LAPPEENRANNAN-LAHDEN TEKNILLINEN YLIOPISTO LUT
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CO-CREATIVE AND LEAN BASED BUSINESS CONTROLLING PROCESS WITH COMPETENCE DEMAND AND COMPETENCE SUPPLY

Examiners: Associate Professor Lea Hannola
Professor Ville Ojanen

ABSTRACT

Lappeenranta-Lahti University of Technology LUT
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Co-creative and lean based business controlling process with competence demand and competence supply

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The goal of this thesis is to describe how a knowledge intensive project organization, which has grown by acquisitions, can become an integrated service dominant service provider by combining co-creation, knowledge-based thinking and competence management in its business, and how this can be done with one main business controlling process. This thesis investigates how this business controlling process works in practice and what kind of effects it has to the organization. Case organization can balance customer competence demand and competence supply with the business controlling process based on competence management and value co-creation. This makes possible to use rolling forecasting and makes forecasting easier in different organizational stages. Also, it increases the visibility horizontally in the organization.

This thesis composes of two different parts. First part is a comprehensive literature review which creates the foundation of service dominant logic, value co-creation and competence management. Second part of the study constitutes of case organization related empirical study where earlier presented theories are connected to solve a practical problem. Second part of the study first presents the how the business controlling process should work from theoretical perspective. After, semi-structured interviews are used to measure how well process work in practice. The results of the interviews also create a possibility to analyze process practical relevance and the effects it has.

The results of the study reveal that the practical relevance from competence demand perspective responds to planned process logic. Instead, the competence supply turned out to be more complex and more difficult to understand. To utilize competence supply more efficient, it requires a longer time frame than this research had. Process realized positive effects concentrated on more harmonized organization and better forecasting possibilities. Negative effects focused on process complexity. The process outlook for the future was positive and interviewees believed that organization can utilize process for many purposes in the future. In addition, possible negative effects focused on process implementation phase, neither the theoretical frameworks behind the process.

TIIVISTELMÄ

Lappeenrannan-Lahden teknillinen yliopisto LUT
School of Engineering Science
Tuotantotalouden koulutusohjelma

Miika Huuskonen

Yhteiskehittävä ja leaniin pohjautuva liiketoiminnan ohjausprosessi kompetenssien kysynnän ja tarjonnan avulla

Diplomityö
2020
98 sivua, 22 kuvaa, 6 taulukkoa ja 4 liitettä
Tarkastajat: Apulaisprofessori Lea Hannola ja Professori Ville Ojanen

Hakusanat: Yhteiskehittäminen, Palvelulähtöinen ajattelu, Osaamisenhallinta, Tietointensiivinen Projektiorganisaatio, Lean

Työn tavoitteena on kuvata, kuinka yritysostojen myötä laajentunut tietointensiivinen projektiorganisaatio yhdistetään ratkaisukeskeiseksi palveluntarjoajaksi hyödyntäen jatkuvaa yhteiskehittämistä tukevaa osaamislähtöistä ajattelua, sekä sitä tukevaa osaamisenhallintaprosessia liiketoiminnassaan. Työssä selvitetään, kuinka tämä prosessi käytännössä toimii ja millaisia vaikutuksia sillä on yritykselle. Osaamisenhallinnan ja yhteiseen arvon luontiin pyrkivän liiketoiminnanohjausprosessin avulla yritys pystyy tasapainottamaan liiketoiminnan kompetenssien kysyntää ja tarjontaa. Se luo myös pohjan rullaavalle talousennusteelle ja tämä helpottaa ennustamista organisaation eri tasoilta ja lisää näkyvyyttä horisontaalisesti organisaatiossa.

Diplomityö koostuu kahdesta osasta, joista ensimmäinen on kattava kirjallisuuskatsaus, joka luo palvelulähtöisestä ajattelusta, yhteiskehittämisestä ja osaamisenhallinasta koostuvan teoriapohjan. Toinen osa koostuu kohdeyrityksen case tutkimuksesta, jossa aiemmin työssä esitellyt teoriat yhdistetään käytännön ongelman ratkaisemiseen. Ensiksi liiketoiminnan ohjausprosessi esitetään, kuinka se teoreettisesti toimii. Tämän jälkeen prosessin toimintaa mitataan laadullisten haastattelujen avulla, jonka tuloksien pohjalta analysoidaan prosessin käytännön toimivuutta ja sen aiheuttamia vaikutuksia.

Työn lopputuloksista huomataan, että kompetenssien kysynnän osalta käytännön toimivuus vastaa teoreettisesti haluttua tasoa enemmän kuin kompetenssien tarjonnan näkökulma. Kompetenssien tarjonta koettiin kompleksiseksi asiaksi, ja sen käytännön toimivuus vaatii enemmän sisäistämistä ja aikaa. Prosessin positiiviset, realisoituneet vaikutukset keskittyivät yrityksen yhtenäistymiseen ja aiempaa laajempiin ennustusmahdollisuuksiin. Negatiiviset vaikutukset keskittyivät lähinnä prosessin kompleksisuuteen. Tulevaisuuden näkymät prosessin vaikutusten kannalta olivat positiiviset ja haastateltavat uskoivat, että yritys hyötyy prosessista usein eri tavoin. Lisäksi mahdolliset negatiiviset vaikutukset keskittyivät prosessin lähinnä käyttöönoton onnistumiseen, eikä prosessin taustalla toimiviin teorioihin.

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I have had a change to meet awesome persons during these five and half years. You are the key reason why these years have been the best years of my life. I have got many life-long friends and I believe we will share many awesome moments together in the future. I would like also to thank the university and all the teachers I had possibility to cooperate. You have provided me the possibility to improve my skills, acquire new knowledge and challenge myself.

Finally, the biggest thanks belong to both my parents and my girlfriend Stiina. You have supported me when I have had hard times. There are not enough words to express how much that has meant to me. With your support I have been able to pursue my dreams and I will continue to do that also in the future.

Helsinki, 9.9.2020

Miika Huuskonen

TABLE OF CONTENTS

FIGURES

TABLES

ABBREVIATIONS

A2A	Actor to Actor
FP	Foundational Premise
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CMS	Competence Management System
CPQ	Configure, Price, Quote
CRM	Customer Relationship Management
G-D logic	Goods Dominant Logic
MDS	Master Data Services
KIPO	Knowledge Intensive Project Organization
KIF	Knowledge Intensive Firm
S-D logic	Service Dominant Logic
T&M	Time & Material
TPS	Toyota Production System

1 INTRODUCTION

This introduction chapter presents the background of the research and main topics of the thesis. This chapter starts with the background which gives an information about the purpose of the study. Secondly, research objectives and questions are presented. Thirdly, the research methodology and data are briefly presented. The Introduction chapter ends with presenting the overall structure of the thesis before continuing to the literature review and empirical part of the study.

1.1 Background

The role of services has become more central in economy and from 1965 to 2010 service-based economy has increased approximately from 62 percent to 82 percent on a global level. One explaining factor for this increase is raised demand for more skill-intensive output. (Buera et al., 2019, p. 1-2) European Commission (2020) states that services are the future motor for growth in economy. When economy is changing to service driven based and that emphasizes knowledge-intensive work importance. In recent years, many organizations have begun to evolve their business strategies towards offering service-oriented solutions to customers from focusing on just product deliveries (Plouffe et al. 2020, p. 79). Drucker (1990, p. 83-87) states that, knowledge intensive workers role in modern organization is important when they are a fundamental capital asset for the organization. When knowledge intensive workers productivity is hard to measure, managing knowledge workers can be seen as a big challenge in a leadership perspective.

Lean methodologies have provided help to optimize production in product-based manufacturing industry for decades. Connection between lean manufacturing and services is expected to gain more popularity in service organizations where possibilities to eliminate waste are high. Results for lean methodologies implementations have not yet been as successful or widespread as expected. (Andrés-Lopez et al., 2015, p. 23) Vignesh et al. (2016, p. 1) also note that lean implementations have been successful in the manufacturing sector, but in a service sector it is still gaining its importance. Malmbrandt & Åhltsröm (2013) annotate that interest

among service organizations lean practices adoption is increasing but research about lean methodologies adoption in services are still primitive compared to manufacturing industry.
When the role of services is emphasized, that also changes the nature of the markets. In VTT report from 2009 there are five changes which will affect to every industry. One of those was development of technology and digitalization. Also, the role of the knowledge intensive business services will increase when the demand of services increases. Report also highlights the question how organization can increase their interaction between customers with utilizing technology. Puusa et al. (2013, p. 245) emphasizes that organization must be open for co-operation with customers and with other stakeholders. The role of the organization's own workforce is emphasized because it is mentioned as one of the principal stakeholders in the organization.

Vähä et al. (2009) emphasizes organizational structure in service-based economy and how that also reflects to the market competition. Competitiveness achieved by organizational structure changes and competence management are harder to reach than good-based economy. To achieve service-dominant logic in daily business, it requires resources, willingness, and sustainability. Evans (2016) remarks that for achieving financial benefits with service dominant logic thinking combined with resources it is important to know how those resources are allocated and deployed.

Kuula (2020a) highlights that service development is still stuck on old patterns where the company develops a product and puts it on the market. In a rapidly changing markets roles of co-creation and lean methods are emphasized. Company with the best ability to adapt to the market changes, is the strongest.

When the market changes to service driven, the resources are more like knowledge type than product type. This makes a significant potential to utilize widely competence management information, where competences are the resource particles, and adapting those build a possibility for organization to react agile to the changes in the market. It is also creating potential to adapt competence portfolio to match customer needs. Connecting competence management to the service dominant logic and lean methodologies principles, it provides interesting possibilities from both, academical and practical perspectives. This sort of a topic

has been featured more in recommendations for future research than in actual research topic which creates great baseline for this thesis report.

1.2 Research Objectives and scope

The aim of this study is to describe how an organization, which has grown mainly by acquisitions, can become an integrated service provider, which uses service dominant logic and co-creation supporting knowledge-based thinking and supporting competence management in its business. In addition, the objective of the research is to describe how organization can combine those elements in a one business controlling process. Research also examines how this process works in practice and what kind of effects process has to different organizational functions. The findings of the research are used to model the business controlling process in practice and that can be compared to planned process and how well different theories in the literature are visible in the process. Those theories are presented in literature review. Three research questions were formed to reach the targets of the study. Those questions are presented in Table 1 with the objectives.

Table 1. Research questions and objectives

Research Question	Objective
1. How is business controlling process possible to create based on competence demand and competence supply information?	Describe business controlling process key elements and workflow.
2. How does business controlling process work in practice from different organizational functions perspective?	Identify key elements of how competence supply and competence demand-based business controlling process works in practice and from different functions perspective.
3. What kind of effects business controlling process has?	Evaluate how different company's functions can be utilized from competence driven value creation.

First question concentrates on describing key elements behind the business controlling process and how competence demand and supply controlling solution creation is possible. To support the first question thesis report presents case company background and the problems before the beginning of the business controlling process implementation project. Implementation project early stages are also briefly presented which makes the foundation for making business controlling process possible. This includes Competence Management System (CMS) implementation and business planning solution implementation.

Second and third question input data are gathered from qualitative interviews. Second question objective is to identify how implemented process works in practice and how it works from different organizational functions perspective. Third research question objective is to find what kind of effects process has. Table 2 presents research questions and input data relationship and what is the desired output of the data and research question combination. Based on research questions two and three, it is possible to model the current state of the business controlling process.

Table 2. Research questions and data relationship

Input Data	**Research Question**	**Output**
Literature review, internal documents, and data from company source systems	RQ1	Description and workflow of the process
Qualitative interviews	RQ2	Process practical relevance
Qualitative interviews	RQ3	Process effects
Literature review, internal documents, and data from company source systems, Qualitative interviews	RQ1+RQ2+RQ3	Model of process current state

This study approaches competence management and service-dominant logic from a little bit different angle referring to the earlier research. Connection between service-dominant logic and competence management are used for wider perspectives than in earlier studies. Research concentrates on three different functions of the organization. Those functions are finance,

delivery, and sales. Delivery in this context means business units, which main purpose is to provide services to the organization's customers. One important function is scoped out because the time frame of the study is too short to make reasonable conclusions about from that function perspective. This function which is scoped out is people operations and it concentrates on competence acquisition. Short time frame also scopes out couple interesting viewpoint which could have been in the centrum of the research. The research is made during the implementation stage of the process which is why the strategic- and change management perspectives are scoped out of the study because the information about long term effects are impossible to gain yet.

Recent studies about competence management have discussed competence management topic often in technical perspective and research main point have been CMS technical modelling and implementation related case studies. (Boumezoued & Boudjlida, 2019; Stepanenko & Kashevnik, 2017; Niemi & Laine, 2016a). This thesis briefly presents the main parts of the CMS implementation, but it concentrates in information what CMS data can provide to the organization and how CMS data can be used for business controlling purposes. Competence management is one important part of the study where service dominant logic theoretical framework creates the other central part of the study. Two main theoretical frameworks are included in the thesis report in literature review. There is also briefly discussed two other theories presented in the report which are basics of lean methodologies and brief discussion about knowledge intensive project organization (KIPO). KIPO is presented in chapter four when case organization is handled. The reason why those are not chosen to literature review is that basic theoretical background for S-D logic and competence management are commonly more unknown and scope of the thesis report would be too wide if all four theories are discussed more widely. Also, from the business controlling process perspective competence management and service dominant logic constitute together the underlying logic of the process. Lean brings some special characteristics to the service dominant logic and KIPO are more case related theory than the process overall functioning related. Theoretical framework is presented in Figure 1 where triangle reflects the importance of the theory.

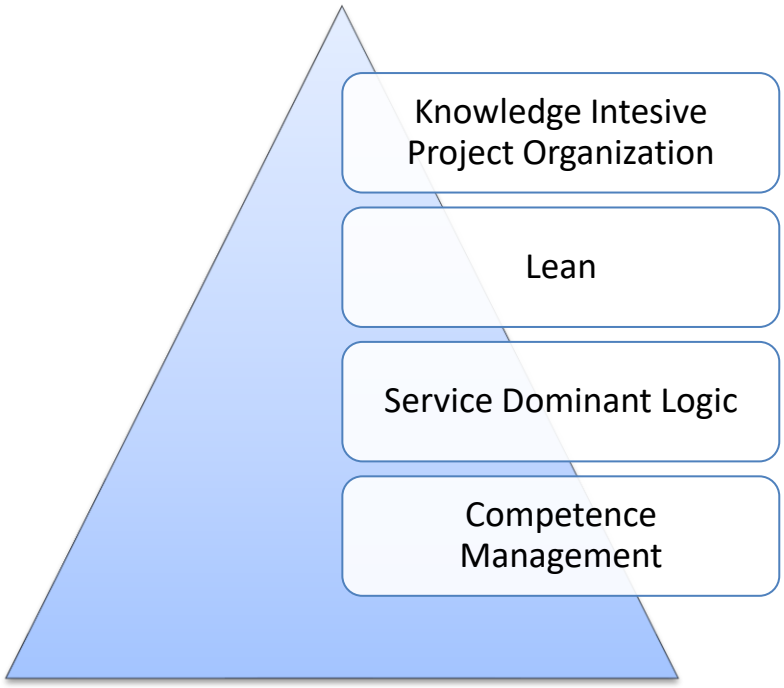

Figure 1. Theoretical framework of the study

1.3 Methodology and data

This study research method of this study is constructive research method which is a hyponym for case research method. (Lukka, 1999) Constructive research is a procedure for producing innovative constructions which aim to solve real world problems and contribute to the theory of the discipline in which is applied. (Lukka, 2003, p. 84) Constructive research as a methodology starts with identifying the practical problem. Identified research problems are used to propose research questions that address the problem. Questions are solved developing or constructing a solution which will be operationalized to determine its workability and appropriateness. In constructive research the reason and experience are the fundamental criteria in the solution of problems instead of non-rational. (Oyegoke, 2011, p. 576)

The aim of constructive research is to combine practical problem solving while producing an academically appreciated theoretical framework. (Lehtiranta et al., 2015 p. 95) The key idea behind constructive research is the construction which is based on the existing knowledge and can have few missing links. Typical construct research fields are models, organizational charts, and software development methods. (Crnkovic, 2010). Kasanen et al. (1993) states that

constructive approach is intended to produce managerial constructions. Constructive research approach has been popular in the field of business administration and it has raised its potential also in the field of information systems and medicine (Lukka, 2003, p. 83).

Constructive research method implies building of an artifact that solves a domain specific problem to create knowledge about how the problem can be solved, explained, understood, or modeled. Research also gives results which can have theoretical and practical relevance. (Crnovic, 2010) Constructive research method has potential to bridge the gap between academia and practice and it is used especially in project-based organizations.

Constructive research consists of six different stages. In the first stage aim is to find the problem to solve. Second stage finds theoretical background for problem which want to be solved. Third stage gathers solution for first stage identified problem and fourth stage test solution's functionality. In the fifth stage method states connections of solution to theoretical framework and last stage examines solution's implementation scope.

When organization implement the construct created in the constructive research approach it passes the weak market test, suggesting that created construct has practical value. Passing semi-strong and strong market test, it requires usage in other organizations, or the financial benefits of the use apply to multiple businesses. (Rautiainen et al., 2017)

The background for the research problem is based on case organization internal documents and interview with the case organization Chief Executive Officer (CEO) before the start of the thesis project. The data in the company related research are gathered mainly two different ways to support selected research method. Data for quantitative analysis are gathered from company's source systems which are related to the business controlling process. Source systems include business planning solution, CRM, Comptence Management System (CMS) and Master Data Services (MDS). Role of each system in business controlling process is presented in chapter four. Data for the quantitative analysis are gathered between March 2020 to June 2020.

Data for qualitative analysis are gathered from interviewing persons from different organization's functions. Interviews discuss how business controlling process works and what

kind of effects this process creates. All the chosen organizational functions have relationship with business controlling process. Target group include respondents from three different functions: delivery, finance, and sales. One of the interviewees is the member of the case organization management team which gives possibility to analyze how effects vary in different organizational stages vertically.

The chosen research method in this thesis supports earlier research about the topic where Niemi (2017) recommends for future research in his doctoral dissertation that new constructions aiming at better integration and visualization of customer demand in competence management context. This thesis report presents process which connects competence management and customer demand together and the objective is to form a construction of a process where practical functioning and relevance is tested and construction has theoretical contribution and connections to literature around the topic.

Figure 2 presents the four basic elements of the constructive research. Contrasting those to this study, the business controlling process practical relevance and practical functioning is tested with the research questions two and three. Models of the current stage of the process and planned process has connections to theories presented in the literature review in chapters two and three. Study also aims to create theoretical contribution around the service dominant logic and competence management topics where the amount of studies connecting these two topics are currently slight.

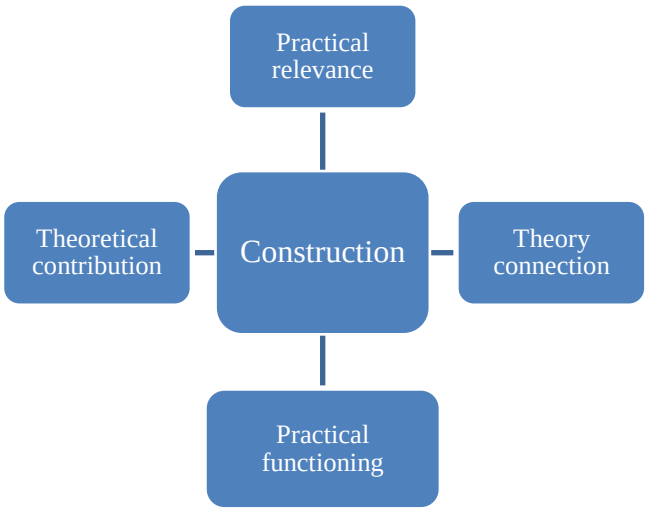

Figure 2. Elements of constructive research (Adapted from Kasanen et al. 1993)

Figure 3 presents the research process of the thesis report starting with problem definition and ending up to the validation of the results. Research process is divided to eight different steps and two of those constitutes the empirical research part of the study.

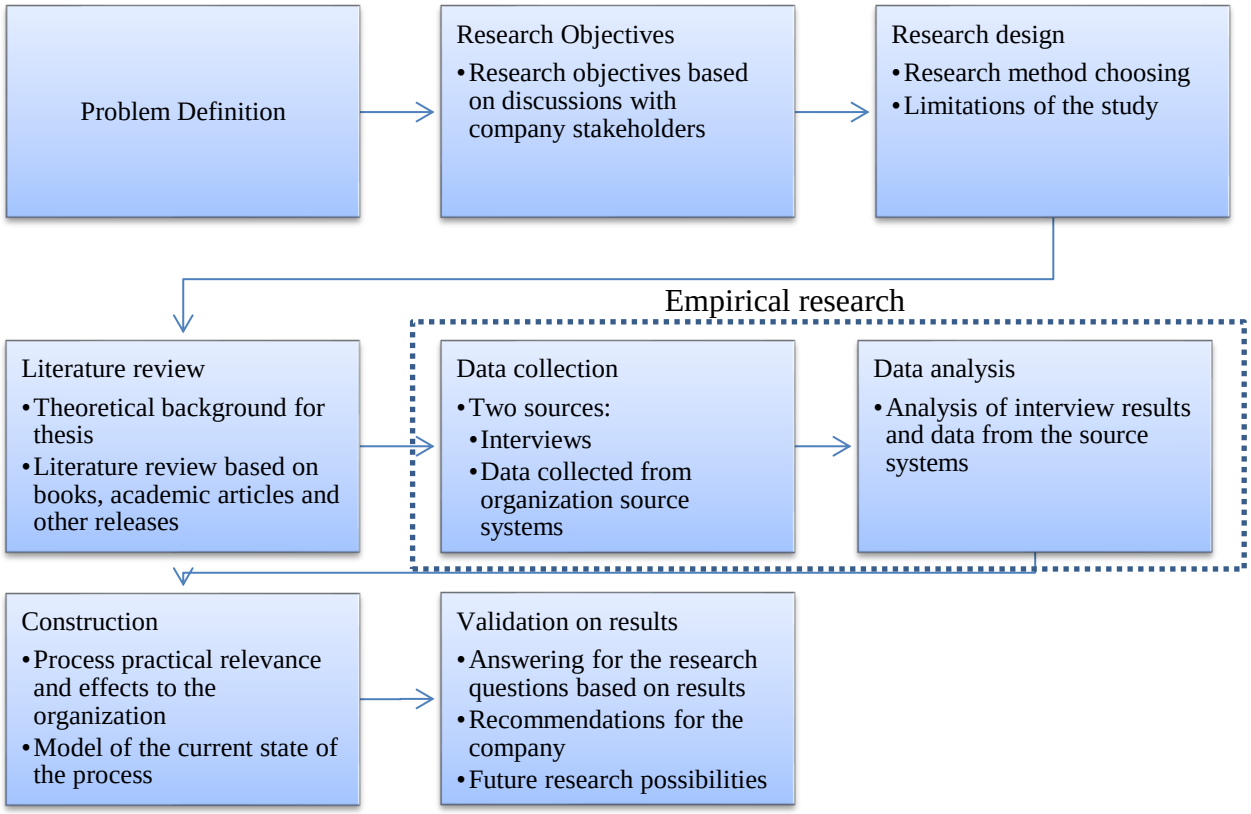

Figure 3. Research process of the thesis

1.4 Structure of the thesis

This thesis includes six main chapters. First chapter is introduction which describes the background, research questions and research methodology. First chapter gives a general information for reader of the thesis report. Second and third main chapter of the thesis report constitute the literature review of the study. Those two chapters combine main theories which are later used for case company research. The objective of the chapter two is to introduce concepts of service dominant logic and co-creation thinking and how those two ways of thinking are linked together. In chapter two lean methodologies is also presented briefly. Chapter three introduces competence management main principles by addressing the past research of the topic. With literature review reader can combine theoretical framework to practical problem solving in the end of the thesis report. Chapters two and three also operates as a constructive research method second stage where the objective is to present strong theoretical background for the problem.

Chapters four and five constitute the empirical part of the thesis report. Fourth main chapter describes the case company background and problem description. Chapter four also presents the background the business controlling process and model of the planned process. After reader understand the business controlling process background, fifth chapter presents and analyzes interview results, concentrating on business controlling process practical relevance and effects in organization. Chapter five also presents the model of the current state of the business controlling process which is possible to compare to the model presented in chapter four. Sixth chapter is the final chapter of the thesis report which presents the summary and discussion of the report. It presents answers to the research questions, recommendations for the case company and future research possibilities.

The storyline of the thesis is following: Literature review presents key theories and prepares reader for empirical part of the thesis. After basic theoretical background is presented, reader can combine those with the case company problem description and follow the case company research process. During the case company research process, business controlling process functionality in practice is tested and reader can notice differences between the planned process which is based on literature review presented theories and how those works in practice. Table

3 below presents the input and output of each chapter to briefly describe the contents of the thesis report.

Table 3. Structure of the report

Input	Chapter	Output
General information about the thesis and research framework	Introduction	Background, research questions and objectives, research scope, structure of the report
Literature about the Service-dominant logic, value co-creation and lean methodologies to clarify the terminology and key definitions	Theoretical framework for Service-dominant logic and Lean	Knowledge of the concepts of service dominant logic and especially value co-creation
Literature about the Competence management to clarify the terminology and key definitions	Theoretical framework for competence management	Knowledge of second main theory of the thesis
Data from case company source systems and the results of the literature review	Empirical Case	Description of case company and analysis of how business controlling process works in theory
Data from the case company interviews and results of the literature review	Business controlling process in practice	Description of how the research is conducted including the data collection and interview design, description about how business controlling process works in practice and what kind of effects it has for different organizational functions
Results of the literature review and analyzed interview results	Conclusions and Discussion	Answers to the three research questions, conclusions, recommendations for the company, and future research possibilities

2 THEORETICAL FRAMEWORK FOR SERVICE DOMINANT LOGIC AND LEAN

This chapter presents the first theoretical framework related to the service dominant logic. The chapter concentrates on the theoretical background related service dominant logic and value co-creation. This chapter presents also briefly lean theoretical background which prepares reader for the empirical part of the report. The chapter starts with explaining the role of service and the concept of the service-dominant logic and the key elements of it, including foundational premises, axioms and operand and operant resources. After this, co-creation is presented, followed by main elements of it and how it relates to service-dominant logic. Then, value creation spheres are presented in brief. Lastly, lean theoretical background is presented in brief.

2.1 Service-Dominant Logic (S-D Logic)

Marketing has moved in 100 years from a goods-dominant view, where tangible output and transactions were central, to a service-dominant view, in which relationships, exchange processes and intangibility are the central elements. Likewise, the definition of service has changed from something offered to exchange a good or a classified service as health care to be the application of specialized knowledges and skills which through processes and performances benefit entity itself or another entity. (Vargo & Lusch, 2004, p. 2; Vargo, 2009, p. 374)

Service is the central element in service dominant logic. Grönroos states (2008, p. 300) that there are three different aspects of service which is used in the literature today:

1. Service as an activity
2. Service as a perspective on the customer's value creation; and
3. Service as a perspective on the provider's activities (business logic).

First aspect, service as an activity is a traditional process where someone does something to assist someone else. Second and third aspects can be defined as a foundation for customers' purchasing and consumption processes (2. aspect) and for service-providers' business and marketing strategies (3. aspect). Edvardsson et al. (2005) state that service concept can be more

important as a perspective than as an activity. This is considered in service dominant logic, which is presented next.

Vargo (2011) defines S-D logic as a “pretheoretical” perspective that conceptualizes business exchanges in the economic and social world from a service-based perspective. It changes the overall mindset of suppliers from offering something to the customer to offering it with the customers (Vargo & Lusch, 2004). This approach offers a metatheoretical framework that identifies service and the process of using resources for the benefit of another actor. In S-D logic goods are the service-delivery mechanisms (Vargo & Lusch, 2019). S-D logic can be also seen as a network of economic and social actors instead of single organization which concentrates only economic exchange. (Lusch & Nambisan, 2015)

In S-D logic the fundamental purpose of an enterprise can be described as to serve itself by serving others. It is done by integrating internal resources and available resources from other sources to create new resources which can benefit other enterprises. (Vargo & Lusch, 2014, p. 17) S-D logic have direct and indirect connections to practice but organizations are still usually driven by goods/service divided, industrial logic. Growing service sector provides practical implementation possibilities for S-D logic, when organizations start to approve a thinking, where impact of all stakeholders are considered, and value are created together. (Gummesson et al., 2010, p. 20)

Vargo et al. (2008) refer the conventional view of economics as the goods-dominant logic (G-D logic). This conventional view of thinking is based on value-in-exchange where value is created by the company and distributed in the market through exchange of money and goods. The roles of the customer and the provider are distinct, and the value is created often by the provider in series of activities. Alternative way of value creation is service-dominant logic (S-D logic), which is based on a value-in-use. In this view the roles of customer and provider are not distinct, and value is always co-created in interactions among provider and customer through integration of resources and application of competences. (Figure 4)

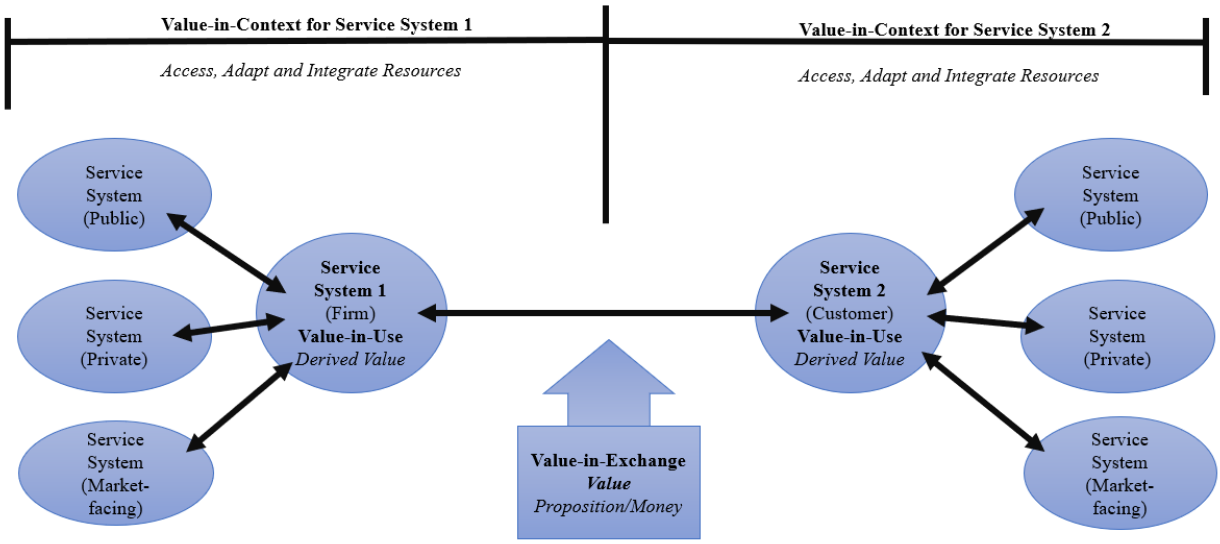

Figure 4. Value-in-context, Value-in-Use and Value-in-Exchange (Adapted from Vargo et al., 2008, p. 149)

Value-in-exchange can be described by following way: service provider produce a service and they transform resources to something that customer wants. The value is created by the provider itself exchanged in the marketplace usually for money. The value is measured by the exchange transaction. Value-in-use co-creation can be described by following way: service provider apply their knowledge and skills in the production of a service, on the other hand customer apply their knowledge and skills in the use of it and value is co-created by the customer and provider relationship (Vargo et al., 2008) Term Value-in-use has been modified to more S-D logic friendly concept, which is value-in-context (Chandler & Vargo, 2011, p. 45).

2.2 Service Dominant Logic foundational premises

Service dominant logic can be divided to key ideas, which are called as foundational premises (FP). From 2004 to 2016 service dominant logic foundational premises have been developed iteratively. (Vargo & Lusch, 2016, p. 8) Foundational premises are presented in table 4 below.

Table 4. Development of service dominant logic foundational premises (FP)

Foundational Premise	2004 (Vargo & Lusch 2004)	2008 (Vargo et al., 2008)	2016 (Vargo & Lusch 2016)
FP1	The application of specialized skills and knowledge is the fundamental unit of exchange	Service is the fundamental basis of exchange	No Change
FP2	Indirect exchange masks the fundamental unit of change	Indirect exchange masks the fundamental basis of exchange	No Change
FP3	Goods are distribution mechanisms for service provision	No Change	No Change
FP4	Knowledge is the fundamental source of competitive advantage	Operant resources are the fundamental source of competitive advantage	Operant resources are the fundamental source of strategic benefit
FP5	All economies are service economies	No Change	No Change
FP6	The customer is always the co-producer	The customer is always a co-creator of value	value is co-created by multiple actors, always including the beneficiary
FP7	The enterprise can only make value propositions	The enterprise cannot deliver value but only offer value proportions	Actors cannot deliver value but can participate in the creation and offering of value propositions
FP8	Service-centered view is customer oriented and relational	A service-centered view is inherently customer oriented and relational	A service-centered view is inherently beneficiary oriented and relational
FP9		All economic and social actors are resource integrators	No Change
FP10		Value is always uniquely and phenomenologically determined by the beneficiary	No Change
FP11			Value co-creation is coordinated through actor-generated institutions and institutional arrangements

Vargo & Lusch published first eight foundational premises in year 2004. Foundational premise 3 and foundational premise 5 are the only premises which have not changed between 2004 and 2016. Number of foundational premises has been increased from eight to eleven between years 2004 to 2016. During those years some of the definitions of premises have been changed, because of more accurate research around the topic. Vargo & Lusch (2016, p. 7) mention the need of modifying the FP language and some of the FPs are more foundational than others. This

can be seen in FP6 case, where customer role in value creation process have been changed from co-producer to co-creative participator.

Earlier mentioned value-in-context term combines service-dominant logic foundational premises 9 and 10 which argues that thinking is moving towards more generic actors, actor-to-actor (A2A) orientation from producer/customer thinking. Actor can be described as an enterprise which includes to the process to benefit other actors. All the actors have same role, they integrate resources and engage in service exchange, in process of cocreating value (Vargo & Lusch, 2016, p. 6-7; Vargo et al. 2008, p. 149).

2.3 Axioms

S-D logic also includes axioms, which can be referred as key concepts of it. Axioms also have connections to foundational premises. S-D logic holds five axioms which are presented in figure 5 with descriptions and connections to foundational premises.

The Axioms of S-D Logic	Axiom 1 / FP1	Service is the fundamental of exchange
	Axiom 2 / FP6	Value is cocreated by multiple actors, always including beneficiary
	Axiom 3 / FP9	All social and economic actors are resource integrators
	Axiom 4 / FP10	Value is always uniquely and phenomenologically determined by the beneficiary
	Axiom 5 / FP11	Value cocreation is coordinated through actor-generated institutions and institutional arrangements

Figure 5. Service dominant logic axioms (Vargo & Lusch, 2016, p. 18)

Axioms and foundational premises are statements that are assumed to be true. They form a basis for a deeper explanations and knowledge development. The role of the axioms and foundational premises of service dominant logic is to provide a framework for viewing all actors in the process of exchange. (Vargo & Lusch, 2014, p. 80)

The first axiom, *Service is the fundamental of exchange*, is based on the definition of service. When service is the application of operant resources for the benefit of another actor. This also includes three different statements: 1. Goods are appliances for service provision 2. All businesses are service businesses 3. All economies are service economies. (Vargo & Lusch, 2014, p. 15)

Second axiom, *The customer is always a cocreator of value*, sees company as service provider and customer as involved to value creation process with the provider. Grönroos (2011, p. 287) mentions that the second axiom of service dominant logic states that both: provider and customer are involved to value creation process but the axiom abandon how much customer or provider processes or activities are involved to the process. Grönroos (2011, p. 288) states that Vargo & Lusch definition for S-D logic's second axiom is too simplistic to be useful part of decision making and theoretical development. It also can lead to invalid management decisions and also academically misleading theoretical conclusions.

Third axiom, *All social and economic actors are resource integrators*, describes that integrable resources come from different sources and through the service provision of the resources. Resource integration occurs with directly available actors involved in an exchange and also indirectly with the resources and actors that provide these resources in a network of other resource-integrating actors. (Vargo & Lusch, 2014, p. 16)

Fourth axiom, *Value is always uniquely and phenomenologically determined by the beneficiary*, purpose is to verify that all market offering, all service provisioning, all goods and all value propositions are integrated differently by the unique involving actors. That makes value always uniquely experienced and determined. (Vargo & Lusch, 2014, p. 16)

Fifth axiom, *Value cocreation is coordinated through actor-generated institutions and institutional arrangements*, role is to emphasize the role of the institutions in value co-creation. It expands thinking to handle wider networks which can include multiple institutions. It makes the S-DL framework applicable to all exchange. This strengthens the role of the S-DL framework from theoretical aspect and makes it more general. (Vargo & Lusch, 2016, p. 18)

2.4 Operant and operand resources

In S-D logic resources can be divided in two different categories: operant and operand resources. Resources can be defined as operand resources when resources require an action to be performed on them. Operand resources also are typically defined as tangible resources. Operant resources instead can act on other resources and those can be described as soft or intangible resources. (Constantin & Lusch, 1994; Archpru et al., 2011)

The role of operant resources began to shift in the late twentieth century when knowledge and skills realized as the most important types of resources. Operant resources can be described as invisible and intangible. Often those are core competences or organizational processes. Operant resources are more dynamic which differs in operand resources. (Vargo & Lusch, 2004) Foundational premise number four also highlights the role of the operant resource when it states that operant resources are the fundamental source of competitive advantage. In this context competition is a secondary motivator and the primary motivator should be the value cocreation through service provision. (Vargo & Lusch, 2016, p. 8) Operant resources role has become more evident to both sides: customers and providers as service and solutions are exposed for the quality of value they offer. Company must broaden their perspective to adopt the importance of operant resources as those are the particles which collaborates with customer operant resources through interaction and which together accumulate as a unique group of value. (Michel et al., 2008, p. 62)

Operant resources can be hierarchies to three different levels: 1) Basic, operant resources, 2) Composite, operant resources and 3) interconnected, operant resources. All those three different categories are combination of basic or other operant resources. First level operant resource is a knowledge of individual employee. Second level, composite operant resource is a combination

two or more basic resources which is more difficult to acquire or developed. Highest level, interconnected, operant resources is a combination of two or more basic or higher-order operant resources where the lower order resources interact in enabling the firm to efficient market offering possibility. (Madhavaram & Hunt, 2008, p. 70-71)

2.5 Value co-creation

Connection between S-D logic and term co-creation is based on the idea that in S-D logic customer becomes a co-creator of value. S-D logic second axiom states that the customer is also cocreator of the value. In recent years, popularity of concept value co-creation has increased among the researchers in different fields especially in the marketing (Yi & Gong, 2013). Co-creation is becoming the cornerstone of marketing and design practices and its managerial perspective is rapidly being seen as more important among both, researchers, and professionals. (Vargo & Lusch, 2004; Vargo & Lusch, 2008)

Value co-creation can be defined as an integration where resources from various sources by multiple actors to realize benefits in the beneficiaries' use and the customer is always on actor role in value co-creation. (Vargo et al., 2019) In value co-creation perspective customers and providers are not anymore on opposite sides. They interact with each other and they create value in a way which differs radically from traditional supply and demand model. (Gummesson et al., 2014, pp. 643-644) Value co-creation is the integration and application of resources that contribute to the creation and determination of phenomenological value (Archpru et al., 2011, p. 255).

Co-creation is based on the opportunities to create value through interactive process with different stakeholders, including customers and suppliers, to make them participants in the definition of their interactions with the firm. (Navarro-Garcia et al., 2015) Both parties involve processing of cooperation and it approaches businesses in a new way when customers are also defining the service to be provided (Fang et al., 2008)

Provider is in charge of the production process and customer can participate as a co-producer or co-developer. Most of this production process is potential value generation where resources

for customers' use are developed without interaction with customer. Customer oversees value creating processes where the real value is generated. There are also possible to create joint value where interactions take place and customer creates value together with the provider. If there are no interactions, provider is only facilitating the value which customer in the future creates itself. (Grönroos, 2011, p. 292)

Co-creation can be derived to two main components: co-creation of value and co-production of value. First component involves the direct interaction or conformable third foundational premise: goods are distribution mechanisms for service provision, between provider and the customer in the intersection of those two. Second component indicates that customer is also involved in the creation process with participation to production. (Lusch, 2006, p. 284)

Figure 6 presents the narrative of value co-creation. Vargo & Lusch (2016, p. 7) says that the narrative of value co-creation process is: "*one of resource-integrating, reciprocal-service providing actors cocreating value through holistic, meaningladen experiences in nested and overlapping service ecosystems, governed and evaluated through their institutional arrangements.*" In other words, value co-creation process includes actors which integrates resources and creates value in service ecosystems. It expands the approach from customer-provider thinking and process observes more complex situations where value co-creation can be composed of complex service ecosystems where number of actors are also high.

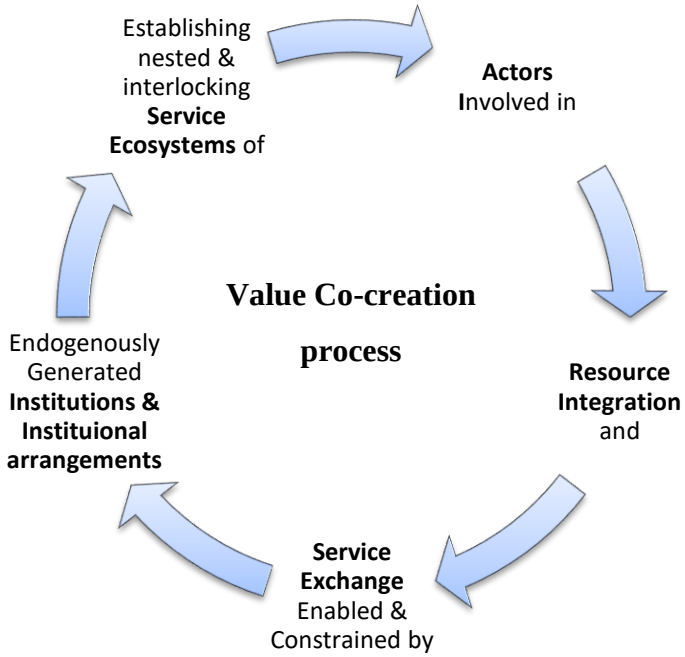

Figure 6. Value co-creation process (Vargo & Lusch 2016, p. 7)

Heinonen et al. (2010, p. 13) presents reverse view to co-creation requirements: Service provider company should focus on how it can become a part of customer's daily activities rather than thinking how customers can be involved in co-creation process. Value co-creation are basically on service dominant logic related literature defined as a process that includes actions by service provider and a customer. Therefore service-provider together with customer are co-creators of value. Profound definition for value creation is not defined for example with roles of the service-provider and the customer. (Grönroos, 2008; Grönroos & Voima, 2013)

Researchers emphasize the benefits and the significance of value co-creation. However, Harris et al. (2010) notify that benefits and potential from the value co-creation are huge but it is also possible that value co-creation become value co-destruction and it can be also outcome from provider and customer interaction. Plé & Chumpitaz (2010, p. 431) define value co-destruction:*" interactional process between service systems that result in a decline in at least one of the system's well-being"*. Before implementing S-D logic-based strategy it is important to recognise where and how value co-destruction might occur.

Ramaswamy (2011, p. 195) emphasizes that concept of the market, from people as a target for goods and services offered by a firm have changed to be a forum where people outside the firm are participating to value creation process. He also mentions that co-creation of value consist of multi-sided interactions through continuous dialogue and transparency, access and visualization of experiences that can enable better risk-rewarded assessments. Goods, services, activities, and processes do not disappear. Rather they must be designed around to support co-creation.

2.6 Value creation spheres

Value creation can be divided into three different spheres. Those spheres illustrate the role of the customer and provider in value creation and how it varies between different value creation spheres. Spheres are illustrated in figure 7 below.

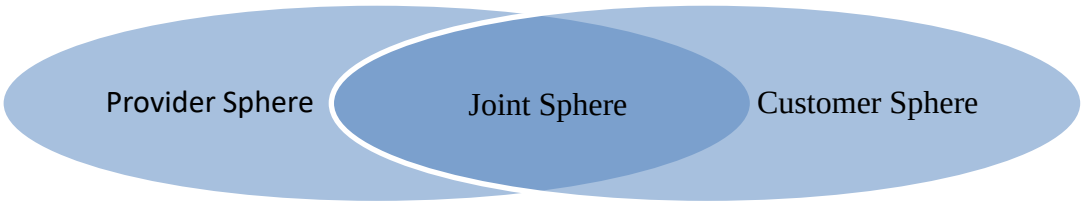

Figure 7. Value creation spheres (Adapted from Grönroos & Voima, 2013)

The first sphere is provider sphere where company is responsible of production process which includes design, development, manufacturing, delivery, back-office and front-office processes and company produces resources and processes for customers' use in the provider sphere. Company provides potential value-in-use and it can be characterized as a value facilitator. (Grönroos & Voima, 2013)

Next sphere is joint sphere where customer role splits to two different roles. It co-produces resources and processes with the company and create value jointly with the company. In this sphere value be generated through interaction. It is important that customer and company have direct interactions between each other because those interactions make possible to co-create the value. If direct interactions do not exist, value co-creation is not possible. Even if there is interaction between company and customer, it does not mean automatically that the value is co-created, and company engagement can have also negative influence on customer value creation. To guarantee positive impact to value creation with the customer it is important to recognize the role of the company employees' who interact in the customer-interface with the customer. Gummesson (1991) describes those employees as a part-time marketers. (Grönroos & Voima 2013; Grönroos & Raval, 2011)

The last sphere is customer sphere where customer creates value independently and there are no direct interactions between provider and the customer. Customer sphere can be described as the experiental sphere which is outside direct interactions and where the value is created through customer's resources and processes. (Grönroos & Voima, 2013)

2.7 Lean thinking

Lean thinking was first built up in the Toyota Production System (TPS). Ohno (1988) defined six principles of lean thinking which are 1) Respect for people, 2) Continuous improvement, 3) a pull-driven process, 4) root problem solving, 5) continuous learning in organization and partner networks and 6) long-term thinking over short term goals. S-D logic emphasizes value co-creation with customer and how provider should also participate value co-creation process. S-D logic can be connected to lean thinking when value is primarily created by customer demand and the value stream is constituted satisfaction enabling sequence of activities. (Andrés-Lopez et al., 2015, p. 25) Kuula (2020b, p. 43) defines the link between SDL and lean thinking in a following way: *"in value co-creation the supplier's processes can be seen as a value stream wherein core competences are the pull-driven value particles, bridging SDL to lean thinking".* In a service environment pull means to distribute the customer demand all along the value stream and the deliverable is based only on actually demanded by the customer. (Andrés-Lopez et al., 2015, p. 25) Operant and Operand resources are the value stream particles

and value creation is based on pull-driven customer demand, which enables both customer and provider participation to value creation process.

Lean manufacturing has five basic principles. First is specify value from the point of view of the customer meaning that customer is not buying products rather results or solutions. Second principle is value stream where the focus is on the whole supply process of a one object or product and not in one process step or department point of view. Flow is the third principle meaning product or object flows through value adding processes and manufacturing company should avoid non-value adding steps and never delay step which adds value. Fourth principle is pull, which emphasizes customer demand role. Pull means that company reacts to customers' rate of demand with production but not over producing. Final principle is perfection. It means that production should aim not only quality but also producing exactly what customer wants with exact time, to a reasonable price and with minimum waste. (Shirvastava et al., 2015, p. 97)

Value adding in lean knowledge work concentrates transactional deliverables of a customer experience to a much broader perspective. It includes transformational aspects of building collaborative and engaging relationships with customers. Organizations create value through interaction with different stakeholders including suppliers, customers, and employees. (May, 2005, p. 34-35) Creating the flow concentrates the role of internal operations of the organization including delivering value, eliminating waste, and pursuing optimum performance. It requires ability to match talent to task, build shared values among team members and continually develop the full potential of individuals. (May, 2005, p. 35)

In service-based organizations, lean implementation normally focuses on the back-office processes which has high volume and low variety. Service based organizations are lagging implementing sequential pull system between different functions. Lean implementations in service sector vary a lot and implementations are still rare. Real pull driven systems have been less developed and considered not worth applying or not applicable in services. (Portioli-Staudacher, 2009)

Poppendieck (2011) highlights four basic principles which are relevant in IT service industry and provide framework to improve company development processes. Those are 1) Eliminate

waste, 2) Center on the people who add value, 3) Flow value from demand and 4) Optimize across organizations. In chapter four these four principles are combined to case organization.

3 THEORETICAL FRAMEWORK FOR COMPETENCE AND COMPETENCE MANAGEMENT

This chapter explores the main theories related to the competence management. The chapter starts with defining key concepts of competence. Then, competence management related literature is presented. Lastly, the chapter continues to present recent research concerning to how competence management have been utilized in different organizations and for what kind of purposes.

3.1 Key concepts of competence

Competence definition composes of various knowledge related terminology. Competence consist the practical capacity of a person or a team of employees, which can be used to develop and integrate a range of heterogeneous knowledge and abilities to fulfill assigned tasks. (Lache, 2011, p. 128) Klendauer et al. (2012) defines competence as a measurable capability which is required in a concrete work situation performing. Chursin & Tyulin (2018, p. 11) defines competence as to include all knowledge, skills, abilities and capabilities of a person or a group, which can provide certain type of products. Berio & Harzallah (2005) define term competence to be some knowledge, know-how, which individuals have in the organization.

Competence can be specified differently in different organizational stages. Dejoux (2001, p. 38) defines three level of competence as illustrated in Figure 8. Those levels are individual, collective, and organizational. Individual competence composes matching individuals with concrete work situations. Collective competence is an aggregate level of individual competences which optimizes information exchange, performance, and value-creation. The last level is the organizational level which defines the level of competent organization. Level of organizational competence is the ratio of available resources and their effective use by firm. Chursin & Tyulin (2018, p. 11) highlight the organizational competence role in organization when they state that enterprise must have information about the maximum number of competencies when having flexibility adjusting market requirements.

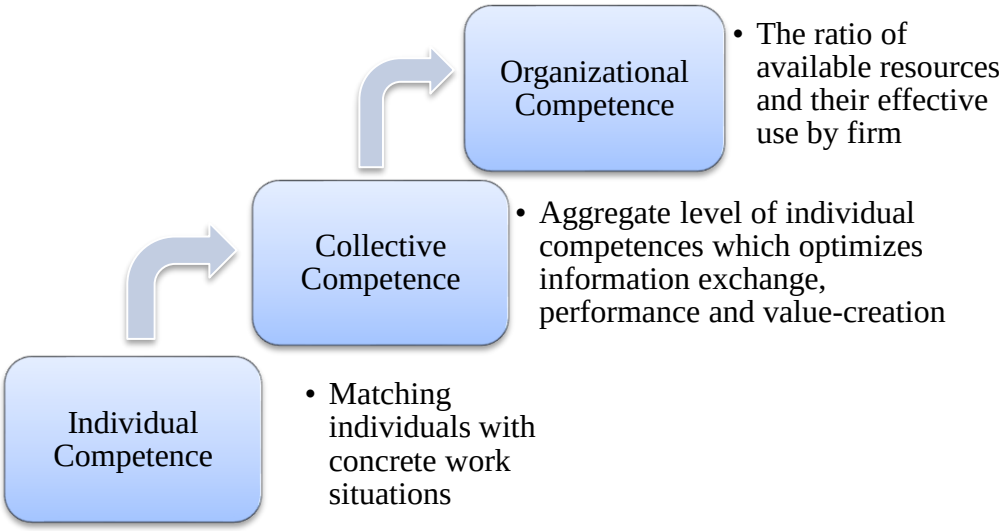

Figure 8. Three levels of competence (Dejoux, 2001, p. 38; Lache, 2011, p. 126)

Organization can use competencies in various purposes, depending on the notion of competence. Table 5 below presents how different notions of competence have different goals and which kind of organization areas those influence.

Table 5. The notion of competence (Adapted from Lache, 2011, p. 126; Dejoux, 2001)

Area	The notion of competence	Specific instruments	Goal
Human resource Management	Individual	Employee competence references	Enhance human resource management, Identify, and develop personal potential, Combine economic efficiency and social performance
Individual	Individual	Review of competences	
Organizational	Collective	Professionalization targets	
Resource allocation	Individual & Collective	Database of competences	Staff deployment
Strategy	Organizational	Human resources assessment based on the competence portfolio	Identify and promote competences that generate performance
Quality	Organizational	Quality standards, procedures	Certify competences

Competence can be a useful source of competitiveness. Berio & Harzallah (2005) emphasize that, recognizing competencies in the organization is important for achieving company goals. Rahab et al. (2016, p. 30-31) highlight that knowledge-based resources are referred as an important source for providing competitive advantage.

Even if competence is important source of competitiveness in the markets, Lache (2011, p. 127) notifies that identification of competences is a challenging for human resources within the firm. Positions can have many components which defines employee profile and that makes competence identification process harder. Competence identification should be simple enough to make competitiveness increase possible in the organization.

Gilbert and Parlier (2008) define competence-based approach three principles when putting it to practice:

1. Competence cannot act as the driver of the firm's ambitious projects: strategic vision is needed to address customers' evolving demands
2. mobilizing all stakeholders to become engaged in the competence-based approach so as to prevent counterproductive actions in the implementation of the project
3. Harmonizing economic efficiency with the social one

In the information-oriented society and fast-paced market the competence is fast-moving. Unique competence can become ordinary quickly if there is not improving processes for competencies. This needs dynamical capabilities from organization so the competitiveness remains at the same level as the competitors have. (Chursin & Tyulin, 2018. p. 11) Lindgren et al. (2004) developed three stages typology for competencies. Those stages are competence-in-stock, competence-in-use and competence-in-the-making. The last stage refers that individuals in organization are purposive to develop their competencies, motivated by own or organizational needs.

3.2 Core competence

Core-competence dominated in management strategy literature of the 1990s and it is defined as a key organizational resource that could be exploited to gain competitive advantage (Nadler & Tushman, 1999; Mitrani et al., 1992). Hamel & Prahalad (1990, p. 80) defined core-competence as how to coordinate diverse production skills and integrate multiple streams of technologies. Agha et al. (2012, p. 192) defined core competence as a knowledge set which separate it from competitors.

Organisation's core competencies identification, cultivation and exploitation are the most powerful way to gain competitivity in global competition. (Prahalad & Hamel, 1990) Core competence has recognized as an important source of profitability and it change more slowly over time than products and markets. It has been developed to support more efficient identification and utilization of an organization's strength. (Agha et al. 2012; Gupta et al. 2009) Ljungquist (2008) states, that core-competencies have links to competencies, capabilities, and resources. The link between competencies and capabilities are linked to core-competencies continuously and resources intermittently.

Core competences can be modelled through hierarchy of competences as illustrated in Figure 9. First stage of the hierarchy is resources. Those are the building blocks of competencies and inputs for company's value creation. Second stage is capabilities, which can be described as company's capability to exploit its resources. Capabilities consist of a set of business activities which transform input to output. Those can be for example marketing capabilities or human resource management capabilities. Third stage is a competency which is co-ordination and a cross-functional integration of capabilities. Core competence is the highest level in the hierarchy and it is described as a collection of competencies, skills and areas of knowledge, which are widespread in the corporation and which are result from interaction between different strategic business units' competencies. (Javidan, 1998, p. 62-63)

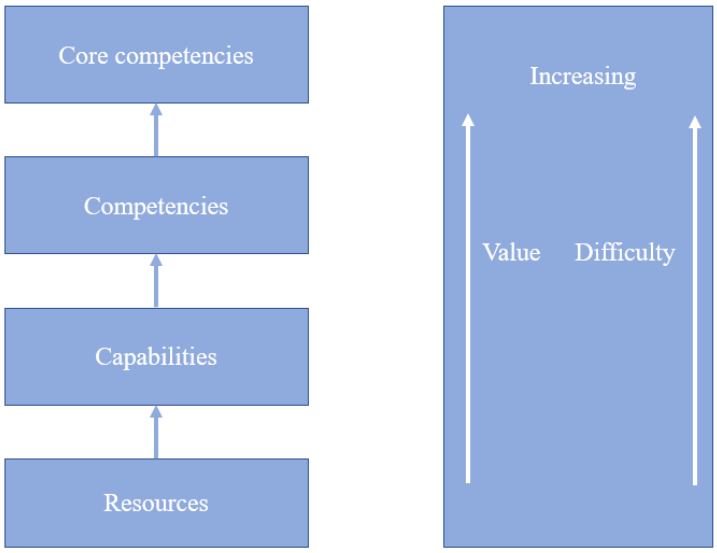

Figure 9. Core competence hierarchy (Adapted from Javidan, 1998, p. 62)

Competence-based perspective argues that core-competencies are the source of future competitive advantage and those are long-term success drivers of a firm. (Hafeez et al., 2002, p. 28-29) Agha et al. (2012, p. 192) state that core competence role emphasizes in highly competitive markets and core competence has emerged as a central element for competitive strategy. Mooney (2007, p. 111) states that core competencies have two main features. First feature is that core competence must be a skill of a company rather than the mere ownership of resource. Second is that core competence is the main element to a firm's value-generating activities.

Randall (2010, p. 13) highlights, that core competence is a powerful tool when it is properly used but in business environment this concept is usually misunderstood and regularly misapplied. Problem is misunderstanding in, what really make competence to be core. Core competence becomes core when it provides specific value to customer and offers possibility to competitive advantage. Core competence is also difficult to duplicate and it is also possible that core competence outsourcing is in some cases impossible. Organization might also end up in situation where they have not any core competencies, rather they list activities which they perceive to be core competence. Those activities fill only some core competence requirements. When organization ends up in a situation, it has only one source for competitive advantage, which is price.

Core competences have important relationship to organization capabilities and strategic processes as illustrated in Figure 10. Core competence is the integration of knowledge combined to technological know-how, which separates organization from its competitors. Strategic processes are defined as the business processes, which aim to deliver know-how that result as high value to customers and other stakeholders. Together these two components constitute a core capability which is mentioned the most critical and distinctive ability and it transfers core competences to develop core products or services. Copying of core capability is hard to competitors when strategic targets are linked appropriate in value chain. Yang (2015, p. 175-176) highlight the usage of core capability, which can result in huge contribution to customers' value and benefit provider organization.

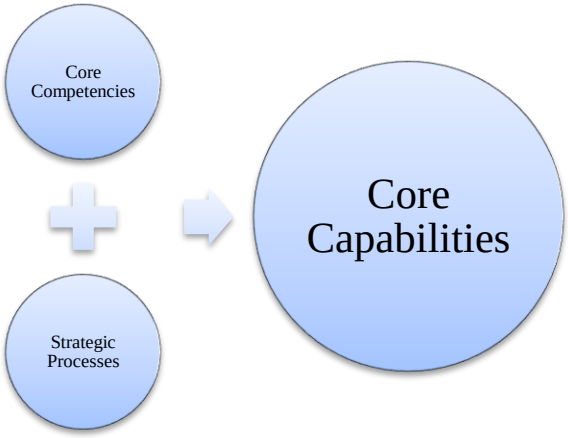

Figure 10. Core competence relationship with core capabilities (Long & Vickers-Koch, 1995, p. 13)

Core competences add the greatest value since they exploit resources and capabilities at the broadest level and across the corporation. In a consulting business where several offices have gained their own knowledge in specific industries. Company can leverage knowledge across its network of offices, and it can become a greater value. That makes core competencies available in other offices and it helps to develop skills if they want to. (Javidan, 1998, p. 63) Medina & Medina (2017) states that unclear identification of core competencies leads competence mapping problems. In their case study, the case company run into problems because of the lack of system tools to categorise competences and maintain a knowledge base.

3.3 Competence Management

Competence management focus on examining, how competencies should be controlled and administrated. Competence management can be identified a way to manage competencies of individuals or groups in the organization. Primary objective is to define and maintain competencies information. (Berio & Harzallah, 2005) Davenport & Prusak (1998) state that managing competencies for organization can strategically be a critical advantage and it is increasingly important.

Competence management can be organized to four kind of processes:

- Competence identification: When and how competences are identified?
- Competence Assessment: When to identify and to define competence acquired?
- Competence acquisition: How to acquire competencies and when?
- Competence usage: How identify gaps between required and acquired competencies?

Competence management represents the organizational perspective and denotes a management approach providing processes and a methodological framework for competence development of organization aligning with organizational business goals. Those methods are mainly focused on identifying and securing usage of competencies but increasing demand is also developing competencies fostering learning processes of employees' manifold ways e.g. identifying potentials. (Kunzmann & Schmidt, 2006) Vasconcelos et al. (2003, p. 1421) states that competence management main goal is a better utilization of company's employee skills and knowledge. Competence management is used for various purposes including company and project resourcing, competence detection and developing the competences. (Dorn et al., 2008)

Competence management involves the definition of the organization's competence needs, the identification of gaps between needed and actual competence, resourcing of projects, competence sourcing, competence development. (Baladi, 1999) Kimble et al. (2016) describe that competence management concentrates on utilization of skills and knowledge. Competence management consists of different mechanisms and have links to different organizational functions. It links together strategy, product or service development and innovation. Competence management should no longer be considered as having few relationships with

organizational goals. (Medina & Medina, 2017) Draganidis & Mentzas (2006, p. 51) emphasize competence management significance and state it identifies key knowledge which employees and organizations should have to achieving targets.

3.4 Competence management utilization in organizations

Competence management should aim also to customer demand and employee interests instead of only to company current strengths. (Niemi & Laine, 2016) Niculescu & Trausan-Matu (2009, p. 165) suggest that competence management information system could be linked to the project management to find optimal team building with minimizing educational needs.

Competencies can be used in different kind of employee management applications. Draganidis & Mentzas (2006, p. 55-56) defines that competencies can be used for example for workforce planning, recruitment planning. In workforce planning future competence needs are compared to current competencies and that is used to workforce development plans. In recruitment planning competencies can be used to define the new position recruitments.

Kimble et al. (2016) conducted a study in Portuguese company which discusses competencies utilisation in decision support activities and enabling identification of gaps in knowledge to improve organisational learning and to provide solutions to core competence modelling problems. They gathered the knowledge of organisation employees based on questions “Who knows what” and “how much do they know”. Decision support based on competencies meant in this case decision support to online recruitment and it uses metrics to match candidates profiles to different job positions.

Medina & Medina (2015) proposed the competence loop: four mechanisms for efficient competence management. Those mechanisms are: Utilisation, accumulation, assimilation, and transformation. Utilisation mechanism objective is to measure how organisation utilizes competencies in projects in accordance with the organisation’s strategy. Second mechanism objective is to measure how organisation generates new competence. Assimilation mechanism objective is to understand how organisation interprets, understands and assesses new competence developed in projects. Last mechanism, transformation objective is to define how

the organisation integrates new competence with existing to increase innovative capability. They claim that this competence loop needs to be empirical tested and further adapted to practical use.

Medina & Medina (2017) conducted case study in a public organisation in Sweden. In case company there was competence planning processes where employee's knowledge was resourced against tasks by functional units. There was not an overall planning process which leads to the lack of an overall view of what competences utilisation.

Niemi & Laine (2016a, p. 221) remark in their article connection between CMS implementation and target organization economic success during the implementation period. Target organization could be referred as a knowledge intensive business services provider. Organization annual revenue increased from 18 million to 42 million euros and stock market value increased 243%. Role of the CMS can be seen at least as a related component for economic success. Niemi & Laine (2016b) suggest in their article that competence management should concentrate on customer demand and competence development should notice employees' interests rather than only focusing current strengths. Niemi & Laine (2016b) recognize in their article that it is important that competence management linking to the customer needs in the design of the service offering. This means that company must be able to track the interaction in the customer interface. When demand of chosen competencies is increasing, it means that company should be able to transform. Transformation includes new competence development and acquiring where the demand is higher.

In value co-creation process, the supplier's processes can be seen as a value stream where core competences are the pull-driven value particles, combining service dominant logic to lean thinking where supplier processes are a value stream where core competencies are the value particles. Supplier operational efficiency can be measured with value density which is level of competence and value stream density which is utilisation rate of actions used to value creation. Value stream has to always be pull directed and processes has to be continuously improved and responsive. (Kuula & Niemi, 2016; Kuula & Haapasalo, 2017)

4 EMPIRICAL CASE

In this chapter, case company background, case company problem, business controlling from theoretical and technical perspectives, are presented. First, this chapter presents the background and introduction of the case company. Chapter continues to the case company problem description, which concentrates on a lack of a one main business controlling process. Further, chapter presents how the new business controlling process is planned to work in theoretical and technical viewpoint. Lastly, chapter presents an overview of the planned business controlling process. Chapter aims to provide information about business controlling process and link the literature review to the empirical part to complement each other.

4.1 Case Company background

Enfo Group was founded in year 1964 and it offers business and technology consulting services. It operates mostly in Finland, Sweden but also in Norway, and United Kingdom. Most of the company's customers operate in Finland or Sweden in a wide range of different fields of industry and in most of the cases employees work at customer premises. Most of the company's revenue comes from customers charged by monthly basis. Revenue streams from consulting business can be roughly divide to two main categories: Time and material (T&M) consulting and monthly recurring revenue where T&M is based on billable hours and monthly recurring revenue is based on fixed price which is charged every month regardless of workhours of consultants. Enfo's biggest offices in Finland locate in Helsinki and Kuopio. In Sweden biggest offices locate in Stockholm and Gothenburg.

Enfo can be described as a knowledge intensive project organization (KIPO) or knowledge intensive firm (KIF). In that type of organization knowledge, information and experience are identified as a company's key resources in competitiveness (Roberts, 1999; Stewart 1997). Lovendahl & Revang (1999, 1998) states that knowledge-based firms are more related to the service industry, because customers demand translates back into the firm as a demand of knowledge of employees, which have experience in solving customer problems. Alvesson (2004) defines KIF as an organization that offers knowledge-based products or sophisticated

knowledge to the market of use. Those activities are based on intellectual skills rather than natural resources or physical activities.

When considering Enfo's economic performance, Enfo's net sales is presented in figure 10 for last five years. It has varied roughly between 110 and 132 million euros. (Enfo 2020a; Enfo 2019; Enfo 2018; Enfo 2017)

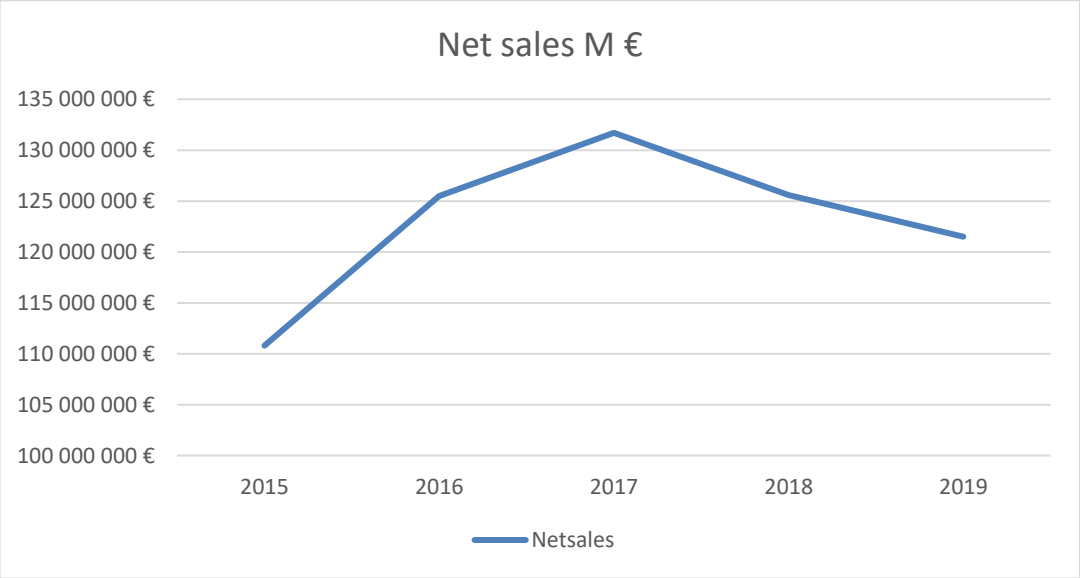

Figure 11. Company Net sales between years 2015-2019

As a KIF, Enfo's employees are in central role in organization performance. Company's headcount is presented in figure 11. It has varied between 780 to 910. From year 2015 to year 2019 the trendline is rising. Between years 2015 to 2017 the number of employees has raised a lot, mainly by acquisitions but at the same time employee turnover rate has been high. High employee turnover rate is usual when a company is consulting company. In last three years turnover rate has been stable. Enfo has also sold unprofitable business units during last years, which is also an explaining factor for headcount variation and decreasing of net sales between years 2017 and 2019.

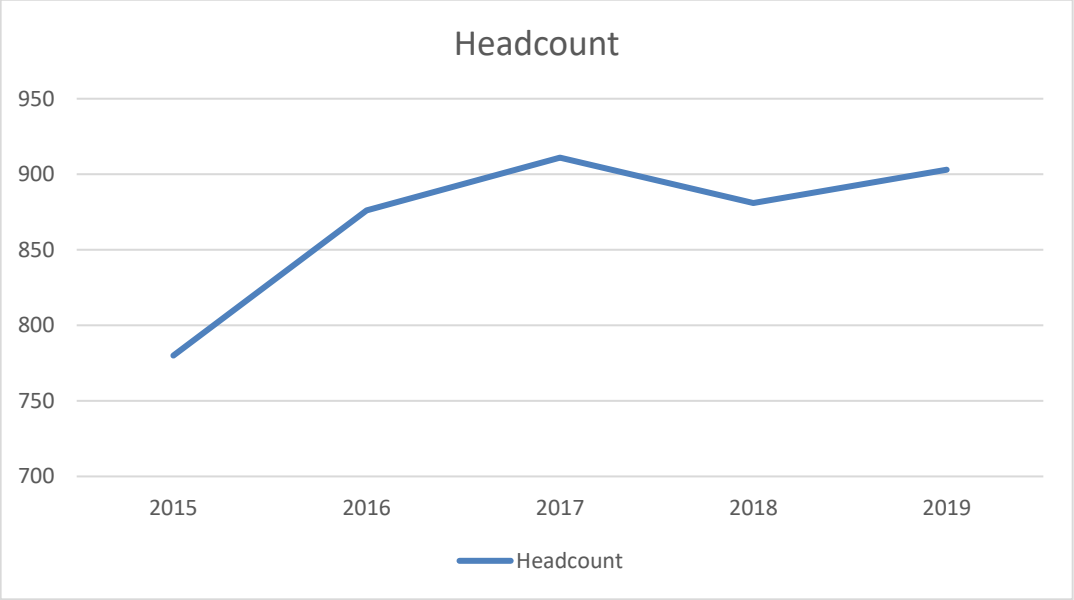

Figure 12. Company headcount between years 2015-2019

Enfo's business operations can be divided to four main business areas. These business areas are presented in figure 13. Applications business area provides applications, digital services, and integrations for customers with leading technologies. Data platforms business area provides versatile platforms for the management of data. Care business area concentrates on care of Enfo's customers and their solutions. Information management business area concentrates on master the customers data and use it as a strategic asset.

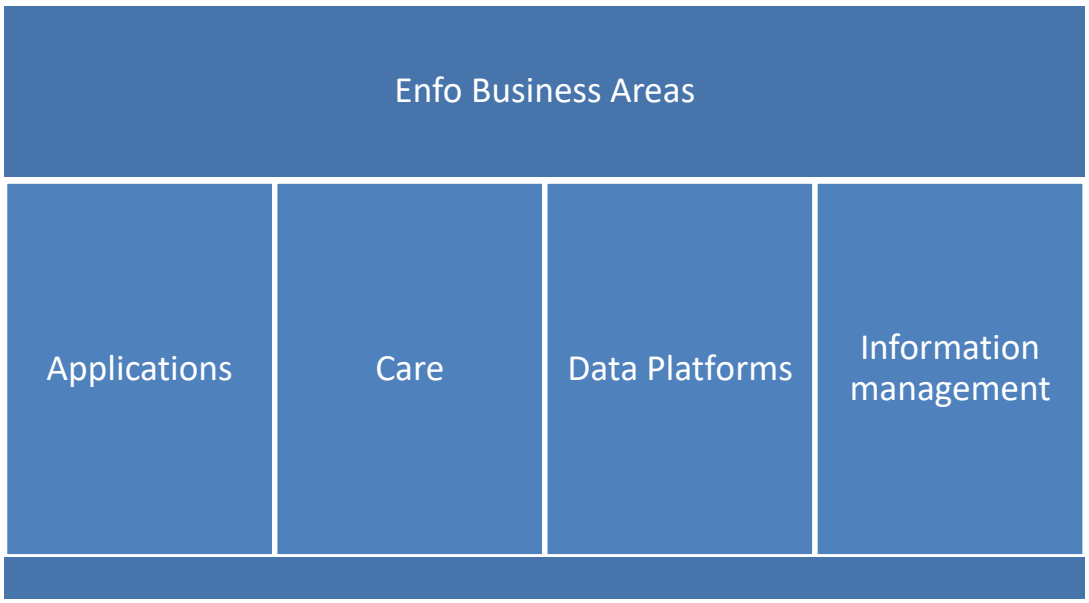

Figure 13. Enfo's business areas (Enfo, 2020b)

4.2 Case company problem description

Enfo launched a new investment program, called as DUCK -program in 2018, which aims to increase visibility in customer interface and between different company's business units. DUCK -program can be referred as a main business controlling process creation, which controls the whole organization business activity. Reasons for launching this program are listed in figure 14. Enfo has mentioned, that they have problems where the disconnection and lack of transparency of facts between sales and business areas leads to low utilization of employees and to losing sales cases due to lack of availability of right competences. Also, competence acquisitions have not been based on a real demand and resourcing right customers is not based on facts.

Problems Before DUCK - Program	Lack of visibility to actual and forecasted customer margin and utilization
	Disconnection and lack of transparency to facts between sales and business areas leads to low utilization and to losing sales cases due to lack of availability of right competences
	Resourcing right customers and competence acquisition is not based on facts and real demand

Figure 14. Problems before DUCK -program

Enfo has grown by acquisitions and that has made Enfo consisting of separate parts where visibility between different business areas is poor, and processes are not distinct. One reason for poor visibility is "cost center" based thinking where business activities is managed from cost center perspective. This becomes a problem when organization wants to manage business from other dimension, like customer-delivery perspective. When business is managed from

customer perspective, there can be resources from different business areas or business units, and it breaks the vertical aspect of managing resources. This kind of managing aspect requires possibility for horizontal visibility.

4.3 Business controlling process in Enfo

This chapter presents the business controlling process logic and how it theoretically works. When the different steps and the overview of the process are presented, the practical relevance of the process is tested. For this, qualitative interviews are used, which give answers to questions: how it works in practice and what kind of effects it has. Three organizational functions are related to the business controlling process. Those functions are sales, finance, delivery. Delivery in this context means a function consist of business areas and business units, which work in customer assignments by providing knowledge and services. Earlier mentioned functions role in the process is described starting from sales role.

4.3.1 Sales role

Sales function role in the business controlling process is important when it operates in the customer interface and sales receive the information of customer demand. Demand can be for example different combinations of different competencies which customer needs. Sales is usually the first function which notices customer demand and it is a starting point for business controlling process. Sales role in the process is to input data to the process. This input data consists of different sales opportunities which includes different competence combinations, depending on customer needs. Customer competence demand are compared to current situation of organization competence supply. Available resources, employees, can be resource to new sales cases and by means of the sales case resourcing provide steady revenue streams for organization. Those opportunities become visible for delivery and they can resource those demanded competencies. With sales opportunities resourcing, company is ensuring competence supply and possibility to deliver demanded solution to the customer. New sales opportunities should start earliest after 6 months when the first contact with the customer have been made. This makes possible to know, what kind of competencies organization needs for delivering the

customer demanded services. That is the say that the process provides visibility in a structured way, so the end goal of having a foundation for understanding customer demand is enabled.

4.3.2 Delivery role

Delivery has main role in organization business controlling process. It receives the data from sales and refine it with resourcing competence supply against competence demand. Enfo's business and revenue streams are based on selling delivery capacity which can be for example time and material consulting, licenses, or different on-going services. When competencies are resourced against customer demand, it creates information about competence utilization. Especially in consulting business, measuring utilization is important, because that kind of business revenue is based on billable hours. Resourcing also generates information about how much different competencies organization currently holds and how much there is available competencies. Resourcing also makes possible to track when chosen competencies are again available. Every team manager maintains resourcing of their employees in weekly basis. With one business controlling process, it is possible to control whole organization resourcing in one business planning solution and this also creates possibility to vertical visibility through organization.

In a longer period of time, competence demand indicates also current state of the markets. With information about future competence demand, organization can examine how market is going to change in the future. This should lead in a situation where organization transform its competencies to become valid in markets and from organization perspective it led a situation where organization changes according to the market needs.

When delivery have resourced the sales cases, resource plan is possible to convert for finance function needs by using cost and price information. Future revenue is possible to calculate with resourced days and price per demanded competence. Cost component calculation is possible with knowledge of different employee know-how grades costs to the organization. For every competence standard cost is calculated, and it makes possible to create cost component for forecasting purposes. In business controlling process, data have been refined in two different functions and finance has possibility to use it for their purposes.

4.3.3 Finance role

Final function, which is in central role in business controlling process, is finance. Business controlling process generates important information for it. Enfo revenue is based mainly on invoicing customers. When resourcing information are converted as revenue and cost streams, it is possible to create a customer based forecast about revenue and cost, called as net sales forecast, which is based on a real time resourcing information and usage of different competencies. Net sales forecasting dimensionality ensures customer-based forecasting, which can include many different cost center combinations.

Information, brought by business controlling process, can be used in rolling forecasting. Rolling forecasting can be described as a navigation tool for operative business planning which makes possibility to react faster to changes. (Metzger & Zeller, 2013) It also provides a possibility for organisation to track its development in short- and long-term perspective. (Hill, 2016) One weakness of rolling forecasting is mentioned the difficult of the implementation. (Åkerberg, 2006, p. 74-76) When the customer interface interaction can generate quickly new demand flow to the organisation, rolling forecasting is suitable method to track operative business activities from financial perspective. Enfo's rolling forecasting is based on a real customer demand and a weekly basis-maintained resourcing, which generates revenue and cost information for forecasting purposes. Finance can use different reports for tracking organization financial performance and reporting is possible to create from new dimensional perspective, which include customer-, competence- and employee-based reporting possibilities. New dimensions diversify the former, cost center-based forecasting where reporting and tracking is based on organizational hierarchy only in vertical perspective.

4.4 Business controlling process from technical perspective

Enfo's business controlling process consist of different technical parts. Those high-level technical parts are presented in figure 15. Figure also presents the role of the system in this business controlling process context. The role of the system for each function is presented because functions can use same system for different purposes.

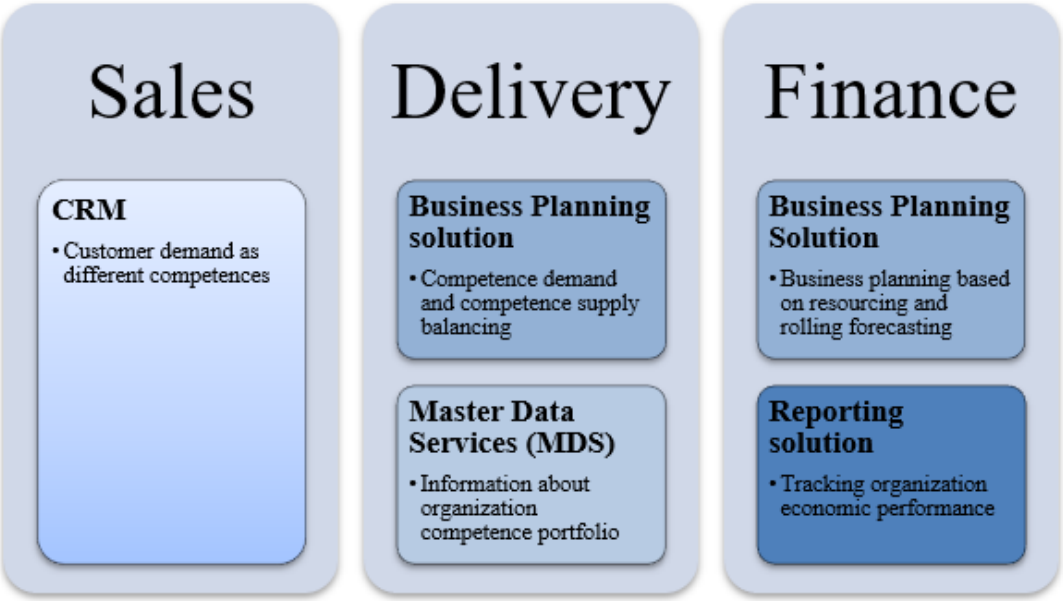

Figure 15. Technical perspective and role of the system

In technical perspective, business controlling process combines four different systems together. Those systems are CRM, business planning solution, Master Data Services (MDS) and reporting solution. If system is used in different functions, it can have different kind of purpose.

Sales main information system is CRM. It holds the information about organization customers, and it is also a starting point for new sales opportunities. Salespersons add every new sales opportunity to the CRM system. CRM system uses Configure, Price, Quote (CPQ), which purpose is to help generating sales quotes and providing integrated data to the business planning solution.

Delivery uses two main systems in this business controlling process. Business planning solution is used for resourcing existing assignments and new sales opportunities. In the integration with the business planning solution, demand of competencies moves from CRM to the business planning solution. In this point it is technically visible also for delivery. Every team manager can see what kind of competencies is in the sales pipeline and resourcing those is also possible. Every team leader has possibility to resource own employees and track their utilization in real

time based on planned workdays. Delivery can also track their customers and projects profitability in net sales planning where information generated by resourcing are aggregated. MDS holds knowledge information of every organization employee. The information is related to the competencies and MDS answers to the question: “Who knows what?”. Delivery can use MDS for maintaining employee’s knowledge information. Every team leader has rights to modify their employee’s competencies, which basically means adding new competencies or updating existing competencies. When team leader adds new competence to his/her employee, it comes visible to this person knowledge portfolio and person is possible to resource in a sales opportunity or an assignment which includes that chosen competence. MDS information can be also used for generating the organization competence portfolio.

Finance uses business planning solution and reporting solution for financial planning purposes. Planning is based on a rolling forecasting in monthly basis. Forecasting is driver based where main drivers are competencies and the baseline of the financial forecast is based on business planning solution resource plan. Financial forecast changes according to resourcing state in business planning solution and CRM in real time. Sales pipeline competence demand and current competence utilization combined with price information can be seen as a future revenue stream. Price information is based on real prices which is used in agreements. Every competence has standard costs which can be used to profitability and gross margin calculations. Reporting solution makes possible to show data in different reports and analyze organization future economic performance.

Figure 16 illustrates DUCK -program timeline and what kind of projects together constitute the manifold of the business controlling process.

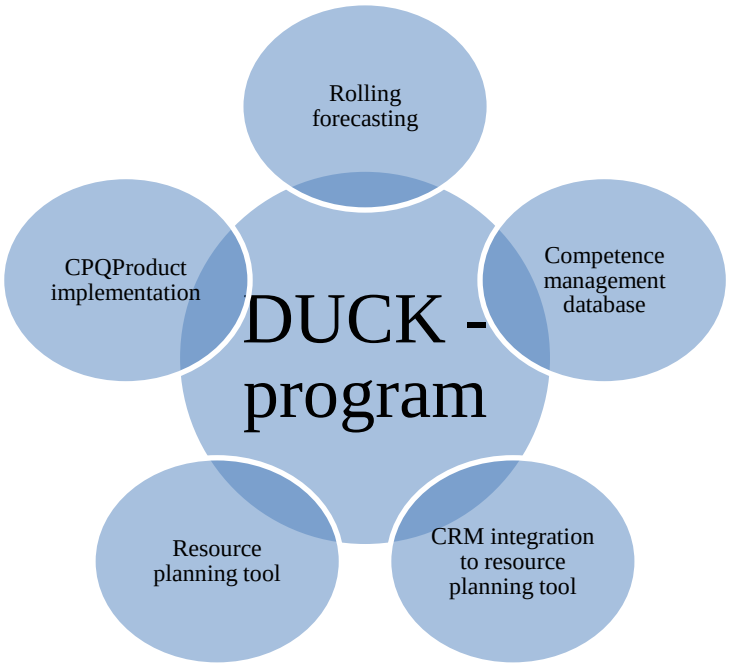

Figure 16. DUCK -program consisting projects

From technical perspective new upgrades are CPQ Product implementation, competence management database and new resource planning tool. Rolling forecasting changed the way of budgeting to more agile. Together these set up the possibility to implement the new business controlling process.

4.5 Business controlling process relationship to strategy

Enfo strategy also supports the basic elements in this business controlling process. Enfo has defined three strategical must-win battles for year 2020. Those are illustrated in figure 17.

A workplace to love	Collaborative value creation	Trusted partner
• Enfo is a workplace where we are authorized to act, encouraged to grow and have a culture of caring. Our values are at the core of our actions: collaboration, trust, continuous development and expertise.	• Our strength is in our expertise. We develop our leadership and improve our agility by collaboration and predictability. We work together, focusing on customers' needs and respond to change driven by digitalization. We work towards one common goal and with one common story.	• We understand our customers' business and possess broad knowledge of technology enabling data-driven transformation, as well as competence to co-create value.

Figure 17. Enfo's strategy must-win battels (Enfo, 2020c)

Every of these battles have relationship with this business controlling process. *"A workplace to love"* emphasizes continuous development which can be connected to employee competence development. Enfo concentrates employees' competence development in the future to respond to market competence demand (Enfo, 2020a).

Second must-win battle emphasizes customer needs and how Enfo must be an agile service provider and be able to transform itself to fit the customer needs. This transformation can be done transforming competence portfolio. *"Collaborative value creation"* needs lean thinking and customer demand connection to Enfo competence portfolio. Enfo will strive in the future to improve steering of business operations and sales with competence management (Enfo, 2020a).

"Trusted partner" emphasizes customer role and Enfo's ability to be a trusted partner which can provide services which customer really need. Partnership ultimately requires to be able to exceed customer expectations and in minimum to delivery right services, based on right competencies at a right time. Steering business based on competence demand and balance is

the key here. Enfo tends to enhance co-creational approach and to track valuable customers more accurate and thorough. (Enfo, 2020a)

4.6 Overview of business controlling process

This business controlling process is based on three theoretical frameworks which were presented in the literature review. Those are service dominant logic, lean and competence management. In Figure 18 process logic overview is presented.

In the beginning of the thesis project, case company CEO presented and sketched the logic behind the business controlling process and described how the process includes theoretical frameworks which were presented in the literature review. Figure 18 is an overview presentation of the business controlling process and it is iterated from that original sketch, which provided the background logic of the process. This overview figure can be treated as one part of the outcome of this thesis, but the creation of the planned process was made before this thesis project. The overview figure also summarizes DUCK -program planned functioning in a one figure for the first time. However, this thesis does not concentrate on this planned business controlling process, rather the focus is on how the business controlling process currently works in practice.

Business controlling process creates a dataflow which reflects current situation in a market and how market is changing in the future. Organization should be able to use this information to ensure competitiveness in the future. In this planned process sales recognizes the demand and forward it to the delivery when competence demand is balanced between competence supply. If competence supply is less than competence demand, organization has to acquire demanded knowledge or services from another source.

Competence demand streams generate information to finance, which can use rolling forecasting based on different drivers, for example competence utilization. Organization can measure economic performance in reporting from different perspectives, including customer, competence, and business area perspectives.

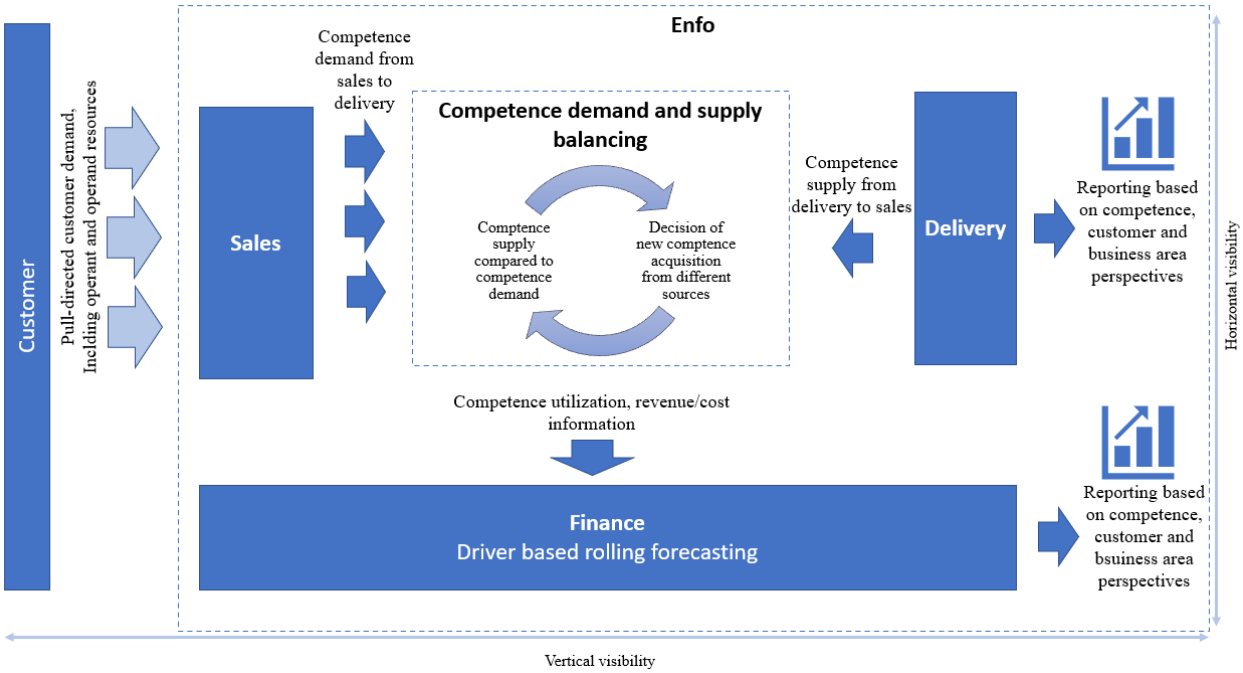

Figure 18. Overview of planned business controlling process

As earlier mentioned, in this business controlling process demand which Enfo faces should be pull-directed where customer has need for some knowledge or service. From this aspect, organization does not attempt to sell products to customers, rather providing services which customers need. Those so-called knowledge particles are different competence combinations and from S-D logic perspective those are operant resources. When company has information about competence demand and knowledge of current competence portfolio, it is possible to analyze how current knowledge of the organization match against market needs. Organization must use this knowledge and try to adapt to the market by transforming its knowledge according to customer demand. This keeps organization also competitive in a changing market and organization is able to use co-creation when it creates value in customer deliveries together with the customer. Combinations of different competencies enables cross selling where Enfo can provide services what customer needs from current competence portfolio.

From the lean methodology perspective, this process considers all four principles which improves processes (Poppendieck, 2011). Available time can be considered as a waste. Resourcing purpose is to reduce available time of the consultants and try to allocate them to different assignments and sales opportunities. Second principle, center on the people who add

value, is emphasized with the competencies which employees have. With knowledge of current competence portfolio, it is possible to develop employees' knowledge. When the process is based on competence demand information, it emphasizes the role of the value from demand. Last principle highlights optimization across organizations. In Enfo's case utilization of employees is possible to measure in horizontal and vertical perspective which makes possible to guarantee balanced workload in every level of the organization.

5 BUSINESS CONTROLLING PROCESS IN PRACTICE

This chapter presents the practical relevance and effects of the business controlling process. Those are measured using qualitative interviews and chapter presents how the interview is designed and executed. Next, results and analysis of the interviews are presented, starting with process practical relevance, and continuing presenting the process effects. Lastly, current state of the business controlling process is presented.

5.1 Interview as a data collection method

Interview research can be described as one of the most important qualitative data collection methods. (Myers & Newman, 2007, p. 2; Qu & Dumary, 2011, p. 238) This interview is semi-structured interview where researcher have prepared some questions beforehand but there is also a need for improvisation and researcher is the interviewer. It differs from structured interview in a way where complete script is prepared beforehand and there is no possibility to improvisation. In structured interview interviewer is not usually same person as the researcher. (Myers & Newman, 2007, p. 4) The reason for choosing a qualitative method instead of quantitative, was to ensure that respondent have understanding enough of the process in larger perspective.

In semi-structured interview, many of the questions are prepared before the interview and interviewer makes sure that every question is covered during the interview session. In qualitative interview there should be always incomplete script which makes flexibility, openness, and improvisation possible. (Myers & Newman, 2007, p. 15) Semi-structured interviews are mentioned to develop understanding of management world. Especially management and organizational related issues can be studied using semi-structured interview approach. Interview can bring valuable results, when the researcher is able to understand how the interviewees perceive the research topic. (Qu & Dumary, 2011, p. 246) It is important that interview is well-planned because even if the interviewer and interviewee speak the same language, it can lead situations where their words can have completely different meanings. With

a well prepared interview it is possible to provide a rich set of data. (Qu & Dumary, 2011, p. 239)

5.2 Interview design and execution

This interview is qualitative approach where the number of interviewees is lower than in survey-based approach. Creswell & Poth (2016, p. 125-126) remark the importance of appropriate candidate selection for interviews. Selected participants should be able to understand the research problem and central phenomenon of the study. For sampling strategy, critical case sampling was chosen which objective is to provide specific information about the research problem. Turner III (2010, p. 757) also emphasizes the qualified candidates' role when objective is to gather most credible information for the study.

All the target group members are Enfo employees from different organization functions. Interview target persons were chosen together with organization Chief Financial Officer (CFO). Target group consist of persons from finance, sales, and delivery. Group of interviewees consist of nine persons and one of them is a member of organization's management board. In participant selection also participant role in the function are observed in selection to provide data from little bit different aspects. This ensures that every function is considered which relates to business controlling process. In delivery there is also managers from different organizational levels and with different amount of management responsibility. This makes possible to analyze how information and effects of the DUCK -program relates the organization vertically. Table 6 illustrates information of how representatives divide between different Enfo functions and what kind of roles they have. It also presents the schedule of interviews.

Table 6. Representative information and interview schedule

Organizational Function	Position	Business Area	Geographical Location	Member of Management Board	Interview date
Delivery	Executive Vice President	Applications & IM Sweden	Sweden	x	11.6.2020
Delivery	Vice President	Information Management	Sweden		5.6.2020
Delivery	Consulting Manager	Information Management	Sweden		17.6.2020
Delivery	Vice President	Information Management	Finland		3.6.2020
Finance	Head of Business Administration	Finance	Finland		3.6.2020
Sales	Senior Vice President	Sales	Sweden		17.6.2020
Sales	Senior Vice President	Sales	Sweden		17.6.2020
Sales	Senior Vice President	Sales	Finland		1.7.2020
Sales	Senior Vice President	Sales	Finland		1.7.2020

After selecting the respondents, they were contacted with a cover letter by e-mail. The goal of the cover letter was to establish first connection with the respondent, and it explains why the thesis report and the interviews were meaningful. Cover letter also have time estimate information of how long interview would take and why representative had been contacted. Every respondent has the basic understanding of DUCK -program so term “DUCK” is mentioned straight in cover letter. The cover letter can be found in Appendices A1 and A2, both

in English and Finnish. After sending the cover letter, interviews were scheduled and held between June and July 2020.

A pre-defined set of questions was prepared to guarantee comprehensive carry out of the interviews. The pre-defined set contained 16 main questions which were formed to support thesis research questions and highlight findings from the literature review. Design principle of the qualitative research questions is to use words “what” and “how” in the interview (Eriksson & Kovalainen, 2008, p. 8) This has been considered when designing questions for the interview. Interview questions can be found both in English and Finnish in Appendices A3 and A4. Interview can be divided in the three different modules. First module concentrates on respondent’s background. Second module discusses on business controlling process practical relevance and third module discusses what kind of effects business controlling process has.

All the interviews were conducted as a remote interview. There were two reasons for remote interviews, first is face-to-face interviews arranging is impossible in some cases due to long distances. Second reason is ongoing COVID-19 outbreak, where remote interviews is a safest option for carry out interviews. Each interview was recorded with recording device to make possible to save the data for analyzing purposes.

5.3 Interview results

This chapter analyzes the results gathered in the interviews. The chapter starts with a brief analysis of the interviewees background. Then chapter continues with analyzing business controlling process practical relevance and effects of the business controlling process. This chapter has been constructed according to the interview questions structure presented in Appendices A3 and A4.

The first purpose was to find out how the business controlling process work in practice. The second purpose was to find out what kind of effects this business controlling process has in different organization functions. The third purpose was to find out what kind of effects has realized and what kind of effects interviewees see in business controlling process in the future.

5.4 Background information of interviewees

The interviewees were chosen from three different organizational functions: Delivery, Finance, and Sales. The total amount of interviewees were nine persons, five from Sweden and four from Finland from (Figure 19.). The interviewees had different working history in the organization and their career length at Enfo varied between six months to 15 years. Most of the interviewee had worked in Enfo more than 2 years. Based on long enough working history in the organization, it makes sure that every interviewee can see time before business controlling process implementation and is able also to compare what kind of effects it has. As earlier mentioned, Enfo has grown mainly by acquisitions. This can be seen also from interviewees answers to question examining their working history in Enfo. Most of the interviewees, whose job description relates to delivery function, mentions that they became Enfo employee by acquisition.

Interviewees main role and job description varied between three different functions which caused that the level of understanding and the practical experience of the business controlling process were different depending on interviewee role in the organization. When the group of interviewees had job descriptions from team manager to the business area managers and executive vice presidents, it is possible to measure, how does the understanding between different organizational levels change. Even though they answered the questions from slightly different angles, the answers of the interviewees still had the same characteristics which makes analysis of the results possible from overview perspective also.

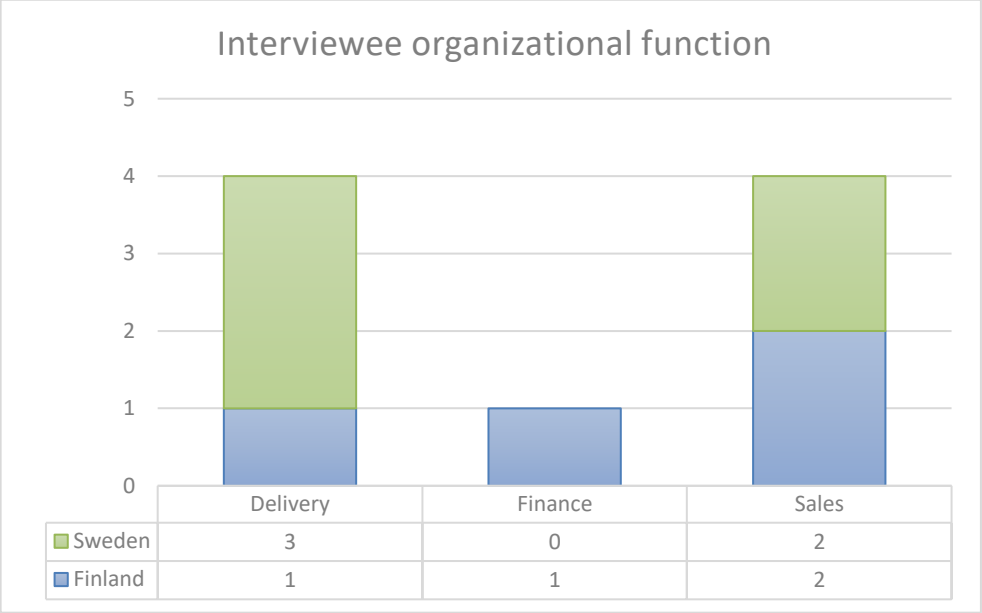

Figure 19. Interviewee by organizational function

5.5 Business controlling process practical relevance

Interview contained four questions, which objective was to measure the business controlling process practical relevance from different functions' perspective. These five interview questions also support thesis report second research question. Questions measure, how information flow between different functions and is the information reliable for decision making purposes. The business controlling process practical relevance results review every included function one by one and the analysis starting with finance function perspective.

Practical relevance from finance perspective

Finance function is one of the support functions and it has quite good visibility to every other organization's function. The business controlling process from Finance perspective is seen as a major improvement and its role is emphasized. It changes the way of forecasting completely when process is based on rolling forecasting on monthly basis. Finance see that process can generate reliable data, but it needs adjustments to make sure that forecasts are not too optimistic or pessimistic. During the interview with the head of the business controlling and finance, KIPO role in this process are emphasized. He mentioned that the process fits well when Enfo is selling knowledge intensive services for example T&M consulting. When Enfo's net sales contains

approximately 50% of other revenue streams than T&M consulting, it is not possible to use process the whole organization controlling based on customer needs. T&M consulting forecasts are also more reliable than other business areas forecasts, where revenue streams are different. This currently generates more manual work to finance function. Currently customer demand which is based on T&M consulting is possible to trust and part of the forecasts are reliable before adjustments. Even though, only part of the Enfo's business activities are possible to forecast with the business controlling process, forecasts have better baseline and better analyzing possibilities than before. With competence and customer information it is possible to track customer profitability and lifecycle of the customer relationship better than before.

Practical relevance from Sales perspective

Sales described business controlling process as a laborious and challenging process. When sales role is to input data to the process, they create the data for other functions usage. Sales mention that from technical perspective they have only possibility to see data in a CRM system and they do not have access to the delivery planning system. It makes a "brick wall" between the sales and delivery when visibility to the data flow is blocked between the systems and also partially between the functions. Information pass on between different functions mainly via e-mails and conversations.

Competence supply information pass on between different functions worse than information about competence demand. Competence supply information is mentioned important because that information could be possible to use in business controlling. Sales have knowledge of available competences, they could present more detailed information to the customer about the service delivery. Competence demand information pass on between different functions from sales perspective quite well. This is based on the feedback from the delivery function.

Sales ability to measure the reliability of the information is hard to analyze, when their role is to generate a lot of information in this process. From the overall perspective sales mentions that they can rely on information, but in the decision-making situations they still must be careful with utilizing the business controlling process information.

Practical relevance from Delivery

Delivery role in business controlling process is to provide competencies for existing assignments and new sales opportunities. Delivery are also responsible for forecasting their future business operations profitability. This means that delivery is connected for both other functions in the business controlling process.

Data for delivery can be categorized to three different subcategories: Finance data, sales data and resourcing data, which are all generated and utilized during the business controlling process. Finance data are the most reliable information in the business controlling process from delivery perspective. Delivery can rely on financial information and use it for decision making. Other two data categories can be described more hectic, because those changes in real time. Sales data, which can be also seen as competence demand, and resourcing data, which can be seen as competence supply are not yet as reliable level as those should be. If delivery notice demand of new competences, which is not Enfo's current competence supply portfolio, they cut the corners by adding that competence for some of their employees and then resource the demand against supply. Even if those data flows do not consist trustworthy information, it generates communication channel and process role is more to help and start communication with sales and delivery.

When delivery notice that there is untrustworthy competence demand information in the sales pipeline, they contact responsible salesperson for more detailed information, and it creates the channel for communication. Delivery mentioned that any technical system cannot replace meetings or communication. This confirms that the role of the process is to create communication and technical system is a way to start it and combine different stakeholders together. Communication happens currently via e-mails and conversations. This communication would concentrate about competence demand and supply information and future state of Enfo's competence portfolio.

Delivery mentions that competence information is hard to understand and use in real life. They also mention that competence information currently is only hard skills. From delivery perspective other factors should be also take account, for example soft skills, location information, which are also important factors in competence management perspective. In Table 5 comptence notions were presented and for resource allocation purposes, database of competencies should keep quite simple level from technical perspective.

Connections to strategy

Every function's interviewees saw the connection between the business controlling process and Enfo's strategy. Answers for question about strategical connections varied depending on interviewee job description and role in the organization.

Interviewees from delivery, which job description is more related to the operational activities saw the connections to the strategy mainly from the profitable business perspective and how process support to recognize profitable customers. Respondents with wider responsibilities emphasized the role of the customer demand and how organization needs to react for changing customer demand by transforming competencies for match market changes.

Finance saw the business controlling process connections to Enfo's strategy. Finance described that everything in the process was in line with the Enfo's strategical targets. Process allows co-creation and customer demand recognition better than before and Enfo can better offer services what customers really want and co-create value together with them.

Sales mention that business controlling process supports Enfo's strategy. If business controlling process would work perfectly in practice, it would support co-creation and trusted partner strategical elements. Also, recognition of profitable business supports organization strategy when Enfo must be able to perform profitable business. Sales mention that process must consider in high level perspective to identify process relationship to the strategy.

Overview of the business controlling process practical relevance

From every function's perspective business controlling process have differences between practice and theory. Some of the process steps are not possible to prove yet, because it takes time to see the process results in real life. This kind of issue could be for example organization competence transforming to match changing market needs.

Process should be able to change operand resources to be as operant resources. This make possible to utilize process more widely in the organization and it would generate more accurate forecast and the amount of the manual work would also decrease. Currently, process can express operand resources as operant resources, but the way of thinking is still based on operand resources.

Sales mention that it can still work independently in the business controlling process. A salesperson has possibility to close a won deal without informing delivery or having knowledge of available competencies. This impart that the business controlling process do not tie different functions work together and some functions are able to do independently steps in the process which would need also other functions presence.

Process is not yet capable to generate data which is reliable from every function perspective. It can give a good baseline for forecasting but from organization financing perspective, data still needs adjustments and double checking.

5.6 Business controlling process effects

Interview contained eight questions to measure what kind of positive and negative effects business controlling process has brought and possibly will bring in the future. Business controlling process effects can be categorized to four different categories which are presented in Figure 20 below.

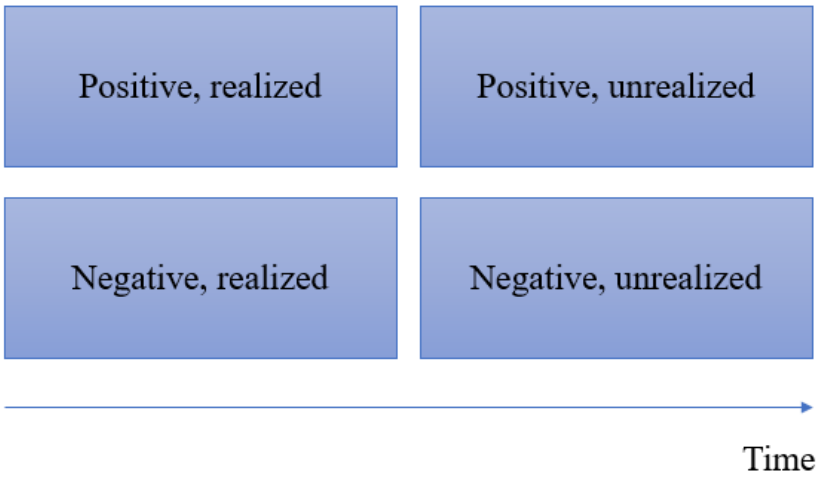

Figure 20. Effects of the business controlling process

From every function's perspective process has generated more positive effects than negative effects. Some of the functions did not even see any unrealized negative effects. Based on low amount of unrealized negative effects one can say interviewees saw more capabilities in the process than disadvantages in the future.

Effects in Finance

Finance see some positive effects which the new business controlling process has bring. Finance mention that rolling forecasting is a huge improvement. With rolling forecasting organization have readiness to react more agile to market change. Finance also sees real customer demand usage as a positive effect. Now real customer demand is visible horizontally in the business planning solution and organization managers have knowledge of what kind of competencies are demanded for the customers. Finance also emphasizes one main business controlling process importance and how it makes organization business planning easier.

Finance mentions one realized negative effect. This is the time usage in the implementation phase of the business controlling process. Implementation phase have been time-consuming

and in finance perspective it has consumed a lot of possible billable time from employees. However, Finance was confident about the future, when it did not discover any potential unrealized negative effects in the future.

Finance can utilize data brought by business controlling process to cash flow forecasts. Also utilization of resources is possible to monitor. When forecasting is driver based, utilization competencies can be used straight to forecast the organization financial performance in the upcoming months. Business controlling process also makes possible to track organization profitability from customer perspective. This is possible for the first time to see chosen customer net sales forecast which includes open sales cases and on-going assignments. In the future, data brought by business controlling process can be utilized to get rid of so-called body shopping. In body shopping employee contract is usual short-term contract and from financial perspective hourly cost is very high. When organization can optimize competence supply and competence demand balance, it should create cost savings for organization.

Effects in Sales

Sales mention better and wider reporting possibilities as a realized positive effect. Sales mentions process complexity as a negative effect of the new process. Complexity entails frustration and a lot of consumed administration work hours. Complexity can also lead a situation where people relieve complexity by cutting corners. When sales have input role for data, this kind of acting causes negative effects to data quality and other functions benefits from process decrease. They also mention that currently business controlling process has model for consultancy sales but for different service portfolios are not considered in the process as those should.

Sales see a huge potential in a new business controlling process. They mention many unrealized positive effects which process can bring in the future. Currently competence supply is invisible for sales. Sales mention that seeing available competencies would make their job easier and

also at the same time they would have understanding about current and upcoming months competence strain. Sales mention that with this business controlling process transparency in data flow is possible to create in the future. This would repair the problem which Enfo had before DUCK -program, when data flows between business functions were untransparent.

In the future, sales see a possibility that attention concentrates too much to different information systems and organization bureaucratizes. Also, as a possible negative effect, sales mention the role of the input data and how qualityless data can affect to the organization decision making activities negatively. Currently process main components are competencies which are pull driven particles. Those could be referred as operant resources. When almost a half of Enfo's net sales compose from different kind of on-going service agreements which are operand resources. Sales see this as a problem. In a longer timeframe those operand resources should be transformed to be as operant resources.

Sales can currently utilize data generated by business process for some purposes. They can see more easier what sales have offered to customer. They can also see open sales cases, so called sales pipeline easier and more closely than before. Now sales have possibility to see how profitable chosen offer has been. In the future sales could utilize data for deeper analyses of profitability and how it differs between won and loss sales cases. There could be also found a suitable profitability level which should be used, when pursuing to win sales case. Sales want to see available competencies and they see that they can utilize that information in the future. Sales also highlights competence price information utilizing to measure are the prices for different competencies on a correct level, based on won and loss cases offered competence information. Sales also could in the future measure profitability of different services if services could be added to the process.

Effects in Delivery

Delivery mentions couple realized positive effects which new business controlling process has made. Rolling forecasting was mentioned as a great improvement and it makes possible more agile reacting to market changes. Communication and co-operation between sales and delivery has also improved with different functions and process has brought sales closer to delivery. In the future delivery sees that utilization of competence supply information would be useful. Currently delivery thinks still from employee perspective and competence aspect stays hidden.

Every delivery function respondent mentioned that biggest realized negative effect has been new process implementation phase time usage. Implementation have caused also negative attitude, because process is mentioned quite complex from theoretical and technical perspective. Respondents who work near customer interface, see that implementation have consumed too much valuable time from customer related work. When most of the premeditated positive effects have not realized yet, it creates a risk where delivery people abandon the process. This could lead a situation where organization had made an investment to increase forecasting capability and did not gain any benefits from strategical perspective.

Delivery sees couple negative effects which could realize in the future. If everyone trusts too much process generated information, it can lead in situations where only important element in decision making is customer profitability in longer time frame. When process makes possible to track customer profitability in cross horizontal perspective, it can create a situation where customer abandon based on only unprofitability in the short term even if unprofitable business is a known act to create longer customer relationship.

Delivery can utilize data for resourcing purposes by doing resourcing weekly basis and they have now possibility to track their employees' utilization better. Business controlling process generates data to net sales forecast. Delivery follows it to get understanding of what kind of economic performance from customer perspective. Time frame for future visibility is currently

couple months, by increasing this to over six months, organization can control it's business better and get more benefits for rolling forecasting. In the future process could generate more accurate data and this would also increase the accuracy of planning when actual amounts from past months are possible to present at an adequate level.

5.7 Overview of the business controlling process and comparison of the results

Figure 21 below presents the main realized and unrealized positive and negative effects of the business controlling process. Amount of negative effects are less than positive in both categories, so interviewees trust the thought of the business controlling process. Negative effects are restricted to secondary issues which are not related to process logic. Literature review presented the theoretical background and for which elements the business controlling process is based on. Those are not seen as effecting negatively to organization now or in the future. Instead, lean thinking and S-D logic usage with competence management are experienced as a big opportunity. This is possible to see in interviewees answers where everyone saw positive opportunities in the future and future possible negative effects did not related to process theoretical viewpoint itself.

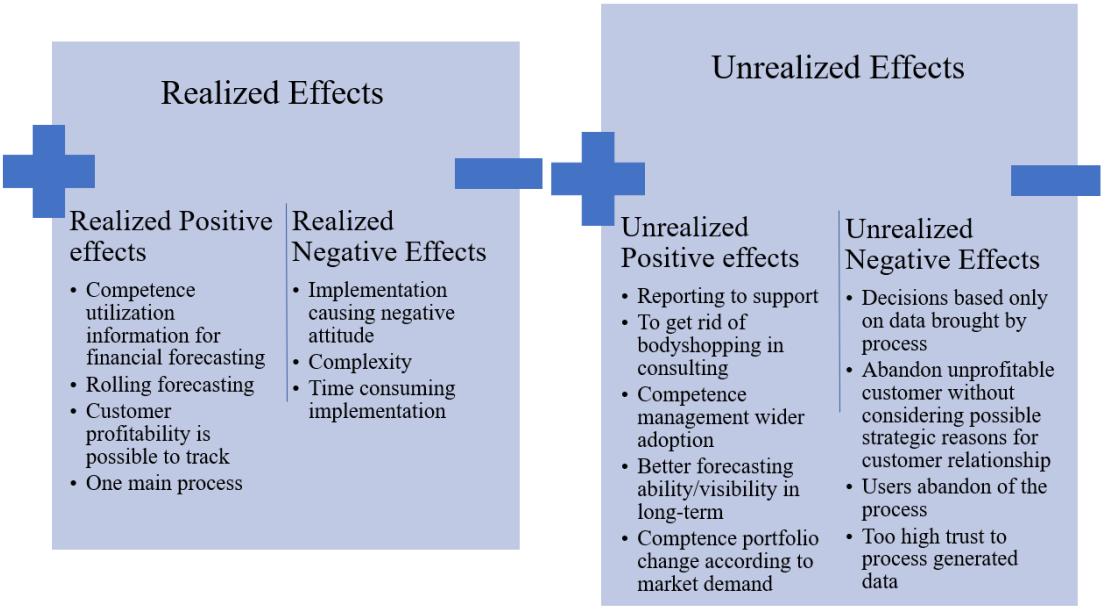

Figure 21. Realized and unrealized effects

Figure 18 illustrated how business controlling process is planned to work from theoretical perspective. After the analyzing of the interviews, process current practical functioning was possible to present. This is presented in Figure 22 below.

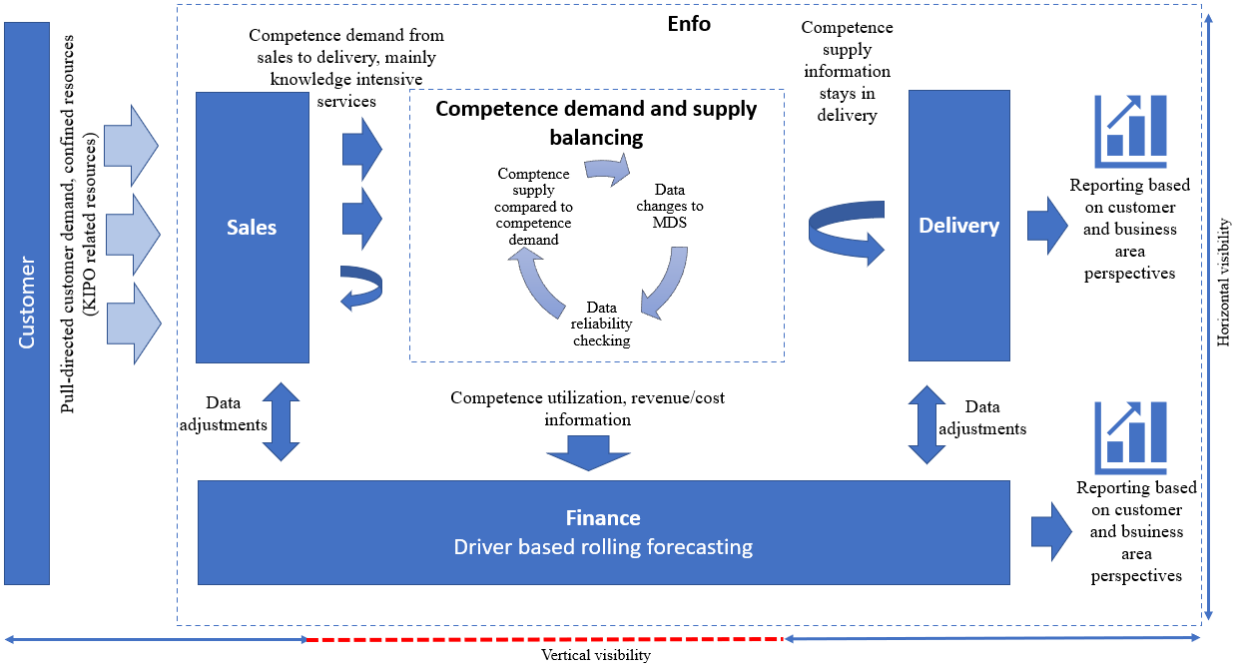

Figure 22. Business controlling process in practice

Visibility between different functions is not in practice as good as in planned process. Main reason for this is that competence supply from delivery and sales is not working and information about competence supply stays in delivery. Customer demand is mainly pull demanded but only some of the customer demanded competences passed on from sales to delivery. Those resources are mainly KIPO related competences which are from technical viewpoint easier to model and handle. Issue is highlighted when Enfo's revenue streams also includes a lot of other resource particles than KIPO related knowledge kind of competences.

Also, competence balancing cycle looks little bit different than in planned process. This is the result of competence viewpoint current complexity and resourcing is made more from employee perspective than from competence perspective. Data is not reliable enough to make important

decision and data needs a lot of adjustments. Process was mentioned quite complex and the nature of the data is different than before when competence management is so strongly featured in the organization business controlling process.

In a longer time frame this business controlling process can generate important information for organization about current and future state of the markets and how well organization knowledge portfolio fits to market demand. Process still needs improvements which can allow process wider usage in the organization. When organization learn to utilize competence management better, it is possible that complexity of the process also decreases.

The mindset, where S-D logic value co-creation is organization background operation logic and market demand observes lean methodology principles and competences operate as a value stream particles, can in a longer time frame allow organization to survive in the market and organization can adjust the market needs better than its competitors. This kind of mindset implementation is a complex process, especially in a big organization, and it takes time until the process can generate benefits for the organization. However, future possible negative effects concentrated somewhere else than the mindset itself, so process benefits could be realized after a longer time frame.

6 CONCLUSIONS AND DISCUSSION

The research is consisting of two parts. First part is a literature review which is divided into two main chapters. The literature review consists four different theoretical frameworks where two of those are discussed more thoughtful. Those chapters are theoretical framework of service dominant logic which concentrates especially on value co-creation and the second theoretical framework to competence management. First theoretical chapter introduces first main theory, S-D logic, to reader by presenting main definitions and describing how S-D logic relates separate from goods dominant logic. Second chapter discusses competence management and it clarifies to reader basic definitions of competence management. Lean and Knowledge based project organisation theories are explained in chapter four where case company information is presented. Lean basic theoretical assume to be more familiar than service dominant logic and competence management concepts.

As a constructive study, literature review of two main theories is combined to practical problem in chapters four and five. Chapter four presents business controlling process from theoretical aspect. Chapter five includes analysis of gathered interview data and results of interviews from different organizational function persons. Chapter five also present process practical relevance comparison to the theoretical framework which consist in this case from competence management, service dominant logic and lean thinking.

This chapter includes the summary of the thesis report. First the presented research questions are answered regarding to limitations of the study. Secondly, discussion and recommendations are presented and finally suggestion for possible future research are given.

6.1 Answering the research questions

The first objective of this thesis report was to describe how it is possible to create a business controlling process which is based on competence management and information about competence supply and competence demand. The next objective was to measure process functionality in practice. The third objective was to find out effects caused by process practical usage. To reach these three objectives, three research questions were formulated in the

beginning of the thesis. Based on the findings of the literature review and the results from the interviews, answers to those three questions are presented below.

Research Question 1: *How is business controlling process possible to create based on competence demand and competence supply information?*

To create business controlling process possible based on competence supply and competence demand, it needs large technological investments from the company. These include in Enfo's case CMS implementation, CRM system integration to business planning solution and CMS. Also, active usage of those systems is necessary to provide high quality data for decision making. Creating this kind of a process, it also needs organization way of acting, vision and strategical targets to support those technical investments. This process is based on pull driven demand from customers and organization must be able to transform itself in a way where organization has capability to provide demanded knowledge for customers. This in this case happens with using information about competence supply and competence demand. Organization should use S-D logic mindset which enables them to create value with customer and highlight customer importance. Organization should not sell products in a push directed way to the market. Instead customer demand should be pull directed and it becomes visible as a competence demand.

Demand indicates the state of the market and how well company can provide competencies for that demand enables value co-creation together with the customer. Process supports managing business activities from customer perspective which can lead to situations where organization's multiple different business areas or business units from multiple locations are creating value together for chosen customer. When the organization has readiness to create this kind of a process, the implementation phase is time-consuming, and it may also cause frustration to organization employees. Comptence management wider usage changes also the way of thinking resources from employee-based aspect to competence aspect. This is an important stage because way of thinking changes totally.

Research Question 2: *How business controlling process works in practice from different organizational functions perspective?*

Process practical relevance was measured with interviewing different organization function representatives from different stages in organization. Business controlling process was mentioned to work well in practice in T&M consulting but for other Enfo's business activities this business controlling process is not currently working as planned. Partially, the reason is that organization is not yet think all customer demand as operant resources, rather only some amount of demand flows as an operant resource.

Comparing practical functioning from different functions perspective, every function mentioned problems which they face when using the process. Finance had more problems related to data quality and increased manual work. Sales instead mentioned one of the biggest problems the lack of visibility to upcoming competence supply. This is an important note because process should also pass on information from delivery to sales. Sales saw straight benefits if they could use competence supply information, when they could offer competences to the customers which are free to use in the future. Delivery problems varied more than sales and finance, but most of the problems concentrated on complexity of the business controlling process and understanding the competence mindset usefulness.

Data flows between different functions vary depending on data origin. Pure finance data flows better than competence information, which is a new type of data to organization. Some of the functions do not have straight visibility between each other and that makes data reliability difficult. Then, after the longer usage of the process, this problem may disappear when users start to trust more on what they see in the systems.

Data reliability was not on a first-rate level. When the process is complex and the viewpoint is now concentrating on competences instead of directly on employees, it causes confusion. Also, new data sets are not yet beneficial for users because those value is still unrecognized. The business controlling process changed the budgeting cycle from one year to one month. This creates in implementation stage a lot of manual work and data needs a lot double checking especially by controllers.

The business controlling process was in line with organization's strategy and interviewees mentioned several straight connections what they currently saw. Mentioned connections varied between the aim of doing profitable business with the business controlling process to control the organization whole business activities in a new way which is based on S-D logic, lean and competence management mindset combination.

Process practical functioning was measured on a short-term and some of the planned procedures was impossible to examine. One of the most important issue is the competence transformation according to market demand. It turned out that in short-term, delivery rather add some competence to the employee than acquire an employee with that competence. It is not possible to say, is the business controlling process working in a way as it planned where organization can transform competences according to market demand and stay competitive in the market.

Research Question 3: *What kind of effects business controlling process has?*

Business controlling process effects were divided to positive and negative effects. Interviews examined what kind of effects are realized and what kind of effects possibly realize in the future. To taking account both, realized and unrealized effects, one can say that process have more positive effects than negative. Every function mentioned implementation phase time usage as a negative effect. Also, process complexity was mentioned repeatedly. Negative effects concentrated more to implementation phase itself than in the business controlling process background logic. This can be seen a positive matter concerning the future.

Positive effects concentrated on around of reporting improvements and one common business controlling process. Rolling forecasting and customer based vertical visibility inside the organization was also mentioned as a positive improvement in organization activity. Now there is also visibility what happens in the customer interface and decisions are based on real data. The business controlling process has also connected functions to work more closer together. When the business controlling process is quite complex, it needs co-operation between functions and that also subsidiary creates conversation. This conversation is an important improvement and it should decrease functions independent work which can lead in a situation where sales makes a deal, but delivery has no possibility to deliver it to the customer.

Future unrealized positive effects concentrated more on background logic and competence mindset potential. Interviewees saw that competence demand and competence supply can be used to control organization business activity and those also can be used to compare customer needs and organization knowledge gap. Keeping that gap small enough, it makes sure that organization retain its competitiveness in the market. Future possible positive effects need more time to realize and it may take even years to achieve those. This kind of effect was organization's competence transforming to match market demand. Those effects are related to the business controlling process background logic and those are the most important effects to achieve in longer time frame to realize.

As a constructive study, weak market test was passed when qualitative interview suggested that the business controlling process has practical value in the future. For passing semi-strong market it requires that this type of business controlling process is implemented in other organizations and it should have financial benefits.

6.2 Discussion and recommendations for Enfo

This thesis report examined business controlling process and its practical relevance and effects. Practical relevance and process effects were analyzed with qualitative interviews. With analyzed interview results it was possible to create description of the business controlling process current state and compare it to the planned process description. Some of the planned process consequences did not come out because the time frame of the research was not long enough. One of the interviewees mentioned that the business controlling process may work as planned after couple of years. When research examined under one-year time frame, some of the process effects are impossible to verify.

The business controlling process practical functioning and effects was covered from three different functions perspective. One of the important functions was scoped out because the research time frame was not long enough to make any remarkable conclusions. This function was people operations, which mission in the process is concentrate on competence acquisition. When competence demand and competence supply differ dramatically, organization must

transform its current competencies to match to the customer interface demand. Organization should also use information about competence demand for recruiting processes. When customer interface demand is pull directed, dataflow should stimulate people operations function and that function should use that information for recruiting. This kind of process should enable effective recruiting which role highlights in consulting business.

In general, the results of this thesis interviews serve a good basis for a case company future business controlling process development. Interviews provided positive results about the future and most of the interviewees saw that process has large potential in the future and company should continue the implementation of the process. The process needs further development and iteration because it now includes only partially company's revenue streams.

When the process should consider the whole company, it should include also other business areas to provide company's functioning in a more realistic way. This will also generate more realistic forecasts for reporting and business controlling purposes. Most of the interviewees mentioned that the process was quite complex. As a side recommendation, to avoid process complexity, company should also concentrate to keep the process as simple as possible and focus more on internal communication in the future.

Lastly, the logic behind the business controlling process was not criticized in the interviews. This indicates that company can trustfully continue the wider implementation of the process. With continuing the implementation, the business controlling process can be iterated from the current state, in the Figure 22, to match the planned and desirable process which was presented in the Figure 18. The iteration of the process will be time consuming, but it is recommendable from company's economical and future competitiveness perspectives. In the future, process has potential to provide a possibility for a company, where major changes in a market does not create obstacles for company's business operations continuity and company can adapt its competence portfolio to match to the new competence demand situation in the market.

6.3 Future research

This study described how one business controlling process can be created and used based on competence supply and competence demand. Connecting competence management to S-D logic and lean principles organization can utilize competences to value co-creation together with the customer.

This study scope did not consist the role of the competence acquisition. Therefore, future research possibilities could be constructive study about competence acquisition, including subcontracting and concentrating on how subcontracting can be optimized when company has information about utilization of competencies and capability to plan competence supply more accurate than before. In this study competence management and S-D logic principles were applied to KIPO nature organization. Future research possibility could also be applying methods presented in this thesis to the different industries and other service organizations. It could be also useful to concentrate on organizations where goods dominant thinking is still the dominant perspective in organization functioning.

This kind of research topic provides possibilities from research perspective but also from practical perspective. It could be reasonable to make research of strategic management perspective investigating on how this kind of solution affects to organization strategically. When process complexity and huge amount of spent administration work hours were mentioned the biggest negative effects, it would be beneficial to examine how this kind of process can be optimized. Process generated a lot of data and it would be beneficial to examine how process can be optimized for example from lean methodologies perspective by measuring the amount of waste in different steps in the process. This kind of approach can measure about how efficient the process is how much waste of value there are in the processes.

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APPENDICES

Appendix A1: Cover letter for interviews in Finnish.

Hei,

Lähestyn sinua kartoittaakseni mahdollisuutta toteuttaa haastattelu diplomityöhöni liittyen. Teen parhaillani diplomityötäni DUCK -projektiin ja tutkin työssäni millaisia vaikutuksia DUCK :la on siihen kuuluvien organisaation funktioiden arvonluonnin ja kompetenssien hallinnan näkökulmasta.

Haastattelujen tarkoituksena on selvittää, millaisia hyötyjä osaamisen hallinta tarjoaa eri organisaation funktioille ja millaisia mahdollisuuksia se tarjoaa asiakasrajapinnassa tapahtuvaan arvonluontiin.

Olisiko sinulla mahdollisesti aikaa noin 30 minuutin – 1 tunnin mittaiselle haastattelulle aiheeseen liittyen? Haastattelut toteutetaan anonyymisti ja niiden tulokset käsitellään luottamuksellisesti akateemisessa tarkoituksessa. Haastattelupanoksesi on työlleni tärkeä merkitys, sillä aiempaa tutkimusta laajemmasta osaamisenhallinnan hyödyntämisestä arvonluonnissa case tutkimuksen myötä ei ole tehty paljoa. Lisäksi haastattelun tulokset tarjoavat Enfolle uutta tietoa DUCK :in implementoinnin ja sen synnyttämistä hyödyistä eri funktioiden näkökulmasta.

Yhteystietoni löytyvät alta.

Appendix A2: Cover letter for interviews in English.

Hi,

I am contacting you about an interview possibility for my master's thesis. I am currently finalizing my studies in Lappeenranta-Lahti University of Technology LUT and I will soon graduate as M. Sc. (Tech) in Industrial engineering and management.

I am currently writing my master's thesis for a DUCK -program. My thesis examines what kind of effects DUCK has in different organizational functions from competence management and value co-creation perspective.

Would you possibly have time for a 30-minute to 1-hour interview around the topic. The results of the interview will be treated confidentially and used only for academic purposes.

Your participation would have a great impact for my thesis as there are only a few previous studies published around the topic. Results of the interview also provide new information for Enfo about what kind of effects DUCK implementation has in different organizational functions.

Appendix A3: Interview questions for interviews in English.

Interview

Interview questions

Background

1. Briefly describe your role and responsibilities in the Enfo?
2. How long have you been working for Enfo?
3. In which of the following functions do you work?
    - Delivery
    - Finance
    - People Operations
    - Sales

RQ2: Business controlling process practical relevance

4. How does the business control process (DUCK) work in practice from the perspective of your funtion and job description?
5. How does the information of customer demand pass on between different functions in the company?
6. How does the information of the competences pass on between different functions in the company?
7. Is the information produced by the business control process reliable in your opinion?
8. Which elements in the business control process support Enfo's strategy in your opinion?

RQ3: Business controlling process effects

9. What benefits has DUCK brought in your opinion?
10. What benefits can DUCK bring in the future, which haven't been realized yet?
11. What negative effects has DUCK brought in your opinion?
12. What negative effects can DUCK bring in the future, which haven't been realized yet?
13. What information that has been brought by DUCK can you use in your work?

14. Related to Question 13: To which kinds of purposes can you utilize information brought by DUCK in your work? (decision making and recruiting…etc)

15. What information brought by DUCK could be utilized more effectively in your opinion?

16. Related to Question 15. To which kinds of purposes do you think information brought by DUCK could be utilized better in your opinion?

Appendix A4: Haastattelu kysymykset suomeksi.

Haastattelu

Haastateltavan tausta:

1. Mikä on työnkuvasi yrityksessä?
2. Kuinka kauan olet työskennellyt yrityksessä?
3. Missä funktiossa työskentelet?
    - Delivery
    - Finance
    - People Operations
    - Sales

RQ2: Liiketoiminnan ohjausprosessin toimivuus

4. Kuinka liiketoiminnan ohjausprosessi (DUCK) toimii käytännössä sinun funktiosi ja toimenkuvasi näkökulmasta?
5. Kuinka informaatio asiakaskysynnästä mielestäsi välittyy yrityksessä eri funktioiden välillä?
6. Kuinka informaatio kompetensseista mielestäsi välittyy yrityksessä eri funktioiden välillä?
7. Onko liiketoiminnan ohjausprosessin tuottama informaatio mielestäsi luotettavaa? 8. Mitkä tekijät liiketoiminnan ohjausprosessissa mielestäsi tukee Enfon strategiaa?

RQ3: Liiketoiminnan ohjausprosessin vaikutukset

9. Mitä hyötyjä DUCK on tuonut mielestäsi?
10. Mitä hyötyjä DUCK voi tuoda tulevaisuudessa, jotka eivät ole vielä realisoituneet?
11. Mitä negatiivisia vaikutuksia DUCK on tuonut mielestäsi?
12. Mitä negatiivisia vaikutuksia DUCK voi tuoda tulevaisuudessa, jotka eivät ole vielä realisoituneet?
13. Mitä DUCK: n tarjoamaa informaatiota voit hyödyntää työssäsi?
14. Millaisiin tarkoituksiin pystyt hyödyntämään DUCK: n tarjoamaa informaatiota työssäsi? (Esimerkiksi päätöksenteko ja rekrytointi)

15. Mitä DUCK: n tarjoamaa informaatiota voisi hyödyntää mielestäsi paremmin?

16. Millaisiin tarkoituksiin näkisit, että DUCK: n tarjoamaa informaatiota voisi hyödyntää mielestäsi paremmin?