P automation projects. All the interviewees agreed that automated P2P process was aimed to improve financial performance through improved process efficiency and better financial transparency. Although the overall objectives were the same, there were differences in emphasis depending on which department was responsible for P2P. When automated P2P was organizationally placed

under financial management, the financial issues (such as invoice processing, coding invoices, accounting etc.) were underlined in project management. On the other hand, the automated P2P placed under supply management were more likely to underline procurement issues such as supplier relationship management, tools for tendering, contract management, etc.).

The role and importance of the project differed between companies. For example, interviewees 6 and 7 (Company 6) said that their company was going through implementation projects for both new ERP system and new P2P system at the same time. ERP is much more centric information system for the organization (everything is related to it) and therefore the ERP project had much larger scale and had a lot more at stake. Compared to that, P2P was less central and less risky. The both interviewees underlined that (“of course”) P2P project was important for the company as well but still the attitudes towards it were affected by the bigger ERP project. In a way, simultaneous ERP project put P2P project in second place.

The aim of the analysis was to examine what changes have taken place in companies in general but particularly to find the themes of change common for all the companies. The study was able to identify many types of changes, both structural and processual. The themes had to do with increased collaboration between procurement and finance department, increased professionalism, new tasks and positions, personnel structure changes and organizational design changes.

4.2.1. Relationship between the departments

The nature of the P2P process is somewhat two-part with procurement function on one end and AP function on the other. All of the interviewed companies reported that P2P system has brought the two departments closer to each other and the collaboration between them has increased significantly when P2P system was introduced. Interviewees also pointed out that closer collaboration alone is not yet sufficient, but the activities of the two departments involved in the P2P process must be coordinated together and managed jointly for the entire process to work. One company reported that during the P2P implementation their organization was redesigned so that the both departments (procurement and financial) report to the same manager. This was the most far-reaching example of the convergence of departmental activities among companies interviewed. Other companies have kept their managerial positions unchanged even though the relationship of the departments had significantly improved and become closer.

Companies understand that close collaboration between the two departments is required for automated P2P to produce added value. Although interdepartmental cooperation increased between procurement and financial department and joint management was introduced to planning and performance of the processes, still none of the companies announced to set up an actual P2P organization. For that regard, the old boundaries between departments remained in place. None of the companies had any plans of combining the two sub-processes structurally. Even though procurement and AP function go together in the P2P process and the process requires joint management, the companies still view these functions to belonging to their own departments.

4.2.2. Effects within procurement organization

Almost all of the companies interviewed reported that their procurement activities have become more professional due to the automated P2P. Workload and tasks of the department had increased and become more complex. However, many companies underlined that the automated P2P was not the only reason for these changes. As interviewee 1 said: "*These changes were a result of our company's shift towards more procurement-centric and process-oriented operating model*". In fact, the general opinion among interviewees was that procurement organizations did not change *because of* the automated P2P but the acquisition of the new P2P system was *a result of* increased focus on procurement. In a way, P2P projects were manifestations of companies developing their procurement functions. The finding confirms the recent trend that organizations find value in improving their procurement capabilities and supply management is increasingly important part of a company's overall strategy (van Weele 2005).

Changes within procurement function included many variations. Some interviewees report of these changes happening on two organizational levels. First, specialist-level positions are increasing. This would suggest that the overall expertise level of procurement tasks would go up because these positions locate in the middle of the organization (middle line) above the operational buyer-level (operational core) (Mintzberg 1980). However, according to the interview findings procurement organizations are quite likely to expand downwards as well.

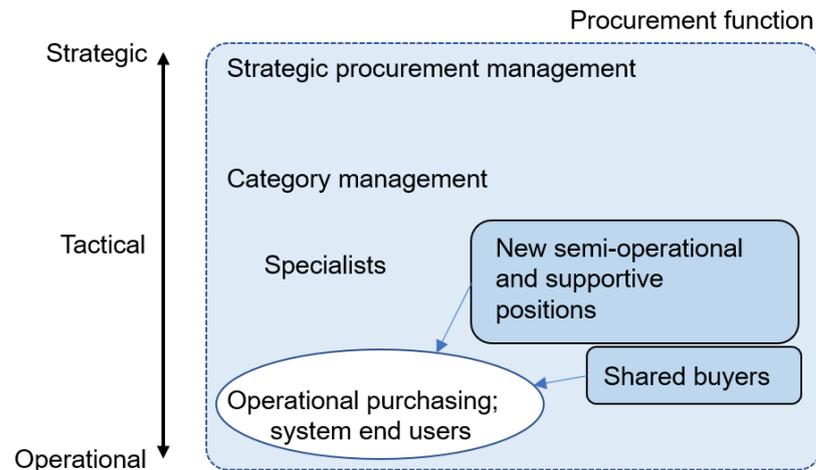


Figure 5. Location of new positions in procurement function

Many companies reported that new operational level positions (e.g. shared buyers) were created as a part of the implementation of automated P2P. Interviewee 4 said that they had established new semi-operational positions in their procurement department and positioned them between category managers and buyers. This semi-operational staff act as support personnel for P2P system end-users. The purpose of this structure was to allow category managers and specialists to focus on their core areas of strategic and tactical procurement issues instead of using their working time to operate the purchasing (P2P) system. The company had estimated that it does not make sense to use expertise of category managers and specialists to perform routine tasks of creating purchase orders in P2P system. Some other companies had made quite similar changes to their staff. This structure, in a sense, expanded the procurement function from within. New positions located in the middle of the procurement organization, making the organizational extremes (managers and operational buyers) move farther apart. The location of new positions is shown in figure 5.

Some interviewees reported that the issue of increasing the involvement of procurement department (in indirect procurement) had been discussed during their P2P projects. Indirect procurement was found hard to centralize if the organization has multiple business units with individual needs in multiple locations (Faes et al. 2000). Company 4 had moved toward increasingly centralized purchasing model in which they had established supportive buyers serving a larger base of personnel in need of purchasing something. This reorganization proves that the company had identified benefits of more

centralized purchasing approach and they were looking for purchasing synergy (Rozemeijer et al 2003), at least for some purchasing categories. Motivations behind centralization decisions addressed issues such as improved compliance and not needing to train as much staff to use the new system. Both of these issues aimed at improving P2P performance and the success of the entire process. These changes were partly related to focus changes within the procurement function. Shared buyers became professional users of the system and they were able to serve wider base of internal customers within the company.

Overall, it was clear that procurement organizations are getting more resources when companies introduce automated P2P. Use of resources may vary from organization to organization but in general, automated P2P seems to increase the number of tasks in procurement function. New systems require new skills and therefore some organizations create new positions inside procurement department, such as support personnel for P2P system end-users or supportive buyers. These structural changes mean that the new system would not need to be trained for a large number of people. Procurement experts were not seen as potential end-users of P2P system as they could be used more effectively in other more central tasks.

4.2.3. Effects within accounts payable organization

Automated P2P means that accounts payable activities are becoming increasingly automated and less dependent on human resources. This could mean that companies would expect large reductions of jobs at AP function. This is true for some part but interviews brought out that organizations expect quite similar changes to happen in finance department (AP function) than in procurement department. Functioning automation is dependent on the abilities of creating and programming the working procedures. Automation of invoice processing will require new kinds of knowledge and skills in the organization. Companies need to have these skills in-house and therefore new jobs will be created to finance department.

All interviewees expect changes happening in financial function due to these issues in the future. However, most of the companies reported surprisingly low automation levels at their AP function at this time. Only interviewee 3 announced that they had achieved the invoice automation level initially aimed at. He said that they have had quite cautious expectations for these levels as the company had lots of experience from previous IT

projects. Other companies had hoped for higher automation levels but the benefits had not yet come to life to that extent due to a variety of issues, e.g. early stage of the project, processual incapability, technological problems, etc. These matters can be considered to relate to the maturity issue of the organization. Companies were expecting organizational changes to happen but because their automation levels were so low they still had to process lots of invoices manually. Thus, major organizational changes had not taken place yet.

The interviewees expect AP tasks to become more technical and more complex in the future. Task specialization will move from routine AP tasks to technical specialization such as programming etc. Automation will change tasks and responsibilities of the employees as tasks shift from routine manual tasks (checking invoices, coding, etc.) to monitoring the automated process and adjusting it according to the need. However, none of the interviewees expect that the company could get rid of all the manual tasks in the process because manual labor will be needed, for example to handle invoice exceptions.

Further development of the P2P system to meet the future needs of the company is an important task. The company should have skilled personnel capable of developing the system in cooperation with the system supplier. In this way, the system can be modified in a way that understands the needs of the company. Interviewee 1 pointed out that for the company to be able to develop P2P automation further it must have technical expertise in-house, otherwise the company becomes too dependent on P2P system provider and development costs will rise. Capability to develop the system in-house may increase the benefits of the system for the company.

4.2.4. Personnel structure changes

The most common issues discussed in the interviews were related to changes in personnel structure. This theme is quite logical as introducing automation usually aims at reducing manual labour, and the P2P automation is not an exception. The two-part structure of P2P process comes very clear as personnel structure changes in organizations are being analyzed. The two different ends are under different types of changes as AP seems to be the function from which human resources are reduced and at the same time, the procurement function seems to be getting additional resources.

Two of the six interviewed companies announced that their AP personnel have already reduced as a result of AP automation and all of the remaining companies were expecting the similar reductions at some point in the future. One organization (company 5) had outsourced their AP function some time before P2P project and therefore, the implementation of automated P2P had in fact increased the number of employees in the company as there was no AP job reductions. These changes prove that processual changes seem to reduce the need for human labour in AP. Interviews also showed that different organizations approach staff reductions very differently, as some had set them as a key goal, while some companies took on them more softly and saw the reductions only as a natural change, without a strong drive towards them. However, as a conclusion, the interviews did not give any reasons to assume that AP organization of the implementer company would not go through some personnel reductions.

At the same time, the personnel structural changes at procurement side had been quite different. Couple of the companies reported that, in fact, their employee base had increased during the P2P project. This was mainly due to the new tasks created inside of the procurement function. This increase in total staff numbers was intended to be only temporary, as the companies expected to reduce higher number of people from the AP function in the future. Overall, companies were expecting that their total staff numbers will be smaller than before once implementation projects were completely and successfully executed. Companies reported very little redeployment of existing staff to new tasks within the P2P organization. When asked about whether they see it possible to move employees inside the P2P organization (e.g. from finance department to procurement department) the interviewees had very similar perceptions that the tasks would change so much that it would limit the use of existing employees for the new jobs created. As P2P process becomes automated, new tasks will be increasingly technical and they will require new knowledge and skills.

Proposition 1 suggested that resources will move from AP to procurement. The study findings do not agree with this. The procurement department is getting additional resources during the implementation but these resources do not come from AP function. The findings of the study seemed to support *Proposition 2* as new tasks and skill requirements will be born as a result of automated P2P.

4.2.5. Organization design

One issue related to organization design that surfaced from the interviews was staff training as an enabler for successful system use. This study does not go in-depth with the training issue but merely states that competence can be ensured either by extensive training or by other organization design means. There were differences between companies in how they approached staff training. Some companies sought to train all individuals who would come to use the new system. Others seek to ensure system expertise by setting up new tasks (support staff, shared buyers, etc.) so that such many people would not have to be trained to use the system at all. An alternative to extensive training is therefore to ensure competence through organizational design that ensures sufficient support for end-users (e.g. instructions, guidance and help, etc.). Interviewee 4 said that they had noticed that one reason for user-problems was that *“some end users use the systems so rarely that they never learn to use it the right way”*. Therefore, they had introduced new positions to their organization (supportive buyers and shared buyers) that took care much of the use of the system. These organizational changes moved the procurement organization towards more centralized structure.

4.2.6. Dependency factors regarding changes

The interview material was also analyzed to find out what things affect the magnitude of organizational changes in different organizations. The following dependency factors were identified:

- 1) motives for organizational change (organic vs. forced)
- 2) organization design before P2P implementation
- 3) the stage of the P2P project
- 4) the importance of P2P system for the organization
- 5) organizational maturity and the timing of changes
- 6) experience

Motives for organizational change refer to the fact that the interviewed companies had approached organizational changes quite differently. Some companies had clearly staged certain organizational change goals in the beginning of their P2P project and executed their project with these goals in mind, pushing towards them. Other companies had established “softer” organizational change goals that were actualized in more organic way during the implementation project, or they were planned to be realized slowly in the future.

The second factor concerns *organizational design before P2P implementation*. Some organizations reported that they had reorganized their organization before starting their P2P implementation. Therefore, at the time of P2P implementation they did not need as much organizational changes as part of those changes had already been made. This seems to be quite important factor leading to P2P implementation success as these organizations reported having fewer problems regarding the implementation of P2P automation. The companies that had not made any organizational changes in advance faced more problems. In addition, they felt that it was very challenging to reorganize functions and staff during the implementation project. Interviewee 3 described that the implementation of the system requires so much management attention on technical issues alone and if the organization has not taken this into account in resourcing the project, then resources may not be sufficient to plan organizational changes during the project. According to her, there was no time for planning organizational readjustment during the project. This issue brings forth another important issue related to these projects: sufficient resources. This study however, leaves resources and other project management issues for later studies.

The stage of the P2P project relates directly to the time horizon of the project, in other words, whether a company have had enough time to conduct the planned changes and did it have all the required pieces in place to be able to make these changes. It should be noted that this factor is partly related to the first factor (motives): companies that were highly motivated making organizational changes pushed towards them in very early stages of their P2P projects as others gave more time for these changes to happen. In addition, this issue is related to the dimension of maturity because the realization of change seemed to depend on how ready the organization was to go through changes (both procedural and structural maturity).

The importance of P2P project for the organization refers to what type of a role the project had in the organization (top management). All the companies announced that P2P system is very important for them but still there were some variations on what type of importance P2P implementation had in the larger scale of things. For example, company 6 was implementing new ERP system at the same time and therefore P2P system was seen as a minor factor in the overall change due to these IT projects. This put P2P project into a “secondary” position and it just went on at the same time with the more important ERP project. In some companies, on the contrary, the P2P project played a very important role.

It was interesting to note that the organizations in which P2P project was given a very important role estimated that organizational changes (actualized or anticipated) occurred as a result of the P2P project, while the companies in which it was seen less important reported that changes had occurred for other reasons. For example, company 6 did not recognise P2P causing any major organizational changes.

Maturity and timing the changes refers to organizational readiness for implementing the new P2P system and its processes seamlessly to the existing organization. The magnitude of experienced change seems to go hand in hand with an organization's procurement department's maturity; companies whose procurement activities had been less professional earlier had gone through larger processual and organizational changes during their P2P project. Vice versa, the companies that already had professional procurement department in place before P2P project did not experience similar overall change. The analysis shows clearly that the level of true changes is quite directly in correlation with previous situation and the design of the related organizations. Companies that introduced automated P2P system to a fairly immature procurement department reported having more significant changes (and also problems) in their organization.

Experience refers to an organization's experience on similar implementation projects. Analysis shows that companies that were more experienced on different system implementation projects were far more likely to have taken these challenges and potential problems into account and redesigned their procurement operations and organizations in advance. Once they felt that they had working organizations and processes in place, they were able to start implementing the P2P system onto them. Many interviewees pointed out that it is crucial to first create working procurement processes that can be automated and then redesign an organization that can support the process as it gets automated, and only then start the process automation. It is important to notice that process automation can only produce as good results as the backgrounding process (the process that is being automated). The automated process can never exceed the inputs that are fed to it. Therefore, it is necessary to build a working process first before trying to automate it.

The findings from the external peer group data confirmed that organizations do change in many ways due to P2P automation. Some organizations had started their P2P automation by automating their existing processes. Other organizations had reorganized and restructured their organizations in advance before implementing P2P automation. In

general, it seems that organizations that had prepared their organizations better in advance were experiencing less problems. Organizational maturity and experience play a key role in how certain organizations identified potential changes that could and should be made in advance so that the process automation could be introduced successfully.

Procurement organizations are becoming increasingly professional and procurement as a function is getting more resources. Interviewee 1 described the importance of P2P project for their company by saying *“the company got its first professional procurement department during the P2P project”*. On the other hand, the same interviewee mentioned that *“the organizational change would have come to reality even if there would not have been any automated P2P solution at all”*. This mention agrees the common perception among the interviewees that organizational changes happen because of changing focus towards procurement activities, not because of implementing new P2P system.

4.3. Findings from the internal survey

Internal survey was targeted to the selected persons involved in indirect procurement and invoice processing in Company X’s organization (Denmark, Finland and Sweden). The main aim of the survey was to collect experiences on current P2P process as the background information to identify what issues especially should be developed during the P2P project. The aim of finding these things was to raise these important issues in the awareness of project management. The targeting of the survey was 81% successful, with 60 out of 74 respondents reporting participation in indirect procurement (table 3). These 60 responses form the analysed material. The remaining 14 people stated that they do not participate in indirect procurement in any way.

Table 3. Involvement in indirect procurement

	n	Percent
My central tasks are related to indirect procurement	16	21,62%
I purchase indirect categories occasionally myself	22	29,73%
I only approve invoices of indirect purchases that my subordinates have done	22	29,73%
I don't participate in indirect procurement in any way (Note! Ends survey)	14	18,92%

4.3.1. Challenging tasks related to indirect procurement

The respondents were asked what indirect procurement tasks they find challenging or resource consuming. They were given a selection of procurement tasks from which they could choose those tasks (three at maximum) according to their view (see Appendix 2). If the respondent did not find a suitable alternative from the pre-given selection, they could select “*other, what?*” option and then write their answer to the free text area. The tables showing the division of responses by departments are shown in Appendix 3.

Overall responses (all respondents combined) show that *invoice processing* was found to be the most challenging or resource consuming task with 44,7 percent (n=17) of respondents this option. Regarding the procurement-end of the P2P, the challenges were fairly evenly distributed between the different options given (sourcing, ordering, supply contracting, etc.) and none of the options clearly stood out from the others. The most challenges or resource consumption was identified in tasks related to *finding new suppliers* (36,8 %) and *making and managing supply contracts* (34,2 %) (Table 4). Interestingly, ordering products (29 %) were found more challenging or time-consuming than ordering services (23,7 %), even though the difference is not a great one. Written answers underlined that ordering products require technical understanding that makes them more resource-intense. From these responses, it can be concluded that the P2P project should focus in particular on developing invoice processing (at AP-end) and finding new suppliers and making contracts (at procurement-end).

Table 4. Overall reported challenges regarding indirect procurement

	n	Percent
Finding new suppliers	14	36,84%
Finding existing suppliers for certain products or services	5	13,16%
Making and managing supply contracts	13	34,21%
Communicating with suppliers	10	26,32%
Product ordering (spare-parts, tools, etc.)	11	28,95%
Service ordering (maintenance, marketing, consulting, etc.)	9	23,68%
Invoice processing (checking, approving, accounting, etc.)	17	44,74%
Other tasks, what?	3	7,89%

Next, the responses are categorized by organizational functions / departments. The distribution of respondents by organizational functions is shown in Table 5. It should be noted that different functions were quite unevenly represented in the overall sample.

Table 5. Distribution of respondents to different business departments

	n	Percent
Administration	20	27,03%
Supply	11	14,86%
Product development and laboratory	7	9,46%
Production	17	22,97%
Sales	19	25,68%

Small number of respondents reduces the reliability as the risk of subjectivity increases. The results should be analysed with this limitation in mind. However, these small samples may provide valuable information on the most probable issues regarding the staff of each department.

As the survey results are categorized by organizational functions, some differences start to emerge (see Appendix 3). The results show that among the respondents from **administration function** (12 respondents, 22 responses) the most challenging or resource-consuming task is clearly *invoice processing* (58,3 %). Written answers underlined that invoice processing is highly manual and the current system is very complex and requires lots of “*clicking on the computer*”. It was pointed out that these tasks are even more complex for people that perform them rarely. Correcting invoicing errors in collaboration with suppliers was found to be taking lots of time as well. Some suppliers send their invoices with significant delay. This makes it very time-consuming to check, approve and otherwise process these invoices as a single invoice may include costs from many separate purchase orders.

From procurement-end tasks *making and managing supply contracts* (50 %) was found to be a task with the most challenges among administration function. Written answers underlined that creating contracts with suppliers requires deep understanding of what is being purchased (category expertise). Expertise is required to define what should and

what should not be included in the contract. There were no ready-made contract forms in use. One respondent argued that negotiation and contract responsibilities should be transferred completely to procurement experts. Overall, making contracts was experienced to take lots of time. Contract agreements must be modified many times to make sure that they are suitable for the firm. *Finding new suppliers* (25 %) and *communicating with suppliers* (25 %) were found to be lesser challenges but both collected a few hits. Once again, people who do these tasks less frequently found them more challenging.

In **supply function** (8 respondents, 18 responses) the most critical issues seem to be *service ordering* (57,1 %). The secondly challenging task was *supplier communication* (42,9 %). These findings can be considered quite natural and expected, as the procurement department works closely with suppliers and communication tasks are one of its key responsibilities.

Overall, the respondents from supply function seemed to be happy to take care of actual tendering and contracting processes for other organizational departments. However, it was mentioned that lacking or unclear specifications make it difficult for the supply function to serve other functions efficiently. Lots of in-house communication between different functions is required before specifications are clear enough for the supply department to be able to make purchases. In addition, previous reductions on supply resources in Company X were felt affecting negatively on supply function's capabilities to serve other departments. Maintenance service purchasing was mentioned as a special challenge as it is often impossible to tell beforehand what some repairing will eventually cost.

Laboratory and product development function had only two respondents for this question due to the survey design. Both respondents were active purchasers of indirect categories. These responses might be highly subjective due to the small sample. The main interest was on analysing the written answers of these respondents as they show what issues are challenging in the product development function. Making sample orders was found to be quite resource-consuming. Samples are ordered from a supplier and defining the needs and product specifications take lots of time. One challenge concerned e-procurement system design: A supplier from which samples are ordered must be added to the supplier base of the procurement system (as a contract supplier) to be able to

invoice the supplier electronically. This burdens the system and expands the supplier base unnecessarily. In many cases, the sample order is the only order from the certain supplier as testing of the sample products may show that they are not suitable for Company X's purposes. The respondents were hoping for less formal way or process to purchase samples from new potential suppliers.

In **Production function** (11 respondents, 30 responses) the responses show that *product ordering* (72,7%) is the most worrying tasks. Challenges were related to the high level of technical details and expertise required to be able to decide what to order. For example, ordering spare-parts for production machines requires lots of technical knowledge and understanding of the production process. This issue also came up in the interview of a factory manager (production function). He argued that it is required that a person who is responsible of production machine maintenance ordering must have good understanding of production processes to be able to decide what type of maintenance is needed in a certain situation. Understanding root causes of why some repair tasks are needed so often is very important. For example, is some part of the production machine too weak and should the company try to find better quality replacement for the part to decrease the need of frequent repairs. Knowledgeable person can identify root causes that should be addressed in maintenance instead of just ordering new spare parts for high costs every time something breaks. Fixing the root cause with innovative thinking will reduce costs in the long run as the needs for spare-parts and maintenance services reduce and there is less down-time in the production.

Invoice processing and *finding new suppliers* were experienced also quite challenging, both were selected in 54,6 % of the responses. Written answers described that the production department does not have enough resources to be able to make proper written contracts with all of its suppliers. This issue is related to the contract management. It was mentioned that finding alternative suppliers to replace the current suppliers is difficult and takes lots of time. Proper tendering should be done with care so that the agreement would be optimal for the firm but as these tasks are not core responsibilities of production personnel, these "extra" tasks were felt to take time from the more central responsibilities. This clearly tells that support is hoped to these tasks from the procurement department.

In **Sales function** (6 respondents, 9 responses) *finding new suppliers* (50 %) and *invoice processing* (33,3%) were found to be the most challenging or resource-consuming tasks

related to indirect procurement. Once again, the number of responses is very low, making these results quite subjective. Written responses explain that sales department mainly orders advertising and sales services / consulting and it is very difficult to tender different service providers as it is impossible to define their service quality beforehand. Including procurement department in these orders was seen unnecessary and problematic because it is difficult to explain what types of specifications are required. Making purchases was estimated to be easier than explaining the need to a procurement specialist. In this matter, the procurement expertise for these specific services (advertising and sales services) were felt to locate in the sales department.

4.3.2. Support needs from procurement department

The previous responses addressed the issues which respondents had found to be challenging or resource-consuming in indirect procurement. Written answers explained these issues further from the functional perspective. This chapter examines what types of needs for support from the procurement department there is among the other organizational functions. These findings help to identify what matters should especially be focused on when designing organization for the automated P2P.

The survey aimed to examine how indirect procurement activities could be changed and improved in order to support Company X's business departments better. In theory, the procurement department has the most expertise in purchasing and supplier relationship management. Therefore, the next phase was to examine how could the procurement department support other departments in their purchasing tasks. The respondents were asked to which (indirect) procurement tasks they would like to get support from the procurement department. The tables showing the division of responses by departments are shown in Appendix 3. Once again, the respondents were allowed to select three options at maximum from the given selection of tasks. They could also add some new tasks by selecting "other tasks, what?" option and giving their answer by writing the task. Table 6 shows the overall response statistics and the distribution of all responses.

Table 6. Overall support needs

	n	Percent
<i>No need for support</i>	14	23,33%
Finding new suppliers	21	35%
Finding existing suppliers for certain products or services	10	16,67%
Making and managing supply contracts	26	43,33%
Communicating with suppliers	10	16,67%
Product ordering (e.g. spare-parts, tools, etc.)	8	13,33%
Service ordering (e.g. maintenance, marketing, consulting, etc.)	8	13,33%
Invoice processing (checking, approving, accounting, etc.)	20	33,33%
Other tasks, what?	1	1,67%

Respondents were also asked to expand their responses by writing if they wanted to elaborate or mention some other important issues regarding the subject (Q9). The survey was designed to collect useful views and ideas on potential reorganization of indirect procurement processes and responsibilities. These opinions could be used to pinpoint critical improvement areas within the P2P process and organization. *Making and managing supply contracts* (43,3%), *finding new suppliers* (35%) and *invoice processing* were the three tasks to which the most support needs were addressed. 23,3 % of respondents did not see any need for support. The next phase was to examine how different business departments were experiencing these needs by categorizing the responses by organizational departments as was done in the previous chapter.

In **administration function** (17 respondents, 32 responses) the results are quite aligned with the overall responses. 52,9 % of the respondents would like to get support to *making and managing supply contracts*, and 47,1 % of respondents hoped that they would get help for *invoice processing*. Written answers show that respondents were hoping for support especially for contacting suppliers, negotiating agreement terms and making the actual written contracts. The respondents wanted the procurement department to create ready-made contract forms and negotiate prices in advance. Extra support was needed for IT purchases. In addition, the document management should be improved so that supply documents could be easily found when needed. The current document management was seen to be too complex and scattered.

The answers given to the questions regarding processual or responsibility changes (Q10) suggest that the case company should introduce category managers with specific and clearly defined responsibilities. The processes of both procurement and invoice processing were hoped to be improved in a way that allows programming certain routine orders in the system (e.g. monthly) without such a heavy process of approving the product deliveries. There were also wish for more established instructions for making indirect procurement (e.g. which suppliers to use, what payment methods are suitable in different cases, what are the protocols of approval, etc.) and for proper documentation and management of those instructions.

In **supply function** (9 respondents, 19 responses) the support needs do not follow the same pattern than the overall responses. This is understandable as the group of the respondents belong to the supply function itself. The responses are quite evenly dispersed between the different options given. However, the most challenges concerned *service ordering* (Q6: 57,1%) but there seems not to be an equal need for the support as only 22,2 % of the respondents hoped for this support in Q8. *Making and managing supply contracts* was seen as an important task to get support to as 33,3 % of the respondents would like to get support for these tasks. As these respondents belong to the procurement function (that is responsible of offering the support according to Q8) these support needs could be understood to communicate lacking resources for these tasks in the procurement department.

Written answers show the ideas within the procurement function on how it could support other functions. It is believed that by bringing procurement expertise to the table it could help business departments to make better decisions. Centralizing indirect procurement was seen one way to improve the support from supply function. There is already some central purchasing but the organization could try to find new areas in which they could benefit from this model. To the question regarding the potential processual and responsibility reorganization of indirect procurement (Q10), the answers included a notion that indirect procurement should be performed in close connection to the local business units and it should be managed locally. On the other hand, another view underlined benefits of more central-managed indirect procurement processes. Yet another opinion addressed a worry that reorganizations might make the procurement systems and procedures even more burdening and resource-consuming.

In **product development and laboratory** function support needs are not totally comparable with experienced challenges in the Q6 as there are more respondents in Q8 (6 respondents, 11 responses). This is due to the survey structure that allowed all respondents to answer Q8 even though they did not answer to Q6 on the basis of their inactive purchaser profile. The survey aimed to collect improvement ideas also from these non-purchasing members (that participate in the overall P2P process as invoice approvers).

Communicating with suppliers (50%) was the biggest support need but some support was hoped for *making and managing supply contracts* (33,3%) and *invoice processing* (33,3%) as well. However, the number of respondents is quite small and therefore these results should be interpreted with some extra caution. Written answers suggested that the system tools should be improved so that they would allow monitoring the status of the order to be able to see when the products ordered will be in production and when they shall be delivered. Another comment hoped that procurement department could create and offer a clear process for ordering small samples (single orders) efficiently. Yet another respondent called for simpler ordering processes. The support for document management was also called for. One respondent in Q10 called for better knowledge of what kind of information is needed in elsewhere in the organization to complete the order-delivery-invoice-payment -process as efficiently as possible. Other answers called again for more simple processes.

In **production function** (16 respondents, 36 responses) the support needs in Q8 are quite strongly centered to tasks related to *finding new suppliers* (62,5%). Also *contract issues* (37,5%) and *product ordering* (31,3%) were hoped to be supported by procurement department. Interestingly, even though invoice processing was found to be resource-consuming and challenging in Q6, respondents did not report any significant support need for that task (18,8%). This most likely refers to that respondents see the support for finding new suppliers, making and managing supply contracts and ordering tangible products more important for the overall business of the company.

Written answers (Q9) on how procurement department could support indirect procurement activities underline the need for taking care of contract-related issues. Respondents mentioned that procurement department should offer more ready-made contracts with negotiated prices and payment terms. Support for finding alternative suppliers was also

seen important. Project Services business requires the support from procurement departments on a daily basis. Processes and responsibilities could be reorganized to better serve the organization by positioning indirect purchasing resources locally. Local purchasing support was seen as an important factor regarding also the Project Business: procurement should be located nearby the executional (project) function. This will make communication faster, simpler and more efficient. Increasing centralized purchasing was seen preferable only if it could have some significant skill-increase benefits. One respondent mentioned that things should be made easier and faster and possibilities for errors should be minimized by proper in-advance planning, competitive tendering and solid contracts.

In **sales function** (12 respondents, 20 responses) the most significant support needs concern tasks related to *making and managing supply contracts* (50%) and *invoice processing* (41,7%). There are some needs for the support regarding *finding new suppliers* (25%). The support needs are partly aligned with the challenges experienced as invoice management got fairly high percentages in both of the questions (Q6 and Q8). However, even though *making and managing supply contracts* was not reported to be a big challenge (Q6: 16,7%), respondents still would like to get support for this task from the procurement department (50%). This could mean that sales personnel are willing to let go of these task to focus more on their core tasks.

Written answers show that the procurement department could help in negotiations, making agreements and contracts. For example, support for negotiations should be provided to drive prices of basic materials (in indirect categories) lower. Supply base management should be improved and a clear list of contract suppliers should be created and made easily accessible for individuals who are making purchases. Respondents also would like to get help in invoice processing issues (e.g. support for categorization, coding and reporting installation project invoices). Couple of answers mentioned that sales department should have dedicated / assigned buyers that the sales personnel could talk directly to. Direct communication channels (local presence) and designated responsibilities make it easy to ask for advice if needed. If purchasing operations are highly centralized and/or locates in different location, communication becomes difficult. Processual changes to improve the ability to monitor costs were also wished for.

5 DISCUSSION AND CONCLUSIONS

This chapter presents the discussion on the study results and gives the answers to the research questions. The both data sets are discussed and managerial guidelines are created for Company X's project management. Some limitations related to the validity and reliability of the study are also presented. Finally, a few topics for future research are given.

The main research question of the study asked: *“What types of organizational changes will implementation of automated P2P cause (or require) in an organization?”*. The study had three sub-questions, SQ1 and SQ2 were focused on the two departments collaborating through Procure-to-Pay process, procurement and finance. SQ1 looked organizational changes taking place in these departments with more general perspective and SQ2 focused specifically on role and task changes in these departments:

SQ1: *“How does the implementation of automated P2P change the procurement and financial organizations?”*

SQ2: *“How does the implementation of automated P2P change roles and tasks within the procurement and financial organizations?”*.

Answers to these sub-questions are presented next in the following sub-chapters. SQ3 was purely focused on Company X's indirect procurement and the discussion drawn from it is presented later in chapter 5.3.

5.1. Organizational changes due to automated P2P

The empirical research was able to confirm that organizations change due to the implementation of automated P2P. The study identified some themes of change that were common for the interviewed organizations. The motives of the companies interviewed to implement the automation of P2P seemed to follow the general motivational factors associated with information systems and technology. As Markus (1983) argued, information systems are often expected to create benefits for an organization by rationalizing work, enhancing managerial planning and decision making, and improving both internal and external communication. Organizational goals of the peer group firms

were related to streamlining the processes of purchasing and invoicing, cost savings, improved financial transparency and enhanced organizational performance and to move from a paper-based process to an electronic one (Ericson & Rycraft 2011). Table 7 summarizes the reported changes in the procurement and finance department among the peer group companies.

Table 7. Themes of change reported in peer group companies

Theme of effect	Procurement department	Finance department (AP)
Relationship	<ul style="list-style-type: none"> • Collaboration between procurement function and financial function increases • Close to joint management model • Still no formal P2P organization 	
Organizational structure	<ul style="list-style-type: none"> • Boundaries remain • Getting more resources • More centralized structure (partly) 	<ul style="list-style-type: none"> • Boundaries remain • Resource reductions as manual labour decrease
Professionalism and expertise	<ul style="list-style-type: none"> • Increases 	<ul style="list-style-type: none"> • Expected to increase as invoice automation improves
Tasks and responsibilities	<ul style="list-style-type: none"> • More tasks • Increasingly complex tasks • New positions in existing organization (e.g. shared buyers, semi-operational support personnel) 	<ul style="list-style-type: none"> • Less tasks • Completely new tasks require new skills (e.g. monitoring and controlling automated process) • Some manual jobs remain (invoice exception handling)

5.1.1. Increased collaboration within the P2P organization

The P2P process has been historically considered a clerical activity divided between procurement and accounts payable departments (Palmer & Gupta 2011). The findings of the study showed that automation of the P2P process increases collaboration between these departments. P2P is a joint process of the two departments (including two sub-processes in both ends) and therefore it should be managed jointly as one united process (instead of two separate sub-processes). The experiences of the peer group companies underlined the management issues and the argument is that the benefits of the

automation can only be achieved through joint “P2P management”. Close collaboration regarding planning, decision-making and operational performing is required to be able to create benefits that lead to added value (see figure 1). It is noteworthy that although all the companies interviewed emphasized the importance of joint management, they had not made any changes to their organizational structure. The previous departmental boundaries were still in place and the procurement function and the accounts payable function were still seen to belong to the separate departments. This design is likely to effect the management of the automated P2P process, as the boundaries between departments are likely to complicate the coordination of the common activities within the P2P process. Due to this two-part structure, the sub-functions of the P2P process are fragmented around the organization making managing the P2P process more difficult. When the sub-functions are considered as individual organizations with their own responsibilities and objectives, a situation may arise where they seek to achieve their own objectives in a way that is detrimental to the objectives of the other department, and thus to the entire P2P process. The two departments have their own managers that may pursue for individual benefits over the other and, in a way, the two departments may end up competing with each other. The upper management has to identify this risk and manage it to the minimum.

5.1.2. Increased professionalism and expertise

Professionalism, especially in procurement function, was reported to increase, however, this was not considered to be due to P2P automation alone. The peer group reported a broader movement toward increasingly procurement-oriented operating model. Companies had first started to focus more on procurement issues as potential improvement areas. Moreover, they had identified financial incentives in indirect spend. These changes regarding closer focus on procurement activities and especially on indirect categories are manifestations of the increasingly important role of indirect procurement (Porter 1999; Cox et al. 2005).

Similar increase in professionalism was expected to occur on the AP side. The expectations were that automated P2P will require new skills in AP organization and therefore completely new positions with new job descriptions (and skill requirements) will be born. However, most companies were still far from the levels of process automation that they had set as their objectives in the beginning of the implementation project. The expected organizational changes regarding the personnel (structures and responsibilities)

had not yet come true for the main part but the companies expected them to happen in the future.

5.1.3. Changes regarding tasks and responsibilities

The study showed that tasks and responsibilities of the procurement and finance departments (accounts payable) change due to e-procurement and invoice automation. Automated P2P requires new types of skills in accounts payable function. Tasks at AP become increasingly technical and focus on monitoring and managing automation. These tasks naturally require different types of skills than the previous and mainly manual tasks, e.g. handling paper invoices. New tasks of accounts payable department will require understanding the basic principles of information systems and automation and include such tasks as programming.

Tasks will change in procurement department as well. Automated invoicing demands for using the e-procurement functionality of the P2P system correctly. Purchase orders must be appropriately inputted so that the rest of the process could function as planned. Procurement-end is identified as a critical point for overall automation because the functions performed at the procurement-end will affect the entire process through. Errors and omissions in this part of the process will prevent automation from taking place and this increases the need for manual work, e.g. correcting errors and handling invoice exceptions. So, new tasks with new skill requirements will be born in both ends of P2P as Proposition 2 suggested. Once the implementer organization achieve the certain level of automation and process certainty, they can start reducing manual labour from the organization. However, although organizations aim to automate everything they can, the process cannot be completed entirely without people. Order and invoice exceptions will require some human resources even after the automation of the process (Brands & Smith 2016).

5.1.4. Changes in personnel structure

The above-mentioned changes in tasks and responsibilities lead to changes in personnel structure. The importance of the procurement-end as the starting point of the P2P process is emphasized and therefore new skills and additional resources are allocated specially into the procurement function. Procurement organization becomes larger at the same time as AP organization is getting smaller (by number of employees). New tasks at the

procurement department require completely new set of skills compared to the old tasks at AP and therefore inter-departmental transfer of staff from AP to procurement is likely very minor. This will lead to reductions especially on AP-end but also to new recruitments on procurement-end. According to Proposition 1, resources were expected to increase on procurement end by moving there from AP function. The findings partly confirmed this. It was shown that procurement function is getting more resources but these resources do not move to the procurement department from AP function. The re-placement of the existing staff was reported to be very minimal because AP employees do not have the skills required to operate in the procurement department in purchasing or in supportive tasks.

5.2. Discussion on the success of implementation

The interviews also highlighted some background factors that arguably effect on the success of system implementations in different organizations. In overall, the interviewed companies had not yet achieved the objectives set for their P2P projects very widely. This finding is aligned with the fact that only minority of change initiatives truly achieve the expected outcomes (McDonald 2014). Different companies had achieved different results, but in general, the projects had not produced the benefits that they were expected to achieve at this point. Organizations were in different phases of the implementation project but still the overall picture was that they have had challenges or problems in their projects, resulting in lower-than-expected performance (Shore 2005). One peer group firm was in such early phase in their project that they did not comment on their project results at the time of the study. However, it is notable that only one company of six interviewed reported being contented with the automation level at the time of the interview. This finding is aligned with the report of Mankins & Steele (2005) according to which organizations often do not achieve their performance objectives in full for a variety of reasons. Ali & Miller (2017) reported that approximately 66-70 percent of ERP implementations fail to achieve their objectives. Even though ERP is more central system, it is argued that similar challenges are related to both systems, ERP and automated P2P, because the both are integrated information systems. The project challenges among the peer group companies had to do with things such as technical problems, sufficient resources, project and project schedule (Shore 2005).

One company reported having far more challenges compared to the others during their implementation project. The company was unsatisfied with project schedule and they had

had different types of technology-based problems that prevented most of the intended automation at the time of the interview. This raises couple of interesting questions on why this organization had had more problems than others in similar implementation projects. First, whether the objectives of the projects were set realistically? Were those objectives even achievable in the first place with the then-current organization and processes? Ram et al. (2013) pointed out that implementation success is often judged on the basis of direct project delivery outcomes (e.g. completion in budget, completion in time, completion as expected). If the entire implementation project is evaluated based on these measures and estimated as a failure, this could negatively effect on the atmosphere of the organization. The organization may become afraid of starting new development projects in the future due to the failure. The topic of realistic expectations was addressed in couple of peer group interviews. The interviewees underlined that the implementation project should not be burdened with too high expectations (Davenport 1999). The project is such a complex entity that it should be carried out with some “*breathing room*”. The project objectives should be realistically set and the time horizon for the expected benefits should be “*conservative and careful*”. Drawn from this, it is argued that project success indicators should be developed to evaluate the project results in the longer term, and to measure the post-implementation attributes relevant to the company (Ram et al. 2013; Ari & Miller 2017).

Organizational maturity was one issue identified during the interviews as one of the factors affecting performance (Luzzini et al. 2014). In this thesis the dimension of maturity is related to both experience on information systems and the implementation of such systems but also to the readiness of the underlying procurement process to be automated. The findings of the study seemed to reinforce the notion that higher maturity organizations are more successful in their implementation projects (Schiele 2007). As Benbasat et al. (1980) defined certain maturity criteria to research organizational Information System (IS) skill needs. They argued that more mature organizations (compared to less mature organizations) have, for example, more experience with computer technology, have senior management who plays greater role in planning and controlling of IS organization, have more formalized goals that are tied to overall organizational objectives, have evaluation criteria based on overall contribution to those goals and less on clerical cost savings, and have users interested and capable of participating actively in development of the systems. Similar issues are affecting the automated P2P implementation success as well. The results of the study showed that firms with more experience on implementing IT systems reported, on average, better

success in meeting the goals they had set (Zhu et al. 2010). It was also clear that companies with more experience of implementing systems had set their goals more restrainedly and put more resources into the project. This seems to prove the importance of the organizational experience in project success.

Another issue related to the dimension of maturity has to do with understanding the underlying procure-to-pay process, and whether or not it can be automated. For example, (more) successful organizations among the interviewed companies had redesigned their procurement organization before they even started their P2P implementation project. Their idea had been to first fix the potential structural or processual challenges that might prevent the automation to work as intended. By doing this, these organizations allowed themselves to redesign their operations and organizations without any hurry. They had approached organizational change and utilization of e-procurement as Trkman & McCormack (2010) suggested by analyzing and improving the connected processes before trying to support them with e-procurement system. This was found to be an important factor as companies that had not done this reported having more challenges during the implementation. Some companies had found the binding schedule of a P2P project a problematic. As companies had started their P2P project with Provider A, they made a contract in which they committed to a certain schedule. Provider A was willing to take the project forward according to the schedule as it had up-coming client projects with other organizations and had to be able to free company resources to those projects in time. Provider A took projects forward even if the client company would have needed more time to make certain organizational changes first.

This observation suggested that organizational changes should be made in advance before introducing automation to processes with the P2P system. It should also be understood that automation can only reproduce the results of the underlying process, it cannot correct deficiencies or errors in that process, thus the automatic process cannot exceed the performance of the background process. This finding is related to the fact that different companies had different procurement and invoicing processes which they sought to automate with the P2P system. When implementation projects began, the processes of some companies were more ready to be automated than those of some others.

The motivations for organizational change were not purely based on the automation of P2P process as there seems to be a broader movement toward procurement-focused

business model. Firms had become aware of potential improvements within the indirect procurement and they started to focus on indirect spend even before the P2P implementation (Porter 1999; Cox et al. 2005). Some firms had, for example, conducted organizational changes by new positions in their procurement organization and introduced new operational protocols to streamline procurement and invoicing processes. These changes were an indication of firms taking steps toward procurement-centric business model. These changes led to increased professionalism in procurement department in advance of the P2P implementation. By doing these changes, the firms became more mature purchasing organizations (Rozemeijer et al 2003; Adams et al. 2016). Some organizations reorganized their procurement department only during the P2P implementation. These changes were probably more related to the system implementation itself. However, regardless of when organizational changes were made, all interviewees underlined that the organizational changes had occurred *because of increasingly procurement-oriented business approach* in the organization, not because of the automated P2P. The background motives were purely financial-focused and firms were looking for improving their financial performance. Automated P2P system was just one element in this broader improvement focus. As interviewee X said: “*Our company would have made these changes even if there was no automated P2P system at all*”. In a sense, this underlines that automated P2P was *a result*, not *a cause* of indirect procurement focus.

The timing of the organizational changes seemed to have an effect on the implementation performance. Companies that made organizational changes during the implementation project report experiencing more problems. Problems were related to technical issues but also to not having enough resources or time for all the necessary changes during the implementation, and thus they had to continue making changes after the implementation phase. This inherently meant that companies did not experience as much success in implementation and their level of automation right after the implementation was rather low. Once they had done the necessary changes to organizations and processes they were able to slowly start increasing the automation in their processes. However, this moved the expected results forward to the future, and the implementation was therefore not as successful as hoped. This finding puts the management, skill requirements and resources of the project into the spotlight. This is also related to the time of expected results

P2P projects were also modernization projects in which companies seek to move from the old methods of indirect procurement to fully electronic operations and to a paperless environment. The peer group companies were expecting e-procurement and automated invoice processing to create benefits such as lower transaction costs, improved workflow, and better financial transparency (Palmer & Gupta 2011; Kim & Shunk 2004). These changes by technology were seen to lead to better competitive performance (Partida 2015). The companies had estimated that by investing in the system they can reap more benefits than the costs involved in the project, at least in the long-term. All companies had followed the general development of technology and the benefits of the automation P2P process in organizations that had previously deployed these systems. Some companies had followed the developments in e-procurement and automated invoicing systems for years as they were trying to find suitable systems for their use. Selecting the right system was not easy because there are various systems on the market (Kim & Shunk 2004). Once P2P systems became easy-to-use, user-friendly solutions, companies decided that now was the time to acquire the system (Gebauer & Segev 2000). Companies had also followed the experiences of other companies regarding the automated P2P. Positive experiences of others helped making the decision on acquiring it at this time.

All of the interviewed companies had identified significant processual challenges when they moved from their then-current procurement processes to the new P2P system process. *These challenges were mostly related to compliance issues* and individuals being used to perform purchases in certain way. Purchase orders placed outside the P2P system (maverick buying) require manual handling and binds resources. The results show that non-compliance had negative effects on system performance resulting in disappointing performance results, as Brandon-Jones & Carey (2011) suggested. There were some differences on how strictly guided purchasing activities the different companies had before the P2P system were introduced and what purchasing channels (e.g. phone, email, etc.) were used. The transition from the old methods of making orders to new ones was identified as one critical challenge that must be considered during the implementation (and staff training). The companies had created a variety of rules that aimed at making sure that the system will be used as it was meant to. All the interviewees argued that this transition will take more time than expected. Potential challenges, such as maverick buying, must be actively managed and reduced in order to make P2P system work optimally. Overall, companies that had formal and clear purchasing procedures before the implementation project had less problems with maverick buying after the implementation.

This relates to organizational maturity and the readiness of underlying processes to be automated.

Process compliance is one issue that is strongly related to the success of a process or the performance of an organization (Brandon-Jones & Carey 2011). Mankins and Steele (2005) argued that organizations often fall far short of the financial targets they set for themselves in their strategies. This was the case among the peer group organizations as well regarding their P2P automation. Only one peer group company reported having achieved the functional objectives set before the project. There were a variety of reasons why companies had not achieved their goals. This study did not examine these reasons closely. However, it was clear that there were some significant strategy-to-performance gaps, or to be more exact formulation-to-implementation gaps (Mankins and Steele 2005; Crittenden and Crittenden 2008).

The existence of the gaps raises the question whether the formulation of the objectives, resources of the project and strategies of the implementation were unsuccessful. Managers may have failed to set clear goals for the projects, or they may have been unsuccessful to communicate those goals to the organization. Without proper knowledge, the employees may have been unable to produce the results and therefore the implementation have failed for this part (Crittenden and Crittenden 2008). The process of setting the goals may have been too loose and informal as some interviewees told that their company pursued for “financial improvements” without stating clear numbers to pursue for. Failures in the formulation phase of strategy or internal communication about it may create a situation in which the organization starts pursuing “wrong” strategy. If this is not identified and stopped in time, the situation may create a negative cycle in the organization that effects on strategy implementation also later in the future (Crittenden and Crittenden 2008). Management is in a key role and it is the responsibility of management to reduce these negative effects. For management to be able to do this, first it must become aware by studying the organizations and its processes, then it must create and communicate clear strategies, plan and distribute resources accordingly, identify and communicate clear priorities and build a working model to monitoring and constantly keep motivating the staff and developing the organization further (Mankins and Steele 2005). Monitoring and controlling the possible process violations and reacting to them by developing the process further is very important responsibility of the project / process management (Knuplesh et al. 2017).

These issues raise the *change management and communication* to critical roles. All the interviewed companies saw internal communication on upcoming changes very important. Early (but relevant) information reduces the resistance to change and improves results of staff training that will be conducted later. Communication should focus on motivating personnel by giving examples of how the new system will benefit them personally, e.g. making their job easier. Communication should aim to improve the attitudes towards the system and knowledge about the system to make implementation possible in the organization (Caniato et al. 2010). After getting the sufficient amount of information on how things will be done in the future a person will have less negative attitudes towards the system and the staff training will be more effective. Aim of all this is to shorten the down time and allow the company to start benefitting from the system as quickly as possible. Proper staff training is important because training and education has reported to have a significant influence on organizational performance at the post-implementation phase in ERP projects (Ram et al. 2013). It is believed that this is true with P2P projects as well.

The interviews revealed that companies had, on average, invested more in internal communication as it was understood to play an important role in reducing resistance to change. At the same time, however, they had somewhat disregarded communication with their suppliers. Automated P2P also requires procedural changes from the suppliers because they have to customize their processes to be able to participate with the client company (P2P implementer). Therefore, the implementer company should start communicating the necessary changes in a timely manner with the suppliers and provide support to them to integrate them into the new procurement system in good time before the system launch.

5.3. Guidelines for organizing indirect procurement in Company X

One purpose of the study was to find certain themes which Company X's P2P project management should address so that the company's implementation project would be as successful as possible. The third sub-question guiding the data collection process was:

SQ3: *“What issues Company X should take into account when reorganizing indirect procurement in connection with the P2P implementation?”*

The findings from both the external and internal parts of the study are used to form some managerial guidelines for Company X's project management. There were noticeable differences in the responses from different departments but certain themes were repeated in several responses. These recurring themes are considered as the most important themes (key themes) on which the company should focus first. After these key themes have been addressed and indirect procurement processes designed to solve the experienced challenges, the company may start focusing on smaller challenges and on the support needs of the individual departments. The internal survey findings were addressed in detail in chapter 4. The most reported challenges had to do with invoice processing, finding new suppliers and making and managing supply contracts. The support needs requested from the procurement department were largely related to making contracts and communicating with suppliers. The summary of the findings is shown in table 8.

The survey responses indicated that different departments have their own challenges and support needs regarding tasks including in indirect procurement and invoice processing. The responses from the different departments are presented in detail in Chapter 4. Every department seems to have their own opinions about challenging and resource-intense tasks. However, this study is more interested to find some key themes which Company X should first try to improve. Invoice processing was one such theme as it is highly manual process and fairly difficult to do correctly especially for people who does not do it very often. The invoice processing functionality of automated P2P aims at solving this challenge especially. Other key challenges have to do with tasks such as service ordering, managing contracts and communicating with suppliers. Company X should aim to create solutions to these so that company resources could be optimally used (right kind of expertise to every task).

Other departments had different needs for support from the procurement department. Interestingly, these needs were not fully in line with the perceived challenges or the experienced consumption of resources. The needs for support are considered more relevant and important as themes for development than the identified challenges because the needs communicate how other departments feel the procurement department can help them. In other words, departments feel that they will get most benefit if the procurement department supports the department according to its needs. Therefore, the

support needs are considering as the key themes on which Company X should focus over the experienced challenges.

Table 8. The summary of internal survey results by different departments

Function/ department	The most challenging tasks	Reasons for challenges	Support needs from procurement department	Support method
Administration	<ul style="list-style-type: none"> • Invoice processing • Managing supply contracts 	<ul style="list-style-type: none"> • Highly manual process (invoices) • Difficult for people who perform it infrequently (invoices) • Expertise required in making contracts with suppliers 	<ul style="list-style-type: none"> • Making and managing supply contracts • Invoice processing 	<ul style="list-style-type: none"> • Ready-made contract forms • Improved contract documentation system
Supply	<ul style="list-style-type: none"> • Service ordering • Supplier communication 	<ul style="list-style-type: none"> • Unclear specifications from other departments • Lack of resources 	<ul style="list-style-type: none"> • Making and managing supply contracts 	<ul style="list-style-type: none"> • More resources • Improve coordination between departments
Product development	<ul style="list-style-type: none"> • Making product sample orders 	<ul style="list-style-type: none"> • Complicated and heavy process for such small need 	<ul style="list-style-type: none"> • Communication with suppliers 	<ul style="list-style-type: none"> • New sample ordering process
Production	<ul style="list-style-type: none"> • Product ordering (e.g. in maintenance) 	<ul style="list-style-type: none"> • Highly technical • Requires understanding of production processes 	<ul style="list-style-type: none"> • Finding new suppliers 	<ul style="list-style-type: none"> • Ready-made contract forms
Sales	<ul style="list-style-type: none"> • Finding new suppliers • Service ordering 	<ul style="list-style-type: none"> • Tendering for service purchasing is difficult 	<ul style="list-style-type: none"> • Making and managing supply contracts • Invoice processing 	<ul style="list-style-type: none"> • Help in negotiations and making contracts • Technical instructions (invoices)

5.3.1. Supporting indirect procurement

The internal survey brought surface that the procurement department was hoped to support other departments with supplier relationship management tasks (e.g. communicating and negotiating with suppliers and making contracts). These views were related to the fact that other departments did not have the necessary expertise or

resources for these tasks. A more centralized procurement structure was therefore called for regarding these tasks. More centralized structure was aimed at creating purchasing synergy in the company as centralized approach was expected to benefit the organization with specialization (Rozemeijer et al. 2003; Mintzberg 1980). Survey responses showed that it was believed that procurement experts could lower the purchasing cost by skilled tendering and negotiating. These expected benefits are aligned with the main advantages of centralization listed by Leenders (2006).

On the other hand, it was pointed out that certain tasks of indirect procurement are very hard to centralize due to the nature of the indirect purchasing, and thus the procurement department is not involved with it (de Boer et al. 2003). For example, when purchasing requires very in-depth understanding of a particular process or “field”, the situation may be such that even if the purchaser is a procurement expert, he may not understand underlying reasons for a purchasing decision at all and therefore needs constant expertise of other parties to evaluate options and make decisions. These challenges seemed to cause some degree of friction between the purchasing department (purchasing experts) and internal customers in other business departments. Boer et al. (2003) reported of this phenomenon in their research. Some respondents from other departments argued that the procurement department should not be involved in indirect procurement because purchasing experts are not skilled to purchase certain products or services for lacking knowledge needed to make enlightened decisions. If this is the case, the centralized procurement structure cannot produce significant purchasing synergy and it is best to give decision power to other departments (or local business units) by decentralized structure (Leenders 2006; Cavusgil 2012). Purchasing department can still help internal customers by supporting them with backgrounding tasks of purchasing, such as tendering, contract negotiations and contract management. Thus, it is argued that Company X should conduct in-detail analysis of indirect procurement processes taking place in business departments of the organization and identify tasks in which procurement department could be used to create added value.

The above-mentioned conflicting views on the benefits and challenges of centralizing the procurement activities paint a picture of the complex and fragmented nature of indirect procurement in the case organization (Telgen & de Boer 1995; Kim & Shunk 2004; Cox et al. 2005). On the basis of this study alone, it is impossible to identify what products or services Company X could or should buy in more centralized manner, the indirect

procurement category is far too broad and diverse and Company X's global organization is way too complex. It is suggested however, that the company must look into the contingencies of different locations in detail and identify those sub-categories of indirect procurement category in which more centralized procurement approach could be used beneficially. Then it should plan supportive procurement activities on those specific areas. It is unlikely that all indirect purchasing could or should ever be totally centralized because in a large organization entirely centralized indirect procurement would mean too rigid and clumsy process incapable of reacting on quick situations and changes in the purchasing environment (Cavusgil et al. 2012). Instead of that, Company X should create separate supportive purchasing mechanisms (processes or structures) to answer the different needs of different business departments. These mechanisms could include increasingly centralized procurement approaches for some purchases, if the firm chooses so. This could also mean increasingly decentralized approach for some other purchases. The decisions should be based on the analysis of the overall benefit. These supportive mechanisms should be then incorporated into the new P2P system so that the organization would get the benefits of the system in forms of improved cost control and financial transparency etc.

5.3.2. Understanding global contingency environment

The new P2P system will be introduced to a global organization of the case company and the aim is to harmonize indirect procurement models across the enterprise. This will likely require reorganization of both procurement structures and processes as different operating models of local business unit customs must be harmonized so that indirect procurement and electronic invoice processing can be carried out via the new P2P system in the future. Global organization creates additional challenges to the system implementation and to the organizational rearrangement related to it as the environment to which it is implemented is more complex compared to the domestic organization (Schweizer & Johanson 2012; Vahlne et al. 2012). Complexity should be seen here from the perspective of the parent company. Individual countries may not be particularly complex as environments but when the company tries to harmonize processes and use the P2P system similarly in number of different countries, the environment of the whole system becomes highly complex.

The general perception based on contingency models is that an organization should be designed based on its purpose, strategy, objectives, operating environment and the

technology that is being used (Mintzberg 1980; Randolph 1981; Anderson 2019). Effectiveness of the organization is built on the assumption that organization design follows strategy, and suitable design depends on contingencies and the task environment of the organization (Donaldson 2001). The effecting contingencies include both external (e.g. competition, technology, market, location, etc.) and internal (e.g. industry, technology, organization structure, specialization, size, age) factors (Mintzberg 1980; Morton & Hu 2008). The global environment includes large number of contingencies, such as legal issues, local habits and customs. These may affect the way the system can (or will) be used in different locations. For example, different laws in different countries can create a situation in which a certain activity is legal in one country but illegal in another. The interviewee 4 told that they had faced such situations during their globally scoped P2P automation. The company solve these problems by creating different processes and operating models for a certain task (a variety of options) from which business units located in different countries could choose one model suitable for their legislation and / or cultural customs. This solution goes hand in hand with contingency theory as it identifies contingency differences and configures the structures and processes of the organization from a basis of environment factors (Mintzberg 1980).

As a global actor, Company X faces many markets, supply environments and competition fields that all include a different variety of external factors that should be considered when redesigning the indirect procurement organization. External characteristics of every location (business units) should be analysed during the design process, instead of just focusing on internal organization structure issues (Anderson 2019). Organizations and processes should be designed based on the contingencies of every unit, as there is no design suitable for every situation and environment (Galbraith 1973; in Surdu & Potecea 2012). Therefore, Company X needs to conduct the analysis of each locations and identify what differences and what similarities there are between different locations.

Total harmonization of processes might be impossible due to the complex nature of global environment even if this was the main aim of the company. Instead of pursuing the total harmonization, Company X could form similar processes and organizations in all locations where internal and external contingencies are sufficiently similar to allow it. The new aim would be to harmonize everything that can be harmonized. This design would form the “basic” indirect procurement structure and processes. For locations where some contingencies prevent the implementation of this basic design, the company has to set the

individual organization design for that particular location based on the analysis of the local contingencies (task environment, competition, etc.). Company X should solve these challenges before the new P2P system can be put into effective use in the global scale.

The thesis does not give any suggestions on procurement organization structures or other organizational design issues. The main goal of the study was to bring important topics to the attention of the project management. The internal survey was performed only in three countries that were included in the pilot phase of the implementation project. These countries were Nordic countries with quite similar social and legal structures. Thus, the findings of the internal study may not represent the entire global organization of Company X. New internal surveys are suggested to study what other country divisions hope from the P2P system as the project proceeds.

5.3.3. Managing the compliance

Indirect purchasing takes many forms across the different parts of the company's organization and lots of people in different positions are involved with it. Many of them are non-purchasing professionals that perform purchasing as an additional "side work" to their core task responsibilities. These people may not consider buying very important as it is additional to their core tasks. They may find the purchasing processes of the P2P system too rigid and restricted compared to previous methods of purchasing. Especially people who do not use e-procurement solutions very often might want to use old methods and ordering channels, e.g. phone or e-mail. This increases the risk of maverick purchasing.

As decentralized indirect procurement takes place across the organization it means that there are users of the system from many different departments. This may give rise to some liability challenges as all users are not under the same management (procurement management). It can be difficult for procurement management to oblige end users to comply with the rules of the system because individuals are not directly under their managerial control. This fragmented nature of indirect procurement challenges the management of the P2P process. The compliance with the system and its operating protocols and rules becomes a managerial issue. Without the end users complying with it, the system cannot create the benefits it was hoped to create. Senior management should give their support to the project visibly and decisively. This will give the project additional credibility and help to curb over-the-counter purchases.

The company should also create a system for monitoring the compliance and set clear processes of managing the rule violations (Knuplesh et al. 2017). The system must allow managers to monitor how end-users are making the purchases and any person that does not follow the rules of the system will be held accountable. Of course, it would be even better if end-users were motivated to use the system by emphasizing the benefits it offers for everyone's personal work. In general, Company X's project team should concentrate on issues that support and improve pre- and post-implementation compliance.

5.3.4. Performing two-way communication

The internal communication about the up-coming changes should underline the benefits for end users to motivate the staff and to reduce the resistance in the organization. The role of the internal communication arose as one important subject in the peer group interviews. The interviewees pointed out that it is important to start communicating in good time before the implementation. Early information will reduce the resistance significantly. However, too early communication can be harmful so the company must balance between being too early and too late. Communication is related to staff training that will take place later during the implementation project. Motivating staff training and continued internal communication focusing on benefits of the P2P system are in key role for reducing the organizational resistance. The proper staff training will ensure that end users know how to use the system correctly and that incompetence does not lead to non-compliance with the instructions. Staff training is argued to have positive influence on post-implementation performance (Ram et al. 2013).

However, it was also clear that internal communication is not enough. Company X should also manage supplier relationships by communicating to suppliers on up-coming changes. The automated P2P will require changes for many suppliers as well because the system changes ways the product or service ordering and invoicing will be done in the future. depending on e-procurement functionalities that is included in the system, the system may require suppliers to integrate with the system to be able to offer their products to Company X. It should be understood that P2P automation can fail due to the suppliers as well. To reduce this risk, Company X must take care that its suppliers are well informed and capable of operating with the system.

5.3.5. Considering the needs of different business functions

The internal survey showed that different departments had experienced different kinds of challenges and had different needs for support regarding the P2P. For example, the challenges related to purchasing activities in Project Business surfaced in the internal survey. Project Business differs from ordinary manufacturing operations quite much as projects are independent operations that are (at least for some parts) unique. In project business it is important that the project staff and procurement function collaborate efficiently. Therefore, indirect procurement activities related to them might have to be organized differently than for some other departments. The survey respondents involved with project purchasing were afraid that the new P2P system will make purchasing more rigid and difficult to do. They pointed out that project staff is responsible of taking the project forward in time and they have the best knowledge on what is needed at any given time (what must be purchased). Customer projects often contain all sorts of surprises that may stop the entire project. Because of these, projects require the ability to make quick procurement decisions to keep it going as planned and in schedule. Some respondents were afraid that the purchasing flexibility and ability to make quick decisions is in danger due to the P2P system. They suggested that customer project business could have less formal purchasing procedures allowing project staff to purchase without unnecessary bureaucracy.

This is an interesting issue that highlights the fact that not every function and department face the challenges similarly. Moreover, this shows that understanding the needs and operating environments of other departments requires studying them and collaborating with other departments. As a solution for this challenge, Company X could design the procurement processes of Project Business teams as unique structures and processes that would balance purchasing flexibility and freedom with the capability of monitoring financials of those projects. Therefore, the procurement organization of project business function could be structured as *adhocracy* as project teams are quite small and highly specialized (Mintzberg 1980). This would make purchasing processes more agile but would not cause significant risks for the company as these teams are quite small and controllable.

These purchases could be included in the new P2P system by defining a certain pre-determined budget for each project, in which the project business purchasers can operate more freely. This method would allow the management to control the financials by defining

budgets for the projects. At the same time, it would allow buyers to purchase with a little more freedom instead of a completely rigid system. Freedom of operational purchasing at project business requires planning of functional and sufficient control mechanisms. Personnel that purchase indirect categories for customer projects should be trained more extensively to use the P2P system correctly. Only personnel with sufficient experience should have right to purchase high priced items or services as they are less likely to make mistakes (e.g. wrong item, etc.). As project business requires less formal procurement organization structure, challenges related to compliance issues increase. Potential risks included in this approach could be reduced by small number of project buyers with proper training, personal responsibilities, careful budgeting, proper monitoring systems and continuous reviewing of the operations.

The respondents from laboratory and product development function had quite similar challenges regarding product sample orders. Here again, Company X must study these challenges in detail and aim to design a proper solution for this department. These examples show that understanding the unique environments and needs of different business departments is a key issue when trying to improve indirect procurement performance. Totally rigid system without any variations and alternatives might not be the best solution for all participants. Inter-departmental collaboration in planning of the procurement processes and systems is essential so that the procurement organization and processes could be designed by using the expertise of all participants to consider all types of needs.

5.4. Reliability and validity of the study

The results of the study should be viewed with a few limitations in mind. The first limitation concerns data collection processes and data samples. The study results of the peer group may not be well generalizable due to the small number of information sources. The study aimed at targeting only the most relevant organizations, in other words, organizations that are using similar automated P2P system and would have as much organizational similarities as possible with the case company (e.g. industry, size, internationality, etc.). However, it was found fairly difficult during the data collection process to find companies that would fulfil these requisites. Challenges in finding the relevant companies resulted in fairly low number of information sources leading to the limited generalizability of the results. The study may have also failed to reach the right interviewees and this could have had an effect on the results.

The second limitation concerns analysis of the data sets. The study was performed as qualitative case study and analysis was performed with the content analysis method. This method might have caused some researcher bias due to the subjective nature of the method. Data was analysed as objectively as possible to reduce this risk. The study aimed at improving the reliability by data triangulation, which means using multiple information sources to examine the same phenomenon of organizational change (Yin 2009).

The third limitation is related to global scope of the Company X's P2P implementation project. The internal survey was conducted in three countries: Denmark, Finland and Sweden. The aim of the internal survey was to collect information on critical issues to support the global implementation project of the P2P system. However, as this internal survey was conducted only in three countries included in the pilot phase of the implementation project, the results may not be generalized for other countries to which the project will roll-out in the future. This is because the three country divisions participated in the survey are all quite similar by their structural and cultural characteristics (e.g. legal, economic, habitual, etc.) and similar survey in other countries could have resulted in at least partially different findings.

5.5. Viewpoints for future research

The study highlighted some interesting perspectives that could serve as topics for future research. First, a lot of research has been done related to the implementation of ERP systems and to challenges and success factors related to them. A similar study has not yet been conducted specifically in connection with the implementation of a P2P system. It can be assumed that when both systems are integrated information systems, the challenges and the conditions for success are partly the same. However, the systems are different systems and they have different importance for organizations. Therefore, a detailed study of the factors contributing especially to the success of the implementation of automated P2P system is needed.

Second, this study showed that the changes regarding tasks and responsibilities in the procurement and finance department raise the need for new abilities and skills in the P2P organization. A study with a close focus on these skill requirements would be beneficial for any organization that is planning to implement P2P automation. The study would give

preliminary information on potential recruitments and other issues related to staff skills, such as staff training and so on.

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APPENDIX 1

Interview structure of external interviews

1. Background information of the company?
2. Describe your role regarding Procure-to-pay process and the implementation project?
3. Describe what types of information systems the company uses?
4. Describe the supply environment and the P2P system of the company?
5. Organizational objectives of automated P2P? Success?
6. How did the organization change as a result of automated P2P implementation?
7. Describe the implementation process?

COMPANY X

Indirect procurement study

Welcome to this survey!

This survey is related to the Procure-to-Pay (P2P) project that was launched at Company X some time ago. During the project, new P2P tool for performing indirect purchasing and invoice processing will be implemented. This survey concentrates on assessing the current situation related to these functions as background information for improvement.

Aim of the survey is to collect valuable information from personnel that participate in indirect purchasing in some role. Therefore, we hope that you will think the following questions with care and give your opinions according to your view. *Every opinion is valuable so feel free to give your thoughts and potential improvement ideas.*

Answering this survey is important because your views and opinions offer valuable insights that help to structure indirect procurement processes and organizations in a way that will serve you (and others performing indirect purchases) better in the future.

NOTE!

This survey is anonymous. All information will be processed confidentially and individual respondents will not be identified in any way.

Thank you!

1. Country*

- Denmark
- Finland
- Sweden

2. To which function your primary tasks and responsibilities are related? *

- Administration
- Supply
- Product development and laboratory
- Production
- Sales

3. Your position

- Management
- Middle management
- Specialist
- Other official

4. Work experience in your current or similar position

- > 20 years
- 11-20 years
- 6-10 years
- 2-5 years
- < 2 years

Please note the following definitions in your answers:

Indirect procurement / purchasing categories: *Everything else but raw materials for factories like plastics and metals and inventory items (anything included in bill of materials). Examples of indirect categories are spare-parts, maintenance services, machine investments, logistics, IT, vehicles, marketing, installation services for customer projects, etc.*

Sourcing: *"Supplier selection and making contracts." Covering activities from planning of sourcing strategy; selecting, approving and contracting the vendors which can be utilized; making it possible for the organization to place orders to the selected vendors, to managing the supplier relationships.*

Purchasing: *"Ordering from the suppliers." Covering activities from creating a purchase requisition, issuing a purchase order until receiving the goods.*

Invoice processing: *Receiving, checking, approving, accounting invoices, etc.*

5. How are you involved in sourcing or purchasing indirect procurement categories? *

Sourcing: "Supplier selection and making contracts."

Purchasing: "Ordering from the suppliers."

- My central tasks are related to indirect procurement
- I purchase indirect categories occasionally
- I don't participate in indirect procurement in any way (end survey)

Indirect procurement / purchasing

6. According to your view, which of the following tasks related to indirect procurement are challenging or consume the most resources (e.g. time and effort)? *

Please select three tasks at maximum!

You can specify your answers in the following question 8

- Finding new suppliers
- Finding existing suppliers for certain products or services
- Making and managing supply contracts
- Communicating with suppliers
- Product ordering (spare-parts, tools, etc.)
- Service ordering (maintenance, marketing, legal, etc.)
- Invoice processing (checking, approving, accounting, etc.)
- Other tasks, what? _____

7. Please explain briefly why you experience those tasks challenging or what makes them so resource consuming?

8. Do you think that indirect procurement processes or responsibilities could be reorganized somehow to serve you better?

e.g. centralized buying model (designated and shared buyers for indirect categories), etc.

9. How could the sourcing department help and support indirect procurement activities?
What kind of help and support would be the most valuable from your perspective?

Invoice processing

10. What kinds of challenges are related to invoice processing? *

Please select three at maximum!

You can specify your answers in the following question 11

I don't process any invoices

Challenges you have experienced

I haven't had any challenges

Complicated invoice handling process

Unclear instructions

Takes lots of time

Accounting the invoices is difficult to do correctly

Unclear corporation structure (difficult to select the right company for invoicing)

Other challenges, what? _____

11. Please explain briefly why you experience those things challenging?

12. How could invoice processing be improved to serve you better?

13. Open feedback about the survey

Was something important left outside of this survey that you would like to mention or comment?

Press '*Submit*' to send your responses and end the survey!

Q6: According to your view, which of the following tasks related to indirect procurement you find challenging or most resources-consuming (e.g. time and effort)?

Administration function:

	n	Percent
Finding new suppliers	3	25%
Finding existing suppliers for certain products or services	1	8,33%
Making and managing supply contracts	6	50%
Communicating with suppliers	3	25%
Product ordering (spare-parts, tools, etc.)	1	8,33%
Service ordering (maintenance, marketing, consulting, etc.)	1	8,33%
Invoice processing (checking, approving, accounting, etc.)	7	58,33%
Other tasks, what?	0	0%

Supply function:

	n	Percent
Finding new suppliers	1	14,29%
Finding existing suppliers for certain products or services	2	28,57%
Making and managing supply contracts	2	28,57%
Communicating with suppliers	3	42,86%
Product ordering (spare-parts, tools, etc.)	2	28,57%
Service ordering (maintenance, marketing, consulting, etc.)	4	57,14%
Invoice processing (checking, approving, accounting, etc.)	2	28,57%
Other tasks, what?	2	28,57%

Laboratory and product development:

	n	Percent
Finding new suppliers	1	50%
Finding existing suppliers for certain products or services	0	0%
Making and managing supply contracts	1	50%
Communicating with suppliers	0	0%
Product ordering (spare-parts, tools, etc.)	0	0%
Service ordering (maintenance, marketing, consulting, etc.)	1	50%
Invoice processing (checking, approving, accounting, etc.)	0	0%
Other tasks, what?	0	0%

Production function:

	n	Percent
Finding new suppliers	6	54,55%
Finding existing suppliers for certain products or services	2	18,18%
Making and managing supply contracts	3	27,27%
Communicating with suppliers	3	27,27%
Product ordering (spare-parts, tools, etc.)	8	72,73%
Service ordering (maintenance, marketing, consulting, etc.)	2	18,18%
Invoice processing (checking, approving, accounting, etc.)	6	54,55%
Other tasks, what?	0	0%

Sales function:

	n	Percent
Finding new suppliers	3	50%
Finding existing suppliers for certain products or services	0	0%
Making and managing supply contracts	1	16,67%
Communicating with suppliers	1	16,67%
Product ordering (spare-parts, tools, etc.)	0	0%
Service ordering (maintenance, marketing, consulting, etc.)	1	16,67%
Invoice processing (checking, approving, accounting, etc.)	2	33,33%
Other tasks, what?	1	16,67%

Q8: To which tasks related to indirect procurement you would like to get support (or would like your subordinates to get support) from the sourcing department?

Administration function:

	n	Percent
<i>No need for support</i>	4	23,53%
Finding new suppliers	3	17,65%
Finding existing suppliers for certain products or services	3	17,65%
Making and managing supply contracts	9	52,94%
Communicating with suppliers	2	11,76%
Product ordering (e.g. spare-parts, tools, etc.)	1	5,88%
Service ordering (e.g. maintenance, marketing, consulting, etc.)	2	11,76%
Invoice processing (checking, approving, accounting, etc.)	8	47,06%
Other tasks, what?	0	0%

Supply function:

	n	Percent
<i>No need for support</i>	3	33,33%
Finding new suppliers	4	44,44%
Finding existing suppliers for certain products or services	1	11,11%
Making and managing supply contracts	3	33,33%
Communicating with suppliers	2	22,22%
Product ordering (e.g. spare-parts, tools, etc.)	1	11,11%
Service ordering (e.g. maintenance, marketing, consulting, etc.)	2	22,22%
Invoice processing (checking, approving, accounting, etc.)	2	22,22%
Other tasks, what?	1	11,11%

Laboratory and product development:

	n	Percent
<i>No need for support</i>	1	16,67%
Finding new suppliers	1	16,67%
Finding existing suppliers for certain products or services	0	0%
Making and managing supply contracts	2	33,33%
Communicating with suppliers	3	50%
Product ordering (e.g. spare-parts, tools, etc.)	1	16,67%
Service ordering (e.g. maintenance, marketing, consulting, etc.)	1	16,67%
Invoice processing (checking, approving, accounting, etc.)	2	33,33%
Other tasks, what?	0	0%

Production function:

	n	Percent
<i>No need for support</i>	3	18,75%
Finding new suppliers	10	62,5%
Finding existing suppliers for certain products or services	4	25%
Making and managing supply contracts	6	37,5%
Communicating with suppliers	3	18,75%
Product ordering (e.g. spare-parts, tools, etc.)	5	31,25%
Service ordering (e.g. maintenance, marketing, consulting, etc.)	2	12,5%
Invoice processing (checking, approving, accounting, etc.)	3	18,75%
Other tasks, what?	0	0%

Sales function:

	n	Percent
<i>No need for support</i>	3	25%
Finding new suppliers	3	25%
Finding existing suppliers for certain products or services	2	16,67%
Making and managing supply contracts	6	50%
Communicating with suppliers	0	0%
Product ordering (e.g. spare-parts, tools, etc.)	0	0%
Service ordering (e.g. maintenance, marketing, consulting, etc.)	1	8,33%
Invoice processing (checking, approving, accounting, etc.)	5	41,67%
Other tasks, what?	0	0%