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Business Process Walkthrough as a part of Business Process Management

CASE: Customer Service Europe

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<p>Insinööriyössä tutkittiin teknologiateollisuuteen sijoittuvan case-yrityksen liiketoimintaprosessin johtamista globaalissa ympäristössä. Insinööriyön tarkoituksena oli kuvata case-yrityksen toimitusprosessin alkupään tilauksenkäsittelyprosessi, jossa käsitellään vaativamman tuotespesifikaation omaavia projekteja. Toimitusprosessi kokonaisuudessaan on yrityksen ydinprosessi, joka valmistaa tuotteita tilauksesta asiakkaalle.</p> <p>Toimeksianto oli tuottaa kuvaus prosessin nykytilasta. Lisäksi tarkoituksena oli löytää mahdollisia kehityskohteita prosessin asiakaskeskeisemmän suorituskyvyn parantamiseksi. Työlle asetettiin tutkimuskysymykset, joilla pyrittiin vastaamaan tavoitteeseen. Ensimmäisenä tarkasteltiin, miten liiketoimintaprosessi on ymmärretty case-organisaatiossa. Tämän jälkeen tutkittiin vaatimuksia suorituskyvyn kehittämiseksi sekä mahdollisuuksia parantaa prosessin asiakaskeskeisyyttä.</p> <p>Empiirisessä osuudessa suoritettiin prosessin vaiheet havainnollistava läpikäyminen, jonka lopputuloksena tuotettiin prosessikuvaukset toiminta-mallitasolla ja kirjallinen, yksityiskohtaisempi dokumentaatio tukemaan kuvauksia. Prosessin laadullinen tutkimusmateriaali toteutettiin keräämällä osittain ohjattu työntekijöiden haastattelu.</p> <p>Kuvauksen jälkeen prosessi analysoitiin perustuen prosessijohtamisen teorioihin. Analyysin pohjalta nostettiin esille potentiaalisia kehitysehdotuksia, joilla on vaikutus prosessin suorituskykyyn. Nämä kategorisoitiin välttämättömiin ja harkittaviin kehitysehdotuksiin. Merkittävin löydös liittyi prosessin toimintoihin, jotka olivat varioituneet ajan kuluessa maa-kohtaisiin poikkeavuuksiin, ja joista löytyi arvoa tuottamattomia tapahtumia. Lisäksi prosessista löytyi toimintoja, joissa tapahtuvia vaiheita ei ollut kuvattu. Harmonisointi ja standardisointi ovat suositeltavia toimenpiteitä yhteisen toimintatavan löytämiseksi globaalissa mittakaavassa.</p> <p>Toimenpiteiden implementointi organisaatioon on toteutettava muutoshallinnan keinoin, jotta tavoiteltu lopputulos suorituskyvyn nostamiseksi voidaan saavuttaa, eikä suorituskyky horju muutoksen aikana.</p>	
Avainsanat	prosessijohtaminen, prosessikuvaus, harmonisointi

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<p>The bachelor's thesis examines Business Process Management in global technology industry. The case study is based on Customer Service part of the total delivery process in Make-to-Order product business. The process is handling orders with more demanding specification. Orders belong to customer's projects. Therefore, the process handles projects as well. Order handling process is a part of the company's core process which is split to smaller processes.</p> <p>The assignment was to create a clear model and description of the current state of the business process and also recognize the possible ways for improvements. The research questions that were set to meet the objective focused on how the business processes are understood in the case organization. After that, the analysis was done to evaluate the process and how the process is performed according to performance objectives, which in this case were chosen to be customer-centric.</p> <p>The empirical part was carried out by describing the activities done step-by-step, applying so called process walkthrough. The result was process workflow models and supplementary written description. The qualitative data was gathered by semi-structured interview of the employees in the Customer Service Function.</p> <p>The process was analyzed by applying the best Business Process Management practices. The analysis gave the potential improvement actions which could have a positive impact on process performance. These improvement actions were categorized to necessary and considerable improvements. The remarkable finding was the deviate actions that have formed over the time. Some of the deviations were not adding value. In addition, the core process included supporting tasks which were not documented. Harmonizing, standardizing and describing were the suggested actions that should be done to meet the objectives.</p> <p>Implementation of change into organization has to follow the change management. This will ensure that performance will not suffer during the change towards desired state.</p>	
Keywords	business process management, process model, harmonizing

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Tiivistelmä (Abstract in Finnish)

Abstract

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Abbreviations

BPM	Business Process Management
BPR	Business Process Re-Engineering
CPM	Continuous Process Management
ERP	Enterprise Resource Planning

1 Introduction to Research Report

In developed societies customers and end-users are buying products and services which are creating added value and experiences for the users. In Harvard Business Review's article *Service Factory* (Chase and Garvin 1989) the idea of a well-functioning service factory was introduced. The point of the idea was that manufacturing firms are more competitive by employing a wider range of services by factory personnel and facilities. Service industry can be seen as a strategic weapon in the manufacturing environment. Production workers and factory managers are able to create and sustain new relationships with customers because of the interaction. Furthermore, factory personnel have the means to support the sales force, service technicians, and customers. This support should, and will, be used. Competition is shifting away from how companies build their products to how well they serve customers before and after they build them. Manufacturing can be seen as the cortex of the business.

The present business case study is introducing Customer Service function in today's service organization in technology manufacturing industry. The customer service is responsible for order handling in the delivery process of Make-to-Order products. The order handling process is serving the sales offices globally, thus, it has an international interface which will affect the environment where the process works. The case company has lately introduced a new operational model which should be implemented into the case organization. The new alignment is focusing on one-size-does-not-fit-all mentality. In these terms, the idea is to recognize the deviations in the core process between the units and benchmark them in corporate level.

The main objective for the company is to develop the process according to the new strategy, and the focus is on the customer-centric performance. Therefore, the objective of the study is to recognize the possibilities to improve the current process in a way that high performance is achieved in the case organization. In order to improve the process, the current state has to be defined. Purpose and goal of the process has to be updated, so that developing and creating the new desired state is possible. The criteria for increasing performance are derived from competitiveness in the market, to guarantee the more customer-centric approach. The objective is met by answering the following research questions:

- 1.) How are business processes perceived in the case company?
- 2.) What are the requirements for increasing the performance?
- 3.) How could the case of order handling process increase the customer centricity?

The main theoretical framework considers Business Process Management (BPM) and best BPM practices are derived from the literature. The study examines business processes and their relation to organizational design, also how they are seen as part of the system.

A process refines the knowledge of inputs to outputs. A process modeling and description contributes the knowledge to every part in the organization. By gathering the information, knowledge of actual actions is also gained. (Laamanen and Tinnilä 2009: 28). The Galbraight's Star Model (2010: 15) is presented to illustrate how processes are linked to organization. It is also relevant to realise the role of technology and information in process.

The empirical part is based on theories that observe the processes as a part of the whole system. Walkthrough was conducted by following technique according to Laamanen (2001: 79, 81) suggestions: detailed description is needed to process improvements and customer should always be notified in models. The walkthrough is a kick-off for the improvement and development and strategy implementation to achieve the high performance.

Hammer (2007) criticises that many re-engineering processes have fallen down due to lack of completeness when companies are improving and re-engineering processes. He proposes that five process enablers and four capabilities are put under magnifying glass. That is the way that perceives the completeness. Also Michael Porter's value chain-thinking and strategic positioning has relevance when analysing the case process added value from customer's point of view.

After evaluation and comparing the current state to desired one, it is appropriate to decide which actions are taken into account, and how to implement the actions into organization. The Continuous Process Management (CPM) and principles of Lean are examined. The fundamental approach for both theories is to see improvement and development as on-going interaction in the whole system. Lean is minimizing the waste,

the actions that are not producing value from customer perspective. (Meredith and Shafer 2011: 184-185.)

The last theory examined is Change Management. Laamanen (2001: 272) notifies seven steps to lead the change to organization, so that the performance will not suffer during the change process. The study objective and theories used as well as the empirical part and achieved results are condensed to figure 1.

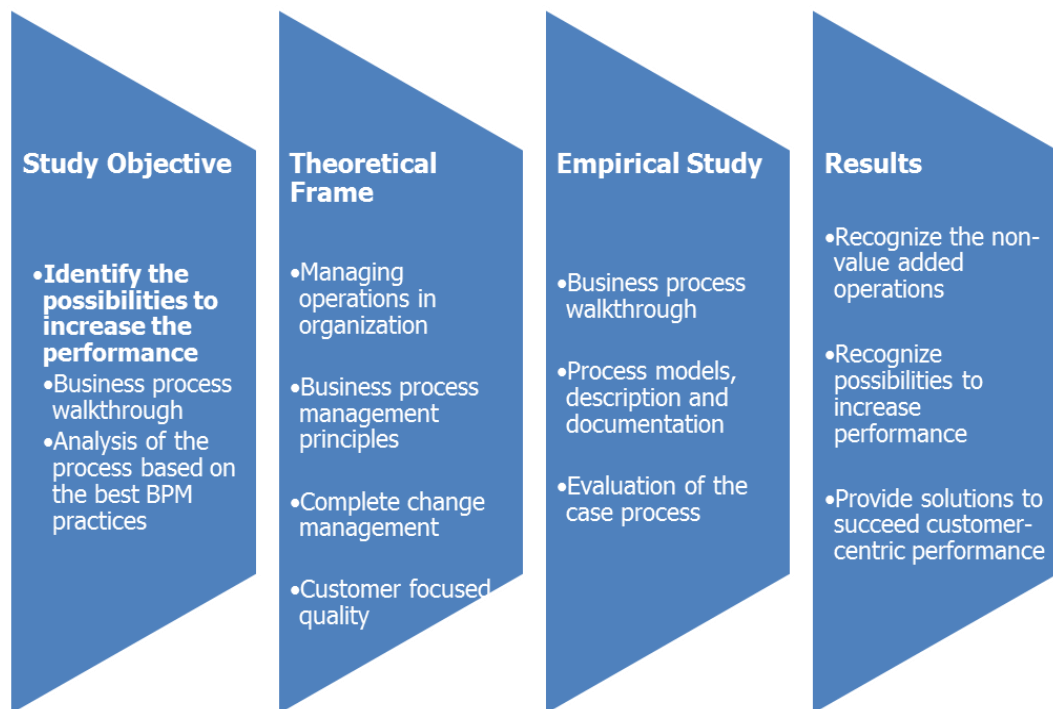


Figure 1 A Summary of the Study

This study will not include cultural aspects even though the case customer service function has the international interface to deal with. The study of the cultures should be considered as a different case study. This study does not focus on benchmarking either, despite the fact that the benchmarking is presented in theory. The benchmarking should be considered also as a different case study.

2 Managing the Operations in Organizations

Operations are the heart of every organization. The operation is defined as a transformation of an input into useful output. The transformation from input to output takes place according to the company's determined strategies and thereby adding value to some entity. Fundamentally thinking, the organizations exist only to create value, and operations involve tasks that create value (Slack and Lewis 2002: 4-25.) The critical task for management is to create an organization capable of infusing products or services with irresistible functionality or even better, create something new that customers need but have not imagined the need yet. (Prahalad and Hamel 1990).

Operations strategy is focusing on the total transformation in the whole business. From strategic point of view, operations strategy deals with managed processes in macro level in order to succeed the agreed strategy. Operations management can be defined as an activity of managing the resources and processes that produce and deliver goods and services. All managed operations are linked to operation strategy, and therefore, operations management focuses processes in micro level to fulfil the agreed strategy. Operations strategy is seen as a long-term, higher level, and more abstract than operations management. On the other hand, all the operations are part of the **system**; a purposeful collection of people, objects and procedures for operating within a same environment. (Meredith and Shafer 2011: 5-7.)

According to Galbraight (2005: 14) organization is more than a structure. Figure 2 presents Galbraight's Star Model, according to which the five dimensions must be dependable among themselves. Strategy is the dimension for giving the direction. Structure is the location where the decisions are made, processes which have to do with the flow of information, reward systems influence on the employees' motivations to perform and deal with organizational goals, as well as the people policies, which influence employees mind sets and skills. Star Model is introduced shortly to understand how organization bases its design options.

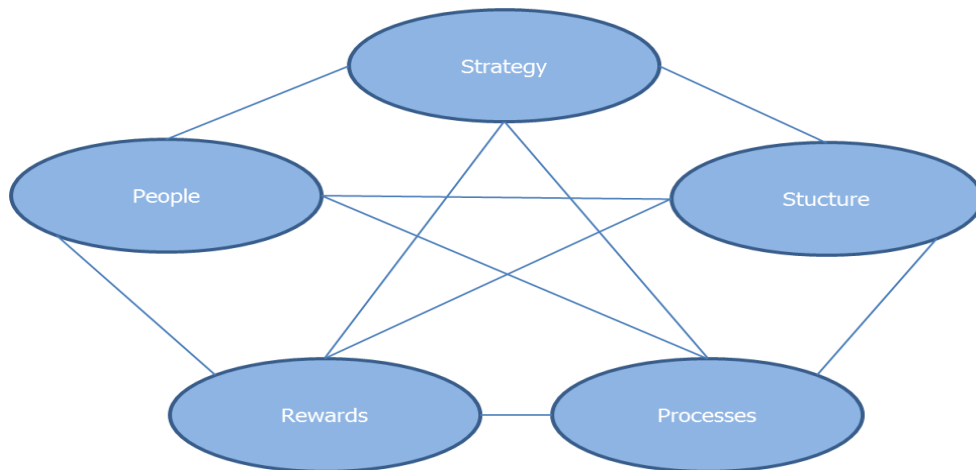


Figure 2 Organization's Star Model (Galbraight 2010: 15)

The strategy is realised through processes. It also focuses on the long-term development of its operations' resources and processes so that they can provide basis for a sustainable advantage (Laamanen and Tinnilä: 55). The customer challenges the company to stay on the cutting edge and develop new and improved products or services. The customer-centric company prefers the most loyal and profitable customer because it is the one most important; the tight customer relationship is value added. (Galbraight, Jay R. 2005: 2-24.)

Structure is a placement for power and authority in the organization. Implementing customer to structure is important. Customers, particularly in business-to-business environment often want a single point of contact, products customized to meet their needs, or an integrated bundle of services and products. Structurally, the company will need strong customer-centric profit centers to pull together the products into effective solutions. It will need more customer knowledge and a greater need for customer segment specific units. (Galbraight, Jay R. 2005: 2-24.)

Information and decision processes cut across the organization's structure. Management processes are both vertical and horizontal. Vertical processes are usually business planning and budgeting processes. The requirements of different departments are centrally composed, and priorities are decided for the budgeting and allocation of the resources such as capital, research and development, and training. These management processes are essential to the effective functioning of matrix organizations and should be supported by dual or multidimensional information systems. Horizontal pro-

cesses or so called lateral processes are designed around the workflow, such as new product development or the entry and fulfilment of a customer order. These management processes are becoming the primary vehicle for managing in today's organizations. (Galbraight 2005: 20-25.)

Complex organizations require the management to understand how to use the organizations as a pedal for competitive advantage. Metrics and rewards are closely related to individual behaviours and performance with the organization's goals. Metrics are the measures used to evaluate both individual and collective performance. The reward system motivates employees and fortifies the behaviours that add value to organization through salary, bonuses, recognition and benefits. In complex organizations, challenges of creating incentives and reward system that contributes to collaborative behaviour are normal. In complex organizations, variable compensation typically tends to focus on team, unit and business performance more than on individual accomplishment. (Galbraight 2005: 20-25.)

Galbraight presents (2005: 20-25.) that usually rewards and processes are underestimated while designing and drawing organization chart and structure are overemphasized because it affects status and power, and a change to it is most likely to be reported in the business press or announced throughout the company. Despite this fact in a fast-changing business environment nowadays, and in matrix organizations, structure is becoming less important, while processes, rewards, and people are given more attention.

3 Understanding Business Process Management

A concept of **process** in business is defined as a completely closed, timely and logical sequence of work activities, which are required to work especially on a process-orientated business object in the environment where the company operates. Business processes are end-to-end work across an enterprise that creates customer value, transforming the inputs to quality outputs. Essential features of business processes are interfaces to business partners of the company, such as customer and suppliers. (vom Brocke and Rosemann 2010: 4-6.)

3.1 Concept and Challenge of Business Process Management

Business Process Management is an integrated system for managing business performance by managing end-to-end business processes on an on-going basis. Performance is measured in terms of critical metrics that relate customer needs and company requirements, and it has to be compared to target for these metrics. If performance does not meet the targets, the reason must be traced and determined. (vom Brocke and Rosemann 2010: 4-6.) On the other hand, all the processes have a system perspective, and processes have to be understood as part of the whole. (Laamanen and Tinnilä 2009: 28).

Figure 3 presents the fundamental life-cycle approach to business process management. The essential points are in design, implementation, execution and control and monitor.

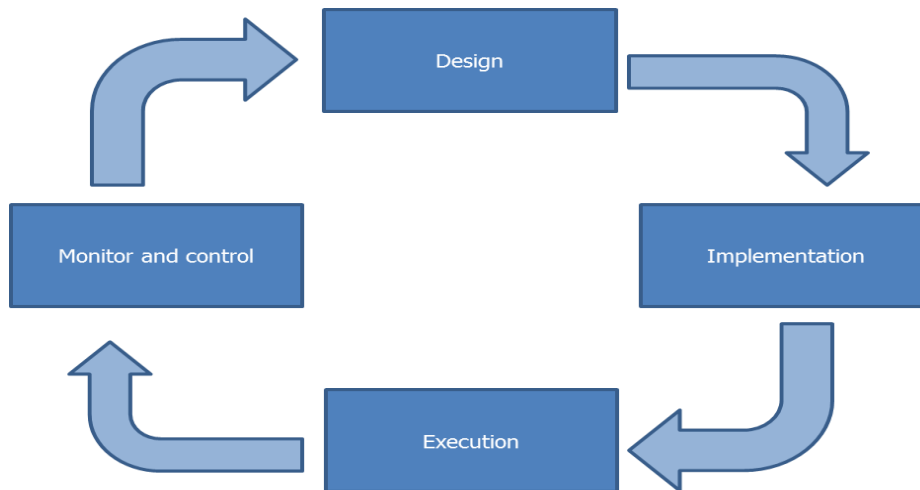


Figure 3 The Life-cycle of Business Process Management (Krichmer in the Handbook on Business Process Management 2: 42)

Fundamental approach to business processes is that they always start because of customer needs. The processes and resources are designed to support the demand of customer. Outputs are answer to customer needs. (Laamanen 2001: 21-23.)

The life-cycle starts when the main business processes of a company are identified. Next, innovations and their general process impacts are defined, delivering the basis for the process structure and the related process goals. The underlying application system architecture is planned accordingly, supporting the required agility. (Krichmer in the Handbook on Business Process Management 2010: 42)

Implementation includes the software configuration or development, and people change management, consisting of information, communication and training. Execution is done through people (human) and IT. The people based execution should be supported by continuous learning, talented management initiatives. Monitoring and controlling are needed to ensure that process is achieving its targets. (Krichmer in the Handbook on Business Process Management 2010: 41-45.)

Project and processes are often mixed together and at this point it is decent to clarify the difference between them. **Project** is the single time action of execution process. The project has clear time frequency, limited duration and often temporary organizational structure, as well as specific resources that are determined for carrying out the project. (Laamanen 2001: 26.)

Projects are managed by project plans and timetables where different steps are separated, such as planning and execution, reporting and decision making. Based on the project goals, dates and costs must be planned and defined as standard values, so called milestones. The time schedule must include the desired end date of the project. Planning a project is essential to reaching the project objectives. The most important thing when planning the project is the integrated consideration of dates and resources to meet realistic standards for the milestones, so that the end of the project can be assigned. Resources costs can vary and moreover, speeding the completion of the project usually causes added costs. (Becker, Kugeler and Rosemann 2003: 13-14.)

The project has clear objectives and schedules, and it is founded on investment calculations schedules etc. The benefits and efficiency of projects are achieved when clearly defined, relatively short-lived and limited objectives are set. Major process improvements can be carried throughout projects, for example re-engineering projects. (Laamanen and Tinnilä 2009: 24.)

The basic target of every economically working company is to make a profit. In essence, the value creating processes has to adapt to principles of the market – a company can only be successful if the customers accept and are willing to pay for the provided services, and therefore are getting the value they consider the best. (Becker, Kugeler, Rosemann 2003: 4.)

Porter (1985) has proposed a model of value chain, and he separated corporate activities to primary activities and supporting activities. The primary activities are regarded as value-creating activities with a direct relation to manufactured product and contribution to economic outcome of the company. These primary activities can be for example sales, marketing, logistics and customer service. (1985: 37-40.) The supporting activities do not have direct impact on manufactured products or services, but are necessary in order to execute the core process, for example human resource and counting are counted as supporting processes. Large international organizations typically have from 5-10 value chains. In essence, value chains are the ultimate processes that define a company (Becker, Kugeler and Rosemann 2003: 4-5).

However, the primary processes are not workable themselves and they need supporting process around to accomplish their purpose. (Laamanen and Tinnilä 2009: 52-53.) The line between primary process and supporting process is usually fickle and de-

depends more or less on the type of the business as well as the size and structure of the organization. According to Laamanen (2001: 52) right approach is to define a key process inside primary and supporting activities.

Some challenges of business process thinking are also relevant to understand. Globalisation and tightened competition will drive companies to adopt the same best practices and find the best way of accomplishing a given task. Eventually this will lead to adoption of corresponding process in the organization, while forgetting the real competitive advantages. The result is a zero sum competition, static or declining prices, and pressures on costs that compromise companies' ability to invest in the business for the long term (Porter 1996). In the long run, competitiveness derives from ability to develop core competencies that spawn anticipated products and services at lower cost and faster than rivals. The real source of advantage is found by management's ability to consolidate corporate wide technologies and production skills into competencies that enhance individual business to be agile. (Prahalad and Hamel 1990.)

According to Porter (1996: 16, 81) **operational effectiveness** (performing similar activities better than rivals) and strategy together enable the superior performance. A company can outperform rivals only if it can establish a difference that it can preserve. It must deliver greater value to customers or create comparable value at a lower cost, or do both. Thus, delivering greater value allows a company to charge higher average unit prices; greater efficiency results in lower average unit costs.

To avoid becoming alike rivals, as rivals imitate one another's improvements in quality, cycle times, or supplier partnerships, strategies converge and competition becomes a series of races down identical paths that no one can win; the other perspective to consider is **strategic positioning** where similar tasks or activities are processed in a different way than rivals do. Therefore, positions built on systems of activities are far more sustainable than those built on individual activities. Literally this means that when company has enhanced specific activity and duplicate it, it takes time for rivals to figure out how that is integrated and adopted to all processes. Basis for positioning is serving most or all the needs of a particular group of customers, and, more traditionally said; targeting a segment of customers. It arises when there are groups of customers with differing needs, and when a tailored set of activities can serve those needs best. (Porter 1996.)

The other basis for positioning is segmenting customers, who are accessible in different ways. Although their needs are similar to those of other customers, the best configuration of activities to reach them is different. However, positioning is not always a function of differences on the demand, or customer, side. Variety and access positioning, in particular, do not rely on any customer differences. (Porter 1996.)

Another aspect is related to human in process. Laamanen (2001: 23-24) also states that difficulties of process thinking are more or less caused by the human nature. Process thinking is against to people intuition to do daily activities. People tend to do activities keeping in mind the need of safety, not new opportunities and goals. This makes it difficult to apply out-side-of-box -mentality. A further aspect is that people have limited capacity to handle activities in mind. The real life is complex and people are affected by many chains of happening all the time. If the change factors are increased in a short period of time, people's natural instinct is to simplify things according to their values and beliefs. However, the concept of process is not based on believes, it is a logical model of causality. (Laamanen 2001: 23-24.)

3.2 Managing Processes and System

Hammer (2007: 1-3) presents two kinds of characteristics that influence on high performance over time: five enablers, which relate to individual process, and four capabilities, which apply to entire organizations. Figure 4 presents the process enablers and company's capabilities. The development of these characteristics is vital in order to success in high performance.

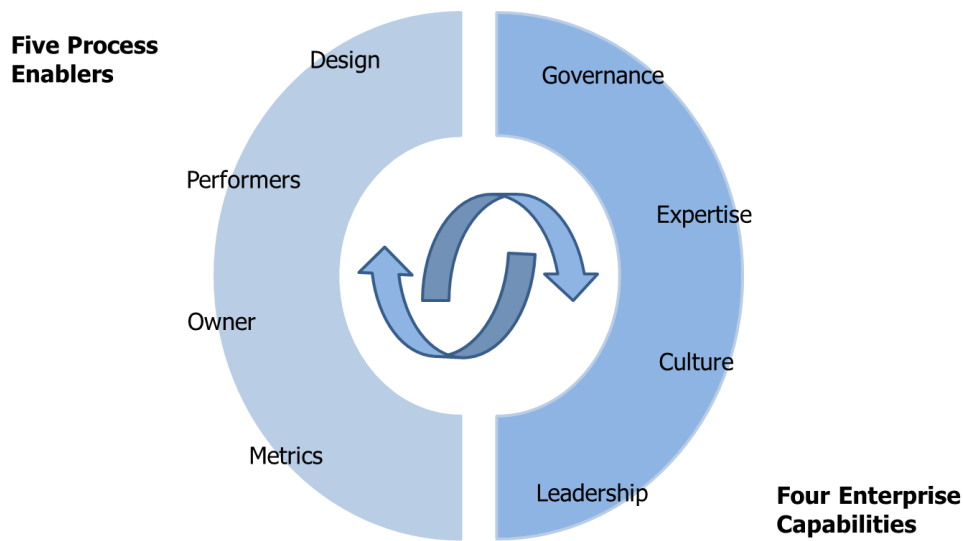


Figure 4 The Process Enablers and Enterprise Capabilities (Adopted from Hammer 2007.)

Process design is the most fundamental aspect of a process; the relations and specification of a task that are performed, by whom, when, in what locations, under what circumstances. Without design there are only uncoordinated individual activities in organizational chaos. **Functional process metrics** has to be derived from customer needs and enterprise goals. Targets need to be set in terms of metrics and performance monitored against them. A balanced set of process metrics such as cost, speed and quality must be deployed, so that improvements in one area do not mask declines in another.

Process performers are the people who work in the process and need a different set of skills and behaviours to work in conventional functions and departments. They see an understanding of the overall process and its goals. Without these characteristics, they will be unable to realise the potential of end-to-end work. **Infrastructure** is giving the support to the whole process. Information technologies and HR systems discharge process responsibilities such as transmitting information. Integrated systems such as ERP systems and results-based compensations are needed for integrated processes. **Process owner** is the one responsible for managing the process. Senior managers with authority and responsibility control processes across the organizations as a whole, and ensure that processes deliver the results; otherwise, it will fall between the cracks. (vom Brocke and Rosemann 2010: 8.)

To have a fully operating process in the long run, all these enablers have to be considered and the relation between them understood. Well-designed process with right process metrics does not succeed if performers are not capable of carrying it, or if the system does not support them doing it so. Implementing a process in effect means putting in place these all five enablers. To succeed in high-performance, companies need to provide a supporting environment. The companies need to develop the organizational capabilities: leadership, culture, expertise, and governance. (Hammer 2007: 1-5.)

The **leadership** evokes the strong commitment of business process approach by the senior executives. Re-designing processes require extensive organizational change that often provokes the resistance down the line. Only a highest executive can authorise the significant resources and changes that process implementation requires. Secondly, the only organizations whose **cultures** value the customers, teamwork and willingness to change will find it possible to move forward with projects where processes are about to change. Process demands that people at all levels will put the customer first, be comfortable working with teams, accept personal responsibility of outcomes, and are willing to accept changes. If the company's culture is not aligned of values like that then leadership must change the culture so that it is. (Hammer 2007: 1-5.)

The third factor is knowledge which requires knowledgeable workers. Implementing and managing processes is a complex aim. Companies need care of people with deep **expertise** in process design and implementation, metrics, change management, program management, process improvement and other relevant techniques. The people must have formal methodologies to follow and be supported in appropriate way. Company **governance** is the one body that sees the system as a whole. The body consists of process owners, the executive leader, and the senior managers who serve a strategic oversight body, setting direction and priorities, see the process integrations with one to another, addressing cross-process issues, and translating enterprise concerns into process issues. (vom Brocke and Rosemann 2010: 8-9)

The principle of **system thinking** relies on the fact that the components of systems interact with each other. The system uses feedback received from its environment. Business system thinking also promotes the understanding the whole and impacts. This approach is important because it prevents the people in the system acting in the way that would adversely affect the whole. System thinking also supports the idea to

find the balance between the short and long term. (Laamanen and Tinnilä 2009: 28.)
Figure 5 presents the perspective of system thinking.

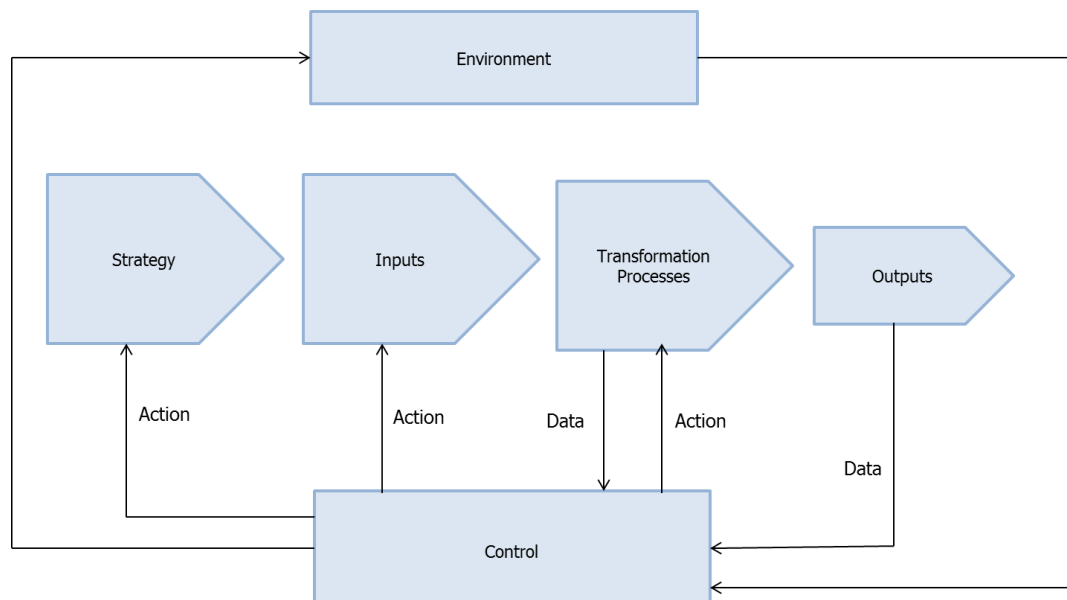


Figure 5 Systems Perspective (Meredith and Shafer 2011: 8)

A system is a holistic unit and a complex structure that has some form that is recognized as a set of related supplements that have some identified structured relationship. Thus processes that produce outputs of entire enterprise can be seen as a part of the business system. (Watson 1994: 36.) **Inputs** of the process in a production system include facilities, labour, capital, equipment and raw materials. Another very important but perhaps less obvious input is knowledge of how to transform the inputs to outputs. The employees in the organization hold this knowledge. **Transformation process** is the part of the system that adds value to the inputs. Value can be added to an entity in a number of ways and four common ways are: alternation, transportation, storage and inspection. Value can be also added as using combinations of the methods. **Outputs** from the production system are determined usually in two types: products and services. Generally, products are physical goods and services are a bundle of benefits some of which may be tangible and others intangible, and they may accompanied by facilitating goods.

The environment includes actions that are the outside of the actual production system but they have an influence on it. Customers, suppliers, competitors, technology and economy are included in the environment were the systems are. For example a large

amount of inputs to a production system are acquired from the environment. Also government regulations related to pollution control and workplace safety affect the transformation system. The customers' changes of needs and competitor's new product releases or new advanced product technology can affect the satisfaction level of the current production system's outputs.

Control and monitor are needed to make sure that processes, environment, and outputs are followed by the strategy so that the inputs and transformation processes are appropriate and align with the goals and vision. To do so, the key factors have to be carefully determined and then controlled. To success in monitoring, it has to be based on the criteria and standards because they dictate, or at least constrain the set of relevant measures. However, quite often standards and criteria will change because of the factors that are not under the control of management. (Meredith and Shafer 2011: 7-15.)

3.3 Managing the Human and the Knowledge

An organization's success is affected particularly by understanding gained knowledge from the complete system including circumstances, processes, strategies and goals. Challenges in the organizations are linked to the issue of understanding personnel's own influences on its success. (Laamanen and Tinnilä 2009: 78.)

Knowledge management has more and more domination to discussions in nowadays business management. Knowledge management deals with the question of using available know-how and how to find organizational structures that are suited for the support, creation, distribution and maintenance of this knowledge. (Becker, Kugeler and Rosemann 2003: 275.)

According to Davenport's (2006: 26-27, 35) determination of knowledge work is done by the specialist in their field, key innovators in today's organization enable the organizational growth. Knowledge workers invent products and services, design marketing programs and create strategies. Typical for knowledge workers is that either they find knowledge, create it, package it, distribute it, or apply it. This kind of expertise should be managed carefully through process management. They should be treated alike when trying to improve an organization and a good way is to segment their characteris-

tics to find out the differences between them. The level of expertise can be described through the matrix in Figure 6. Four types of knowledge workers are based on level of the expertise and the level of the coordination in the work. The dimensions are important because the level of collaboration often drives the degree of structure, and level of complexity of the work can dictate how much knowledge is needed to perform it successfully.

It is stated that many knowledge workers will regard formal process orientated approach as a bureaucratic, procedural frustration. It would be better to see the possibility that a process orientation is beneficial to knowledge workers; discipline and structure will not exclude creativeness and improvisational methods, vice versa, knowledge workers will benefit from the process aspects.

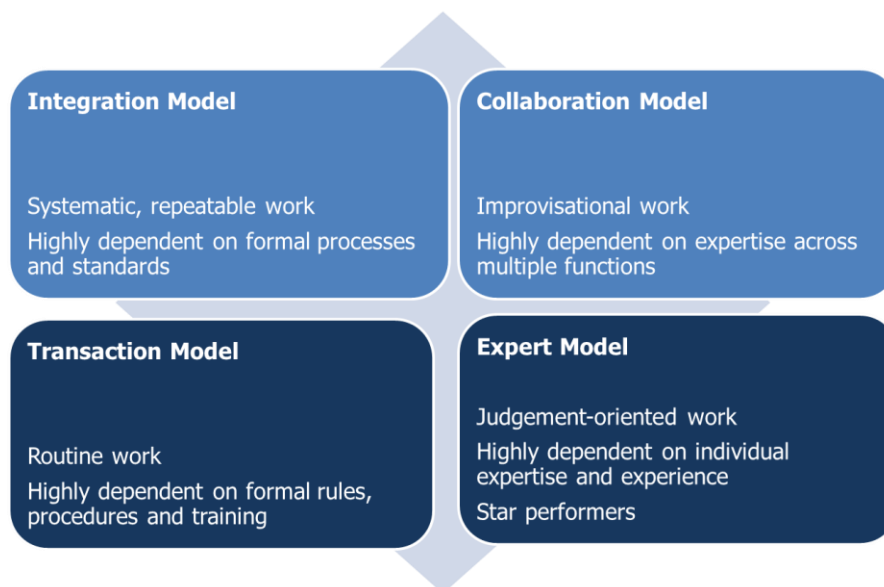


Figure 6 Dimensions of Knowledge Workers (Davenport 2005: 27)

Transaction work is usually easily structured in process terms than any other, because the work is generally repeatable and people who do the work have less possibilities or interest to perform the work as they like. A transaction worker could be found from the call center, for example. The opposite chart stands for **collaboration workers** who have iterative and collaborative approach to work. These kinds of workers usually present a challenge to process-orientated managers. They are willing to do they work without any detailed structures and they usually have the power and the independence to resist process orientated perspective. The collaboration work is perhaps the most

difficult to improve in any structured way, because the characteristic is very iterated and improvisational. (Davenport 2005: 27-28)

Integration work is relatively structured, and often the gained knowledge assets are tried to reuse. For example companies doing software development try to get programmers to store their code in the libraries for later use. Reuse would probably be less successful in more expert and collaborative work. **Expert work** is mainly done by the individuals, and usually experts value their own knowledge particularly high, it can be difficult to get them adopt someone else's knowledge. (vom Brocke and Rosemann: 17-24)

The critics against Davenport's four dimensions are that no one or not even two dimensions can capture the complexity of knowledge-intensive process. It also an important aspect, that organizations cannot improve all the knowledge worker roles at once. They have to prioritize which knowledge-oriented jobs companies think that is most critical to achieve of the organization's strategy. (Davenport 2005: 26-33, 38.)

An important factor to realize is the practice and understanding of how individual workers respond to the real world of work, and how they undertake their assigned tasks. Process work is a designing, modeling and engineering activity which is usually created by teams of analysts or consultants who do not actually do the work in question and often have only one viewpoint to the approach. A process design is fundamentally an abstraction of how work should be done in the future. When implementing the new design of model both aspects, the process in knowledge and practice should be considered. This is mainly because just focusing on the theory of process knowledge, the new design is probably not going to implemented successfully because the reality would not be the same. On the other hand, a pure practice is not helpful either and it would lead to a detailed description of today's work activities, but it may not improve them much. (vom Brocke and Rosemann 2010: 26.)

The combination of a process and practice orientation is best-case-scenario:

- Involve the knowledge workers in designing of the new process. What would they like to see changed and what is most likely stopping them from being effective and efficient.
- Treat experienced workers as real experts. Get them on your side with credible assurances that your goal is to make their lives better.
- Devote attention to spend the “as is” model and “to be” model equally. Knowledge work is invisible, and it takes a while to understand the flow, rational, and variations for the work process.

Enlist analysts who have actually done the work before. (vom Brocke and Rosemann 2010: 27.)

3.4 Managing Performance

Processes are dynamic and requirements for them change over time, as does they performance. Laamanen (2001: 151-152) determines the performance to ability to achieve desired results. Performance is related to customers, products and services, resources and inputs.

Performance measuring has many functions. Usually performance metrics have economic dimensions. Profitability is the most important performance metric which defines the company's possibility to produce profit. The relation between outputs and inputs is described by the productivity. The better output with smaller input is the objective. Economy means the company's ability to perform the output affordably, or ability to perform better with current resources. The competitiveness is the leading performance measuring to describe the success in the market. In addition, global competition requires also non-economic metrics to support development of company's performance (Ukko et al. 2007: 3-4.) Figure 7 illustrates the dimensions of measuring performance of a company.

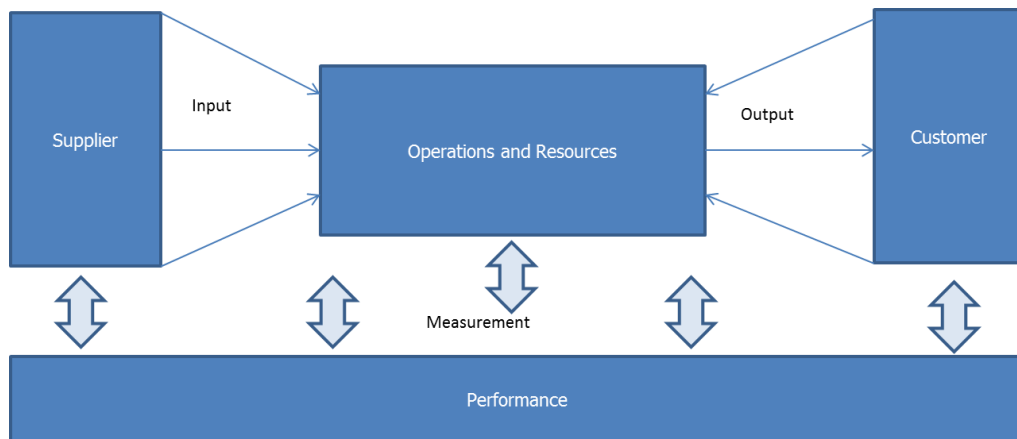


Figure 7 Performance Measuring (Laamanen 2001: 50)

The competitive factors can be seen as the company's wishes to compete. The characteristic for those is that they describe the things that customer can see or experience, and for example competitive factors could be reliability of original promise date, expertise of staff and/ or prompt advice response. In the terms of performance measuring, the competitive factors can be also turned to **performance objectives**, the dimensions which will satisfy the market requirements. Figure 7 presents the five critical performance objectives that are derived from customer's needs: quality, speed, dependability, flexibility and cost. It is worth examining each of the performance objectives in a more detailed way. (Slack and Lewis 2002: 43.)

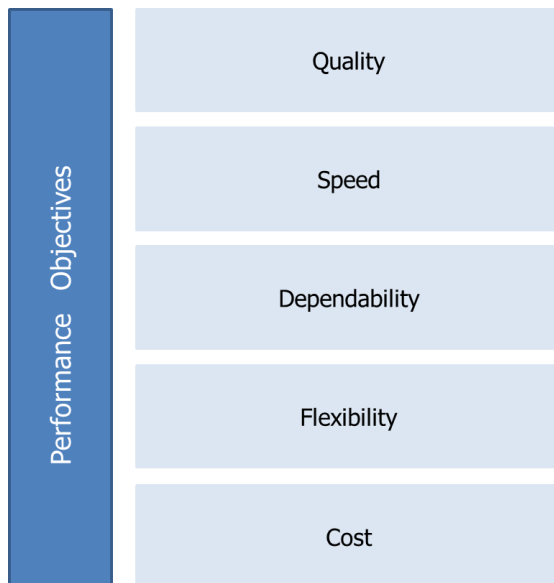


Figure 8 Performance Objectives (Slack and Lewis 2006: 43).

Quality has many definitions. Most of the definitions refer to specification of product or service. It can mean appropriate specification when product or service is fit for purpose, or quality can concern operation itself, so called conformance quality. It refers to the operations' ability to produce goods and services to their defined specification consistently and reliably. (Slack and Lewis 2002: 78, 40-43.) Quality gives satisfaction to customer (Kivelä 2011: 2).

Customer focus survey is a good way of bringing customer's feedback to process, but it is not a good performance metric. On the other hand, a survey has emotional sensitivity which means that negative feelings tend to be emphasized and positive hindered, especially if negative one occurred just before asking the customers' perceptions. (Laamanen 2001: 157.)

Speed indicates the time between the beginning of an operations process and its end. It is an elapsed time, from customer's point of view the total process starts when they become aware of the need for the product or service and ends when they are completely satisfied with its installation. According to Laamanen and Tinnilä (2009: 101) the whole concept of time is seen as a performance metric. In delivery, typical cycle times are queuing time, service time, lead-time and total delivery time. (Slack and Lewis 2002: 40-43.)

Dependability is used in this circumstance to keep the promised delivery time, in other words:

$$\text{Dependability} = \text{delivery time given to customer} - \text{actual delivery}$$

The two performance factors are linked into this, for example theoretically, one could achieve high dependability by quoting long delivery times. In which case the difference between the expected delivery time and the time quoted to the customer is being used as an insurance against lack of dependability within operations. However, companies who try to hide poor dependability inside long lead-times can end up being poor at both. Usually two reasons are found for this: firstly, delivery times tend to expand to fill the time available, secondly, long delivery terms are often the result of internal response, high work-in-progress, and large amount of non-value-added time. All of these cause confusion, complexity and lack of control which are the main root cause for poor dependability. (Slack and Lewis 2002: 78, 40-43.)

Flexibility can be determined as an ability to bend. An operation that moves quickly, smoothly and cheaply from doing one thing to doing another should be considered as more flexible than the one which can only achieve the same change at greater cost or organizational disruption. The cost and time of making change are the friction elements of flexibility. They define the response of the system. Usually for most types of flexibility, time is a good indicator of cost and disruption. (Slack and Lewis 2002: 40-43.)

Cost is the most important objective. It is a consumption of a resource or input used by an organization in terms of money (Laamanen and Tinnilä 2009: 97). The lower production costs enable lower prices for the customer. Despite the fact that some companies compete in things other than price will be interested in keeping their costs low. Cost is generated by performing activities, and cost advantage arises from performing particular activities more efficiently than competitors. Similarly, differentiation arises from both the choice of activities and how they are performed. Activities, then, are the basic units of competitive advantage. (Porter 1996). The purpose is to allocate the costs and revenues in the desired manner, for example product and services processes and customer. These allocations are used to assess the financial efficiency of an item. Activity-based costing, which assigns the cost of each activity to all products and services according to actual consumption by each is usually used to assess efficiency of processes. (Slack and Lewis 2002: 40-43.)

The whole idea of generic performance objectives is that they can be clearly related on some aspects of external market positioning, through their connection with competitive objectives, and can be visibly connected to the internal decisions which are made concerning the operations resources. After all, these competitive factors should be prioritised according to needs and expectations of customer within the target market. (Slack and Lewis 2002: 45-51.)

The last aspect is in horizontal co-operation of all participants, including the customer processes as well. The most successful companies have usually very high degree of integration of people involved in the process. Furthermore, performance has to be measured in a way that costs of measuring are not higher than the benefits or profits. This also has impact on the designing of performance metrics. (Laamanen, Kai. 2001: 149-176.) The requirements for the design of performance measurement are listed in Figure 9.

The key message of performance measuring can be compressed to sentences:

If you cannot measure, you do not understand.

If you do not understand, you cannot manage.

If you do not manage, you cannot improve.

If you do not manage, you cannot separate success and failure.

If you do not separate failure from success, you cannot learn. (Toivanen 2010: 1-5).

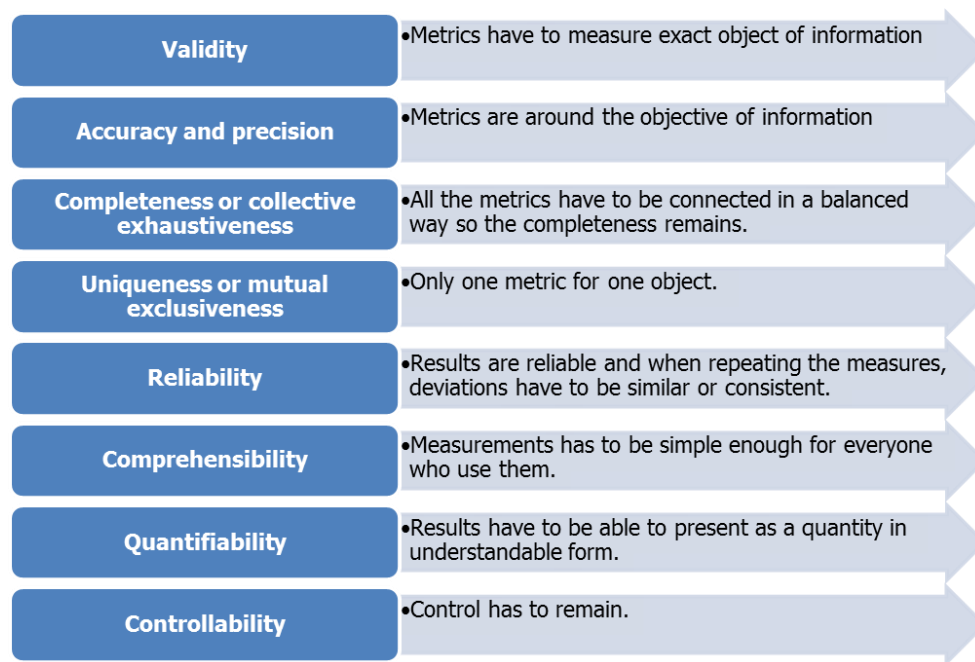


Figure 9 Requirements for the Performance Metrics (Toivanen 2010.)

The common error is made when monitoring data is gathered information that is clearly related to performance but has little or no probability of changing significantly from one collection period to the next. According to Likierman (2009: 1-2) both qualitative and quantitative measurements are needed. It is not worth focusing too much on past indicators of own success either.

The trap that company usually falls into is measuring and looking only the figures inside the company: benchmarking is needed outside the organization to see how well rivals are performing in the same area. The second trap is backward looking; performance package almost certainly includes comparisons between this year and last. Beating last year's figures is not the point because performance measurement system needs to tell whether the decisions are going to help the company in the upcoming months. One common trap is also gaming with the metrics. Manipulating the figures cannot be prevented, no matter how outstanding the organization is. The moment when company chooses to manage by the metric, the manipulation takes its part. Metrics are the only proxies for performance. That is why diversifying the metrics makes the gaming more difficult. (Likierman 2009: 1-4)

4 Theory of Business Process Thinking at Micro Level

Process walkthrough enables people in the process to realize those functions and tasks which are relevant for value-adding. The process walkthrough generates the process description, and the description is a way of spreading information. By increasing the knowledge of the process and its relation to organizations is the way to understand, analyse and develop the business processes, and process description is an efficient approach to point out critical stages. (Laamanen2001: 75.)

In order to understand business processes, the rough and clear description is enough to create understanding. To improve and develop parts of the process, more detailed description of the object is valid and needed. In Figure 11 the process walkthrough is a part of on-going management process (Laamanen 2001: 50, 79).

A good process model and description:

- Includes critical steps of the process
- Relations between tasks
- Helps to understand ensemble and, its own role
- Enables collaboration between human in process (Laamanen 2001: 76.)

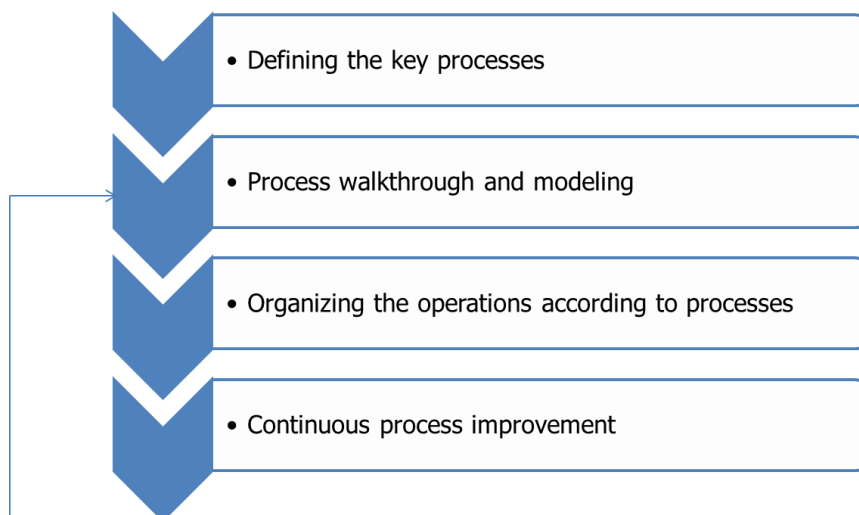


Figure 10 Process Walkthrough as Part of Continual Management (Laamanen 2001: 50)

The importance of description technique should be remembered while creating samples. The model of flowcharts has to be simple and unnecessary symbols should not be used and usually they do not serve anything. Right and clear technique enables to better understanding of the outlined object. (Laamanen 2001: 79.)

The few characteristics should be understood in basic flowcharts. First of all the roles should be described and often those are figured on the left side of Swim-lane flow chart. It is even better, when actual persons are described, so people can define their actual meaning as a part of the process. Roles are often presented in a hierarchy level from top to down but it is not necessary, and also the customer should be placed to description. By placing the customer in the top of the flowchart is a way to emphasize the meaning of the customer and how process creates added value to customer. For core processes it is easy to determine but for supporting processes it might be more difficult. (Laamanen 2001: 81.)

4.1 Purposes for Business Process Walkthrough

Rosemann (Becker, Kugeler and Rosemann 2003: 41-43) states that by defining the process structures and limitations in a proper way companies are able to show the starting and the ending point of their processes. A properly made process model is an effective way of communication. Figure 10 is derived from the book and presents the possible purposes of process models. Each of the purpose is described shortly to create better understanding of the usable areas.

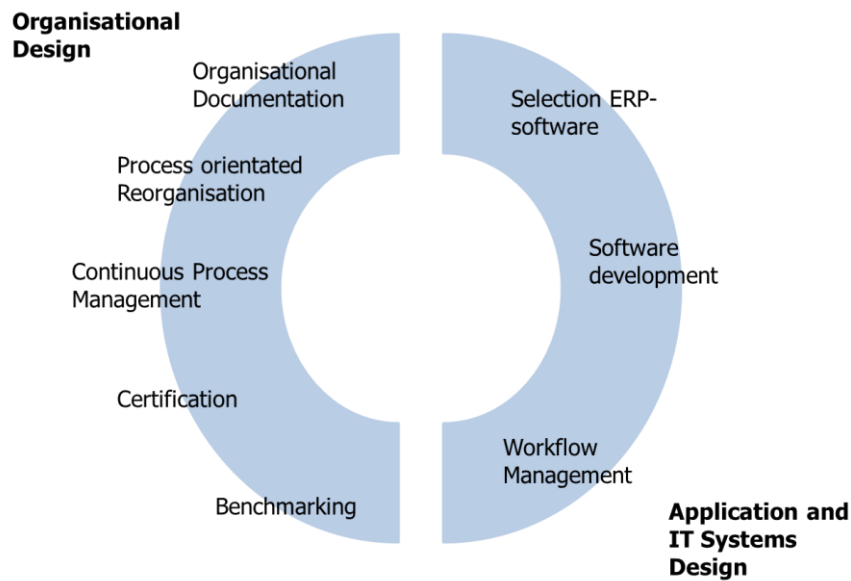


Figure 11 Usage of Process Models ((Becker, Kugeler and Rosemann 2003: 48)

Process models can be used as **organization documentation**: the work is more transparent and so as to communicate the process more efficiently for example the training of employees. Many companies have organizational charts available but those are often insufficient documentation material alone. That is why detailed models and descriptions together with organizational charts are used as an input for job descriptions. The models should be intuitive because, in principle, every organization member should be able to understand the models.

The models in re-engineering use are maybe the most popular way to utilize their potential. The models are used by the managers to identify the weaknesses of the process. **Process-oriented reorganization** is only possible when sufficiently formal models are drawn in order to allow automated comparison of proposed new scenarios and as-is models. The continuation of process-oriented organization is process change management, which means long-term planning, execution and control of process. All deviations must be investigated to see if the result from an inadequate process model is ineffective process execution. Thus control is needed in **continuous process management**. The related tools should be able to support controlling such as early warning systems or data aggregation.

Benchmarking is a description of the approach of comparing the individual structure and performance with available either internal or external references. The denoted ref-

erence values are supposed to present the best practice or at least better practice. Process models containing appropriate attributes are recommended for this purpose since they allow comparison of the process parameters such as the process output. The pre-requisite for this purpose is the availability of the comparability of the related processes which are used as benchmarks. (Becker, Kugeler and Rosemann 2003: 45.)

A workflow is determined as the part of the process that includes timely and logical sequence of activities. Information, data and resources that are involved in the execution of this job are also recorded. The main objective is in automation; automated process execution where the transitions between the individual activities are controlled by workflow management system, and usually this is linked into the transaction of an ERP-system. (Becker, Kugeler, Rosemann 2003: 41-47.) Workflow activities specify the resources that can be taken over the execution. Those resources can be for example employees, machines or software resources. Normally workflow projects are started after business process modelling. It is relevant to understand that when business process modelling focuses on organizational design, workflow management concentrates on the IT-support, thus available process models have to be adapted to the workflow management purposes. (Michael zur Mühlen in Process Management: A guide for Design of Business Process 2003: 264). Not every business is suitable for support by workflow management system and challenges and possibilities have to be recognized. The major benefits are in coordination when tasks are in the electronic support if process execution and manual work is reduced. Related transportation times are minimized and equal process objects are processed in the same way. This contributes to process mastering and process quality improvement. (Becker, Kugeler and Rosemann 2003: 263-274.)

In order to achieve long-term survival in the market, the quality of a product and service are extremely required, in addition to cost and delivery time. **Certification** is one way to demonstrate to customers that process and structures of a company are suited to produce high quality products. As such, organization models and business process models are required for this task.

Software development and selection of ERP -system, both need reference process models. For the purpose of software selection the evaluation of the extended reference modes have to be examined. Also Enterprise Systems need a full parameter-based configuration, which is also known as customizing. Reference models are created to

provide valuable insights into software functionality and can be considered as an important input for related decisions. (Becker, Kugeler, Rosemann 2003: 45-46.)

The listed purposes differ in the terms of usage. This obviously forces the process models to meet certain different requirements, and for example content and methodology differs depending on the purpose (Becker, Kugeler, Rosemann 2003: 41-47).

4.2 Standardization vs. Harmonization

Both standardizing and harmonization are needed to improve process performance, reduce costs for process maintenance, and give top management more control over the operations. The three levels of the company service architecture are subject to standardization and harmonization: strategic positioning and strategy, business processes and information technology; configuration of ERP -system. (Richen and Steinhorst 2005.)

Standardization can be determined as a creation of uniform business process across various divisions. The results are that processes meet their cost and performance objective using a well-determined practice, thus reducing risk of failure. Through standardization, individual business units can share expenses and will benefit cross-functional business process management. Company-wide development of business process lowers the total expenses, using economics of scale. (Richen and Steinhorst 2005.)

Harmonization looks at differences between process standards and sets bounds to the degree of variation. In the context of business process management, harmonization determines the extent of standards and which way they fit together, but does not try to make different standards uniform. (Richen and Steinhorst 2005.)

The most popular measure for performance is the cost of executing the process, however the quality of the results should be considered as vital measurement for performance.

The clear advantages from standardization include:

- Reliable process, variation in quality are minimized
- Less expenses in development of innovative new practices, and less expenses in the administration of process
- Comparing the performance between different units is more possible
- Process standardization is requested for the standardization of IT systems

Criteria for standardization is that decisions about standardising are process-specific and requirements processes are similar. Business environment is causing the variations in requirements and for example misunderstanding of requirements occurs when a company is trying to fit different kinds of operations to single standard (e.g squeezing a Make-to-Order operation and a Make-to-Stock operation.).

The following is a checklist for the cases when business process should not be standardised without carefully looking into details:

- Strategy considerations: different strategic positioning for example between low-cost and high-end production
- Business Processes: Consider all processes of the extended value chain. Process that belong to different types of logistics, sales channels, or product development are hard to standardize
 - Type of logistics, comparing Make-to-Order, Make-to-Stock, or Engineering-to-Order
 - Geography and compliance: Country-specific requirements in financial reporting, HR customs, data archiving etc.
- Information technology: Business process design has a major impact on the configuration of IT. Additional criteria, beyond those for business processes, involve different requirements for hardware, operating systems or databases and incompatible interfaces.

When analysing a given process through **quantitative criteria**, one has to think of costs and benefits that are quantified. Assuming that there are a number of existing

variants in a given process also raise a question should a new process variant substitute the existing ones. Standardization requires following aspects to reach its objective:

- Process performance is measured in terms of reaching process objectives and those objectives are derived of the respective process chain
- Expenses for developing and rolling out the standard process variant
- Cost savings that raise from sustaining just one rather than many variants of the same process (Richen and Steinhorst 2005.)

Harmonization finds the best compromise between too many and too few standards. The ideal number is a trade-off between two factors. First a smaller number of process variants increases the agility of changes and lowers the cost of business process maintenance. The second factor is that having a higher number of process variants enables better requirement of every part of the organization, however ignoring the fact that requirements increase the total cost. An additional consideration for harmonization across processes is managing standards efficiently. Process definitions should hierarchically divide end-to-end sequences of process, so every process element contributes directly to the performance of the higher-level process. (Richen and Steinhorst 2005.)

Harmonization avoids a one-size-fits-all approach. It tries to look for a compromise between too many and too few process standards and avoids inconsistencies between standards. Both harmonization and standardization need management support. Management establishes standardization criteria and ensures that focus remains the overall performance improvement. (Richen and Steinhorst 2005.)

4.3 Process Evaluation

The primary goal of as-is modelling is the presentation of the existing structures and processes in a company, and only known and obvious weaknesses and potential improvements are documented. The goal of as-is modeling is to create a complete list of weaknesses and potential improvements based on the collected models. In addition, reference models and benchmarking results can be used to identify weaknesses and potential improvements. In order to evaluate the analysed as-is models, the objectives of a company must be carefully examined. The goal of benchmarking is a continuous comparison of parameters between company and its units to judge the competitive-

ness. Selecting the measuring object is key criteria, but challenges will rise when suitable comparison partner should be found; other companies do not usually reveal their competition critical data. Benchmarking can complement the documentation of structures and processes within the scope of as-is modelling to identify weaknesses. (Becker, Kugeler and Rosemann 2003: 122-128.)

Adequate IT support for the organizational structures and business processes is a critical success factor in modern companies. Therefore, as-is models should be analysed for the following potential problems for example:

- Missing functionality in existing application systems
- Use of different information and communication systems for the same task in different company areas, the result is high administrative costs, incompatible interfaces, and communication problems
- Insufficient electronic data exchange with business (for example orders, delivery notes, and invoices)
- Lack of applying new technologies such as workflow management systems, electronic document management, web services etc. (Becker, Kugeler, Rosemann 2003: 123)

Laamanen (2001: 97) states that four types of evaluation are recommended to organization. First, process executives will have responsibility to evaluate that model, description and structure of the process is technically relevant. Second, management executives will check that process description will follow the workflow. Third, key performers will evaluate that critical tasks are in line with process and are described in a proper way. Fourth, process performers will understand their part and role in the process. After the analysis is done for the examined process, the improvements should be realised with a minimum short term effort. (Becker, Kugeler, Rosemann 2003: 133).

5 Theory of Business Process Improvement

It is proven that measuring, re-engineering and re-designing as well as improving has great positive influence on the quality of products, lead times and speed of the deliveries, and other key competence factors.

Still, the improvement and development of the process changes has happened in very slow run and required changes have been difficult to implement among organizations' operations. (Hammer 2007: 1-3.)

5.1 Re-engineering and Continuous Process Management

Business Process Re-engineering (BPR) is customer-centric approach to improve processes, and re-designing the process is often the only way to improve the performance dramatically because it will eliminate many non-value-adding activities that are the source of costs, errors and delays, usually re-engineering helps companies to come up with new ideas. (Hammer 2007: 1-3.)

The heart of re-engineering is the idea of discontinuous thinking. Re-engineering requires looking at fundamental processes of the business from cross-functional perspective. The one way of ensure that re-engineering has cross-functional perspective is to assemble a team that represents the functional units involved in the process being re-engineered and all the units that depend on it. The team has to analyse and scrutinise the existing process until it really understands what the process is trying to accomplish. Creating new rules tailored to modern environment ultimately requires a new conceptualisation of business processes. (Hammer 1990: 4-5)

A lot of time is spent on getting managers' approval which is slowing down the process flow. The decisions point has to be there where the work is performed, and build control into process. Instead of focusing on the fact that information is following the organizational hierarchy, the decision-making should be integrated to the process. Therefore, pyramidal management layers can be compressed and the organization flattened. The information should be captured only once and using general on-line databases where

all the necessary people have access is a simple rule to follow. Re-engineering triggers changes of many kinds, not just business process itself. Job designs, organizational structures, management systems, anything associated with the process must be re-fashioned in an integrated way. (Hammer 1990: 1-6)

After implementing the new re-designed organization model, this organization must be managed and controlled. Processes tasks, resources and goals for operation of implemented process are framed by continuous process management. Company should permanently adapt to changing conditions in turbulent market environment and only making the process management continual, the strategic creativity is guaranteed. (Becker, Kugeler and Rosemann 2003: 237). Continuous improvement should be self-evident for the business organizations, and only improving business enables to competing against rivals. Plan Do Check Act (PDCA) is a basis of continuous improvement thinking (Kivelä 2011).

Figure 12 implicates four phases which are identified and repeated periodically: modeling, execution, analysis and redefinition. Process re-engineering is seen as a separate phase, which is more or less greater improvement action and the results are controlled over continuous process management. Continuous process management is good way to stabilize re-engineered processes. The model retells the plan-do-check-act cycle. Based on predefined values for to be-model and based on execution data, the processes are analysed and evaluated to find out whether or not they match with the goals of objectives (such as cost, quality and time). (Becker, Kugeler and Rosemann 2003: 233-239.)

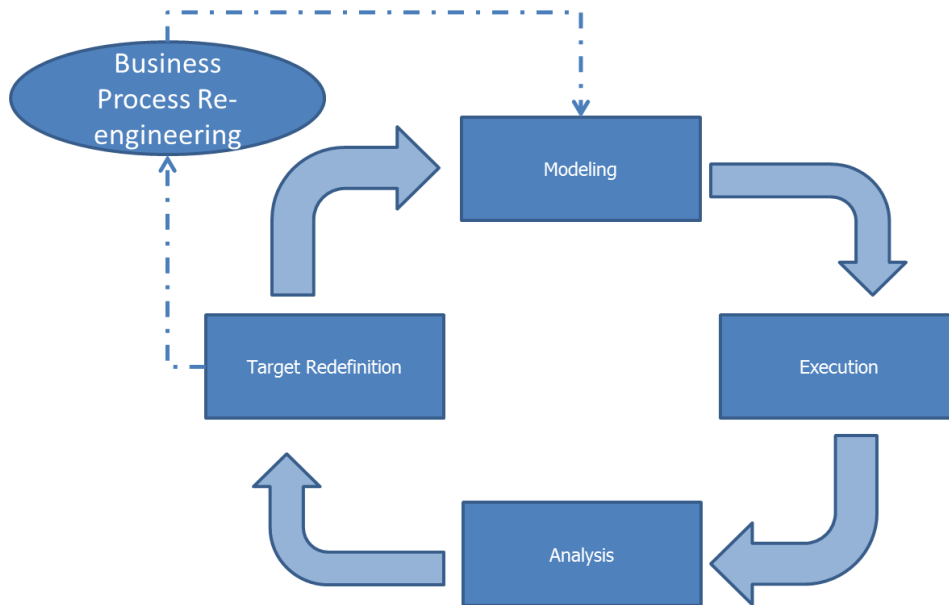


Figure 12 Cycle of Continuous Process Management (Becker, Kugeler and Rosemann 2003: 239).

Normally the implementation of re-engineered process or regenerated process is not done immediately but involves modification of basic process models. This can be the case if the proposals for redesign and/or optimization are not detailed enough to be put directly into practice and therefore require further individualization. The re-engineered processes need to be stabilised, consolidated and further developed. Continuous process management is an on-going task that accompanies the communication and conversion of the process. Improvement suggestions cannot be converted immediately in the existing form. The process orientation can only build and developed step-by-step. (Becker, Kugeler and Rosemann 2003: 235.)

The last fact is that no one in the organizations wants re-engineering. This requires that executives have a real vision which is guided by right leadership. Only top-level managers can implement the vision among organization. (Hammer 1990: 4-5.)

5.2 Complete Change Management

No process stays effective forever in the face of change. Markets change over time, customer demographics and needs are not a constant neither are market requirements. Resource-based capabilities develop over time. Customer needs change, new technologies come and go, and what used to be high level of performance becomes a poor one – and time will replace formerly good process with a new one. (Slack and Lewis 2002: 78.)

According to Kotter (1996: 17) the main sources of the changes are the economic and social forces which are driving the need for change in organizations. The sources are categorized into technological changes, international economic integration (e.g. more global capital flows), domestic market maturation within the more developed countries (e.g. slower domestic growth), and the collapse of worldwide communism (e.g. more countries are linked to capitalist system and more privatization). The company which is able to change is also able to adapt to the market. (Kotter 1996: 17-20). When understanding these facts, it is easier to convince that change is needed in the organization.

The resistance of change is more or less raised when people feel their environment is more likely to change or which has changed. The most important is that resistance is anticipated. (Gillot 2008: 69.) Change resistance is normal cause when people think their own comfort zone is threatened. People who resist the change think that planned change is not affordable for them. In starting phase, the focus should be are in the people who are mutual with the idea of change. The quick start is more important than bending the opposite thoughts. (Laamanen 2001: 270-271.)

One of the techniques to reduce resistance is to identify the participants in the process; the performers' voice, their motivation and participation has key role in developing and quality management. Training can promote attitudes toward changes. To succeed in change, the emotions are the first matter that affects it. Change process is an emotion process. To get employees to constrict to the change, the change has to be accepted and understood. If people do not understand something, the constriction is difficult. That is why communication has key role in change management. When basic plans of change have been done and new models are pushed through, the certain chaotic phase exists; letting go of old and implementing the new, even though the new model

is not fully managed. Testing the new model should be done before the whole implementation. Figure 13 introduces the steps that will guide to successful change across the organization. (Laamanen 2001: 258-272.)

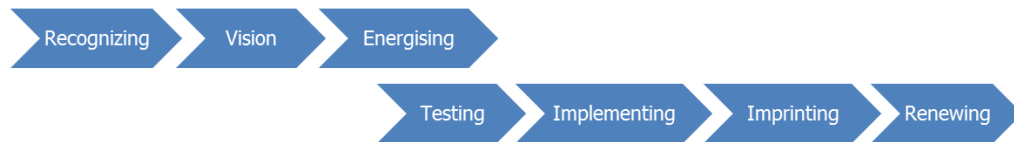


Figure 13 Leading change in the organization (Laamanen 2001: 272)

Certain dimensions for organizational change can be found. Nevertheless, predicting and planning the whole change process is difficult beforehand. Understanding these dimensions will help planning the steps of change: recognizing, vision, energizing, testing, implementing and imprinting.

Recognizing means that key people (top-management) in the organization are mutual with the idea of change. The benefits, challenges and causality of change have to be described in this phase. The vision, improving challenge and deduction for the problem should be noticed in the first phase. After Recognizing the people, who participate in implementing the new model, are responsible for creating general and common **vision** of change model and new state. The critical success factors should be noticed in this phase. Essential for this dimension is to analyse the risks of the change, perceived by people who contribute to the change. Also planning the roles and choosing the right people for them are done in vision-phase. The result of visioning is an operating model where responsibilities, time tables, tasks and goals are described. The change has status and a vision of a new operating model is created.

The meaning of **energising** is to contribute to the idea of change among people whom the change concerns. The aim is to understand the essentials and possibilities of change. The challenge is usually the fear of the unknown. Even though the current state would not be the best solution, it is still a safe environment. At this state, people

decide whether to direct their energy to new, or stay in the old option. The result of this phase is increased knowledge among people who are involved to change somehow, as well as their understanding of upcoming. It is important to create list of concepts as well as the communication plan and material. After the new operation model is communicated, testing is followed. **Testing** is the phase where the key people plan, execute and get feedback of the changes in practice. This can be also called pilot phase where the ideas are actualised. The essential in this phase is to contemplate the new operational model into practice. The challenges are the old ways to think and perform; routines, self-indulgence and time-used habits.

Implementing in this circumstance means that the people who are involved to change, will be trained according to the new model and information systems will be changed to support the new operations model. The base for applying the new model widely is created in this phase. Challenge in implementing phase is changing the routines. Also *new* is not new anymore, meaning that lucrative disappears even though the actual change has not yet happened in the organization. The results after implementing are requested knowledge to perform according to new model, new tools and information systems, a rewarding system in which performers know the requirements for the process goals and how they are rewarded.

The desired results that are followed after change should be rewarded. Performance measuring is essential in the **imprinting** phase, so that the return to old manners is prevented. The purpose of this phase is to contribute to the positive attitude of change. Continual feedback is needed for developing new goals. The risk in this phase is to quit measuring the change too early. The reality is that the actual imprinting is put into test in the first crisis, and especially when challenges are faced the old models and ways to work are a lucrative option. The results are reports of the progress and development, corrective actions to negative feedback, breaking the connection to old way of working and rewards.

Renewing is the last lesson to learn. Leading the change is measured and evaluated, and goal is to learn through the change projects. The gained knowledge of how to lead changes can be applied in the future, so the next project and initiatives are leaded more efficiently. The key of this phase is to learn and apply the gained knowledge and apply them in new situations. The challenge is to keep renewing on-going instead of sticking to rut. The routines and self-indulgence will take the place after new actions

and models are internalised and learnt, even though the surrounding environment will change and new opportunities will rise. The results of the renewing are changes and improvements to execution and operational model, evaluation reports and realising the need of the new improvements. (Laamanen 2001: 258-272.)

5.3 Customer Focused Quality

Quality is executed in processes. Each process has a customer whose feedback and information of satisfaction is needed development in the process, and to make the organization more customer-centric. The customer in the role of payer, chooser and user is always interested in quality. In addition, quality is linked to execution of all efficient and results-producing operations and management. Quality management has produced a number of practical methods for improving quality and processes for example ISO900 standards, auditing, benchmarking, continuous improvement, statistical process control, Six Sigma and Lean Management (Lean). (Laamanen and Tinnilä 2009: 25.)

Lean is a philosophy that seeks to eliminate all types of the waste whether it be excessive lead times, carrying excessive levels of inventory, workers or parts travelling excessive distances. Waste can be thought of as an activity that does not add value for the customer, a strong customer orientation is central with Lean. Lean has a Japanese background and it is the given name to *Toyota Production system*, because exactly Toyota began developing its approach to manufacturing shortly after WWII. The Japanese culture and history are reflecting to lean thinking; small country and limited resources, and large population are the aspects that have forced to create ways to better performance. The system is known for its minimal uses of resources and elimination of all forms of waste, including time, continually proving processes and systems, maintaining respect for all workers. The essential goal for lean is to accomplish more with fewer resources. Less workers, inventory space equipment, time, scarp a so on. (Mer-edith and Shafer 2011: 184-185.)

The five principles of lean thinking are listed:

1. Specify value for the customer's point of view
2. Identify the value stream, the complete set of activities required to create the output valued by the customer
3. Make value flow through the value stream by eliminating non-value added activities and streamlining the remaining value added steps.
4. Have the customer pull value through the value stream.
5. Pursue perfection.

It is important to recognize that value is ultimately defined by the customer. One way to define the value is to reflect what and how much a customer is willing to pay for the particular product or service. Alternatively, the other common definition of value is the opposite; waste. The seven categories are classified in Figure 14.

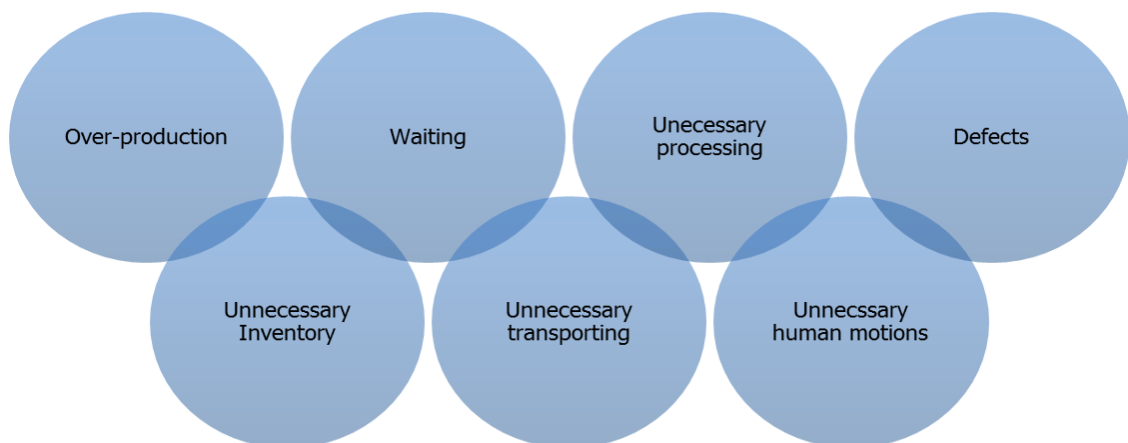


Figure 14 The Seven Categories of Waste (Meredith and Shafer 2011: 184-185)

Overproduction means creating more output than needed. Inventory requires space for storage leading to lease and utility expenses, and most of the work from customer's point of view is not added value. Waiting is related to delays, events that prevent workers from performing their work. Unnecessary transporting minimised, and the goal of lean is to see the ways to reduce the distance between people or work.

Unnecessary processing describes all the extra steps in a process, for example entering same information to multiple places in the process or reworking of defective parts. Unnecessary human motions have to be reduced. Designing the workplace where unnecessary motions are optimized and efficiency of workers is increased. Using the human body efficiently contributes to the health of the employees, but it is also a key to productivity in the organization. Defect; parts that must be reworked or some cases scrapped represent final category of waste. The key to provide outputs that are valued by the customer is developing a solid understanding of customer needs. (Meredith and Shafer 2011: 184-185.)

After value is defined from customer point of view, the next step is to identify the set of activities that create the customer-valued output. The value streaming means that activities are categorised as value-added, non-value added but necessary, and non-value-added and not necessary. The challenge is to identify how these activities are performed in way which is more value adding and less resources are used. Likewise the challenge for the both types of non-value-added activities is to identify opportunities to eliminate them or perhaps turn the activity into something that is value by the customer. (Meredith and Shafer 2011: 172-190.)

6 The Business Process Walkthrough - Case: Customer Service Europe

The section presents the empirical part of the study. The business case is based on globally working Customer Service Function in Europe which is handling projects in Make-to-Order delivery process, in technology industry. To reach the study objective it is essential to realize the current state of the process and get it documented. Process **walkthrough** in these circumstances means describing the activities done in the process, step-by-step. Primary need for remodelling

As Laamanen (2001: 75) stated in Chapter 4.1 process walkthrough generates the process description, and the description is a way of spreading information. By increasing the knowledge of the process and its relation to organizations is the way to understand, analyse and develop the business processes. Process models and description are an efficient way to create the understanding of value creation, possibilities and weaknesses and relation to other processes as well as the information flow in the whole system. The walkthrough is a kick-off for the improvement and development and strategy implementation to achieve the high performance.

6.1 The Description of the Studied Business Process and Data Collection

The order handling process is a part of the total delivery process from supply line perspective. Thus, the process is also part of the case **company's core process**. The process has been modelled in the past but variations and country specific operations have not been described before. The list of deviations was created to Deviation Matrix (Appendix 2). **Deviation**, in these circumstances means the activities done in the process that are not documented and differ from the basic workflow. The deviations are caused by many reasons and analysis of the case process is partly focusing to understanding of the possible and actual reasons to the deviations. The employees are called knowledge workers for the reason that a process needs specialists to operate in the best relentless way.

The customer service function has two Make-to-Order delivery processes and according to the limitation pointed out in the introduction only one process: the more demanding order handling where the costs and time are depending on the material's lead time.

The other limitation was set to concern only the process in Finland, because the same customer service function is handling orders in Area 3 (See Figure 15). Both processes belong to Customer Service Europe, but case process is operating in Finland.

The empirical part was conducted by following the principles proposed by the business process management literature according to Table 1.

Table 1 Theoretical framework used in the analysis of the process and the perspectives

	Process Enablers & Systems Thinking	Value Adding and Waste	Standardisation & Harmonization
Galbraight (1996)	Organizational design and strategy		
Hammer (2007) and Laamanen and Tinnilä (2009)	All the enablers affect performance. System thinking supports understanding the whole		
Porter (1985, 1990)		Value chain thinking, core and supporting processes	Strategic positioning, operational effectiveness
Davenport (2006)	Knowledge gained, and knowledge workers in the process		
Richen and Steinhorst (2005)			Standardization: cost and performance objectives are met by using a well-determined practice and risk of failure is lessened. Harmonization: differences between standards and some degree of variation. Avoids one-size-fits-for-all mentality.

The function and the purpose of order handling process is determined, as well as its relation to organization. Aspects of systems thinking are considered to recognize environment's impact to process. Examination of the Hammer's (2007) five critical enablers

were design, performers, infrastructure, owner and metrics, but only design, metrics, infrastructure and performers are evaluated. Owner and performers are given less attention. Also Davenport's (2005:27) proposal of worker's different dimensions is used. The case process is also evaluated from the point of view of standardization and harmonization.

These critical aspects were evaluated by applying partial SWOT-analysis, where challenges and benefits were separated, to point out the strengths and weaknesses, the image of the process aspects became more substantial. Third, it is vital to understand the value creation. The evaluation of the aspects is reflecting the customer-centric approach and how they are supporting the case company's strategy and vision to fulfil customer's needs and on the other hand, how they can contribute to competitive factors.

The qualitative data was received by semi-structured interview method in years 2012 and 2013, where same or similar questions in order to get whole conception. Appendix 3 shows framework used in interviews in which 14 performers and process owner were interviewed. The increase depth to the interviews probing questions were utilized during the data collection. The models were created by Microsoft Vision modeling tool, and a detailed description was written to use it as documentation and instruction for later purposes. Models were drawn to workflow level and modeling technique was taken into account as Laamanen suggested (2001: 79), in order to see relation between ERP - system and also to see the activities which are not followed in the workflow.

6.2 Results of the Data Analysis

The case company has front line and supply line, and this case process belongs to company's total delivery process in Make-to-Order deliveries in demanding products. Figure 15 presents a general, simplified structure and order workflow through in the case customer service function.

The process starts when sales office sends the order to supply line side at factory. The orders belong to customer's projects which are relevant to also speak about project in the process, even though only products are delivered. The service function is contact point to sales and each country has an own **contact point**, customer service engineer.

The customer service function has an international interface which receives the orders from sales offices around the world. The case process ends when a product is released to production. That is the last activity done in ERP -system. Each area has an own customers service function that is integrated to factories. Material handling and sourcing are common to all areas.

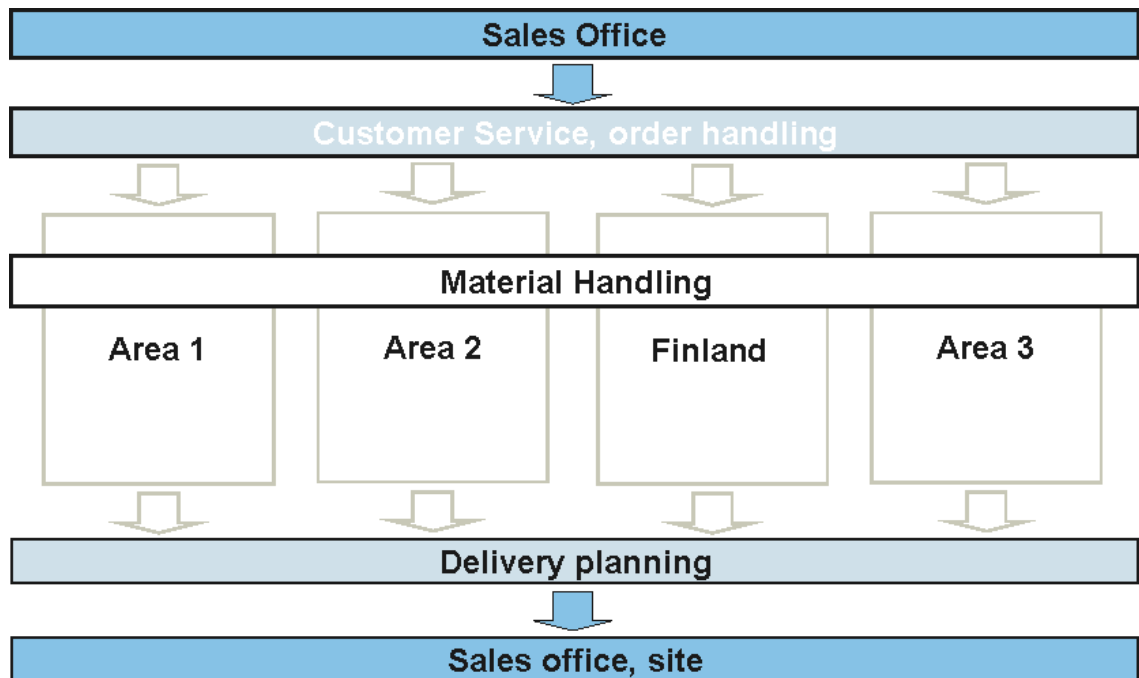


Figure 15 Order flow in case company

The **inputs** for the process are new orders, component orders, and technical support. **The outputs** for the case process are services to sale offices. **Service** to sales office can be: a delivery time confirmations, a price confirmation or technical support. Furthermore, Deviation Matrix (See Appendix 2) shows that also different certificates after delivery are provided after the total process end-point. The total output for the whole delivery process is the make-to-order product. Figure 16 presents the high-level process flow model; the responsibilities and activities done in each line. On the top of the model there is the sales office which can be seen as customer. Blue boxes are the most important milestones of the product delivery. Figure total delivery process is divided to smaller processes inside the supply line. Milestones 0c, 1a, 2a and 3 are responsibility of Customer Service Engineer. The interface that order handling process has is multiple, because function is connected to horizontally, to sales as well as to vertically to manufacturing and suppliers.

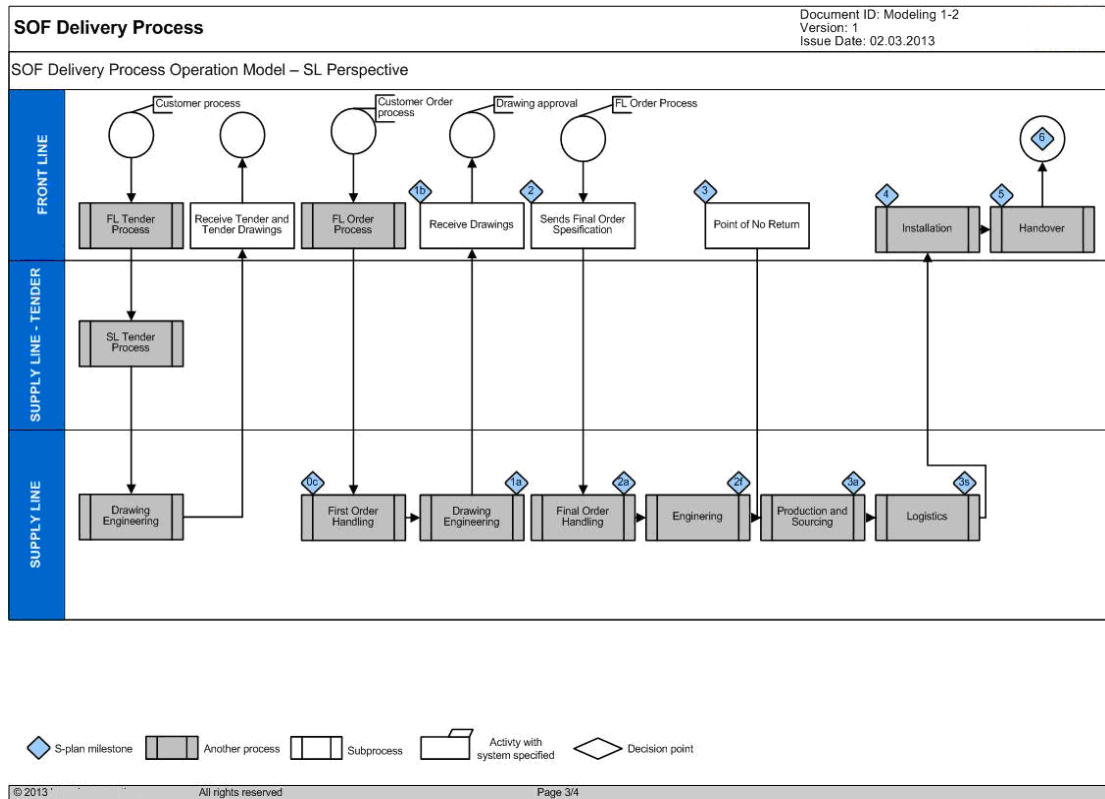


Figure 16 Delivery Chain - Highlevel

The order handling process has **workflow structure monitored in ERP -system** where the projects are timed and controlled. Communication is mainly done through email. As stated in Chapter 4.1 (pp. 27) workflow structure gives similar benefits as automated process execution where the transitions between the individual activities are controlled by workflow management system. The workflow structure of activities makes the measurement much easier. The main responsibilities for customer service engineers are:

1. Feasibility checking; orders are feasible to execute according to customer need
2. Follow-up and inform; to vertical and horizontal direction if changes to promised dates are about to change because of the delay.
3. Price calculations and confirmations to sales

This function is responsible for checking the order specification through and clarifying the specification with sales offices. In other way around, this function tries to clarify that inputs, orders, are a line with company products and filled with adequate information, and also how feasible (according to law and regulations) the requirements are. In es-

sence, the customer service engineers are specialists (**the knowledge workers**) in their field. In other words, the customer service engineer is controlling the process time tables.

All the data of new order specification is saved into database by sales offices. The database is an interface for clear communication because change history can be monitored in that way and all the functions vertically and horizontally have access to the database. Other communication is done by email, phone or a most demanding project may require personal meeting with the sales office presenters.

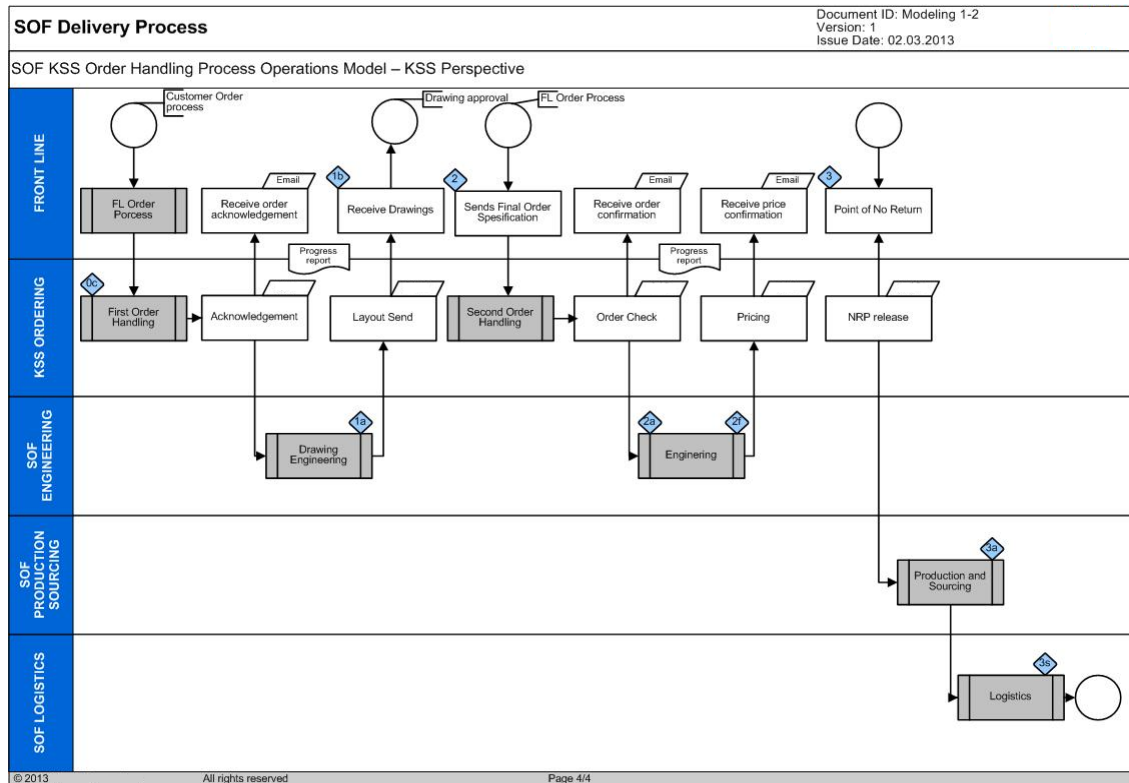


Figure 17 Workflow Activities

The core workflow activities are described in Figure 17. Core activities add value straight to task and are related to manufacture products. The main activities are

- Order Acknowledgement
- Drawing Send
- Order Check
- Pricing
- Release to Production and Material Management

The second group is categorized to activities if something changes during the delivery

- Splitting the delivery
- Component Order
- Clarification

The third group includes customer service activities which are not activities in ERP - system but are considered as supporting activities. The activities are Start-up Meeting and Risk Analysis. Supporting activities are not adding value straight from customer's point of view but are necessary to execute the process. Measuring of these is happened throughout follow-up tables where the necessary data is recorded.

The fourth group includes only one activity, which is not recorded nor followed in ERP system, but still needed as a support for the sales in order to clarify unclear thing to sales. Technical supporting is provided before the order is received to the supply line side. The hours spent on technical supporting are not usually recorded nor is the type of supporting. Supporting, more or less, depends on the type of the projects that sales office is dealing with the customer. This activity is adding value from customer point of view. Technical supporting is modelled in Figure 21. (See Appendix 1 for details).

If the order is tendered to sales, that has to be notified as well. Figure 20 demonstrates customer service and tender. (Appendix 1). Link between the tender and order usually breaks and only way to check if the order is tendered, is to go through the Tender Book, where all tenders are recorded, in case if sales do not remember to mention the tender.

The deviations are described in Appendix 2. The list includes activities that deviate comparing to core process as presented in Figure 17 . The deviations are country specific.

6.3 Evaluation of Customer Service Process

The environment is outside of the actual process, but it has its influence on the process. In case process, the customer projects are handled in the process. A project has clear frequency, limited duration and often temporary organizational structure, as well as specific resources that are determined for carrying out the project. Based on the project goals, dates and costs must be planned and defined as standard values, so called milestones. The cost of resources can vary and moreover, speeding the completion of the project usually causes added costs. When comparing the process and project, it is justified to say that they should be handled differently.

Nevertheless, **project handling in the process** is not weakness or strength, even though the challenges exist. It is a chosen way to manage projects in process-based operation. The issue is that projects of the final customer are liveable and causes variations to process as well. The fact is emphasized when sales offices **do not know the delivery process** and many orders are required with difficult specification under lead times. Moreover, speeding up the completion will cause added cost because resources have to be re-organised. The case company is aware of the reason that sometimes the under-lead-time deliveries are required because the sales offices do not know the delivery process, and because in different global areas have different ways to operate.

Inputs in this case are closely related to the environment. The input is a new order, the component order, or requirement for the technical support. The poor quality of new orders is an issue that reflects the competence of sales offices, and also the cultural aspects which are not focused in this research. New order tool will guide sales offices to more clear inputs, because it will limit impossible combinations of components, still the knowledge of possible and impossible have to have in customer service engineers. Some of the sales offices have better knowledge of orders with complex specification. The more inconsistent the specification is, the more time is needed to solve and clarify the issues.

Hammer's four process performers are evaluated by examining the benefits and challenges that are raised according to the interviews as well as considering the theory of business process management. Table 2 presents the evaluation of process design.

Table 2 Evaluation of Process Design

Design:	Benefits	Challenges
Core activities	<p>Clear documented process.</p> <p>The training is always available.</p>	<p>Component orders do not have proper order form.</p> <p>Project plan (Start-up meeting) policy is not structured enough.</p>
Supporting activities	Benefits the sales offices	Technical support is 'black box' of core process.

Core process is documented and order handling has a clear minimum and maximum lead time based on delivery class which is resolute according to material lead times and order specification. This is a clear benefit. Training is always available for supporting the understanding of the process.

The main issue is the **lack of integration** between sales and supply line. However, this is already noticed in the process. The new tool is already in pilot phase and moving towards integrated order receiving is closer. This will erase the double work: no more opening the orders to the system in sales office side and again supply line side. It will also reduce the amount of manageable ordering tools, and that reduces the amount of updates, trainings and time spent on learning to use those tools. However, the integrated ordering tool does not necessarily erase the time consumed in order handling, because difficulties usually occur in a different form. For instance, the same tool is already used in other process orders, and there the errors are more or less related to bugs in configuration rules and therefore time has to be spent in order to solve the errors. So, the other words, the integration is not watertight.

Project planning and start-up meetings have essential part in the project business. In the case process, there are common start-up procedures which can include several of quality checking's, depending on the order specification. The rule of thumb is that if mismatches or unclear issues occur, the order cannot be forwarded to next phase, which is layout design or listing. The start-up has clear instructions but still it is considered quite heavy duty. The structure is not adequate or not serving its potential mean-

ing if performers are not using it. Also quality issues are caught up when careful checking is done according to principles by Lean. Still, there are cases when careful checking has done, but major quality problems have occurred.

Component orders are required by email and therefore the place of the information is in email. This might cause various problems because the information of the specification is only in a single place unlike the new orders which are saved to the database and all have access to that data.

Customers in particularly business-to-business environment often want a single point of contact, products customised to meet their needs, or an integrated bundle of services and products. Considering the stated aspect **technical support** is given always when sales office needs it. Supporting can include any kinds of support that benefits sales offices, and of course, the level of support needed is depending of the competence of sales office. On the other hand, sales offices receive the clarifications from customer service quite quickly, which is a lucrative option instead of going through the technical instructions of the product. Thus, consuming expensive resources to clarify issues that are clear for customer service engineers is definitely activity that should be challenged. Because the activity includes wide range of actions, which are not recorded, it can be called as **black box** of the process.

Pricing workflow activity has multiple places depending on sales office's wishes when they need the price. The earliest position for calculating the transfer price is after sales offices receives the designed layout drawings, or when final order is received from sales. (See Appendix 1 for details). The latest position for pricing is after order listing and technical specification is ready in system. However, this will change due to new ordering tool, and price is available in earlier phase of the process.

Table 3 includes the evaluation of the customer service infrastructure. In this table the most important matter is to recognize that IT and ERP -system is not fully supporting the case process any more, and new actions to improve the communication through IT are considered in the case company. That is why an evaluation of the entire infrastructure is not completely necessary relevant. Still couple issues should be put into under magnifying class.

Table 3 Evaluation of Process Infrastructure

Infrastructure:	Benefits	Challenges
IT	<p>New ordering tool will be implemented.</p> <p>New improved database is developed</p>	<p>Many ordering tools to cope with.</p>
ERP	<p>Workflow structure measurement easier.</p>	<p>Lack of integration between sales and customer service.</p> <p>ERP -system does not notify the types of different projects in time basis.</p> <p>Workflow does not notify the technical supporting because order is not yet in the system.</p> <p>Measuring the time consumed is challenging, and actual hours are hard to specify.</p>

The activities are managed in workflow in ERP -system. Workflow contributes to process mastering and process quality improvement when following and measuring is easier. The new ordering tool will replace older ones. The new ordering tool will be integrated to ERP-system which harmonises the ordering tools used. This will bring benefits for reducing time and costs spent on updates and training. However, the new tool cannot be used with all of the front lines due to the fact of economics of scale. This maintains the older ordering tools, and knowledge and updates are still relevant.

However, the ERP -system's workflow structure does not support the activities done before the order is received into customer service and opened into system. This complicates the measuring and the hours spent on technical supporting for example. Another fact is that the workflow does not support different types of projects. Some of the projects are more demanding, thus need more time for clarification. Some of the projects are less demanding. The ERP -system does not notify the time, and all of the orders have default time for order acknowledgement and order check.

Table 4 shows the evaluation of the metrics used in process. The metrics are categorised to quality, speed, flexibility and dependability which can be seen as a competitive

factors. The cost is not evaluated because the source data for costs is not available, and would need additional research.

Table 4 Evaluation of Process Performance Metrics

Metrics:	Benefits	Challenges
Quality: Early Failure Rate Feedbacks	Process is systematically collecting the information about the quality. Root causes of feedbacks are always determined.	Hours spent solving feedbacks are not measured. Lack of proper tender hit-ratio.
Speed: Complete on Time Punctuality	Personal and communal metrics which are linked to bonuses.	Manipulating the measurement is easy and happens often. Response time is not measured. Time is standard for handling the demanding and less demanding specification
Flexibility	-	-
Dependability	Will be the measurement, which both sales and supply side are committed to.	Does not yet exist in all deliveries.

Because the company will have organizational changes due to new strategies and operational model, the metrics will be designed according to implemented change.

The quality is measured in many ways and customer service system is collecting the feedbacks. The case company also follows the principles of lean thinking and therefore quality is seen as an essential measurement in the case company. The customers' opinion is measured in survey once in a year but it is not process performance metric.

Nevertheless, the time spent on clarifying and finding the root causes is not recorded in the case process. The time spent on solving feedback should be also known within the same criteria as technical support; metrics and statistics are needed in to develop, and furthermore, it is relevant to know that the costs of measuring are not higher than the benefits or profits. The metrics of the case process are linked to rewarding system

which motivates employees and strengthens the behaviours that add value to organization.

The major challenge is always the fooling the metrics and this especially true if bonuses are linked to metrics. This will change the reality and only way to see the whole truth is use the sales offices metrics to evaluate the real performance. Also the lack of the metrics which measures the response time of case process is still missing. By measuring the response time, it would give the information how fast the customers are served. The flexibility and dependability are not measured yet.

The other aspect of challenges is speed, or punctuality. Time is standard for handling the demanding and less demanding specification. This is not shown in the metrics. Basically this challenges the reasons for the delay. For example, if order intake is low level, this does not necessarily correlate with the speed, because of the demanding project and order specification. Therefore low order bound does not necessarily mean low work load. This is not regarded to bonus metrics either.

The sales office will always tender the orders to final customer, and sales will have tools for evaluating the transfer price but demanding orders may require tender from supply line side. Thus, not inner tender between supply line and front line is not necessarily needed. This will save resources, if adequate price level can be offered without tender.

The lack of proper tender hit-ratio is an issue, due to the fact that both tender and order process need feedback of tendered orders which will lead to final order. This will reflect the performance of tender process. How can we tender better if the rate is low? The other issue relies in interface between tender and order is that if tendered order is ordered from supply line side, the information of the tender does not necessary swim to customer service, if sales does not mention the tender. In this case the only way to find the existing tender is when checking the Tender Book before opening the order into system. In this way system workflow also enables opening the sales order under existing project which means time saving in this phase. This is more or less related to the problem of information flow and design. Despite the issues related on the tender process, the new operational model will focus on the raised issues. Thus further evaluation to tender-hit ratio metric is not done.

The last aspect is to evaluate the process performers. Performers make the process happen. Especially, the interest is the classification in which kind of knowledge workers are suitable for working in case process. Table 4 shows the high-level evaluation of types of characteristics that is needed to process.

Table 5 Evaluation of Process Performers

Performers:	Benefits	Challenges
Knowledge workers	<p>Skilled employees with different field of know-how.</p> <p>Creating and improving the ways to operate systematically.</p>	Structural ways to work are sometimes seen as a bureaucratic, procedural annoyance.

As pointed out in the table, the knowledge workers in the case process are skilled. They also have different technical backgrounds. They perform the process in different manners depending on the country they are dealing with as well as the characteristics they present. Certain types of performers are suitable for specific projects or countries. Also language and other experience of the countries may benefit from dealing with different cultures in the international interface.

Challenges from the process point of view are that knowledge workers need tend to get bored with formal and procedural structure. This can also be the sources of variation when some of the tasks are passed because they are seen time consuming or too boring. To analyse knowledge workers more deeply, more analysis should be done and within the time frame of this research it is not possible to execute.

Table 6 consist activities according to the value-chain perspective. Those are categorised as follow: value-added, non-value-added but necessary and unnecessary - activities. The activities that add value to entity are the ones in workflow. When analysing the place of technical support, one question is valid: is the place right? Because the content of that activity is not defined, it is difficult to say whether this activity includes tasks which are not creating value. From the perspective of sales offices, the benefit is achieved because usually they receive needed help, but if the same support can be read from the documents for example, then resources used for technical support might

not be in align with value creation because of the high cost of expertise work used for simple clarifications. On the other hand, quick respond from customer service side will benefit for total lead time.

Table 6 Value-adding Perspective

Value-added	Non-value-added but necessary	Unnecessary
Workflow activities	Supporting activates	Technical support Certifications Drawings that sales have done, but are not used

A smaller number of process variants increases the agility of changes and lowers the cost of business process maintenance. Higher number of process variants enables better requirements of every part of the organization, however ignoring the fact that requirements increase the total cost. After examined the process structure, there were numerous of **deviations** which were formed over the time. Some of the deviations are caused because of the environment (culture, nature of projects, competence of sales), some because of the process performers.

The real problem of deviations is realised when performers are substituting, and a huge degree of variations will demand more time to learn to perform as performer that has to be substitute. Another way is to spend same the amount of time but perform low, which usually has influence on lead time, or service level to sales. The top three activities that should be raised in terms of waste are

1. Certifications after delivery
2. Position of pricing activity in the workflow
3. Usage of Layouts done by Sales

Providing certification after delivery is similar to technical supporting. Both are service to sales. Providing the test certificates and certificates of origin with proper signatures may benefit for the sales and customer, but is the customer service process right place to ask the certificates? The current moment it is an additional task done in the process at this point. The waste occurs when lots of time is spent on clarifying the certificates from different sources.

As per the interviews, the deviations pointed out that some of the countries have a typical tendency to order most of the orders marked as a-top urgent. This may be due to cultural factors. The concept of time would a focus on the cultural differences but that was not in the scope of this study. For example in some cultures Fridays are holidays. Thus, it is relevant to state that the cultural environment is significant source of deviations in basic workflow. Still, from global perspective all the customer service function should have similar way to operate, and harmonization is considered relevant in order to serve sales offices by using best practices.

Drawings that sales office has done are usually workable and can be used as official drawings. However, some sales offices make the drawings by themselves but drawings contains lots of mistakes and cannot be used as an official order specification, instead new drawings has to be done in the supply line. This can be considered waste of unnecessary checking and does not benefit the end customer. This process step and a purpose of the drawings should be studied in more details.

7 Suggested Improvements to Process

The performance objectives are the dimensions which will satisfy market requirements, and they have to be measured in terms of critical metrics that relate customer needs and company requirements. Customer focus is one of the key drivers to upcoming changes in the company's global operations. Figure 18 presents the needed actions to increase the performance.

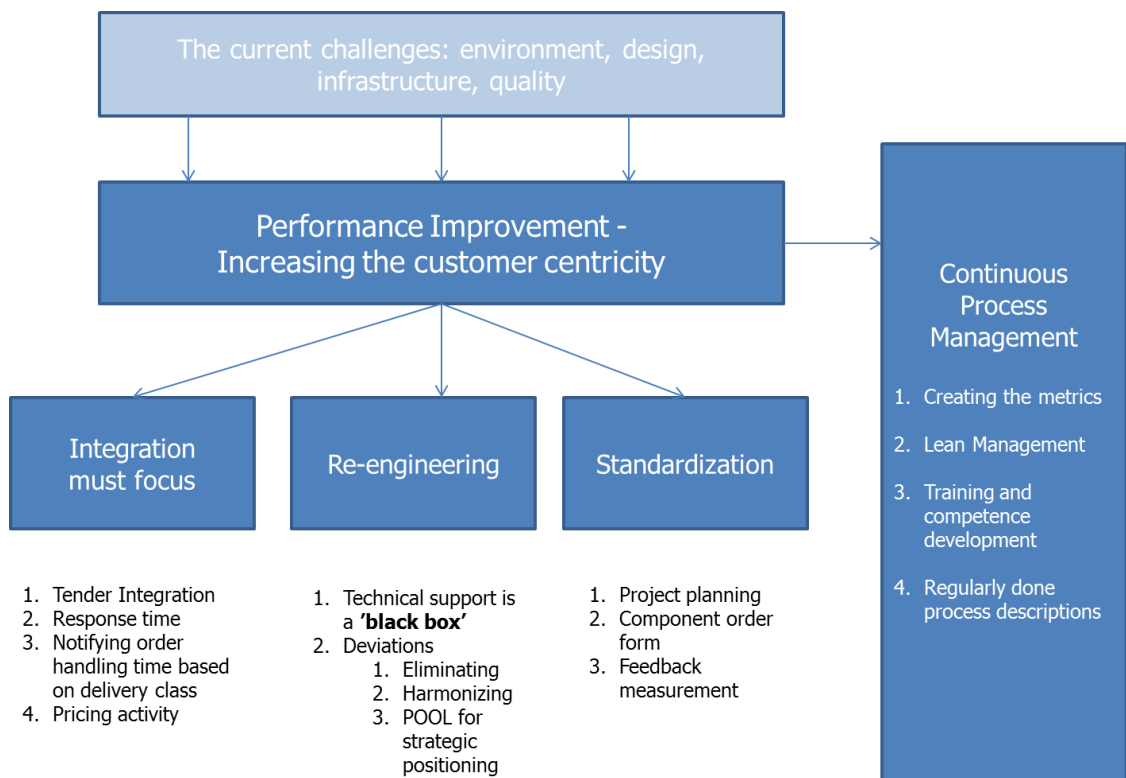


Figure 18 Requirements for Increasing the Performance

It is essential to meet the objective of the study which was focusing to recognize possible improvement actions in order to increase the performance in the process. High performance is derived from competitive factors, so the order handling process will aim to customer-centric way to operate. This means that suggested actions will generate competitiveness. The improvement actions are considered and compiled together with practice and knowledge.

7.1 Implementing the Actions

The suggested improvements are divided into necessary improvements and considered improvements. Necessary improvements are more critical because they have a heavier impact on the performance of the process, while considerable improvements may require more resources to deploy such as time, personnel and investment. Considerable improvements also contain the actions that integration between sales on supply line should focus. However, more integration is given less attention. Table 5 presents the identified problems, actions needed to solve the problem, and results if actions are done, as well the advantages in case implemented.

Table 7 Necessary Improvements

Problem	Action	Result	Advantage
Design: Technical support Quality: Lack of component order form Metrics: Lack of measuring the time consumed on feedbacks	Re-engineering the process and technical support Description and/or Standardization	Content is clearly determined and timed, no unknown activities, workflow supports it, easy to follow	Waste elimination Knowledge of the time needed to system's feedback; allocation of resources.
Design: Deviations & Unnecessary tasks	Eliminating Harmonization Creating a POOL-design	Strategic positioning and operational effectiveness Better use of resources	Notifying different customer's needs, segmentation helps to allocate resources more accurately Waste elimination

Technical support is a black box of the process. The suggestion is to centralize it. It will require engineering, but it will make the process more agile.

Deviation Matrix shows (See Appendix 2 for details) that some of the activities done by the sales or by the customer service are not necessarily benefiting the customer. Also unnecessary tasks should be eliminated. The top three deviations were delivered certifications, position of pricing activity and un-useful drawings. Suggestion is that certification deliveries are standardized, and common procedure has to be identified, so every

time the certifications are needed, time consumption for the process is minimized. The pricing workflow activity is the one which will be replaced during the integration like figure 18 suggest. The calculation of transfer prices should be done early. Questioning the drawings that cannot be used as they are should be done. It should be examined the benefit for using the drawings because from process point of view, drawings are only making the order checking slower and clarifications to sales should be done anyway, because the exceptionally the drawings contain mismatches. The harmonization is recommended, because it allows some variety, thus considering the different customer needs.

Considering the operational effectiveness, strategy and strategic positioning, it is relevant to state that some of the customers are not ordering as much as the some other. Why these customers (sales office) deserve same personal customer service level? The customers should be segmented by profitability to supply line. For example, if the markets are in the some specific area resources should be allocated accordingly. The situation is that every country, no matter how often they order, has their own contact point that can be occupied with heavy workload and technical support at the same time.

One option to allocate resources is to design so called POOL-structure. POOL is a general mailbox where the sales offices who order less or frequently are sending their order. It should be integrated to ERP-system. The customer service engineer, who has smaller workload, is responsible handling the order for example. The benefits for using POOL are the better and optimised resource allocation (balanced workload) and agile order handling process, and may reduce lead time. Thus, more profitable customers have a single point of contact and customers who order less have a general point of contact. This will also take into account the global market conditions and the fact that some countries are always growing more than others, thus demand is higher.

Table 8 presents the suggested improvements which should be considered to be implemented in order to increase performance, but may require more time and resources. The similar aspects are pointed out as in Table 5.

Table 8 Considerable Improvement Actions.

Problem	Action	Result	Advantage
Environment: poor quality of inputs	Competence development to sales.	Increased knowledge and quality inputs	Waste elimination
Infrastructure: Workflow-structure and integration of Start-up -activity	Creating delivery class based order handling workflow.	More time for demanding specification less time for basic specification.	Accuracy; may lead to better quality, resources used in start-up can be measured
Design & Metrics: Tender Integration & Hit-Ratio	Increase the transparency, Creating the metrics	Knowledge of the tenders won	Knowledge of the tender process performance

One way to increase the transparency is to create a general database where the all delivery processes in global level are described. Competence development to sales offices ensures a higher quality, because clarification is reduces, and thus non-valuable actions are not done, in other word inputs to process have better quality and transforming them to quality outputs is demanding less time.

Analysis pointed out that workflow structure does not notify the different types of projects, because time spend for the handling of the demanding and less demanding specifications is the same. The action needed is change the ERP-system to notify the delivery class based on order check and order acknowledgement. The change would result in speeding the projects, which have simple order specifications and the demanding specifications would be allocated more time. This part could include an integrated start-up activity. Demanding projects with a higher delivery class position would contain a start-up activity, which is followed by ERP-system by default. Thus, time spent on the order clarification and delivery planning in start-up phase is integrated and can be measured and resources used in start-up phase would be known. The advantage of re-structuring could lead to better quality because time is allocated accordingly. However, the gained benefits are not easily quantifiable.

The integration between sales and supply line has to notify the tenders more accurately in order to know the performance of the process. This will also increase the transparency of the tender and the order, and ensure that tenders are always notified.

7.2 Critical Evaluation of Improvement Actions

Re-engineering technical support, will require new kind of organizational structure, thus the improvement cannot be realized in short lead-time with limited resource allocation. If the support is separated to different function it will require resources and creates a new job description, but requires training as well. Benefit from the performance perspective is the time saved. For the sales offices, the advantage would be a better service level, and a single point of contact where to ask for help. If technical support is done in the order handling process, it has to be described and followed somehow. ERP-system's workflow has to provide the possibility to follow up the supporting done, so the management can control the resources used for supporting. Technical support can be seen as a service to sales. Therefore the quality of the service should be measured somehow, in order to distinguish the expertise in the process.

Harmonization of deviations has to be done carefully in customer-centric way. The suggestion is that not same personal service level (one-contact-point) is based on segmenting the customers according to their profitability or revenue. This would be a strategic segmentation, avoiding one-size-does-fit-all -mentality and better personal service level to companies that are most loyal and profitable. These customers are the most important ones, because a close relationship with customers is an asset. The POOL-design is option for the countries that order frequently. The POOL -design will not reduce the service level, instead it will make it more automated. This will also balance workloads between employees. Still, the critics are raised, because this would require certain type of IT-structure as well, or at least a centralised mailbox system. The implementation of POOL-design would need resources and it is not able to realise with minimum effort with short time.

The highest priority is on defining the segmentation criteria. The critics against this improvement action are it is not clear, who actually has authority decide on the criteria. Volume based segmentation is not necessarily the best option available but considerable. When thinking about harmonization, degree of variety will also increase costs because of the specific ways to operate, thus, economy aspects have to be measured. The deviations allowed cannot affect too much the process profitability, which means that agreed country specific operations should be managed carefully. That is why balance between standards and deviations has to be found. The advantage gained is the flexibility to important customers but also competitiveness.

In addition, it will take several years to create good relationships with customer. During this time, prioritizing objectives (profitability of the customer) may change. Relationships are also emotional, which means that even though the old customer is not the most profitable, the same service level is provided in terms of loyalty. Thus, the performance may suffer.

Standardization of the undetermined activities should be done to gain economies of scale; reliable process, variation in quality are minimised less expenses in development of innovative new practices, and less expenses in the administration of process. Standardising the component order form for example is the easy way to improve the performance of order process. Standardization will correlate with economy.

Communication in order to increase transparency is important. After deviations are harmonized, a clear guide of customer service function has to be created and sales offices have to be trained. This will help sales to understand the lead times of old projects and reduce questions, responding to which is a responsibility of customer service engineers. Therefore, this improvement may result in better inputs to process.

7.3 Leading the Change into Case Organization

The case process challenges workers from multiple perspectives: transaction workers are needed because the process itself is repeatable and structured, but on the other hand, expertise is needed to understand the complexity of the product and the information systems, that enable the semi-automated process workflow. Expertise work is required for the improvements as well.

After making the decision that a change is needed, the change has to be implementing in the organization and the models and descriptions are the tool for realising the situation and way to show to employees their position in the process. The descriptions should be done regularly to know how the process has adopted. To lead knowledge workers to face the change, a few points have to be understood. First of all, the change is always an emotional process and resistance is usual, when people do not know the upcoming. No one usually wants to change. Advanced communication and presenting the target of the change are proven to lower the resistance, which is caused when

people's comfort-zone is threaded. Figure 18 considers the aspects that should be notified when knowledge workers in the case organization are lead towards the change.

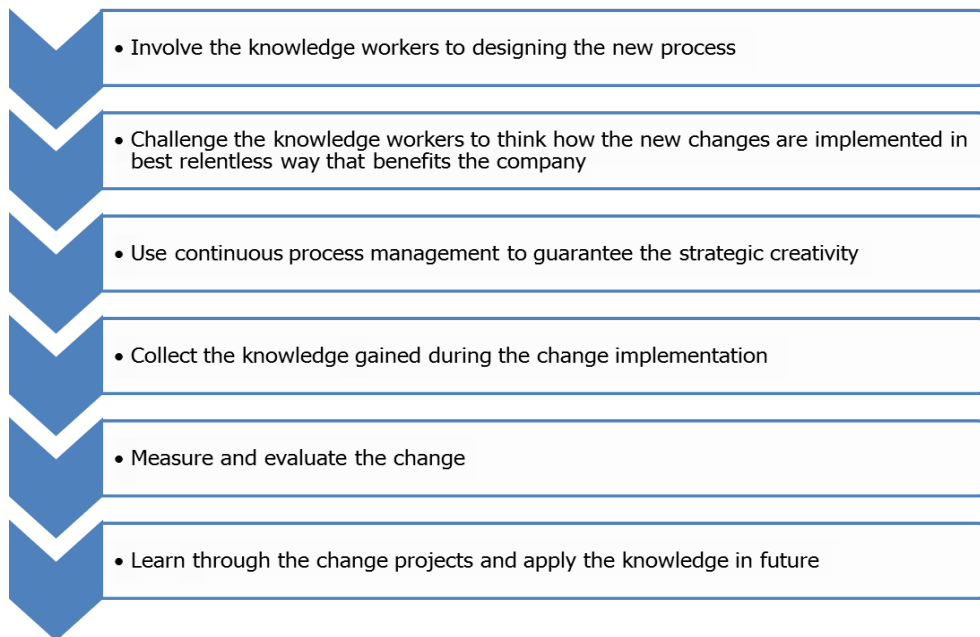


Figure 19 Considerable Aspects to Lead Change in the Organization

The first step is to involve the knowledge workers in creating the new improvements, such as a new organizational model or other improvement. Challenging the knowledge workers to create and internalise the change can lower the change resistance. Also treating the knowledge workers equally may help to avoid conflicts. At the beginning resistance always occur. Instead of trying to convert all the negative thoughts that are raised, it is better to focus on the ones that see change favourable.

Use of continuous process management can guarantee the strategic creativity. Continuous process management is a good way to stabilise re-engineered processes but it may require further individualisation. The basis is in planning, doing checking and acting. The change has to be measured and evaluated to reward knowledge workers for reaching the objectives, and at the same time encourage them to give up old ways of working. The whole change can be seen as an organizational lesson to learned-project. Thus, gained knowledge has to be collected to be utilized in the future. Leading the change efficiently is important because it will affect the performance in many ways. Therefore, a carefully planned change shall help in the implementation but shall also maintain the performance of the organization.

8 Discussion

The business case study introduced Customer Service function in a technology industry company. The case service organization was a part of the Make-to-Order delivery process, which is the case company's core process in its manufacturing business. The study started by introducing the *Service Factory*. The basic idea was that manufacturing firms should take advantage of the position by providing good service level. After conducting this business case study, it is relevant to state that interaction between sales and supply line was noticed and the company's new strategy was aiming at one-size-does-not-fit-all -mentality. In these terms, the new strategy included harmonizing operations and processes inside the company.

The objective of this study was to identify the possibilities to improve the current process in a way that high performance is achieved in the case organization. Thus, the improvements will consider how the new strategy is realized in the case process. Performance objectives were derived from competitive factors (speed, quality, dependability and flexibility). The waste was another term used to describe whether the task was not valuable from the customer point of view. Also the potentiality of proposed improvement actions was considered. The last point was to introduce, how to lead the change to case organization in a way that performance will not endure during the change process. The following questions were raised to meet the study objective:

- 1.) How are business processes perceived in the case company?
- 2.) What are the requirements for increasing the performance?
- 3.) How could the case of order handling process increase the customer centricity?

The answers to research questions were found by applying best BRM practices from the literature. First, the current state of the case process was identified by conducting the business process walkthrough. A clear process model and description are an effective way to demonstrate the work done in the process, the customer, and the outputs. Developing is almost impossible without knowing the current situation of the process. In addition, the description should show how the process operates in the organization. Also non-value adding operations are easy to define, and resource allocation can be done more efficiently.

The result of process walkthrough was Process Handbook with process models and written description. The Process Handbook included Deviation Matrix, which describes country specific operations and relation to Tender Process. The qualitative data for the models were collected by conducting semi-structured interview of the process performers (knowledge workers).

The requirements for increasing the customer-centric performance were studied by applying the theory and practise. The process performers were involved to designing the new improved process where the focus emphasizes the better service level to sales offices. The benefits of the study for the case company are to use the descriptions as organizational documentation and instructions to performers, and more important, as a starting point for improvements.

8.1 The Key Findings and Gained Benefits

The modelled part of the total core process was analysed considering the value-adding and process enablers perspective. Figure 20 demonstrates how the objective was met and the gained benefits after conducting the study in the case organization.

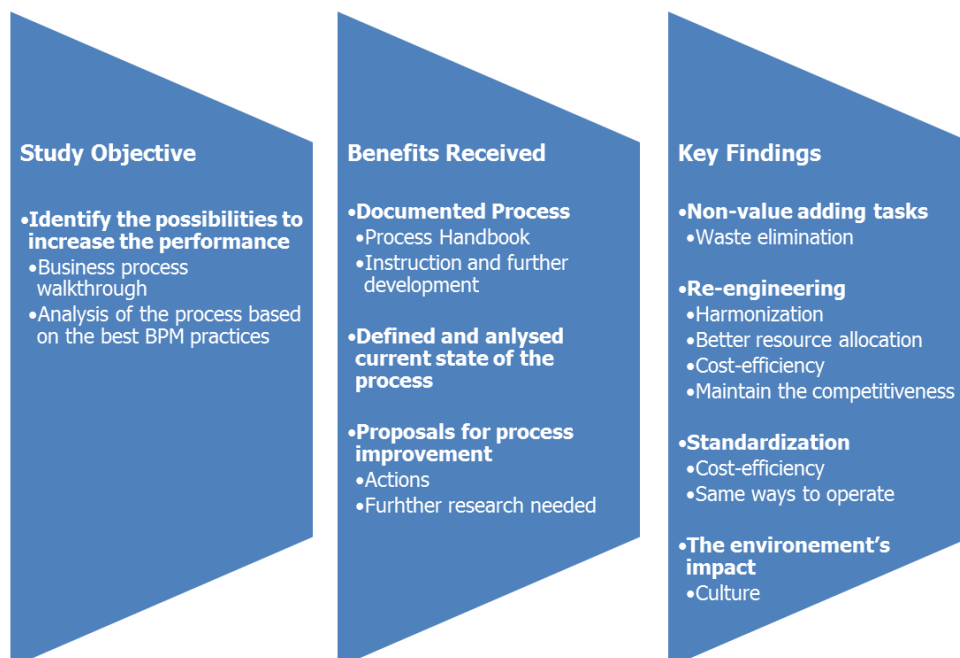


Figure 20 The Objective and Key Findings of the Study

The study pointed out the proposals for improvements, and the key findings in figure 20 are also the results of the study. When thinking about a customer-centric way to increase performance, it is important to recognize the customer expectations as well as the actions that are not giving necessary any benefits to the customer. The balance between customer's expectations and the service level has to be found.

Non-value adding task or waste should be eliminated, because it does not add value to customer. The process included some degree of waste: country specific operations had tasks which were undefined. The decision whether to include them to the process should be done. After that those tasks should be standardized. This will make the process more cost-effective when process has clear standards. Standardization should be done to activities and operations that are not determined, and also for maintaining the general ways to operate. For example the general component order form does not exist and sales offices are ordering components in any way they see appropriate, for instance by email. The gained benefits from standardization are a reliable process and minimized variation in quality. Therefore, the administration of process becomes more cost efficient.

The better resource allocation is achieved when re-engineering is considered. Resource allocation enables agile and customer-centric processes. This will also increase the cost-effectiveness when right performers are in the right position. The study suggested that re-engineering is done to technical support which is undetermined activity, a black box of the process. It should be re-positioned. Re-engineering should be done to deviations as well. Balancing the order bound by allocating the resources according to segments could benefit the whole process: lead time is shorter, thus, the process would be more agile and always flexible to markets.

Harmonizing allows some degree of variation to pertain the service level to sales. This is vital to understand when thinking about the increasing the customer centricity. A loyal and close customer relationship is a valuable asset. However, the result (increased performance) is not necessarily achieved quickly. Usually it will take several years to create good relationships with customer. During this time, prioritizing objectives (profitability of the customer) may change. Relationships are also emotional, which means that even though the old customer is not the most profitable one, the service level is retained. Thus, the performance may suffer.

Sufficient communication increases the understanding and the quality of the inputs. The case customer service function can affect its environment by influencing the interface where the function operates. The competence development of the sales offices is a part of the continual process management. Transparent way to communicate with sales and recognizing the different cultures can lead the better quality of inputs, therefore saving time and decreasing total lead time.

Motivation is a key factor, when the company wants to ensure that people are committed to the company's strategy. Rewards are an efficient way to direct the process to a desired state. Structure and integrated information systems enable the information flow in the organization. If many small operations are changed, it will naturally have an effect on the totality. For example, the current ERP-system cannot provide the best customer-centric performance because it cannot support deviations or un-determined tasks. That is why the focus should always have in the system thinking and the fact that change should always notify the totality.

While conducting the process walkthrough it was clear that the case organization was very aware of the issues they had in their delivery chain. Knowledge workers of the process were participative to create and figure out possible challenges of the process. Change management is easy, when many of the performers were willing to change something in the process. There is no need for bending the opposite thoughts when the participative employees are implementing the change in the organization.

8.2 Validity and Further Research to Consider

The validity concerns the resources used, while conducting this research. The time was limited and therefore, it was not possible to model and describe the total operations of the order handling process. Also, the country specific deviation matrix is not covering all the sales offices that are served globally. That is why the further research is needed to examine how the process differs between case customer service in Finland and customer service in Area 4. Benchmarking both functions could be done to identify the best practises.

The validity of the models, descriptions and a list of the deviations were reviewed by the performers and the owner. However, difficulties of semi-structured interviews are

related to time limitations. The time spent on the interviews had to be adequate. Still, during the interviews the performers were not necessarily able to recall all the situations, which might be also relevant to be described and modelled. Thus, deviation matrix is not necessarily covering the all deviations. Reliability is proven when comparing the new models and descriptions to former ones. Process has not changed dramatically nor is the models and descriptions.

Analysis is done based on the process enablers. Not all of the process enablers and capabilities were analysed due to fact that data was not available. This would have expanded the study. To have a fully operating process, all of the dimensions should be evaluated somehow in order to gain understanding of the whole and to avoid doing fast assumptions by only couple of the dimensions.

The reporting and process follow-up were not able to include to the models. This is an issue, because reporting can be done individually or generally. This should be examined because the reports which are general should be centralized in order to minimise the double work. The study does not comment the metrics in detail which should be created to measure the success in customer-centric performance. Creating the metrics could be regarded as an additional research.

The cultural aspects are not considered in this case study, but it would be recommendable to study also the impact of culture in order to gain knowledge of the different ways to do business and how for example time management is considered in different cultures. Some cultures may have more punctual way to operate than others. In the case process, the average change management in time period of an order is variable. Some countries have very accurate way to answer pending clarifications, and change is under control.

This study also suggested that the common database to increase transparency could be provided to the sales offices. The database already exist but before updating the database, the harmonization of the process variants should be done in order to clear the process structure from sales office point of view, as well. Another suggested action was POOL-design. The study did not comment the detailed structure of the POOL, but it could be done as a different case study, where the IT-structure of the POOL should support the process performance.

References

Becker, Jörge, Kugeler, Martin and Rosemann, Michael. 2003. Process management: A Guide for the Design of Business Processes. Berlin Heidelberg: Springer-Verlag.

Chase, Richard B. and Garvin, David A. 1989. The Service Factory [e-article] <<http://hbr.org/1989/07/the-service-factory/ar/1>> Accessed 15.3.2013

vom Brocke, Jan and Rosemann, Michael. 2010. Handbook on Business Process Management 1: International handbooks on information systems. Berlin Heidelberg:Springer-Verlag

vom Brocke, Jan and Rosemann, Michael. 2010:Handbook on Business Process Management 2: Startegic Alignment, Governance, People and Culture. Berlin Heidelberg:Springer-Verlag

Davenport, Thomas H. 2005. Thinking of Living: How to Get Better Performances And Results from Knowledge Workers. USA: Harvard Business Press.

Galbraight, Jay. R. 2005. Designing a Customer-Centric Organization. San Francisco: John Wiley & Sons.

Gillot, Jean-Noël. 2006 – 2008. The Complete Guide to Business Process Management: Business process transformation or a way of aligning the strategic objectives of the company and the information system through the processes. (e-book) <<http://books.google.fi/books?id=rpkDJWIRt9UC&printsec=frontcover&hl=fi#v=onepage&q&f=false>> Accessed 3.4.2013

Hammer, Michael. 1990. Reengineering Work: Don't Automate, Obliterate. Harvard Business Review, pp. 1-8.

Hammer, Michael. 2007. The Process Audit. Harvard Business Review. pp. 1-17.

Kivelä, Harri. 2011. PowerPoint Document, Study Material. Laadunohjaus pitkä 11.ppt

Kotter, John P. 1996. Leading Change. USA: Harvard Business Press, pp. 17-24.

Laamanen, Kai. 2001. Johda liiketoimintaa prosessien verkkona, Ideasta käytäntöön. Keuruu: Otava.

Laamanen, Kai and Tinnilä, Markku. 2009. Prosessijohtamisen käsitteet. Terms and concepts on business process management. Helsinki: Teknologiateollisuus Oy.

Likierman, Andrew. 2009. The Five traps of Performance Measurement. Harvard Business Review. pp. 96-101.

Meredith, Jack R. M., Shafer, S. 2011. Operations Management. Fourth Edition. Asia: Wake Forest University

Meyer, Christopher. 1994. How The Right Measures Help Teams Excel. Harvard Business Review; May-June 1994, pp. 95-103.

Porter, Michael E. 1985. Competitive Advantage, Creating and Sustaining Superior Performance. USA, NY: The Free Press.

Porter, Michael E. 1996. Operational Effectiveness Is Not Strategy. Harvard Business Review, November/December. pp 61,18.

Prahalad, C.K. and Hamel, G. 1990. The core competence of the corporation. Harvard Business Review, May/June, pp. 79–91.

Toivanen, Jarmo. 2010. Power Point Document, Study Material: Prosessien kuvaus ja kehittäminen. Luento 1 Yrityksen suorituskyky.ppt

Ukko, J., Karhu, J., Pekkola, S., Rantanen, H., Tenhunen J. 2007. Suorituskyky nousuun. Study Material: Suorituskyvyn_kehittäminen.pdf Lahti: Lappeenrannan teknillinen yliopisto.

Slack, Nigel and Lewis Michael. 2002. Operations Strategy. London: Prentice Hall.

Richen, Albert and Steinhorst, Ansgar. 2005. BpTrends. Standardization or Harmonization?

Watson, Gregory H. 1994. Business Systems Engineering: Managing Breakthrough. Changes for Productivity and profit. Canada; John Wiley & Sons.

The Interviews

Boucht, Monica Project Engineer. 11.1.2012, Process modeling

Hamberg Juha-Pekka, Supply Service Manager Europe, Process Owner. 1/2013, Process modeling and discussions in 1/ – 2/2013.

Kerminen, Mikko Project Engineer. 1/2013, Process modeling

Kivelä, Henna Project Engineer. 1/2013, Process modeling

Kivi, Milla Senior Project Engineer. 1/2013, Process modeling and discussions in 1/ – 2/2013.

Lahti, Jussi Project Engineer. 1/2013, Process modeling

Niemi, Tero Technical Assistant. 1/2012, Process modeling

Pajari, Jukka Project Engineer 1/2013, Process modeling

Pohjalainen, Mikko Project Engineer. 1/2013, Process modeling

Salo, Tero Project Engineer. 1/2013, Process modeling

Salin-Lehmussaari, Iina Project Engineer. 1/2013, Process modeling

Skovmand, Peter Project Engineer. 1/2013, Process modeling

Syrjänen, Marko Senior Development Manager. 1/2012, Process modeling

Tuominen, Matti Senior Project Engineer. 1/2013, Process modeling and discussions in 1/ – 2/2013.

Vailaranta, Martti Project Engineer. 1/2013, Process modeling

Process Models in the Case of Tender, Supporting Activities and Order Check

Figure 20 is the model which describes the workflow structure when tender is provided to sales. Figure 21 presents the supporting activities done in order acknowledgement. Figure 22 presents workflow when the final order comes from sales office.

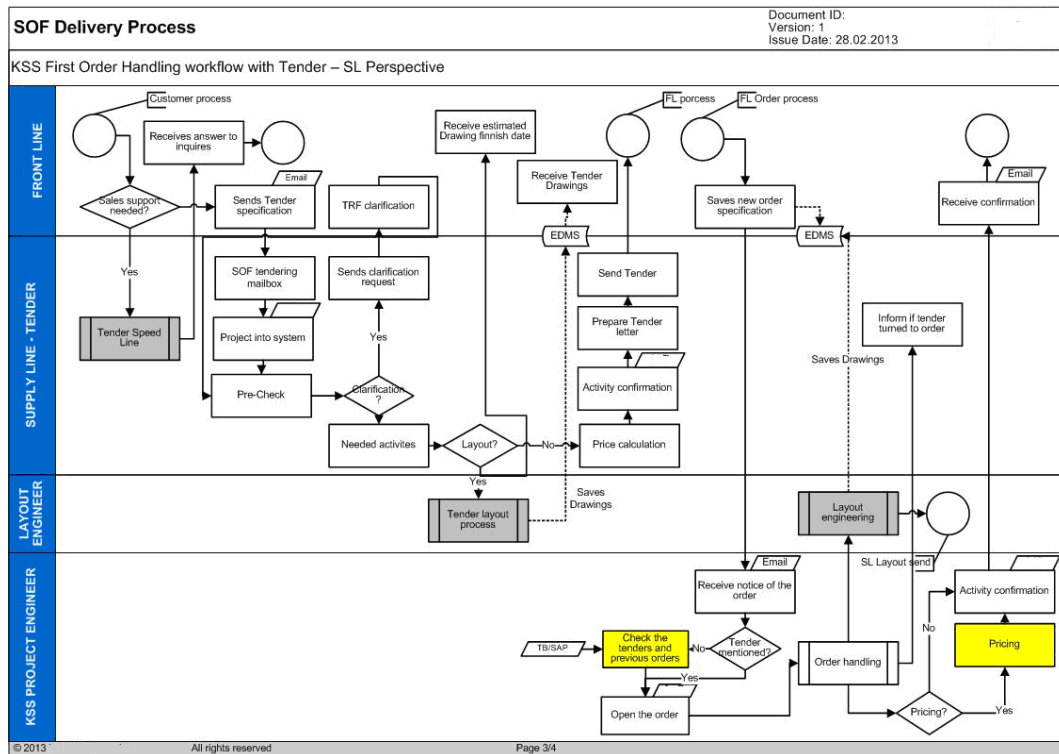


Figure 20 Order Handling – Tender

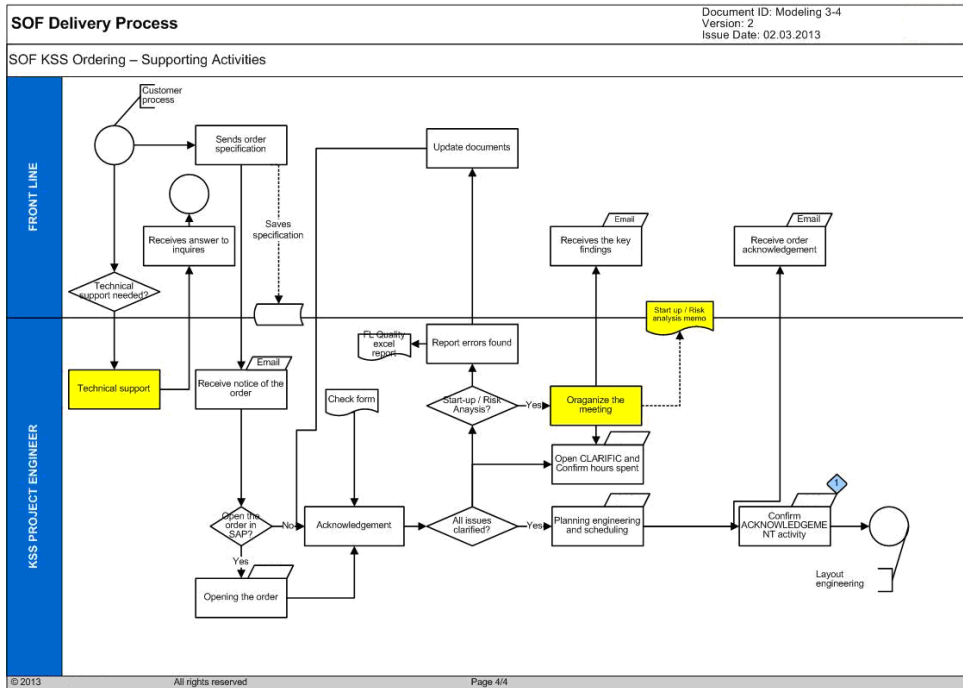


Figure 21 Order Handling - Supporting Activities in order Acknowledgement

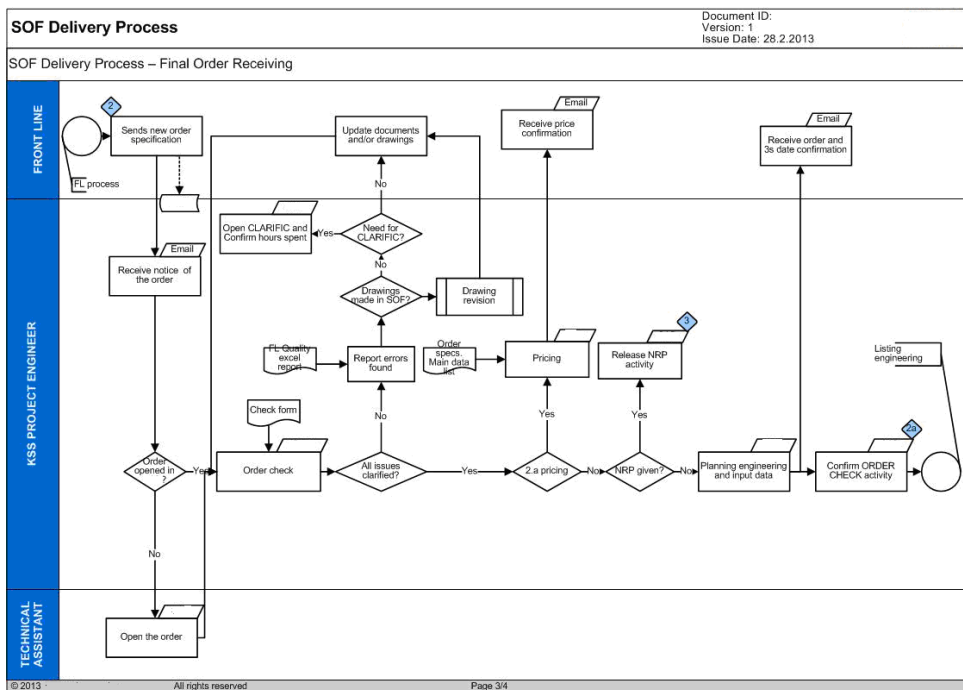


Figure 22 Order Handling – Order Check

Deviation Matrix

The table of country specific operations includes the milestones and countries. This table presents the deviations or country specific operations, activities and tasks which are done during the milestone. Ordering tool field presents the most common ordering tool used for ordering in FL. Blue indicates the time management between the milestones.

Country/ Milestone	0c	1	1a	2	2a	3	Re- marks	Order- ing Tool
Finland				FL CAD + Order Specifi- cation	OCP	Light integration		CST, LOF
Distributor			1a Pricing after layout completion			Light integration		CST
Sweden/ Norway/ Denmark					OCP only from FL to SL	Light integration		CST
Iceland	No ERP integration; sends order form to SL							LOF
Nether- lands				Timescale from drawing approval to final order varies			Techni- cal docu- men- tation after deliv- ery	CST, Core Spec.
Belgium				FL CAD + Order Specifi- cation		Light integration		CST
Germany				FL CAD + Order Specifi- cation				CST
UK	More involve- ment into project clarifi- cation before order is booked to SL side		Pilot case: Layout send confirmed by Layout				Strictly follows regu- lations	Core Spec.
Poland	FL CAD + Order Specifi- cation cannot use as a final order			Final order and NRP together	2a Pricing if tender		Most of the orders are or- dered in very short lead time	CST
Lat- via/Slovak	Slovak: in tender phase full layout			Final order and NRP together	2a Pricing if tender			CST

Russia				Final order and NRP together			Most of the orders are ordered in very short lead time	CST
Australia					Listing lead time: special prelisting process		China materials combined: Signalization in DG 2	LOF

List of Questions in Semi-Structured interviews

The questions used in interviews to clarify the step-by-step done activities in case process.

Semi-structured Interview – List of questions (Customer Service Engineers Interviews 2012-2013):

Workflow determination

1. Describe your daily tasks.
2. Process inputs and outputs
3. Roles and responsibilities

Process performance measurement

4. Process measurements used
5. Validity of measurements

Process evaluation

6. How do you see the customer's or sales office's opinion in process?
7. Problems in process interface?
8. Challenges in work?

Process development

9. What would you do differently?

Open discussion