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SUPPLY CHAIN MANAGEMENT BEST PRACTICES IN PROJECT BASED BUSINESS ENVIRONMENT

Master's Thesis in

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ABBREVIATIONS

AHP = Analytical Hierarchy Process

ANP = Analytical Network Process

CM = Category Model

DNP = Data Envelopment Process

KPI = Key Performance Indicator

SBM = Supply Base Management

SC = Supply Chain

SCM = Supply Chain Management

SM = Scoring Model

VAASAN YLIOPISTO
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TIIVISTELMÄ:

Alati kiristyvä kilpailu teollistuneessa maailmassa on ajanut organisaatiot etsimään ja arvioimaan tarkasti mahdollisia keinoja vastata kilpailuun sekä erottautumaan muista toimijoista markkinoilla. Toimitusketjun hallintaan liittyvien tekijöiden vaikutus yrityksen kokonaisvaltaiseen tehokkuuteen, on ajanut yritykset järjestämään organisaatiota uudelleen ja tavoittelemaan strategisempaa lähestymistapaa hankintatoimien suorittamiseen kilpailukyvyn näkökulmasta.

Tämä tutkimus tehtiin toimeksiantona Ruukki Building Systems Oy:lle. Työn tavoitteena oli vertailla menestyvien yritysten toimitusketjunhallintaan liittyviä käytänteitä, neljällä eri osa-alueella: hankinnan organisoituminen, toimittajapohjanhallinta, ulkoistaminen sekä mittaaminen ja raportointi.

Työ toteutettiin laadullisena tutkimuksena. Empiirinen aineisto kerättiin haastattelemalla yhdeksää valittujen yritysten hankintajohtajaa Suomessa sekä Ruotsissa. Empiirinen osio suoritettiin vertailuanalyysina, jonka avulla pyrittiin löytämään parhaita käytänteitä toimitusketjunhallintaa projektiympäristössä. Joitain oletuksia ja tulkintoja tehtiin analyysin toteuttamiseksi. Kaikki termit ja mallit, joita tutkimuksessa käsitellään, on esitetty aiemmissa tutkimuksissa.

Tulokset osoittavat, että yritykset ovat pyrkineet tasapainottamaan organisaation ja sen rakenteen palvellakseen tehokkaasti rinnakkaisfunktioita, saavuttaakseen kustannussäästöjä ja siten kannattavuutta. Strateginen näkökulma tutkituilla osa-alueilla on nähty kriittisenä tekijänä, jotta pystyttäisiin rakentamaan viitekehys, jota pystytään johtamaan tehokkaasti sekä mittaamaan organisaation strategisten tavoitteiden saavuttamiseksi.

AVAINSANAT: Toimitusketjunhallinta, Toimittajavalinta, Hankintaorganisaatio, Toimittajasuhteiden hallinta, Ulkoistaminen

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ABSTRACT:

The ever-growing competition in industrialized world has driven organizations to evaluate properly the possibilities to response the competition and seeking ways to differ from the other actors. Noting the high influence of supply chain management activities to the overall performance of the enterprise, has led to the re-structuring of procurement organizations and aiming towards more strategic approach to reach competitive advantage.

This thesis-research was done as an assignment for Ruukki Building Systems Oy, by focusing to investigate best practices of supply chain management in four different sub-areas called; organization design, supply base management, make or buy and performance measurement. The aim is to benchmark best-in-class organizations and their actions in defined sub-areas.

The research was conducted by using a qualitative method. The data was gathered by interviewing nine best-in-class organizations originated in Sweden and Finland. The empirical part was conducted as a benchmarking analysis based on the data gathered from the interviews. Due to the nature of the analysis, some assumptions and suppositions were made to be able to conduct conclusion. All terms and frameworks used in the research have been noted earlier in literature.

Results prove that enterprises have been focusing highly to find balance internally in organizations to serve peer functions with strong effort, by achieving cost savings and thereby profitability. The strategic viewpoint of studied actions in field of supply chain management has noted significantly and driven to build up a framework to reach efficient and effective supply base which is measurable in terms of strategic alignment of corporate targets.

KEY TERMS: Supply Chain Management, Supplier selection, Organization design, Supplier Relationship Management, Make or buy

1 INTRODUCTION

The ever-growing interest for procurement influence on corporates performance has been studied widely across the globe. In many sectors, studies had illustrated the importance of procurement function to be major influencer to the overall success of the enterprise. By noting that, purchasing expenses are roughly circa 60-70% of the company's revenue (Safa, Shahi, Haas & Hipel 2014) the management has moved the sight from conventional thinking towards proper Supply Chain Management (SCM) by increasingly highlighting the relationships between organizations involved, rather than just ensuring the the physical flow of materials, products and workforce. (Cengiz, Aytekin, Ozdemir, Kusan & Cabuk 2017.)

To response to the new sight of SCM, companies have been pressured to build up strategically competent procurement organizations to match enterprise level targets with efficient and effective actions (Azadi, Jafarian, Farzipoor & Mirhedayatian 2015). The management of capable supply base has raised to the center, to be able to reduce risks, achieve cost-savings and thereby gain profitability for the enterprise (Melnyk, Cooper, Griffiss, Macdonald & Phillips 2010). The contemporary sight of SCM is highly based on to the analytical side due to the increasingly growing data available, which has led companies to analyze and measure actions with high effort (Elrod, Murray & Bande 2013). This has affected the overall design of the organizations, but also to the actions made considering off with whom we are acting, how and why (Limberakis 2012).

The assumption that project-based organizations need unique actions and management to response to the ever-changing environment characteristics was a base-point for the study. For achieving the performance wanted, the organization design, supply base management, make or buy question and the measurement of that entity has seen to be major influencer and therefore chosen under investigation.

This research is done as an assignment for Ruukki Building Systems Oy, to deliver knowledge about practices used in best-in-class organizations in field of supply chain

management. Company is a well-known steel-frame producer in construction industry and fully project-based organization. The assumption of ever-growing competition in construction industry, the capability of procurement function is mandatory for responding the market demands. Therefore, it is clear that the SCM actions yells of high intensity evaluation with ongoing terms, and this study aims to support that process.

1.1 Objectives of the study

The objective for this thesis-research is to find out the best practices in field of supply chain management, for organization acting in project-based environment. The study has been limited to in four sub-areas of SCM, including organization design, supply base management, make or buy and performance measurement. These areas have been chosen to be investigated together with the conductor and company ordering the assignment.

The study is built up to answer following research question, which is further divided to answer defined four sub-areas.

Research question: what are the supply chain management best practices for project-organization?

The table 1 illustrates the sub-areas and how the research question is further divided, considering specific sub-areas.

Table 1. Research question divided to the sub-areas.

Research Sub-Area	**Research questions**
Organization design	How to organize procurement functions to serve business most effectively and efficiently?
Supply Base Management	Best practices of; Supplier selection

	Supplier relationship management Contracting Bidding
Make or Buy	Best practices of make or buy
Performance Measurement	What are the most critical measures of procurement performance? How performance should be measured?

The chosen method to conduct the study was qualitative. Author conclude to choose qualitative approach to be able to benchmark best-in-class organizations in defined sub-areas. The benchmarking analysis is done by evaluating theme-interviews. This method was concluded to be the best option, to answer the assignment company needs.

1.2 Scope and structure of the study

Firstly, the scope for the work was to deliver necessary theoretical concepts related to the sub-areas defined, to understand the analysis and conclusion of the empirical part. Therefore, the empirical part was conducted by analyzing the interviewed data to find out the general best practices. After concluding this knowledge, the proposition for project-organization is delivered.

The structure of the work follows the basic instructions of the university. The study consists of five different main paragraphs, which are illustrated in the figure 2. First chapter introduced the objectives, scope and structure of the study and highlights the reasonability of assumed outcomes. Second consists of review about existing literature of area studied. Third discusses about the research methods used, introduce the data structure and classify the interviewed organizations and persons. Fourth chapter is about to analyze the best practices out of the gathered data and give proposition for project organization to act in field of defined sub-areas. Finally, the last chapter concludes the study and gives suggestions for future research for the assignment company.

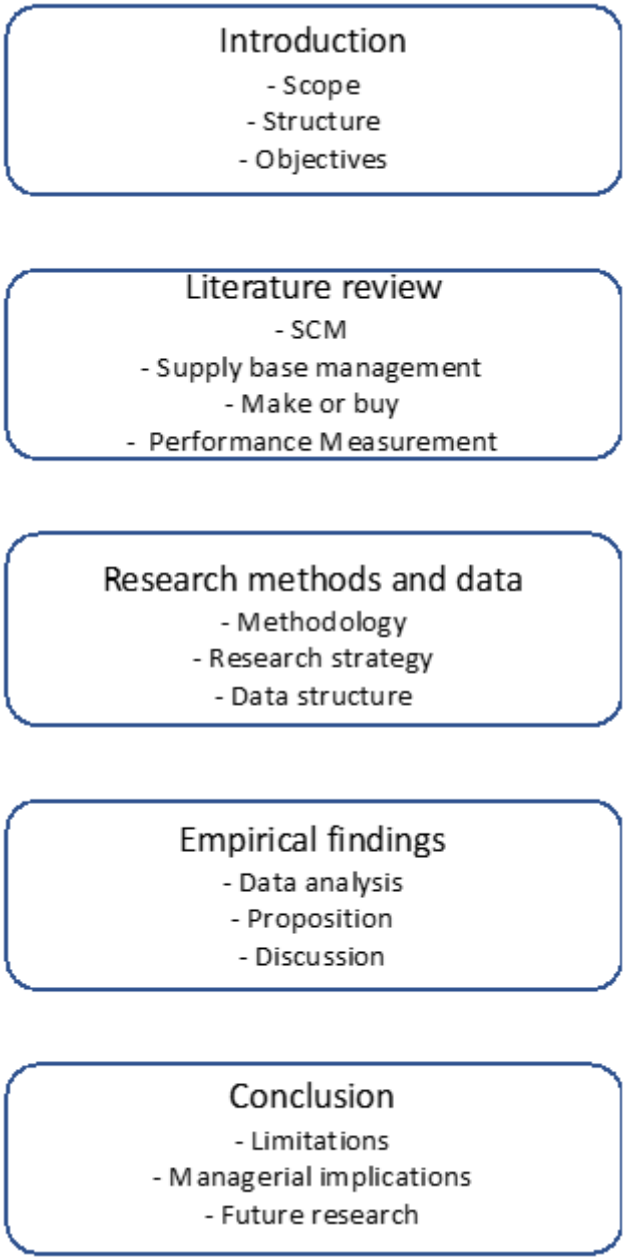

Figure 1. Structure of the study.

2 LITERATURE REVIEW

This chapter deliver the literature background for the research. The purpose is to introduce basic concepts and frameworks to understand the empirical analysis.

2.1 Supply chain management

To be able to understand concepts discussed in this research, it is crucial to understand the definition of the supply chain management (SCM). However, since the SCM concept was firstly introduced in 1980's the definition has gone through many phases and been studied widely across the globe. Coopert, Lambert and Pagh (1997) wrote widely cited paper about SCM, where they defined structure of the supply chain to involve actions from raw materials until to the serving value to the ultimate end customer. Still, it is notable that there are as much proper definitions as there are authors in SCM literature. However, Stock and Boyer (2009) made a research, which purpose was to develop consensus definition to SCM. They conclude that SCM is about to manage the network of relationship internally in organization, and between other organizations and business units which are depended on of each other, including material suppliers, purchasing, production facilities, logistics, marketing and related system that ensures the flow of materials, services, finances and information from the beginning of the chain, until to the final customer by adding value, maximizing profitability with effective and efficient actions and to reach customer satisfaction.

The figure 2 illustrates the key instruments of SCM. Environmental uncertainty, customer focus and information technology are seen to be the key external driving forces affecting to the SCM organization. The strategic purchasing including supply network coordination, logistics integration and supply base management, therefore, builds up the core of the whole concept. The performance of suppliers and purchasers therefore define the efficiency of the operative process in terms of time, quality and costs. Managing this entity efficiently and effectively, should provide competitive advantage for the whole network. (Chen & Paulraj 2004.)

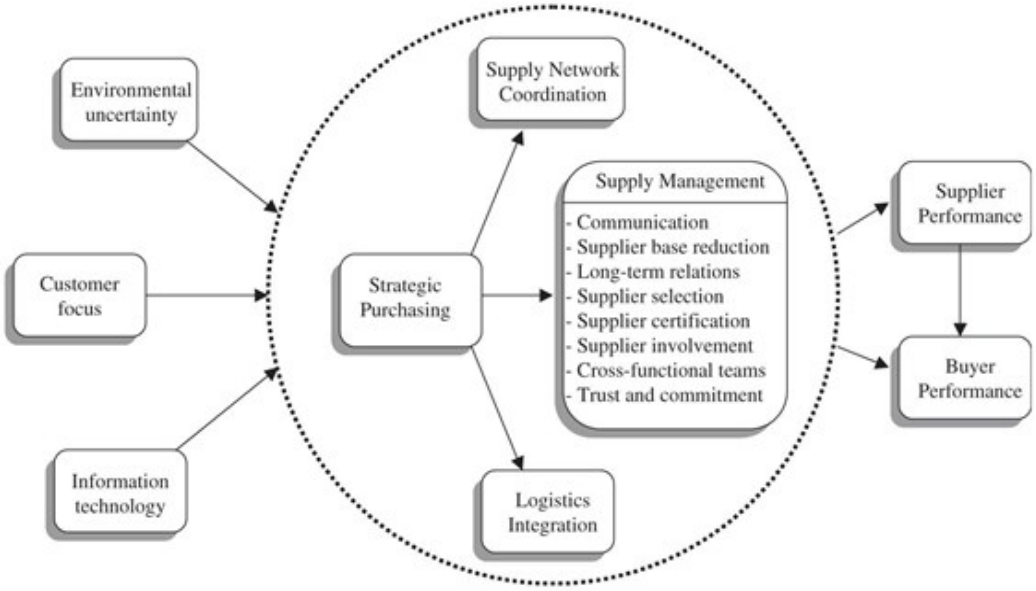

Figure 2. Key instruments of Supply Chain Management (Chen & Paulraj 2004).

However, the SCM can be describe as network, which is a supportive part of the value creation of the company. Therefore, the Porter's value chain model (1985) is a descriptive way to illustrates the company's value creation process and how SCM is a crucial part of that entity.

The value chain is constructed of actions, which influences to the companies' ability to provide value for customer (see, figure 3). These activities are divided to the primary and supportive actions. The primary activities are those, which illustrates the company capability to add value through their operative actions. Therefore, supportive actions purpose is to gain the ability to support to do it efficiently. In fact, procurement as a function, is involving to the operative capability through the whole value chain. On the other hand, all the other supportive actions influence highly to the capability of procurement organization, but also opposite way. To handle this network entity, it can be concluded to be supply chain management, which is described accurately in the last paragraph. (Van Weele 2010: 6.)

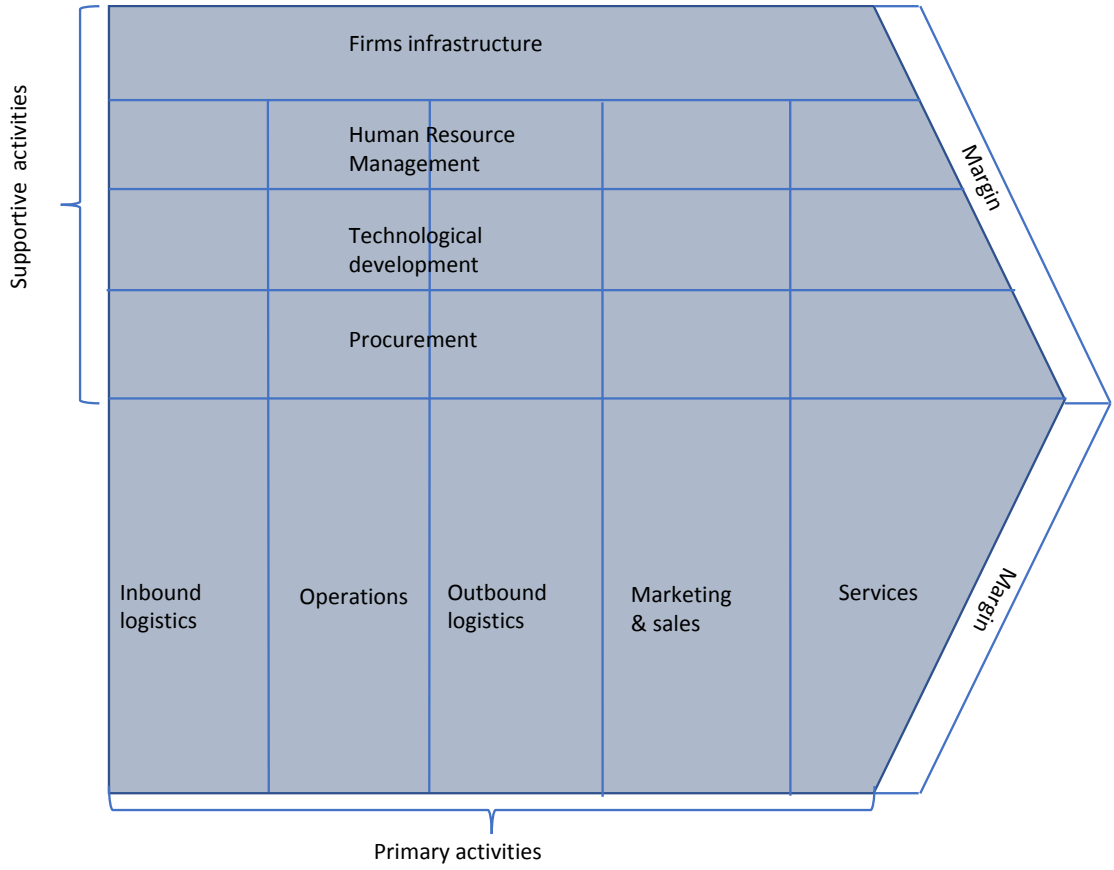

Figure 3. Value Chain Model (Porter 1985; Van Weele 2010: 6).

The SCM concept highlights the importance of time-based factors, reliability and transparency of the process. The essential target is to provide best possible value for customer by managing relationships effectively throughout the chain. Supply chain constructs from many different stakeholders and therefore the purpose is to efficiently manage the network to provide value for all participants. This approach ensures win-win situation through network.

To understand procurement as a major part of the SCM, Van Weele (2010: 9) illustrates the management phases of the business process by separating them in scale of value chain. In this figure 4, the procurement refers to the material management.

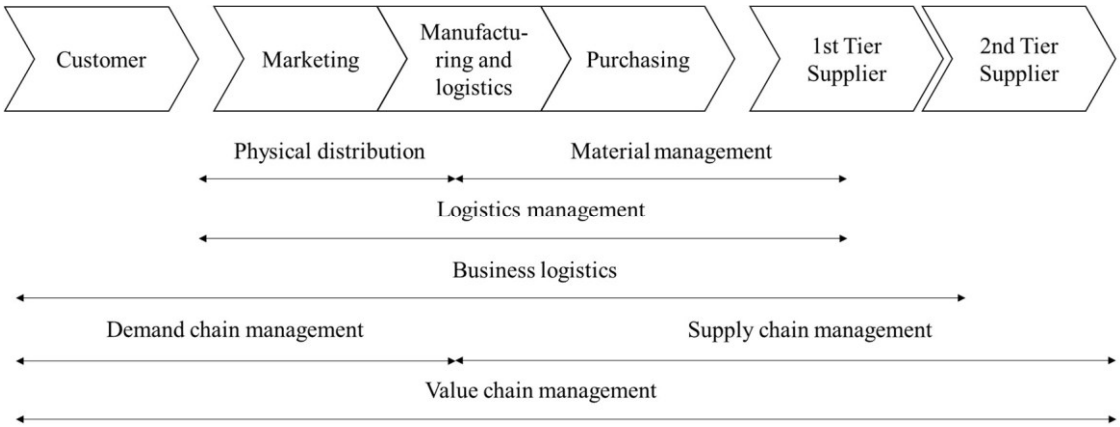

Figure 4. Different roles of Supply Chain Management (Van Weele 2010: 9).

However, Van Weele (2010: 9) separates the roles of demand – and supply chain management, the more contemporary approach by Christopher and Ryals (2014) compound these by moving from conventional product-based delivery to the value creation. In this study author uses this kind of approach for SCM as already described in the first paragraph.

To further divide roles inside the procurement organization, Van Weele (2010: 9) illustrates the sourcing and supply, as a part of procurement, in process model (see, figure 5).

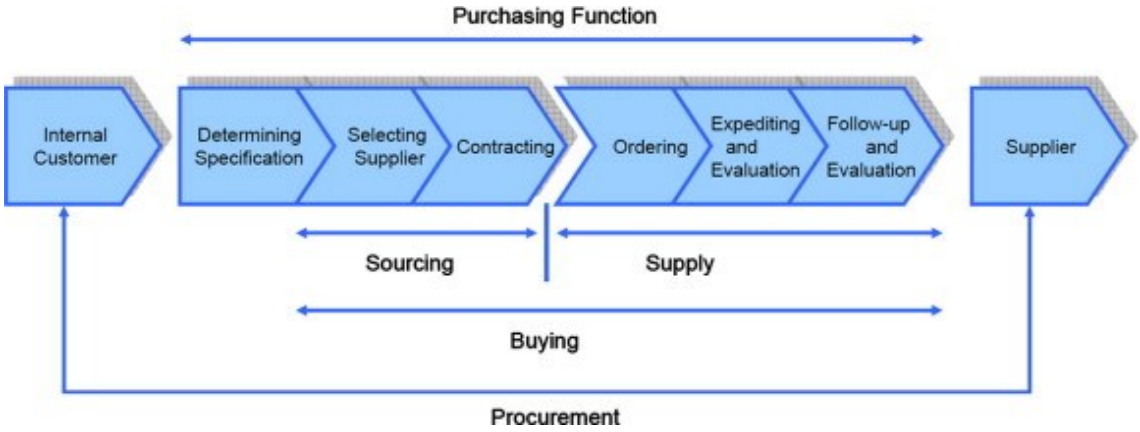

Figure 5. Roles of Sourcing and Supply (Mendoza & Ventura 2012; Van Weele 2010: 9).

Sourcing refers to the building the framework for buying and therefore, refers to the strategic side of the purchasing. Sourcing aims to seek optimal solutions to provide value through procurement actions. These include e.g. choosing correct suppliers, relationship management, supplier evaluation, and overall planning and developing the actions of the organization. Supply side therefore, ensures the material flow for achieving operational excellence.

2.2 Procurement organization

There are many forms of organizational structures for procurement functions. From theory perspective, all the forms can be adopted on any large enterprises and that there is not perfect form for any specific environment. Johnson and Leender (2001) stated also, that the longer one organizational design remains, the more you find the weaknesses and inefficiencies from it. Design of the procurement organization includes forming the structures and formal systems like labor, responsibilities, communication and so on to work within the strategy of the procurement department and more importantly, within the company goals. When the procurement, as a function, is not an individual result-oriented unit, the structure should support the purpose of helping peer

functions to achieve better performance for saving money and time. (Mena, Van Hoek & Christopher 2018: 22.)

In SCM literature the procurement organization is still most often described to be either centralized or decentralized. The degree of (de)centralization is used in this research to describe the design of the organization by assuming that the structure is never fully centralized neither decentralized. Kim, Choi, Yan and Dooley (2010) stated that the centralization is a network-level metric. The description for this metric is the number of actions going through the single point of network. The highest possible level of centralization is achieved, when all ties of network end to the single node. Oppositely, highest decentralization occurs, when all ties equals to the number of nodes. Tachizawa, Alvarez-Gil, Montes-Sancho and Graham (2015) defines this by in what extent the decision making is centralized to the individual member of SCM organization. Further from this definition, Kim (2007) stated that the centralization refers to the power and capability to make important decisions in different levels of organizational hierarchy.

(De)centralization of SCM organization is about to allocate the decision-making authority in-line with organizational hierarchy, by respecting all activities such as research & development, communications and geographical location of suppliers and customers. Therefore, the continuous change in these defined internal and external environment characteristics, demand organizations repetitively estimate the equilibrium to reach stable supply chain. (Treiblmaier 2018.)

2.2.1 Centralization vs de-centralization

The supply chain networks are combination of different companies located geographically differently and acting in multiple industries. To be able to manage these entities efficiently, the fast and powerful decision making is crucial to reach maximal benefits. Therefore, when considering the organization as centralized or decentralized it often refers to the level of decision-making procedure in companies. When the decisions are made in higher stage with upper-level personnel's it refers to the centralization. Therefore, when the decision-making responsibility is distributed to the low- and middle-level

managers business areas and units the organization is called decentralized. (Babbar, Addae, Gosen & Prasad 2008.)

Centralized procurement is a way to organize unit so that it is centrally led unit for buying goods and services for the whole group of divisions, facilities and projects. The aim of centralizing procurement actions is to achieve standardized systems and procedures for buying. Fulfilling the needs of the whole organization includes multiple amount of actions, which should be conducted on time, with right quality and with competitive able prices. This, for sure, demands high standardized process through the organization, but with the right implementation, it could gain great benefits for the company. (Axelsson, Rozemeijer & Wynstra 2005: 99; Mena et al. 2018: 26.)

Figure 6 illustrates the centralized function, where the different units report through the centralized function to achieve strong control over the whole organization. The purpose is to achieve one-team approach to maximize impact of procurement actions. The risk is that standardized processes do not fit perfectly for every situation, which is a consequence of pushing procurement personnel away from daily based activities. Therefore, local buying needs and cooperation with stakeholders need to be ensured, to achieve efficiency with centralization. (Mena et al. 2018: 26.)

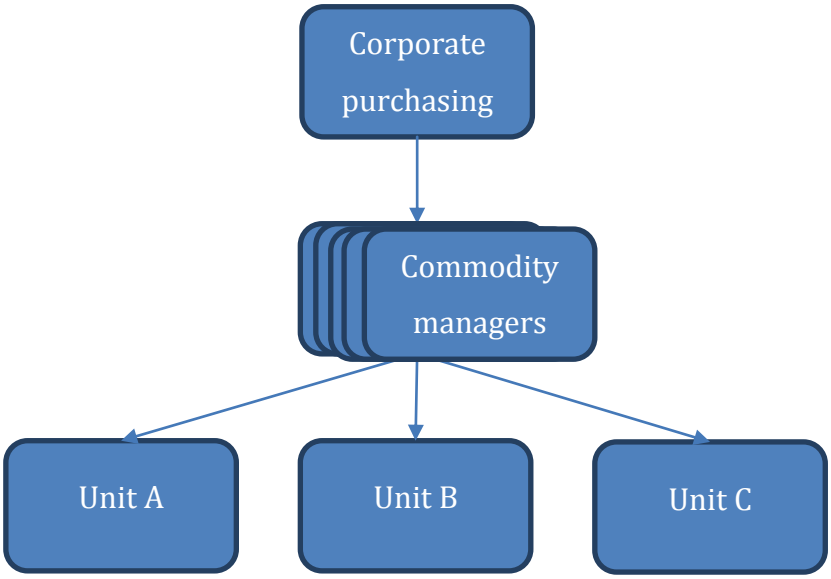

Figure 6. Centralized model (Mena et al. 2018: 26).

In decentralized procurement unit, purchasing activities are seen as an integral part of the business and its operations instead of seeing it as an individual centralized function. Focus of the decentralized unit is to support the needs of the own individual business-unit, which means that the scope of the purchasing actions is relatively narrow and hardly concentrating to the operational aspects, instead of company's strategic purposes due to individual nature of decentralized organizations, coordination between the individual units is often very informal, if existing at all. This also leads to the situation where it is very hard to find any common best-practices or any co-development within the procurement units. (Arnold 1999.)

In figure 7 is illustrated the decentralized model, where all units have an individual director and organization for procurement actions, without corporate coordination. With decentralization, the organization can be described to be a relatively flat structured and to have ability to build up an optimal supply and supplier base to match unit characteristics. (Mena et al. 2018: 26.)

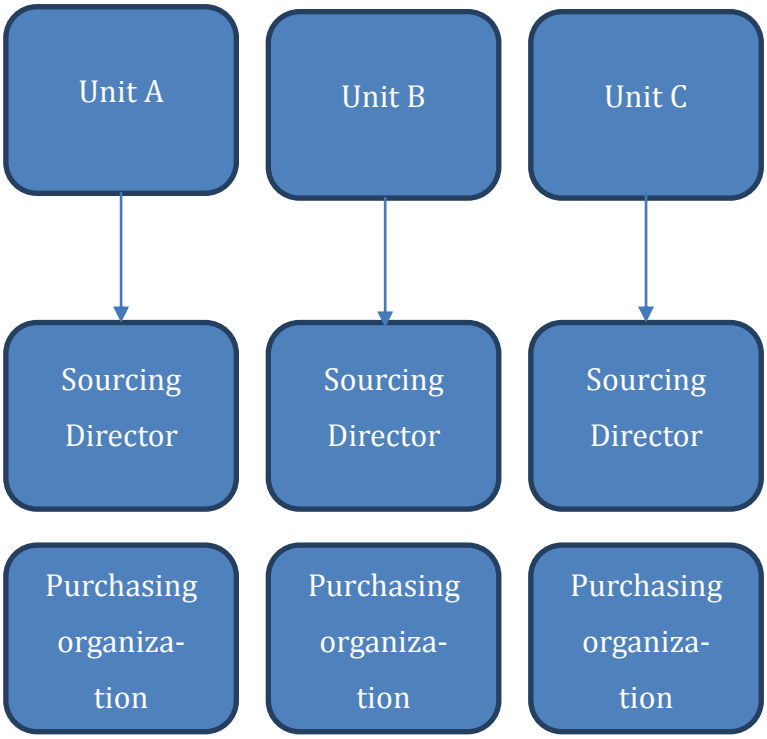

Figure 7. Decentralized model (Mena et al. 2018: 26).

However, these models are describing the allocation of decision making in organization. Babbar et al. (2008) states that SCM decisions can roughly be divided to the strategic and operative decisions. The strategic ones refer to the corporate strategy and often considers larger entity like business area or equivalent and operative correspondingly to ensure material flow and other daily based demands. The strategic side has seen to be better to centralize for achieving higher control, because these decisions have crucial effect to the overall performance of the enterprise. On the other hand, the operational to be decentralized to achieve effective processes to reach fast decisions and to understand more properly the local characteristics and demand fluctuations. Therefore, the companies are more often targeting to achieve optimal balance between centralization and decentralization rather than drive fully towards either one. (Sabath & Autry 2001.)

2.2.2 Category management

The one core strategic action affecting to the organization design is category management, which aims to categorize supply base in terms of strategic development, assessment, and measurement of procurement and supplier performance. Category management helps to aim correct action to each category to maintain its own market intelligence, sourcing strategies, and supplier relationship management. (Partida 2012.)

Identifying best possible categories needs high competence from an organization. External specific market characteristics and internal business activities should determinate the base-lines for building up strategically defined categories. Trautman et al. (2009) states that the category strategy affects highly to the overall design of the procurement organization. However, the core aim with categories is to achieve economic of scales via centralized volumes, the categories vary highly depending the penetration level regarding structure. This means that different categories need different structure and approach to respond the specific demands, to conduct the category work in efficient manners. This highlights again the difficultness of organizing procurement function but supports the upper definition of stabling the function in scale of (de)centralization.

The category management strategy is highly based on spend analysis, which should point out, how it has been divided to the specific homogenous categories. After conducting a sound spend analysis, the most potential categories should be identified based on cost-saving potential and possible investments to capture those. Based on analysis, the responsible persons should prepare a specific strategic and tactical plan in terms of supplier selection, contracting and other specifications related to the specific category. These approaches should be always conducted in cooperation with internal stakeholders to ensure that they are in line with company's strategic goals. The major finding in SCM literature support the phenomena where procurement unite with upper stage management and therefore, with major business processes, which truly gain the performance. (Van Weele 2014: 209.)

2.3 Supply base management

This section handles two different stages of supply base management (SBM). These sections are supplier selection and relationship management. The importance of effectively managed supplier base has seen essential part of the SCM, due to the constant market fluctuation, changes in customers' demands and in companies' strategic directions. Moreover, the contemporary sight of supply base management, is concentrating to the managing current supply base as ensuring the capability to response to the changing environment demands. Therefore, more strategic view for SBM is crucial, by noting the importance of potential suppliers and dynamic nature of the supplier base. (Melnyk et al. 2010.)

2.3.1 Supplier selection

With growing trend of out-sourcing and complexity of supply chains in many sectors, the supplier selection is increasingly stealing an attention of managers, because the decisions have a critical influence on the company's success (Wetzstein, Hartman, Benton & Hohensteinet 2016). Globalization, out-sourcing, growing regulation, environmental concerns, organizational changes and increasing customer preferences provides high complexity environment for the procurement function (De Boer, Labro & Morlacchi 2001).

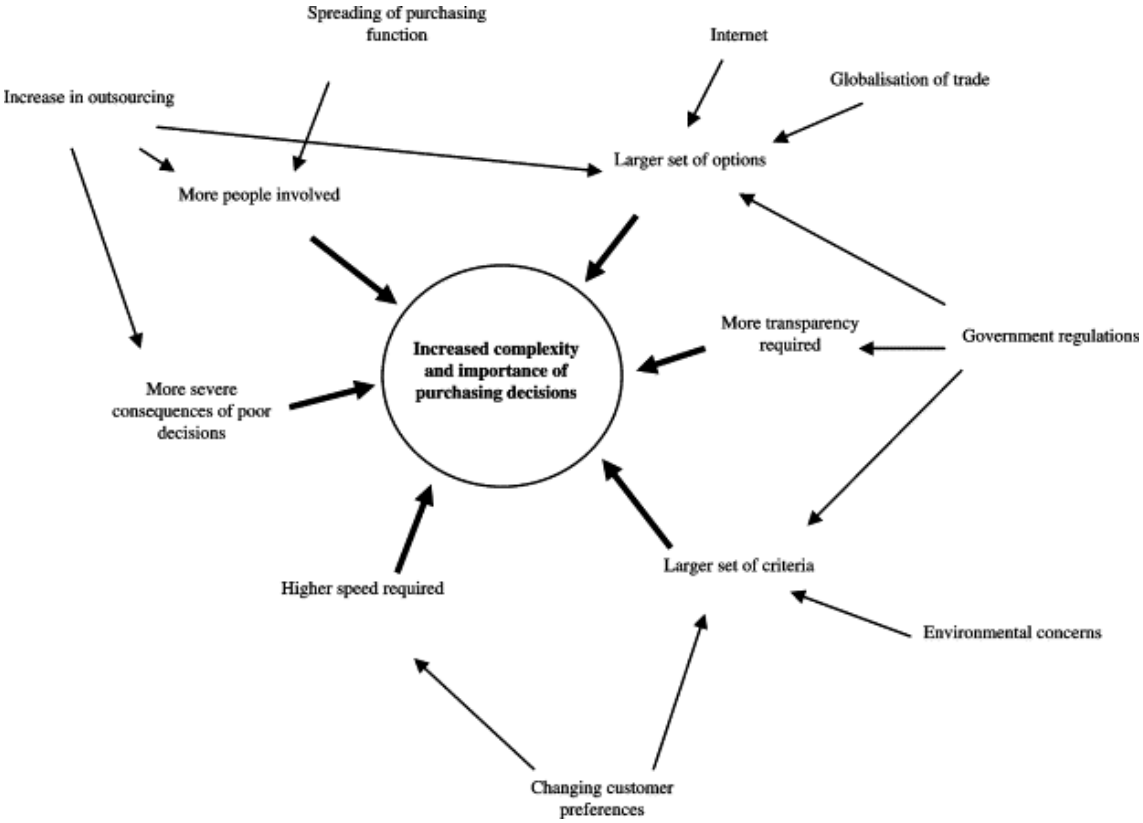

Figure 8. Complex field of procurement (De Boer et al. 2001).

The supplier selection is dependent to many alternative options (Masi, Micheli & Cagno 2013). Companies should consider purchasing internationally or domestically, from how many supplier per target-groups defined, buying from manufacturer or distributor, big or small actor and many more, when making decision (Handfield et al. 2009: 301). The general-sight of the supplier selection can be formulated as a multi-criteria decision-making problem, which builds on, of a wide range of sub-parameters to be analyzed (Safa, Shahi, Haas & Hipel 2014).

To highlight the importance of supplier selection, it is necessary to discuss the selecting situation regarding single versus multiple-sourcing. Single sourcing means that there is only one supplier for specific material or category to purchase and therefore multiple-sourcing oppositely have two or more. Tang and Tomlin (2008) among some other authors, have considered single-sourcing situations to be risky. Still, in the modern world, the relationships have valued higher against transactional approach, to reach long-term

cooperative engagement between single buyer-seller relation. It is noted that with proper investment to the relationship, the associated risk can be minimized, and performance maximized (Zhao, Huo, Flynn & Yeung 2008). Bergera, Grestenfeld and Zeng (2004) in their study state that consensus according earlier studies, related to the supplier selection, supports the phenomena of reduction of supply base. They continue, that comparison between multiple vs. single sourcing situation can be made with critical ratio between operating cost and risks. Therefore, we can conclude that there is no clear evidences of which option is better, but existing proofs point that still restricted supply base is more efficient than wide. It is clear that the importance of supplier selection cannot be highlighted enough. However, still in different situations, the different selection techniques are needed depending of risk and possibilities associated.

2.3.2 Supplier selection models

Theory presents supplier selection as a process to choose best option in specific situation. Masi et al. (2013) states that from the literature, two main groups can be identified how to choose correct option. Selecting techniques which could be analyzed via known analytical methods by comparing different enablers and their dependencies and portfolio approach, which provide managerial implications for specific situations. Authors continue by separating **first main group** of selection techniques to the three groups depending the scale of accuracy and complexity (see, figure 9). The correlation between these variables is clear so that high accuracy demands high complexity from the selection technique. (Masi et al. 2013.)

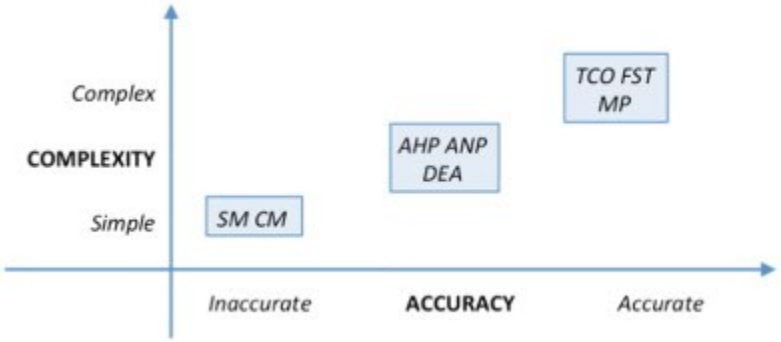

Figure 9. Selection techniques for different situations (Masi et al. 2013).

The first group include scoring model (SM) and category model (CM). These are simplified models, which demands professionality from the sourcing and historic data about the suppliers. SM compares different wages of chosen criteria and compares them to choosing supplier. CM, on the other hand, is a tool to categorize suppliers to be positive, negative or neutral group, which is based on the data and knowledge of the individual analyzer. (De Boer et al. 2001.)

Second include Analytical Hierarchy process (AHP), Analytical network process (ANP) and Data envelopment process (DNP). These models can be described to be more mathematical methods. AHP can be called improved version of SM, because it evaluates also the relative importance between different criteria and supplier preferences regarding specific criteria (Masella & Rangone 2000). ANP, however, includes more interdependent relationships between and within the criteria. This is useful tool when the decision process is impossible to build hierarchically (Gencer & Gürpinar 2007). DNP, on the other hand, is a very different comparing these two. The purpose of this method is to analyze dependences between the cost - and performance weights of the supplier. This ratio should categorize suppliers to the efficient and inefficient baskets. (Saen 2007.)

Third group includes Total cost of ownership (TCO) and few deeply mathematical models, which are not handled here. However, TCO is a very highly noted method to reach the most efficient decisions. Successful TCO process demands high knowledge of cost structure, and accurate data about the cost should be available. It is seen to be a

great process for further investigate the associated cost in specific situations, which otherwise might remain unknown. The greatness with TCO, is to push the procurement organization to evaluate purchases, from more analytical viewpoint away from unit-cost approach more to the overall performance of the organization. (Bhutta & Huq 2002.) However, TCO can described to be an analytical tool, in some research it has been further illustrated to be philosophy, which should penetrate the whole organization. (Masi et al. 2013.)

To properly understand the selection tools, it is good to describe the most used method AHP a bit further. As illustrated in the figure 10, the AHP is in tree form, where in the top level is the problem definition. The tree structure is built up by determining the main- and sub-criteria, which is depending always about specific situation. The final part is to connect the main- and sub-criteria to the earlier mapped alternative suppliers.

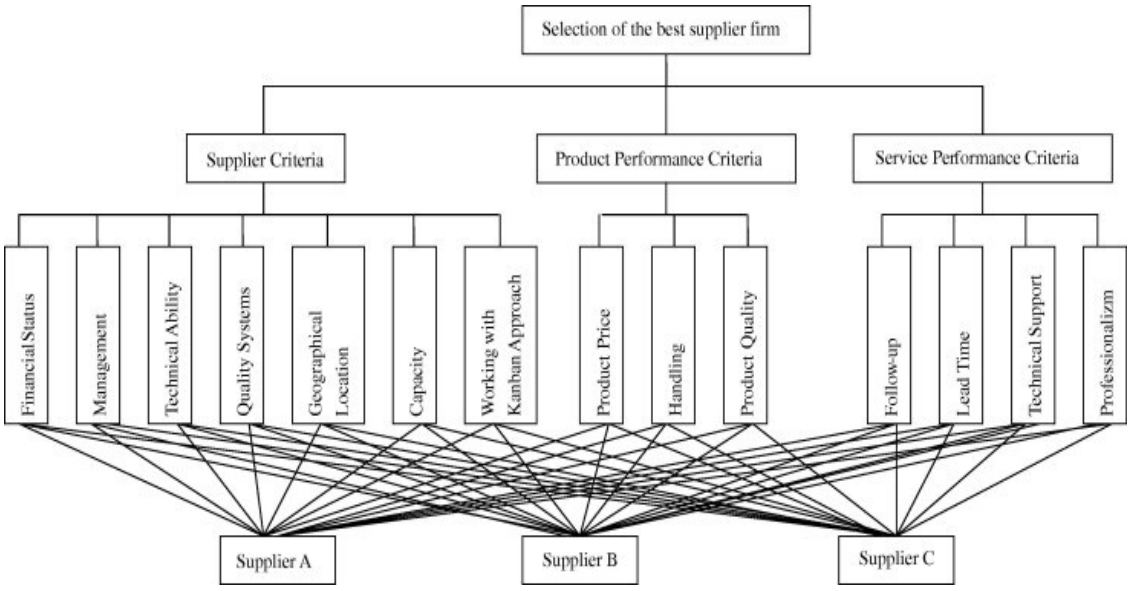

Figure 10. Analytical Hierarchy Process model (Kilincci & Onal 2011).

The analysis is about to calculate different weights for main- and sub-criteria to compare the alternative options. To note the differences between the companies can be done with existing data or by gathering information via questionnaires or equivalent, to be

able to compare alternative options. After calculating the preferred weights of each option, the selection should be reviewing the best possible option. However, these models are based mathematics the capability of individuals have noted to be in high level, to be able to really build up the frame for calculating correct criteria. (Kilincci & Onal 2011.)

In the figure 11 is introduced different possible criteria noted in SCM literature which have been used to evaluate the best possible option.

Product quality	Delivery reliability	Warranties
Product pricing	Production capability	Technical capability
Management capability	Supplier's reputation	Financial position
Labor relations	Service quality experience	Past business records
Reciprocal arrangements	Cultural fitment	Communication barriers
Geographical distance	Foreign exchange rates	Trade tariffs
Trade restrictions	Buyer's commitment	e-transaction capabilities
Quality management	IT standards	Cost reduction capability
Documentation	Design capability	Supply variety
Lead time/response time	Indirect costs	Response flexibility
Innovation	Facility planning	Safety adherence
Domain experience	Exporting status	Conflict resolution systems
Customs duties	Product line diversity	Intimacy of relationships
Inventory position	Electronic data interchange	Value-added productivity
Total cost of acquisition	Risk perception	Certification and standards
Research and development	Organizational culture	Availability of parts
Sub-component pricing	Regulatory compliance	Self-audits
Billing accuracy	Cost reduction performance	Indirect costs
Service quality credence	Supplier's commitment	Skill level of staff
Exporting status	Packaging capability	Intellectual property rights
Data administration	Improvement commitment	Procedural compliance

Figure 11. Supplier selection criteria (Kumar, Kar & Pani 2014; Ho, Xu, & Dey 2010).

The second main group of selection techniques include the portfolio models. The purpose is to find different strategic and tactical approaches for heterogenous categories. The aim is to classify purchased products or services to the matrix depending of different characteristics. Probably the most common tool is Kraljic (1983) matrix. The model is based on the strategic importance and market complexity.

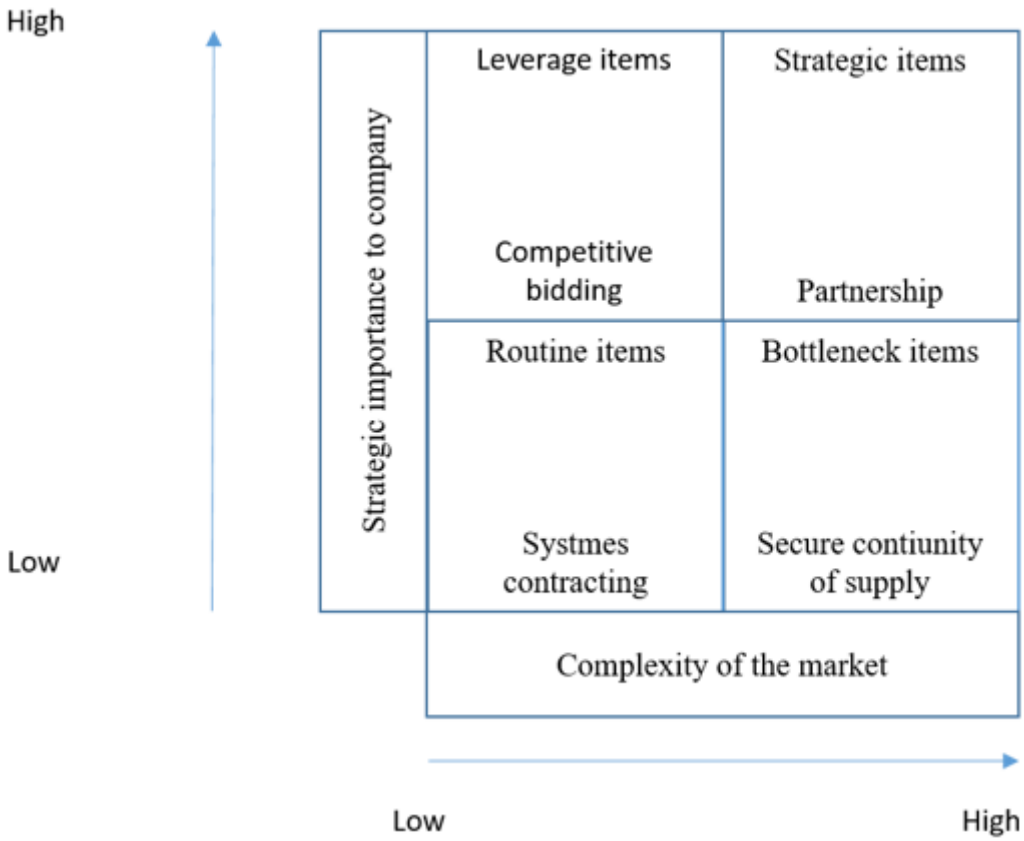

Figure 12. Kraljic matrix for supplier segmentation. (Kraljic 1983; Mena et al. 2018: 68.)

The aim is to locate the suppliers in to the four sub-areas, 1: leverage items, 2: strategic items, 3: routine items and 4: bottleneck items. The plotting is done by degree of financial - and risk impact to the business. The suppliers which are located in the strategic side, probably need more managing for achieving long and continuing partnership. On the other hand, the leverage items can be tendered to achieve direct cost reduction, so called traditional way. In the routine item category, there can be automatized processes to e.g. save time for manage more important segments. Bottleneck category includes suppliers which contribution for the process is important but financial impact is not so big. The outcome should provide a portfolio for the procurement management where to focus, but also to identify critical parts of the supply chain. It may help to develop capabilities e.g. to organize the procurement function, make a differentiation strategies and

tactics, aim the relationship work and implement the overall SCM strategy to the organization. (Mena et al. 2018: 67-69.)

2.3.3 Supplier relationship management

In the very complex business environment, the companies are located in the middle of the wide network of customers, partners, organizations and suppliers with full of different kinds of people. Still in modern era, many organizations are concentrating just to the customer perspective, when talking about the company's relationship management. However, managing supplier relationships are seen to be one of the core contributions to provide the value for the customers effectively and efficiently across the chain (Oghazi, Rad, Zaefarian, Beheshti & Mortazavi 2016). The win-win relational approach towards supplier management has begun a trend, instead of transaction-based win-lose, money centered approach. The benefits, through better relationship, like resilience, transparency, communication and other intangible assets have taken bigger role in the supplier management than simply reaching cost reduction via lower price. With the supplier relationships, companies can and should develop capabilities together to achieve profitability and to provide better out-comes for the customers. (Buttle 2009: 313-315.)

However, SRM have major influence on the operative capability between procurement organization and supplier after the sourcing process is done. Still it is notable that sourcing members work is not done after negotiated the deal. The relationships should be managed properly to reach the planned savings through cooperation. It is noted, that constant communication ensures the suppliers capability to respond better to the fast-changing demands, but also overall plan the business further on. Therefore, it is clear that by cooperating, both parties can benefit not only by avoiding risks, but also to constantly develop more efficient actions by sharing information. (Mena et al. 2018: 66.)

The analytical evidences of the relationship barriers that might occur are consequences of the lack of common targets, integration, commitment and trust between the companies and its supplier. Oghazi et al. (2016) deliver evidences that supplier-buyer relation-

ship can avoid the major challenges or conflicts by providing the feeling to really belonging to the process and had an influence on the outcomes. This kind of commitment encourages the suppliers to set targets align with the buyer organization, which leads to the higher performance outcomes. After building the integration and commitment by defining and adopting common targets the trustfulness increases to the partnership level. To achieve this level of commitment demands considerations from buyer organization constantly to keep the supplier satisfied. To achieve this goal, the manufacturer should prove its consideration of its suppliers. To prove the commitment, buyer organization can provide more development tasks, financial incentives and so on, to keep the supplier satisfied. The outcome should be a win-win situation, by better and more efficient ways to do business. (Oghazi et al. 2016.)

As mentioned earlier, the linkage between the supplier relationship and the customer relationship management is important to understand, because the final evaluation of the supply chain success happen on the end-customer table. It means that all the relationships involved across the chain, not only affect, but also benefits from the best possible financial outcome. Capability to measure performance through the chain, gains ability to constantly develop relationships and share knowledge to the supplying companies to achieve the common goals. With the shared information about success or failure, participants can learn and grow, but also feel to be involved and have an incentive to carry on together. (Lambert & Schwieterman 2012.)

However, supplier relationship management indicates the actions for build-up framework to develop and maintain relationships with the supplying companies (Lambert & Schwieterman 2012). The purpose of the process is not to make a deep cooperative engagement with all the suppliers. Instead of that, organizations should make a decision about where to focus and with whom, because 20 % of the suppliers distribute 80 % of spend. (Mena et al. 2018). For that purpose, the same Kraljics (1983) matrix, introduced earlier, is usable by aiming the focus on correct categories or specific suppliers. However, Park, Shin, Chang and Park (2010) introduced an integrative framework based on the Kraljics (1983), Olsen and Elram (1997) works to aim relationship work, by strategic material evaluation and supplier performance evaluation illustrated in figure 13.

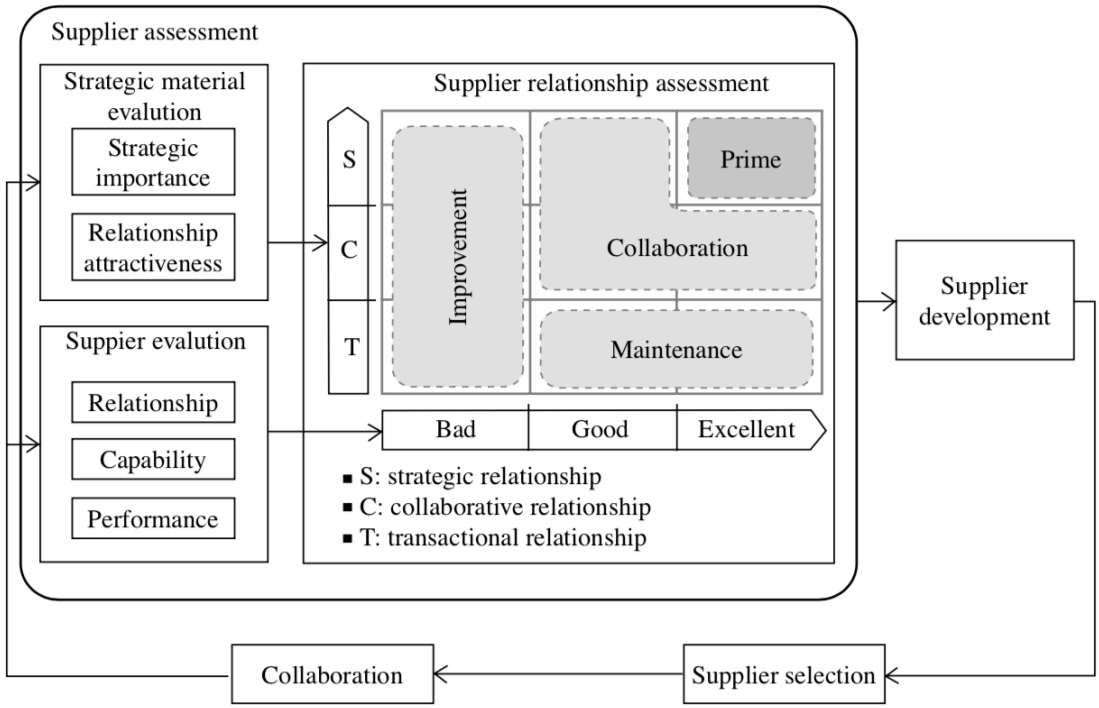

Figure 13. Integrative framework for supplier segmentation (Park et al. 2010).

The framework provides process for relationship work by segmenting suppliers in terms of strategic importance and attractiveness, to be strategic, collaborative or transactional relationship. Then by performance, relationship to be bad, good or excellent. This analysis should categorize supplier to the matrix form to identify relationships in to the four groups, prime, collaborative, maintenance and improvement. After this, the process includes the supplier development which should narrow the supply base and leads to choose correct supplier to each category. Final part is collaboration which aims continuous improvement of the SCM. This framework illustrates also how every part of supply base management is tightening together to reach best possible outcome. (Park et al. 2010.)

Supplier relationship management is about to structure the supply base in efficient manners. The purpose is not only collaborating with suppliers, it is a process including man-

agement activities to reach higher performance in terms of money and time by continuously evaluate and improve the supply base and its actions.

2.3.4 Contract management and competitive bidding

Companies are under many kinds of threats. Internally, e.g. the poor planning and execution of production, project or other actions and externally the demand and supply fluctuation can cause high risk, where enterprise should prepare (Tang & Tomlin 2008). By contracting and proper management, gains the ability to reduce the level of that. The contract is an agreement between buyer and seller about specific service or product, according defined term and conditions to reach better coordination of supply chain. (Calfa & Grossmann 2015.)

In the SCM literature the terms bidding and tendering is often used, and it is good to know that the definition for these is identical. The bidding and tendering refer to the process where buying company asks bids from suppliers to buy products or services. Tendering is a core activity related to the sourcing and more specifically to the supplier selection. Van Weele (2014: 34-35) divides the bidding process to the stages where first stage includes **the bidder's long list** and second **bidder's short list.** As discussed in supplier selection section, the suppliers are evaluated based on criteria. The long list refers to this one, where the request is sent to suppliers, who are meeting the company's requirements. Short list therefore refers to the stage where buyer knows already how is able to meet the unique specifications, often including 2-4 suppliers. The bidding continuous by evaluating and negotiating towards contracting phase. Most noted way to analyze best option is by evaluating associated total cost. The bidding lead to the situation of single sourcing or multiple sourcing, depending of strategic and tactical viewpoint and evolving situation.

There are many forms of contracts noted in SCM literature. Hezarkhani and Kubiak (2010) introduced in their literature review the most common model for contracting to be *fixed price,* which include the price for product, independent from purchased volume.

However, Van weele (2014: 36) explains the other used models for contracting considering price arrangements.

Cost-plus contract:
The pricing includes cost associated to the purchase, which cannot be specified or calculated beforehand accurately. In uncertain situations where the fixed-price is too risky for both parties, the cost-plus contracts is used.

Cost-reimbursable contract:
This model refers to the used amount of workforce and equipment for purchased product or service. There is fixed price for these, and the price is according to the use of resources.

Price-adjustment:
This type of contracts are based on index, resource costs or equivalent to set price.

However, the pricing is always depending of evolving situation and therefore, should be analyzed and negotiated properly. The common way for purchasing is by accepting common terms for buying. This means that for every request send, the purchaser adds the document of company's general terms used in specific buying situations. According Van Der Puil and Van Weele (2014: 133) the seller also has their general sales terms, which leads to situation where every stage of purchasing process, both parties accept the own terms and afterwards it is impossible to know, which ones are applied. For avoiding this situation, e.g. related to the logistics, there is announced general commercial terms for use in purchasing situations, which are easy to accept by both parties, called incoterms.

However, sometimes it might seem that contracts are just for pricing, but Seshadri and Mishra (2004) stated that relationships and contracts are actually complementary, where contracts provides a reference frame for relationships to gain benefits for both parties. To reach efficient results, the relational approach should be considered when contracting.

2.4 Make or buy

The make or buy is most highlighted decision in purchasing. The idea of the decision is to compare if it is cheaper and more efficient to buy with a market price or produce with the production cost. The decision has led companies to out-source the goods and services from a low-price country, but also to relocate the production facilities abroad. (Arya, Mittendorf & Yoon 2014.)

Traditionally the unit-cost approach has been the driving force for out-sourcing from low-cost countries. In modern purchasing organization, have noticed that the costs are not the only variable which matters in the business. The organizations have been moving more towards total cost approaches, which have actually driven companies to in-source and bringing the production and suppliers back, near the end users. When thinking about performance regarding out-sourcing, it has been noticed to be a major driver, to be able to concentrate to the core actions in own business and therefore to focus on areas where company really succeed. (Arya, Mittendorf & Yoon 2014.)

2.5 Performance measurement

The purpose of the performance measurement is to ensure sustainable actions in terms of financial success, efficiency and effectiveness of the procurement. These dimensions can also be defined as financial and non-financial measures (Pohl & Förstl 2011). The combination of these two aspects should be conducted so that decisions made, do not affect harmfully to either-one.

The follow-up and measuring system should be conducted so that it supports the management process by ensuring that data is available, reliable and sufficient for this purpose. The focus should be clear and therefore, the measures as proper defined as possible, because “what you measure, is what you get”. The performance measurement gains the knowledge of changes and trends in the process internally, but also from the market externally. Still the main goal with the measurement system is to gain ability to under-

stand and collect information about the current stage of the process and its development towards more efficient matters. (Beamon 2010.)

The efficiency, in procurement organizations, reflects many times to the supplier's performance. To be able to constantly monitor it, companies should build up a framework for measurement and define criteria in which terms they want to have information. The quality of goods and services, delivery times or deadlines, after-sales service, documentation accuracy, responsive action and collaboration are all well-known criteria for measurement system towards suppliers. Companies use the criteria for monitoring efficiency to develop and maintain the sourcing processes as a whole. (Abolbashari, Chang, Hussain, & Saberi 2018, Mena et al. 2018: 35.)

Financial performance monitoring reflects in cost-centric approach. The follow-up is concentrating to measure cost savings towards defined budgets and earlier purchases. These savings reach from individual parts to the bigger out-sourced entities. The outcomes encourages purchases to improve their own performance, but also drive the organization to find new ways and approaches to raise competitiveness. (Abolbashari et al. 2018, Mena et al. 2018: 38.)

The performance monitoring is not only for developing procurement units, it is also used to implement and demonstrate strategic chances done. It can be used to reduce change resistance by providing accurate information for all stakeholders to understand process. This is a common way to raise knowledge about where to focus in strategic terms. (Pohl & Förstl 2011.)

Performance measuring is reflecting to a success-criteria defined by how the success or failure of the out-come is measured. Traditionally the common success-criteria has been seen as a combination of three variables time, quality and cost. These variables are focusing on serving customer-centric viewpoint by measuring short-term aspects and focusing in some specific situation. However, from strategical point of view, procurement function can be seen as an overarching force between the different parties of the supply chain and therefore companies should build up a frame work to measure overall perfor-

mance, not only individual task which serve some specific purpose. (Abolbashari, Chang, Hussain & Saberi 2018.) Measures considering internal processes, flexibility, sustainability and innovation haven't adopted that widely, which still have noted to affect to the overall performance highly. Caniato, Luzzini and Ronchi (2012) state that it seems that general trend in the future, for organizations to consider these variables is uprising which is going to develop measurement frameworks to the new directions. They provide a framework called "KPI tree" (figure 14), which illustrates the basic idea of building up the measurement system. The ability to measure internally purchasing and operating processes and externally supplier's performance in terms of efficient and effective out-comes, is a core for building up successful measurement system.

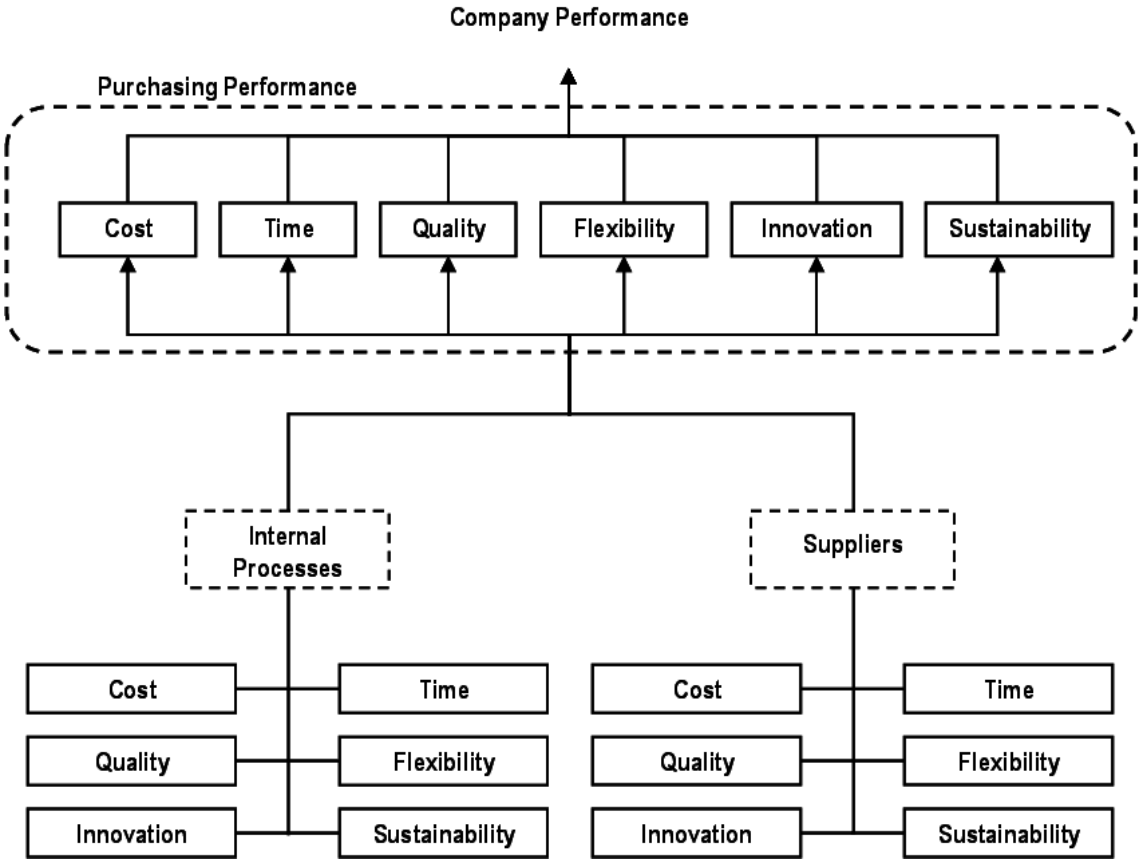

Figure 14. KPI tree (Caniato et al. 2012).

There is multiple amount of metrics defined in SCM literature to evaluate procurement performance. Study by Elrod, Murray and Bande (2013) illustrates the most highlighted measures in four main groups, financial, quality, time and flexibility, which affect highly to the capability and performance of the enterprise in terms of SCM. Collection of the proposed metrics are seen in table 2. (Elrod et al. 2013.)

Table 2. Key metrics for performance evaluation (Elrod et al. 2013).

Financial metrics		Quality metrics		Time metrics		Flexibility metrics	
Measure Name	Definition	Measure Name	Definition	Measure Name	Definition	Measure Name	Definition
Financial Costs	Cost to track and minimize expenses	Perceived Value of the Product	Determining the consumer satisfaction level	Order Lead Time	Tracking preparation time for customer orders	Range of Products and Services	Useful to evaluate the company's ability to introduce new products in the market
Distribution Costs	Cost related to final product cost	Buyer-Supplier Relationship	Determining the relationship between the supplier and the company	Customer Order Path	The path traversed of the raw materials to finished product	Capacity Utilization	Evaluation of ability to increase production
Information Processing Costs	Costs associated with maintaining records	Shipment Errors	Determining the location and severity of shipping errors	Effectiveness of Scheduling the Techniques	Measures how effectively resources are used	Volume Flexibility Plant Volume Flexibility	Ability to change the level of production volumes
Inventory Costs	Costs related to inventory on hand	Accuracy	Determining the accuracy of production	Product Develop-	How long it takes in the product development cycle to	Plant Volume Flexi-	Capability to change the output volume of the plant

				ment Cycle Time	meet the needs and wants of consumers	bility	
Total Costs	Costs incurred to produce; includes both fixed and variable costs	Number of Faulty Notes Invoiced	Identifying wrong invoices sent to customers	Product Lateness Time	The difference between delivery date and due date is product lateness time	Delivery Flexibility	Ability to deliver the product to the customer
Manufacturing Costs	Costs related to manufacturing the product (machinery, labor, etc.)			Average Lateness Time	This time gives the average time for late deliveries	Labor Flexibility	The ability of employees to change tasks
Inventory Obsolesce	Costs related to outdated inventory			Average Earliness Time	This time defines the average time for the early deliveries	Modification Flexibility	Company's capability to modify product lines
Finished Goods Inventory (FGI Costs)	Costs of the finished goods inventory at all locations			Manufacturing Lead Time	The time from the start of the production of an order to delivery of the finished goods	Expan pansion Flexibility	Ability of a firm to expand rapidly
Return On Investment (ROI)	Profit from an investment						
Warehouse Costs	Costs related to maintaining warehouses to store FGI and WIP						
Incentive Costs	Costs associated with incentives given on new products to improve						

	sales						
Intangible Costs	Costs that are non- quantifiable such as customer goodwill, employee morale, and other costs						

2.5.1 Balanced scorecard

As described the financial and non-financial, also known qualitative, measures should be getting together to achieve aimed performance. Kaplan and Norton (1992) introduced widely recognized management tool, known balanced scorecard (BSC), to collect key performance indicators about key aspects of the organization in balanced form, to measure and achieve targeted performance. These perspectives are customer satisfaction, internal processes, financial performance, learning and growth. Bento et al. (2013) study provide knowledge, that the cause-effect relationship between four areas of BSC have significant impact of each other's and that these perspectives should be balanced to achieve performance. They conclude that the correlation between financial and non-financial measures have direct and in-direct effects and therefore, it is clear that this correlation affects to the overall performance of the company. The main goal with BSC is to get away from short-term aspect to achieve the long-term success by combining goals in defined areas.

Mena et al. (2018: 42-43) states that with the BSC procurement function can link the strategic goals with the performance KPI's to reach targets. They state that BSC helps to translate strategic targets to be able to conduct operative actions. By balancing the perspectives, the conventional idea to only measure financial aspects gets more wider framework to balance other dimensions of performance to reach ultimate goal. The metrics are defined in order to reach defined goals, without over-crossing each other, to

reach common target. The metrics and goals vary depending on characteristics of adapted situation, and therefore needs high competence from management to define metrics and goals to achieve benefits in terms of performance. Fiqure 15, illustrates the BSC model and examples of metrics and goals. (Mena et al. 2018: 42-43.)

Financial How do we look to stakeholders		Customer How do customer see us	
Goals	Measures	Goals	Measures
Efficient procurement	-Procurement costs -Processing costs	Internal customer satisfaction	-Annual satisfaction survey
Improved financial contribution	-Cost savings % -Cost avoidance %	Improve time for request to PO	-Average cycle time
Internal processes What must we excel at		**Learning and growth Improve, create value and innovate**	
Goals	Measures	Goals	Measures
Improve supplier deliveries Improve compliance Agile acquisitions Strengthen partnership	-On time deliveries (Full) -Quality -Internal audit compliance -Cycle time -Partnership survey -No. of active partnership	development of procurement professionals Employee satisfaction Knowledge management	- % certification - Trainings spent per. Person - Surveys - Documentation of lessons learned

Figure 15. Balanced Score Card (Kaplan & Norton 1992; Mena et al. 2018: 42-43).

2.5.2 Spend analysis

The best-in-class organizations investigate, classify and analyze the spend data from multiple-sources to make spend more visible, gain knowledge to make decisions and identify cost-saving possibilities, but also to leverage information about predicative measures as spend compliance and supply risk. Comprehensive spend analysis should provide accurate information about spending in each category in terms of how much, with whom and by which part of the organization. (Limberakis 2012.)

By comprehensive spend-analysis the SCM organization can visualize the actions made, but also to help budgeting, forecasting and identify improvement possibilities. With proper investigation of spend-data, the total costs are more accurate to be analyzed for further use of strategic purposes. There is no correct way to do it, instead of that the data can be analyzed with multiple ways for current investigated subject. (Mena et al. 2018: 47-48, 194-195.)

2.5.3 Reporting performance

Once the performance metrics are defined aligned with the strategy and processes, it is necessary to report the information gathered to the stakeholders and suppliers. The reporting guidelines with different metrics varies due of the nature of measured indicator. The economical metrics follow the company's financial reporting structure, which often represent half of a year or yearly timeline. Caniato et al. (2012) state that metrics related to the supplier performance should be evaluated in monthly bases, if possible. The metrics which need ad hoc analysis can be done in longer time-line, depending of evolving situation. However, there is no correct frequency for various KPI's, it is more about enterprise needs which determinate the frequency for specific meters. (Caniato et al. 2012.)

One core form of reporting refers to the performance dashboards. These are way to illustrate the core metrics in "one page or screen" by visualizing the information in a simple form as tables and charts. The progress is showed in colors, usually by traffic

lights to be able to quickly see where we are. These dashboards do not include accurate statistical information, more to, they are used to deliver sight for current situation of few core targets. (Yigibasioglu & Velcu 2011.) The reporting frequency by dashboards can be made in daily, weekly, quarterly or yearly bases, depending of phenomena measured and capability of the system.

3 RESEARCH METHODS AND DATA

This thesis-research is made to study supply chain management best practices in project environment. The purpose of the study was to collect as wide and clear picture as possible by benchmarking best in class organizations, how to achieve performance via supply chain management actions. However, the aim is to investigate practices for project organization and the gathered data should include information about traditional industries to be able to analyze possible differences in processes.

3.1 Methodology

This thesis is a qualitative research. Author sees that qualitative approach is able to truly compare concepts, thoughts and experiences of high-class organizations in field of SCM. However, the purpose is to find common best practices, therefore author decided that by benchmarking, the comparisons can be made most accurately. Its proved that interviews are the best way to gather data for practical research questions, and for that reason theme interviews were conducted.

3.2 Research strategy

To understand methods used, its necessary to describe the strategy approach for the study. The aim is to define best practices of SCM function in defined sub-areas by benchmarking, how other organizations act in these terms. Therefore, it is clear that literature provide necessary framework to understand the concepts, but the analysis is based on the qualitative interviews, which provide the conclusion of the research questions. The target for the data structure was determinate in cooperation with assignment company supervisor and university professor, which is described later on in this chapter. The qualitative benchmarking analysis was chosen to be able to compare different organizations and their actions trustfully.

Interviews were conducted as theme interviews. This method is widely used, when the collected information is open form in pre-defined areas. Theme interview method is based on the fundamentals of open-interview, but have structured nature considering the theme-areas of the area studied. With this method, author gives space for interpretation for interviewee, but still discusses the pre-assigned themes with all participators. The method underlines the interviewees' professionality and therefore, should build up a wide base for strictly structured area. (Hirsijärvi & Hurme 2001: 47-48.)

The areas should be formed just as a topic, not pre-defined straight questions, which ensures that the discussion stays open. The structure do not need to follow always the same structure, it is enough that all topics are handled. The interviewees should be chosen carefully, to be sure that they have necessary knowledge of studied area, so that research question can be answered. Theme interviews have noted to be excellent way to collect information for benchmarking analysis in certain area. (Saaranen-Kauppinen & Puusniekka 2006.)

Benchmarking is a tool for researcher to analyze and identify practices from pre-defined group of organizations to be adopted on assignment organization or environment. Generally benchmarking has been seen as a great way to collect best practices. It differs from data-sharing by concentrating to the actually processes instead of just end results, which therefore helps to improve, not just to compare.

3.3 Data structure and interviews

The figure 16 illustrates the data structure, which was gathered via theme-interviews. In the planning stage, based on the literature, author made a decision to divide SCM organization in three steps. First step describes the corporate level management. The second one was middle level management which refers to the specific unit SCM manager or category manager. Third was sourcing and supply level, which refers the operative part of the SCM.

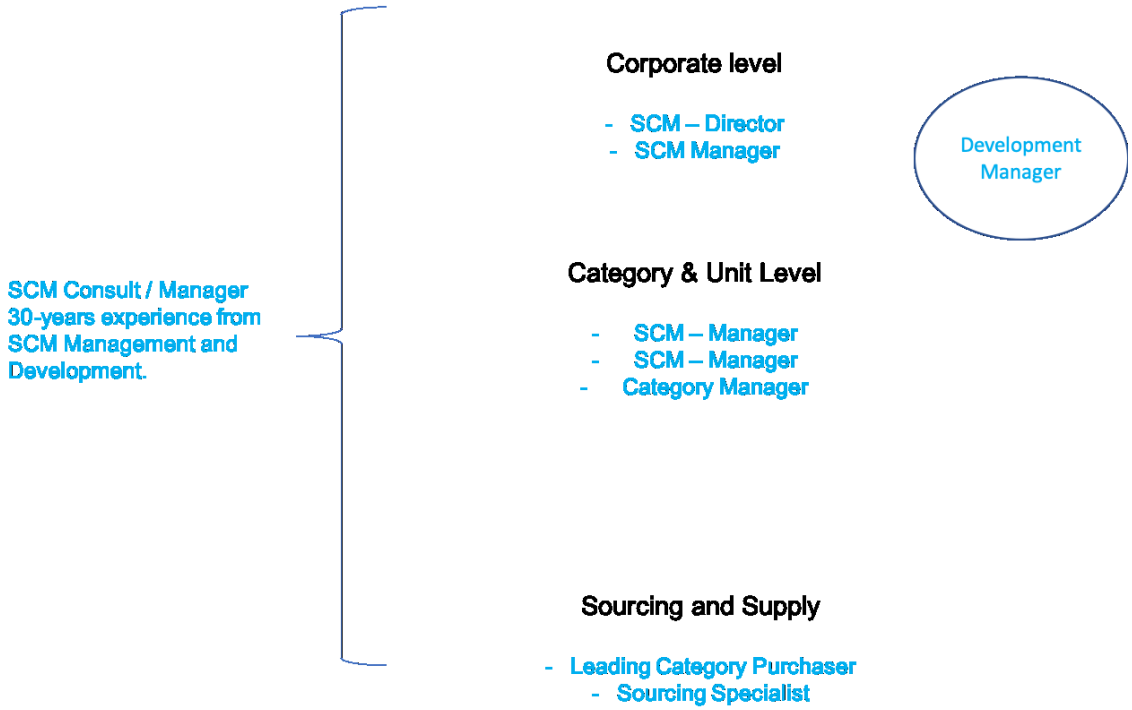

Figure 16. Structure of the gathered data.

The interviewed organization are mainly customers of the ordering-company of this research. As illustrated in the figure 16, the roles typed with blue, describes the interviewees and their roles in the organizations. The idea behind the data structure was to build up as wide picture as possible of how organization perform in terms of SCM. Therefore, interviewees where divided in these described three categories so that two were from top management, three from middle level management and two from sourcing and supply level. After this, author decided to interview one development manager who deliver information about future demands of SCM organizations. Finally, the SCM consultant gathered up the whole topic from the viewpoint of, how the things should be done.

The interviews were conducted between March to May (2019) by Phone, via Skype and by face to face meetings. Seven out of eight interviewees were located in Finland, but

they were mainly doing business abroad. Still the location of the participants was different which was also highlighting the differences between the geographical location aspects. Author choose to interview one company from Sweden to understand the possible differences in Nordic countries, where most of the case-companies business locates. The target was to do as much as possible by face to face meetings, but due to tight schedules of interviewed managers, that was not possible in every case. Most of the interviews were conducted in Finnish language, to ensure that there is no misunderstanding possibility. However, many managers use English terms to describe certain actions, which was actually very good thing to help to form analysis phase. Author agreed with the interviewed companies, that no names are published and therefore table 3 illustrates allowed basic information about interviews.

Table 3. Interviewees.

Interviewees	**1**	**2**	**3**	**4**	**5**	**6**	7	8	**9**
Date (2019)	20.3.	9.4.	18.4.	23.4.	26.4.	2.5.	6.5.	9.5.	20.6
Time (h:min)	1:06	0:57	1:05	1:28	1:14	1:15	0:45	0:58	0:52
Type	In person	Skype	Skype	In person	Phone	In person	In person	Skype	In person
Language	Fin	Fin	Fin	Eng	Fin	Fin	Fin	Fin	Fin

Work tittle	SCM man-ager	Cate-gory pur-chaser	Devel-op-ment man-ager	Pur-chas-ing man-ager	Supply Chain Man-ager	SCM Man-ager	Sourc-ing Manag-er	Sourc-ing Director	Head of strategic sourcing
Expe-rience (years)	10	20	4	20	30	8	20	10	15
Loca-tion	Vaasa	Tam-pere	Hel-sinki	Stock-holm	Hel-sinki	Vaasa	Seinäjo ki	Helsinki	Helsinki

The table 4, illustrates a difference between interviewed companies. The purpose was to interview half of the companies from the field of construction industry and half from other field of the business. Two of the interviewed companies was pure construction companies, and three others have major construction works included to their projects. All these three companies were acting in energy business. Rest of the interviewed companies were more like a traditional manufacturing companies. Most of the interviewed companies are huge multinational organizations which are acting in many different fields of business. Six of eight participants were acting globally and the rest two at least in Nordic countries.

Table 4. Differences between interviewed organizations.

Interviewees	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Project based business		x	x	x	x		x		
Construction company			x	x					

Construction is a huge part of the business		x	x	x	x		x		
Traditional manufacturing environment	x							x	
Interviewee in top management (1) Middle Management (2) Sourcing (3)	2	2	3	2	2	1	3	1	2
Acting in global bases	x	x	x		x		x	x	x
Customer of the case company		x	x	x					

The gathered data and its structure can be described to be very decent and wide picture of the SCM actions in project based and also traditional manufacturing environment. The possibility to analyze the general best practices is in high level and therefore concluding the answers to the research questions can be done surely. All participants have a long experience in field of SCM and its development through the decades of industrialized world.

4 ANALYZING EMPIRICAL FINDINGS

The construction industry can still be seen as a quite traditional and relatively conservative. It means that there are many actions which are conducted in a way as they have been done for decades. Traditionally, purchasing is seen to be a part of the production and under its management in conventional business. It means that it is been seen more like a post-office than individual function which can gain the competitive advantage for a company. The role has been seen more to just ensure the material flow, rather than strategically deliver value for the process.

In a modern world, the competition in every field of business has increased constantly. That's been driving companies to re-organize functions, especially procurement organization. The role of buying has been noted highly. Interviewee (5 2019) stated that in conventional manufacturing, the purchased products and services spend 60-70 % of revenue gained. Companies have noted, that performing better than competitors in SCM actions gain the most valuable competitive advantage for company to achieve market share wanted.

4.1 Results from the empirical data

This chapter discuss, by analyzing interviews introduced in chapter 3, the findings for best practices in defined sub-areas. The purpose is to find common practices but still identify possible differences between organizations in different business environment. Here, author use SCM to describe the procurement function, which involves the whole supply chain from raw material to the end customer.

4.1.1 Supply Chain Management organization

Table 5 illustrates the main findings related to organizing SCM function. The results prove that all companies use same fundaments for organizing SCM function. The one of

the most crucial conclusions from interviews indicates that the management of the function should be centralized as near as possible of top management and the decision making of the company, but also to be individual for ensuring effective decision making. Therefore, the SCM manager should have a place in executive management board to be able to highlight the importance of SCM actions. Interviewee (5 2019) states that, there is many evidences from the past, where decision making is too far from the SCM actions, which leads to situation where the decision making is invariably too inefficient. The centralized SCM manage the organization efficiently and effectively by providing general way of running the SCM process. It is proved, that resemblance of actions conducted is crucial for efficient procurement, but also reducing the risk-level from the whole chain.

Table 5. Best practices for organizing SCM function.

Organization level	**Best Practices (No. of respondents agreed)**	**Why**
Top management level	- Centralized SCM function (9/9) - SCM Manager, member of an executive management board (7/9) - General instructions and code of conducts (8/9) - Category management (9/9)	- Ability to manage procurement actions near by the general management of the company. - Capability to influence to the general decision making. - Ensure the "way of work" through organization. - Manage categories centrally and strategically.
Business unit / Category level	- Centralized function and decentralized actions (9/9) - Sourcing and Supply under category (8/9) - Categories and business units lean on top management (9/9)	- "Know-how" centralized. - Category "match" person in business unit level - High cooperation between units and categories, to be able to divide volumes reasonable.
Sourcing and Supply level	- Different persons for sourcing and supply (8/9) - Decentralized supply near by the action. (8/9) - Centralized sourcing (6/9) - Specific buyer for projects (3/9)	- To ensure time for strategic SCM actions. - Actions conducted near by the end-use, ensure the visibility of added value - Project responsibility to reach overall cost-reductions via SCM actions.

This defined centralized SCM management is responsible of function as a whole and provides general instructions, defines targets, manages categories and concludes the spend management. The centralization as a way of organizing is an only way, if and when the synergies exists in the process. The management of synergies is seen to be an important driver for cost savings and competitive advantage. Construction companies, which have different major material groups in different business segments, can achieve huge savings in projects by centralizing volumes. The interviewee (4 2019) states that e.g. concrete can be a major material by having 80% share of the materials needed in one segment. Comparing the other segments, where the share can be 10%, the relative savings in projects at this segment are invariably major. These are not only affecting to the cost structure in the executing stage, but also gives a major pricing advantage in the tendering phase. In interview (6 2019) was stated that the company has implemented a specific SCM manager-role for improving performance in tendering phase. The manager states that this role has improved their performance in terms of competitive advantage by decreasing the price of the product and increasing profit. Therefore, the measurement of actual savings has begun to be more relevant due to that the tendering price is more comparable than it was earlier.

When going further down in the organization, the scale of decentralization should increase. In conventional manufacturing, the sourcing part of the SCM have been invariably centralized. However, the responsibility areas or categories are well defined, the possibility of overlapping the areas is notable. Overlapping without a centralization in sourcing can lead to bad situations where the same suppliers acts in different categories. There is evidences about situations, where the company act in different categories as a competitor from volumes of the same supplier (Interview 1 2019). Therefore, the best practices for sourcing actions in phase of organizing the function, should be centralized, but still defined the responsibility areas based on category management strategy or equivalent. The decentralization part means that the supply part itself is as near by the action as possible. The decentralization ensures the understanding of volumes better, follow up of deliveries, quality control and the most importantly to understand that where the added value constructs from.

The sourcing and supply are proved to be better to divide so that different persons conduct actions related to these. In interview (6 2019) was said that in smaller organization the same person can handle both roles, but the time used for strategic action in sourcing should be ensuring highly. There is also relational aspect, which can be seen as a benefit when same person conducts both roles, because of the reduced risk in possible disinformation situations. The role of sourcing is the most important part of the SCM because the risk associated is depending highly about these actions. Choosing suppliers, understanding the future demands, being aware of all requirements and so on, have to be in line with each other to achieve efficient and effective chain. The resource allocation depends on the importance of every category and it is been clearly seen that some categories need more competence than others, which is also affecting to the organization design.

The evidences point also that the design of the SCM function should follow the baselines of the organization as a whole. If organization is very decentralized and the different parts of it are acting more like an individual unit, there is no point for driving fully centralized SCM. The continuous improvement in SCM actions gain the maturity, which improves the potentiality of possible choices of designs. Even if we now can conclude that centralization is the most efficient way to achieve cost savings, the capability of rest of the organization still defines the possible scale of (de)centralization. Interviewee (4 2019) stated that the longer organization have been doing business, the stability of the supply chain should constantly increase. In many organizations this can assume to be driving centralization.

However, interviewed organizations have relatively same structure in their SCM organization designs, it is possible to show the existing difference in maturity model (see, figure 17). The model constitutes from SCM maturity in vertical axel and scale of (de)centralization in horizontal one.

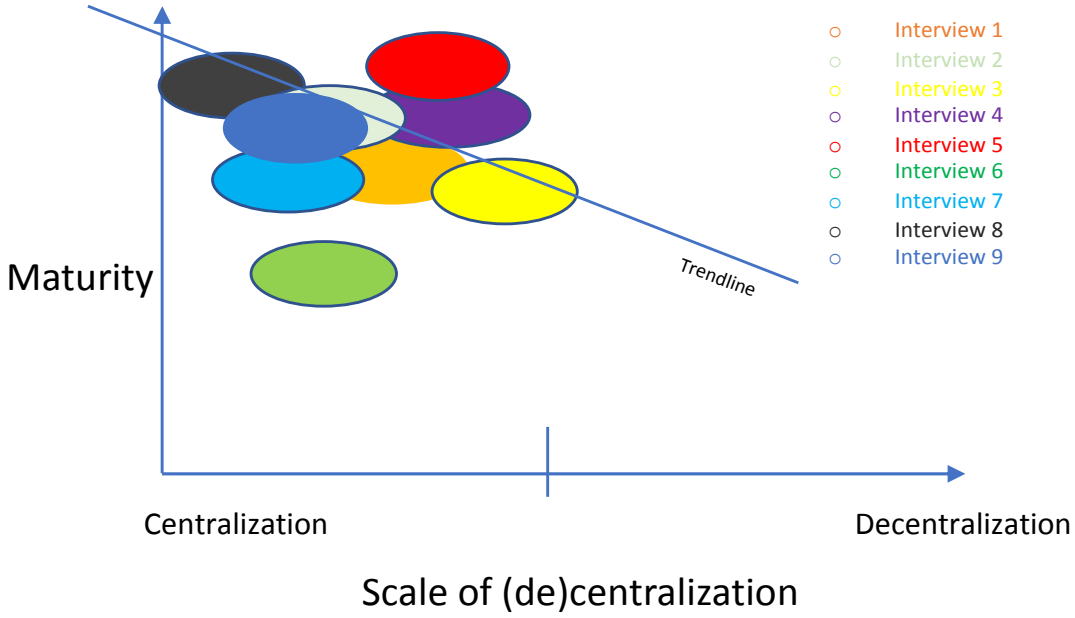

Figure 17. Maturity in Scale of (de)centralization of interviewed companies.

The figure 17 illustrates the differences between the interviewed organizations. The maturity and scale of centralization is concluded from interviews and therefore is a supposition about the situation. The evidences about correlation between SCM maturity and scale of (de)centralization can be described quite obviously. The trendline in figure 17 illustrates the relative decline of maturity towards decentralization. Therefore, the maturity of the SCM organization seem to be higher in centralized organizations and decreasing towards decentralization.

However, from the data we can find two different organization models in use in organization. The most used one seems to be line-organization based design, but also matrix-organizations are used by few interviewed companies. The figure 18 illustrates the basic model based of line-organization design in interviewed companies. This kind of model was noted to be used mostly in traditional manufacturing companies.

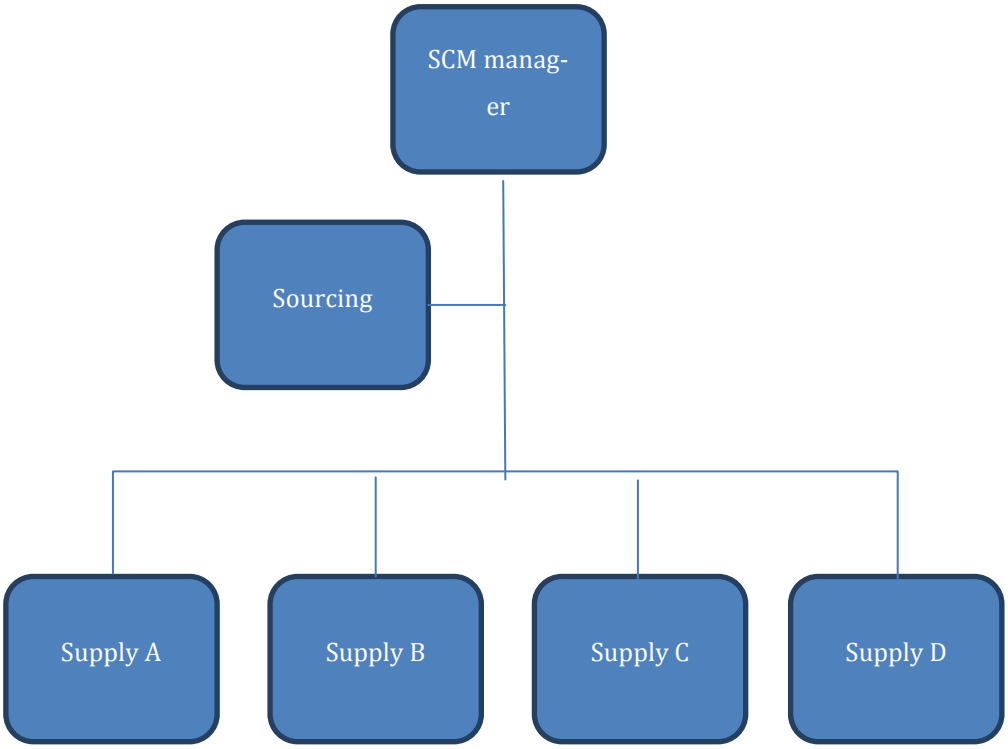

Figure 18. Line organization model

This design refers more to the business units, than the enterprise SCM structure. In the figure different supply/purchasing areas might be defined categories or equivalent and each of them have a counterpart in sourcing team/organization. This approach ensures high coordination of the processes, but also have been seen decreasing cross-functionality between different areas. This model supports the evidenced fact, that sourcing is mostly seen to be centralized and supply on the other hand decentralized.

The other model, matrix-approach, is a bit different, where the cross-functionality is considered highly and seems to be used more in project-based organizations and in multinational enterprises. The challenge generally in matrix-organization is seen to be the definition of interfaces for organization. The data provides information that in SCM organization the interfaces can be defined as supplier interface and stakeholder interface. These can be divided e.g. by categories or functions regarding supplier interface and therefore, the stakeholder interfaces according the design of the enterprise e.g. by business area, business unit or acting country. This design-model have been seen as an

excellent way to combine the demands of different business areas and therefore, to gain the ability to achieve economics of scales, but also transparency of the processes. The arrows in the figure 19 describes the basic feature of matrix-model, so that the individual persons are responsible to report at least to the two directions, to illustrate the high integration between sourcing and supply. This kind of approach divides sourcing and supply so, that sourcing refers to the supplier interface, when operational supply side therefore represents the stakeholder interface.

These models still vary between specific situations. E.g. Interviewee (9 2019) states that, with some categories for example sourcing can be handled via one person, instead of some categories which might require member in every defined stakeholder area. On the other hand, the line organization structure can be seen generally as a quite stable form, but the roles and structures of the downer part of the organization might vary inside the design.

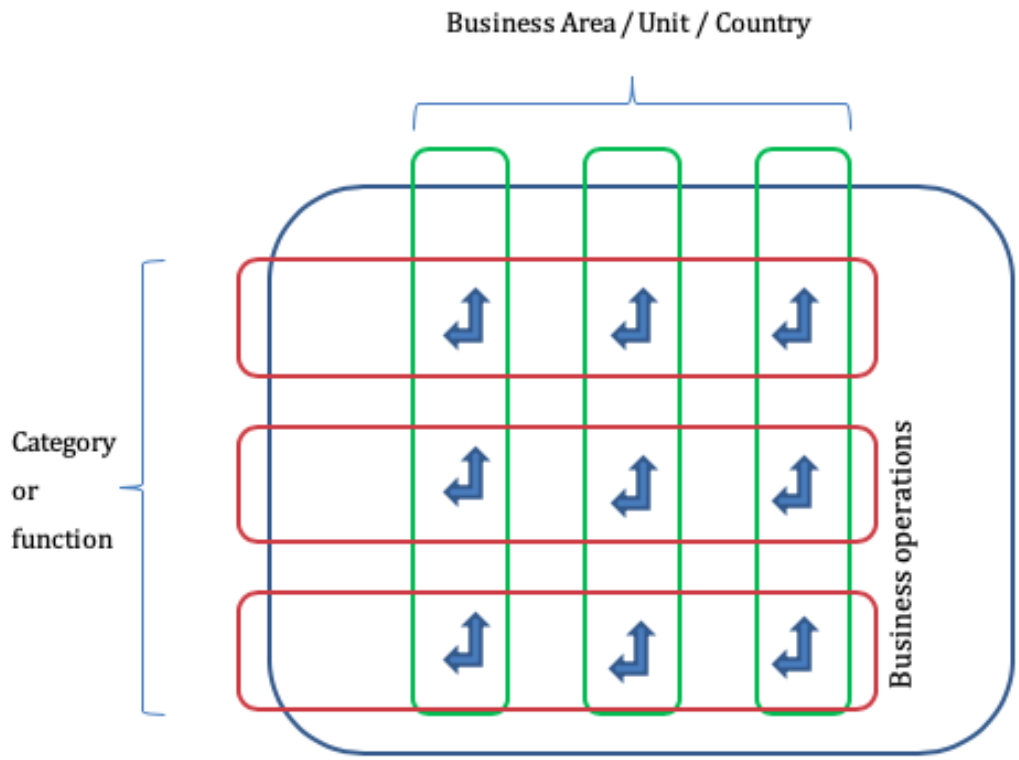

Figure 19. Matrix organization model.

Therefore, concluding the design of the organization, seems to be concentrating balancing the decision-making allocation through supply chain in scale of (de)centralization. The data doesn't deliver accurate information how to allocate the resources, because the efficient decision-making capability have been seen the determinant of success in different environments, which should be balanced by evaluating current state of the organization and its operations. Therefore, it seems that the responsibility interfaces determinates the design of the organization mostly to be able to response to the demands of the whole company, and the scale of (de)centralization varies between organization units and geographical locations, but also within the continuous evolution of the enterprise and market where it acts.

4.1.2 Out-sourcing

The company should focus on their core competences (4 2019). This is a driver for organization design but also refers to the out-sourcing. E.g. in construction industry, where traditionally many parts of the project are out-sourced to be done by other organizations, the supply-organization design can be more centralized than in cases where procurement provides all materials for specific purpose. Out-sourcing is not only affecting to the SCM design, but also to the resource allocation of the whole organization. Interviews evidenced that construction industry traditionally have out-sourced designing, which have affecting to the organizations structure widely by reducing resources.

Table 6. Best practices for out-sourcing.

Best practice	**No. of respondents agree**	**Explanation**
Concentrate to the core competence	9/9	Do the things by yourself, which you feel that you are best option at the market

Out-source only things what you can do also by yourself.	5/9	To be able to ”safely” out-source companies should know how to do out-sourced goods / services.
High effort to analyze direct and indirect cost	6/9	The cost associated should be analyzed properly to be able to really compare benefits between make or buy.

The table 6 illustrates the core best practices related to the out-sourcing. Mentioned in the previous paragraph, all interviewees agreed that the most critical part, when considering out-sourcing, refers to the understanding the capabilities of the own organization. The main driver in all businesses is that what and how you conduct the processes of the business. Companies have to believe that they have some better knowledge and capability than others in the industry and those defines the core competences. The rest of the actions can be out-sourced for someone else to be made, who would do it more efficiently.

In interview (8 2019) was stated that you have to know how to do the out-sourced goods or services by yourself, to really understand the benefits and risks of it. That also give you a more power to manage the out-sourced entities. This knowledge refers also to the cost-analysis. In interview (1 2019) was stated that many times in the past when trend of out-sourcing was started, the decisions were made with very low knowledge of total costs. Especially indirect costs associated are very hard to evaluate, which might lead for cost-fully decisions. Also, the decision-making process has been seen very heavy to perform successfully. The data provide evidences that actually many times the bad out-sourcing decision leads to the insourcing it back, which means double cost associated. The risk management is in center of the decision making to understand what the most efficient and effective way is to proceed. It has been noted, that effectiveness of the SCM can be harmed due to the out-sourcing. The response time is without a doubt, slower in out-sourcing than in internal manners.

4.1.3 Supply Base Management

In this study, supply base management refers to the actions towards suppliers. The interviewees have seen the supplier selection and supplier relationship management as most critical part for efficient and effective sourcing. The actions towards suppliers need to be managed properly to be able to ensure, that all requirements are in line within the company strategic purposes. However, the strategic importance has clearly been noted, but especially in the project organizations, ensuring the operative capability and material flow have raised in to the center. E.g. in construction projects, where the location varies widely, the logistics issues are major influencer in terms of time and costs. In project procurement, where materials are delivered straightly to the site, the outgoing quality from the supplier has seen to be ensured highly. If quality issues are noted not until materials are supplied to the end location, the cost associated are without a doubt huge, which is also highly affecting to the time schedules.

4.1.4 Supplier selection

The table 7 illustrates the core findings related to the supplier selection. The evidences about importance of choosing correct suppliers are clear. All interviewees agree, that the fundamentals of the choosing process should be determined clearly and management should ensure, that all process participants understand it and its purposes. The implementation of the strategy to the whole SCM organization, ensures that workers understand why we are acting how we do, and therefore that is a core contribution for managers to conclude. The matrix as a strategic tool, has been seen a very descriptive way to ensure the understanding of SCM actions in different fields of processes. It has been noted that the tactical viewpoint for procurement areas are more understandable, after receiving information for strategic weight of specific category. Resource allocation for different categories can also be done via Kraljic's matrix, because it is clear that different strategic weight groups, needs different competence.

Table 7. Best practices for supplier selection.

Best practices	No. of respondents agree	Explanation
Kraljics Matrix lead the strategic and tactical work	7/9	This is the most used tool to allocate resources and lead strategic and tactical work. Categories need different approaches to reach best results.
Pictured process, which everybody understands and conduct always as a same way.	9/9	Pictured process ensures that all important things have been considered and that the decisions are comparable.
Avoid situation where situation drives the action.	4/9	All fundaments of the process have to be conducted even in hurry.
Quality, price and delivery related issues should be default values.	9/9	These should always be in order. Purportedly suppliers are professional in their businesses
Flexibility, openness, willingness to co-operate, development orientation, reliability.	9/9	These relationship-based factors have been seen most important parameters for supplier selection criteria.
Total cost approach → Cost over price	7/9	The total cost should be always considered! Never talk about price, costs matter only.
Restricted supplier base at least for direct materials	9/9	Narrow supplier base ensures the manageability of procurement actions. For indirect materials there might be wider base because the core business isn't fully depending of those.
Aware of supplier's situation and processes	7/9	The knowledge of supplier's situation at the market and their processes helps to understand their viewpoint in different situations.
Supplier approval process	9/9	The process ensures that all things, which might cause risks have to be analyzed properly. The approval process includes auditing.
Keep supplier rather than change	9/9	Keeping same suppliers gives more power in terms of learning, cooperating, efficiency and effectiveness.
Suppliers location	3/9	The location of the supplier is very important to consider reaching most efficient total costs.

Figure 20 illustrates the supplier selection process, which is derived from the interviews. As described in theoretical review, supplier selection process can be seen as a multi-criteria decision-making problem, which varies in every specific situation. This

refers to choosing correct criteria, which can be seen as a core phase to achieve successful result. All interviewees stated that traditional criterions are quality, delivery accuracy and price. In modern era, these things have been seen more like a default for every supplier, assuming that suppliers are professional in business what they are doing. More important criteria have been noted to be relationship-based factors like flexibility, openness and reliability. In interview (1 2019) was stated, that nowadays in supplier selection we can speak about feeling towards supplier. It refers also for how supplier is seen in organization, not only by individual buyer or sourcing manager. This factor describes the development of SCM function and its maturity, because the overall result has been seen more important than individual price-reduction. An interviewee (5 2019) stated highly that in SCM actions, should never talk about price, everything is about costs. It is clear that if the price is low, it does not mean straightly that cost is low too. Many times, companies are drawn into the illusion of price-reduction fantasy, which apparently leads to the more cost-fully situations. The core finding is that everybody understands the importance of process and its purposes for best total cost possible.

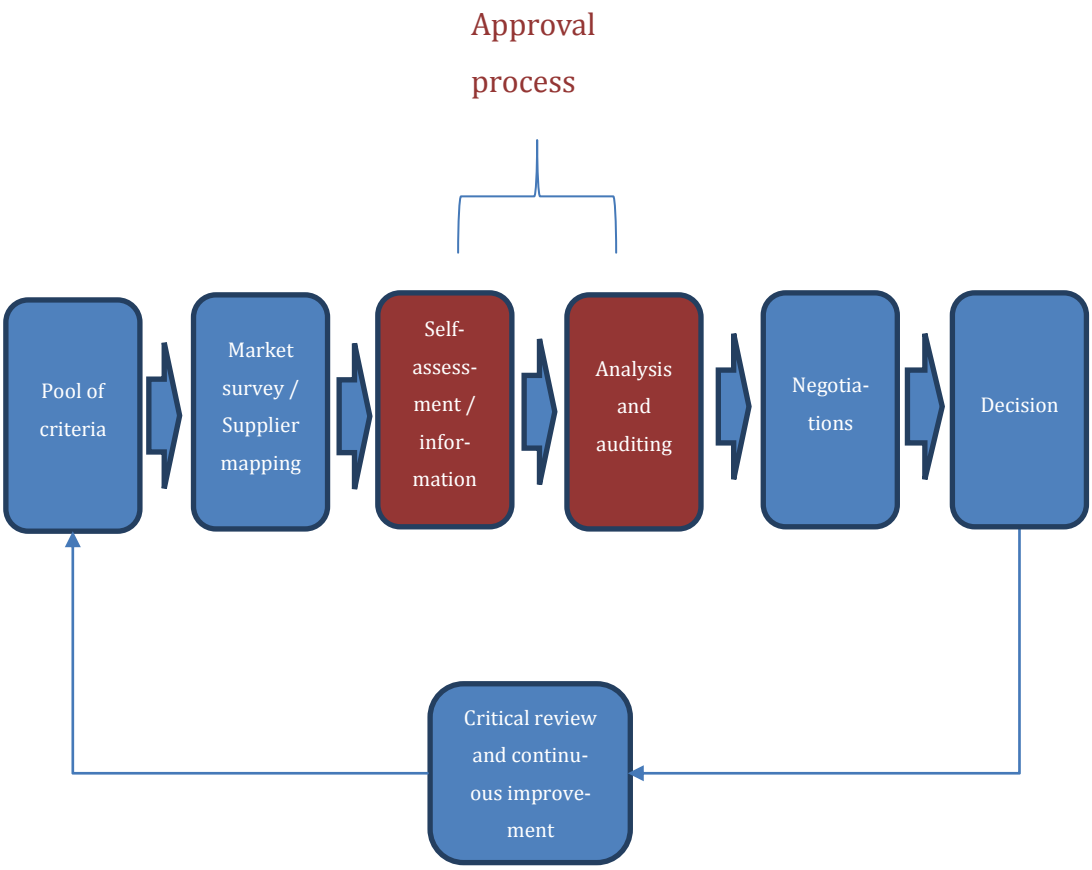

Figure 20. Supplier selection process.

After the criteria has been clearly described, the next phase is to define suppliers which are suitable for specific situation. This phase refers highly to the market knowledge of the individual member of the SCM team. Many interviewees stated, that the market knowledge in every field of procurement ensures that we can make decisions based on facts, not in assumptions. In some categories it is possible to do this phase by bidding, but it is proved in interviews not to be the best option at all. The bidding is discussed more in detail in next chapter. The supplier mapping is important phase for narrowing the scope for approval process, which has been seen as a quite heavy process in many companies.

Approval refers not only that supplier is capable to provide materials or services, but also that its processes and actions are acceptable and in-line with companies' values. Many interviewees stated that they use self-assessment protocol for suppliers to provide

information e.g. their process, finance and sustainability related actions. This gathered information is analyzed properly to be able to assess risks and possible benefits. It is evidenced clearly that this should be conducted as a process to ensure that the results are comparable to the previous good or bad decisions. There is no point for doing same mistakes constantly. In interview (4 2019) was stated that every time it is necessary to see persons face to face in selection process. Still we can push this statement a bit forward by thinking, that depending of category and risk-level associated there might be need for a fully auditing for supplier. At least in strategic categories, the auditing has been seen important to be done in supplier selection phase as a supportive action for analyzes. Five interviewees state that they use mathematical models, comparable to ones defined on literature, to analyze data gathered. The purpose is to understand better the risk associated to the selection and somehow to describe the weights in terms of money. E.g. an interviewee (2 2019) stated that before they implement these models, the risk evaluation was more referring to the feeling of the analyzer. Afterwards, by analyzing with models, the selection has been seen more descriptive and easier to prove to be best possible for managers to see.

The analyzes should narrow the scope for the best suppliers for specific situation, which leads to the negotiation phase. In this phase the competence of sourcing members is crucial for achieving total cost performance by negotiating all important terms. The interviewees clearly stated that the win-win situation is only approach to really reach all benefits possible. The negotiations lead to the decisions making and critical review of the process. In every process, one of the most important parts is to critically review it and constantly develop the phases to be able to aim actions to improve the outcome.

The importance of supplier selection is evidenced clearly by statements in every interview that it is better to keep suppliers rather than change. As described above, the selection process is quite heavy and needs resources to conduct properly. Its evidenced that the benefits from long relationships pay back much better than constantly changing by running for price-reduction.

In project business, there might rise up very special demands during the projects (6 2019). In these cases, the procurement processes have seen to be too heavy to fast react these demands. Therefore, the managers should think mitigation actions, that how we act if some unexpected happens. Mitigation actions, refers also to the situations where there is supply risk in some specific category for example due of single sourcing situation. Two interviewees still state that via proper relationship management the single sourcing situations may pay-back better in some situations comparing to the multiple sources.

4.1.5 Supplier relationship management

Supplier relationship management and its influence on the performance of SCM organization is highlighted in the interviews. The interviewee (8 2019) stated that more and more the criticality of sourcing activities is increasing, and supplier relationship management is in center of that work. To be able to really achieve competitive advantage via SCM actions, the supplier's contribution to that is inevitable. The evidences about keeping same suppliers rather than change, is a core founding which reflects to the importance of relationships and how companies see the supply base management as a whole. In the table 8 is illustrated the core findings related to the supplier relationship management. The findings support very highly the evidences introduced in supplier selection part.

Table 8. Best practices for supplier relationship management.

Best practices	**No. of respondents agree**	**Explanation**
Aim the relationship work to the correct categories	9/9	Kraljics Matrix help to aim relationship work. Concentrate to the relations which provide value for your purposes.
Correct people in a table from both sides	3/9	The relationships are all about a cooperation between individuals. Ensure that there are no any barriers between individuals, which might affect to the cooperation.

Atmosphere index – How supplier is seen in organization	1/9	How the different parts of the organization feel about suppliers' actions towards them.
Supplier early involvement	6/9	Involve and share information in early stage of project to make feeling of importance. Early involvement ensures that supplier capacity is free when needed.
Single point of contact (Key account)	6/9	One-person responsibility of the relationship → no disinformation shared
Supplier involvement to the development work	5/9	Supplier is a professional in its business, use that for seeking better ways to conduct projects
Supplier visits	9/9	Face to Face meetings have been seen crucial for relationship work.
Shared knowledge	9/9	Sharing information constantly ensures the feeling of importance and to be a part of the wholeness. Help supplier to perform better via shared know-how.
Auditing every 1-3 year	9/9	Depending on category, but not necessary to do too often. Depending about risk-level.

As discussed earlier, the matrix is a widely used tool for aiming the focus on correct directions. It is clear that in different categories the relationship works differs very highly, but the basic fundaments are still there. It is noted that, managers have to understand the nature of relationship, which means that there are always individuals acting towards each other's. The interviewees noted that it is important to be aware that the correct people are in the table, so that there would not be any barriers between participants. The interviewee (1 2019) stated also that it is important that all participants of the process who are somehow connected to the supplier or its products or services should feel the relationship somehow important. It can be defined as a feeling-index, which describes the positivity of the company towards the supplier. The difference between categories are in terms of importance and risk associated to the supplied good or service. Some strategic categories might need a strong, deep, cooperative relationship with supplier which gives capabilities to constantly find new solutions and develop existing ways of works towards efficient and effective relation.

Supplier early involvement have been seen very good way to ensure the suppliers attitude toward upcoming deliveries. E.g. the possibility that they can arrange space to the production or be able to save on material costs when being informed early on about future demands. In project-based business, there is evidences about new projecting models, which involves supplier already in the tendering phase highly to be a part of the contract. In interview (6 2019) was stated that they have been tested this kind of contracting-models in practice and the results have been promising. However, the supplier's early involvement can still be just a communication about upcoming projects or equivalent to just inform the suppliers about current situation. All these communication actions build the relational aspects and grow trust and reliability.

The purpose of the relationship work is to ensure as fluent and easy actions as possible. The effectiveness and efficiency of the supply chain depends of mature actions with suppliers. However, there might be several procurement organization members who act with the supplier in terms of basic orders and so on, the evidences from the interviews prove that, at least for strategic suppliers, there should be named person who owns the relationship. In the sales organizations, the account manager role has been noted for a long time, but now the same concept is recognized to be an excellent to use in SCM organizations. This person ensures that there is no any disinformation shared, but also is responsible about contracts, negotiations and about sharing measured information for the supplier. The purpose of sharing measured information is to provide accurate picture of the supplier's actions towards company. This should be used to develop relationship, but also to help supplier to improve their processes towards more efficient manners. However, interviewees state that they have specific roles for managing key suppliers, the interviewee (9 2019) states that, they have defined responsibility for e.g. some sourcing managers to have responsibility about specific supplier relationships. They are doing this next to their daily activities, but with this they ensure the common message delivered to the supplier by single point of contact.

As discussed in supplier selections phase, the recognized importance about supplier's capability to involve to the development work is reflecting to the relationship so that it can be used to gain competitive advantage. The development work does not need to

consider always the most technical manners, e.g. interviewee (8 2019) stated that they have used suppliers to develop new packaging methods, to improve efficiency and also sustainability. Interviewee states also, that with co-development, there is possibility to find solutions. The basic characteristics of any organization includes the assumption of our way of working, which can blind it for obvious development capabilities and new ways of business. Therefore, the right use of supplier via relationship work can be seen a major influence for organization stability but also driver for competitive advantage. The development work requires sharing the existing knowledge. This knowledge can and should be used both sides. In interview (8 2019) was stated that they use their knowledge and professionality constantly to help suppliers to develop their processes, which therefore pay-back by increased productivity. Information sharing ensures the ongoing cooperation with suppliers.

All interviewees agreed, that auditing is a good way to evaluate the supplier's actions during the partnership. Results prove that companies use a bit different method to conduct audits. Some companies seem to concentrate it a bit more than others, so that in larger companies may have a specific person or even team for these manners. Also, there is bit different viewpoints for who should be involved for auditing. All interviewees agree that the group should include sourcing and quality members, but rest of the team can differ. One interesting founding described in interview (1 2019) that, it is not best option to involve members who acts with the supplier daily basis. The existing relationship can turn the focus on to the wrong aspects. On the other hand, interviewee (4 2019) stated that if company have the single point of contact person, he has to be a part of the auditing. In some cases, it is been noted, that safety-manager or equivalent to assess the safety and sustainability related issues. Also, few managers see, that one person who understand the supplier's business and its processes, e.g. production related issues. The group should evaluate the performance and other valuable aspects for efficient and effective relationship. The interviewees clearly state that it is not necessary to do auditing too often, because when doing it properly it requires high effort from both sides. The suitable time between the auditing varies from 1-year to 3-years, depending of risk associated to the specific supplier.

It is noted that for most important supplier, the contact and visits with the top management of ordering company have gained the feeling of importance. Also, it is noted to be a good way to understand on going SCM processes. The relationship management is, without a doubt, important part of the supply chain and seems to be in a center of interviewees image about efficient and effective supply chain management.

4.1.6 Tendering

Tendering is a traditional way for comparing suppliers, to choose between suitable options. Many interviewees state that it is not the best tactic to do sourcing. Still it is seen to be an efficient in categories where the products are relatively simple, volumes are high, and there is high competition on the market. The reason for simplicity is that, the interviewees has seen the comparability to be very important. If the tendered product or service is complex, the content might vary which might lead to bad decisions. Because the tendering refers many times for choosing cheapest price, the risk is that the result might actually make the existing situation worse. All interviewees agree that the SCM refers for total cost excellence and therefore nature of tendering is a bit against that assumption. Table 9 illustrates the best practices for competitive bidding.

Table 9. Best Practices for competitive bidding.

Best Practices	**No. Respondents agree**	**Explanation**
- Bidding process → Ensure the comparability	6/9	- Process ensures that the bidded goods or services are well defined to be able to really see which one is the best option. Not "running" for the cheapest unit-price
- Usable in "bulk" products	4/9	- Simple products, many options

The tendering process (see, figure 21), which might be a part of the supplier selection, can be described as similar process. The interviews evidenced, that the defining charac-

teristics of the products or services tendered, is a crucial part of the process. The definition should be as complete and proper as possible, that there would not be need to clarify it for every participant of the tender. The proper definition ensures, that at the end we are able to really compare the results and choose the best option for each specific situation. From performance point of view, all unnecessary elaborations in characteristics decrease the effectiveness of the process.

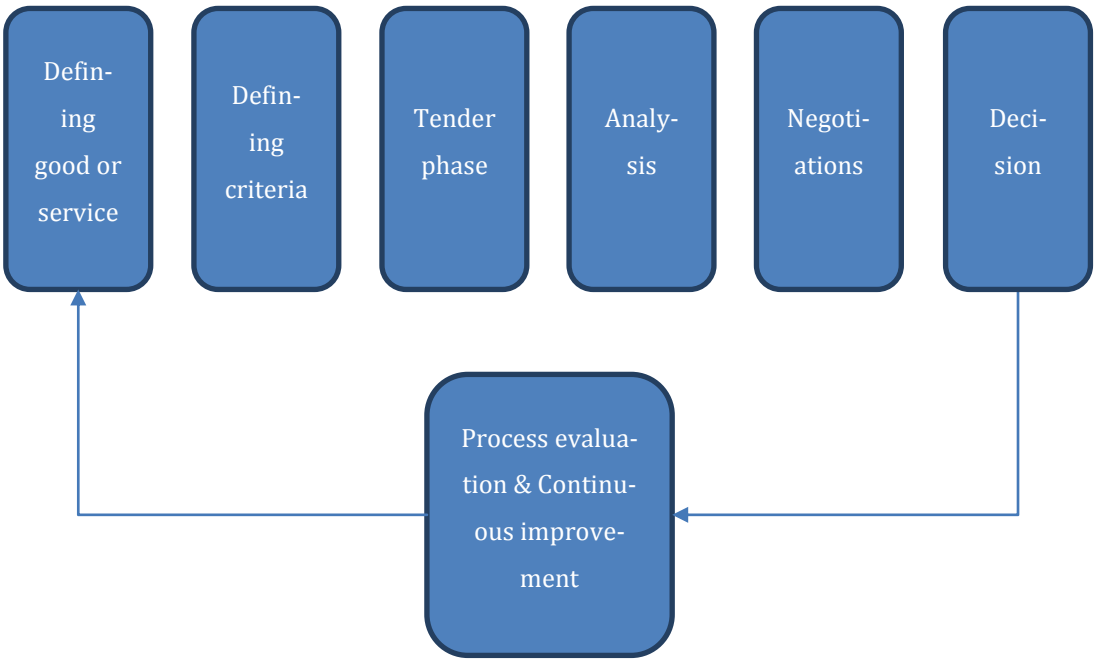

Figure 21. Competitive bidding process.

In the next phase, performing company defines the important criteria for analyzing the best options. The criteria is referring in the same evidences explained in the supplier selection chapter. The purpose of the analysis is that, analyzer evaluate the tenders more widely than only by according price. After analysis the negotiations lead to the decision. The process should, again, be evaluated and continuously find ways for improving the out-come.

The interviewee (1 2019) state that the tendering process is quite heavy and hard to really conduct properly. Therefore, it is seen to be better option when considering about developing some bigger entities, better than a tool for basic sourcing work. Why it has been seen as a bad way of sourcing is due of the nature to drive suppliers to the very tight spot, which increases the risks. This refers more to the unit-cost approach, than total-costs, which have already proved to be much better option to achieve total performance.

4.1.7 Contracting

By contracting, organizations ensure that actions are made according agreed terms. Interviewees agree that companies should have general contract bases for many reasons. First of all, the general basis save time, but more importantly it ensures that all terms which are important to the company are taken consideration and agreed. E.g. legal terms, which might be challenging for individuals have been seen as a benefit of general bases. These also ensure the comparability, which helps to note inefficiencies in contracts and help to improve terms. It has been noted in interviews that many times individuals spend lot of time agreeing terms via email etc. which afterwards doesn't show anywhere. E.g. situations where different person start the job, but does not deliver information to the executive person, who might agree terms again. Interviewee (6 2019) state that they have been reducing this risk by having an e-tool for gathering information related to the contracting. This tool gathers e-mails associated in specific topic and save them to database, to be watched for all allowed individuals. These has been seen as a very efficient way for ensuring the information flow, but also to construct the data which can be used as a reference in the future demands. Table 10 illustrates the core findings related to the contracting.

Table 10. Best practices for contracting.

Best Practices	**No. Respondents agree**	**Explanation**

- General contract basis	6/9	- Ensure that all general terms (legal, company specific terms etc.) have been noted in the contract
- Fixed price contracts → Risk reduction	5/9	- The price / costs do not fluctuate, with the market.
- General terms and pricing according circumstances	3/9	- Pricing depends highly about good or service. Always proper analysis before negotiations. General terms have to involve to the all contracts.
- Learning based cost reduction via increased productivity	1/9	- Cost decrease due of increased productivity
- Contract time → 1-3 years, Price ”check” can be more often	8/9	- Depending about how e.g. price fluctuate in the market.
- Engagement for good relationship	3/9	- Contract is a crown for good cooperative relationship. Not for threatening the supplier or other way.

The prices of contracts can be formed with multiple ways and noted to depend highly about specific situation. The most highlighted form in the interviewees was fixed price, which was seen to be most risk free and efficient in terms of time. Other noted form was cost based pricing, where price reduction is achieved with increased productivity. However, most interviewees agree that pricing possibilities are depending so highly about situation and circumstances that, most effective way is to agree general terms and analyze the best option for pricing, based on the available information.

The contract times, again, depends highly about goods or services contracted. The length of the contract depends of time frame of the change. This means that e.g. for some raw materials, the price is correlating to the index which might fluctuate highly between periods, the contract time might need quarter year to achieve efficient pricing possible. On the other hand, in some categories it might be better to have contract which is valid until further notice, but the price check can be done on yearly bases.

However, contracts include the agreed terms accurately, the purpose of it is not for threatening the contract party. Interviewee (1 2019) states, that all actions before contracting should be done with high effort, including e.g. supplier selection and evalua-

tion, and the contract is just "*a cherry on top of the cake*". In the best case, the contract would not be needed at all eventually. This means that the cooperation is in high level with trust and commitment, and the contract is just a crown for good relationship. Unfortunately, in many cases the contracts irritate the relationship which leads to the inefficiency and more cost fully situations in longer time line.

4.1.8 Performance measurement

Measuring SCM organization performance can be described as a most important part of process. The capability to set correct targets and to define correct metrics for those is a crucial, because what you measure is what you get (Interview 5 2019). This, for sure, needs high competence from managers, to understand properly the business, it is needs and to be able to identify the core drivers which help organization to sell more, because organization lives from profitable sales. It is noted in the interviews, that many times the customer perspective is forgotten when building up the measurement framework. However, the customer needs to define the basic assumptions, how and which kind of value organization should provide, e.g. high quality, cheaper price or fast delivery. After understanding these requirements, the managers should be able to build up the measurement form, which supports truly performance of the organization.

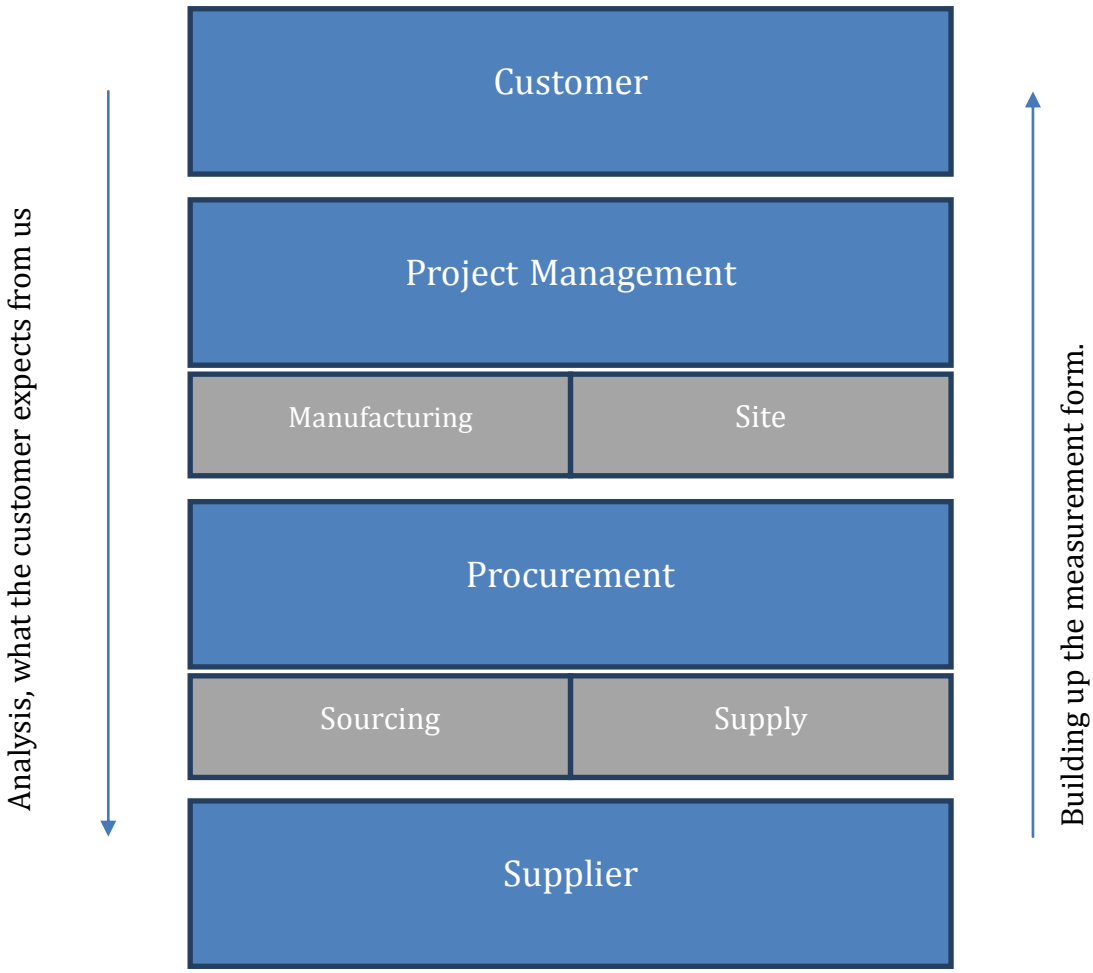

Figure 22. Top to bottom - bottom to top, approach to build up measurement system.

Figure 22 illustrates the process of building up the measurement frame. As discussed in the previous paragraph, the analysis for understanding the value process is crucial for capability to measure correct things to achieve performance. The purpose of the process is to involve all steps of the business to gain understanding of where the added value constructs from. First understanding the customer viewpoint and after that own processes and specific characteristics of different parts of the supply chain. These characteristics include geographical locations, logistics possibilities, facility management and so on, which might have huge effects on how company conduct their business. Last stage of the analysis includes that manager should settle to the supplier's shoes to be able to understand which kind of customer our organization is, but also to understand what to expect from their side. From the analysis the manager should be able to reach common

understanding of value chain. After this the process continuous to the building part, where manager follows up the described path back to the customer stage. During this path, step by step, defining core metrics to measure performance to support value generation of the business in every part of the process. Table 11 illustrates the core findings related to the performance measurement.

Table 11. Best practices for performance measurement.

Best practices	No. Respondents agree	Explanation
Balanced scorecard	5/9	To build up balanced framework, which conducts all meters
2-7 well defined measures	9/9	Not too many meters → To avoid overlapping, to be able to concentrate correct things.
Automated and reliable meters	6/9	To constantly provide information in correct and fluent form. Easy to understand
Manual measuring	4/9	To ensure understanding of out-comes. To avoid situation where the concrete things disappears.
Price, Cost, Delivery, Quality	9/9	Most noted measures
Separate Spend-analysis and Performance KPI's	9/9	Spend-analysis --> what we have done and with whom. Performance KPI → How we have succeeded
Separate financial and nonfinancial meters	5/9	Financial → with financial team, to understand the effects Nonfinancial → To understand the actions what we have made.

Most of the respondents agree that the balanced scorecard is an excellent way to build up the frame for measures to avoid overlapping. As described in literature, the scorecard includes most important viewpoints of the business and therefore provides a great base for measurement. To achieve the desired out-comes, the meters should be well-defined, easy to understand, automated and good looking to ensure the visuality and understandability. Interviewee (5 2019) stated that excellent way for present performance

KPI's is to build up the dashboard where it is visualized as traffic lights (green, yellow, red) for describing the current situation with every meter. The number of performance meter varies between the companies. Still all interviewees agree that the number of metrics should be narrowed circa two to seven meters, which ensures that all information is accurate and that the results do not conflict between the meters. Excellent result of the metric should provide information for company that what to expect. As discussed earlier, the metrics are a conclusion of analysis about companies process to be able to evaluate and follow up the actions and performance of SCM actions, to provide value for company. By failing to set metrics, the outcomes might actually drive to the worse decisions, because the phrase *"what you measure, is what you get"* is working too literally. The overlapping in metrics, means that if you measure one thing it might affect to the other meter opposite way. That is why the analysis should be done properly to avoid described situations and to ensure the correct decisions made.

The interviewee (1 2019) states that automated measures provides info constantly and can easily to be shown for stakeholders to see how we proceed. The automated measures still include the risk that concrete aspect disappears. Therefore, it is noted, that also manual investigation for spend-data and performance metrics by individual members of SCM organizations ensures the understanding of actions made. Whatever is under investigation, by bringing up the humane aspect, grows the ability to understand the background of area studied. It is proved to be excellent way of increasing understanding of strategic viewpoints of sourcing actions. From manually gathered information e.g. from spend-data, might provide info for sourcing or purchasing personnel, to why centralize volumes to certain supplier or with whom, the average lateness has been in highest level. This knowledge, without a doubt, grows the understanding of the processes and drive towards better decisions of SCM actions. However, the automated meters ensure that the data is always in same form and therefore more reliable, or at least more comparable. The comparability is the most important thing when considering measuring. The information gathered can be illustrated in multiple ways, to support decision making in specific situations, but at least the core-metrics, should be general for ensuring the comparability.

All participants agree that money, time and quality are most measured things in SCM. Many managers state that when talking about money in purchasing, never should talk about price, because everything is about costs. The time related issues many times correlate to the delivery accuracy to the specific locations. In project business the delivery related issues have been seen to be quite hard to evaluate properly. The interviewee (6 2019) states that they have started to point a responsible person for every project to receive materials. Therefore, they have gained more visibility to the delivery accuracy measurement, because the person is also responsible of reporting the receiving times. The quality is one of the most important things to evaluate properly and it has also been seen to be hard to conclude. Many companies use amounts of reclamation as a meter for quality, but it is been noted that this requires more proper investigation. In project business, supplier's outbound logistics should be ensured highly because, the quality cost associated increases dramatically, if the mistakes are noted not before assembly in site. The interviewee (5 2019) states that however, these measures are most used, these are also very complicated to follow-up in effective manners. The competence of SCM organization is weighed up that how accurately they can define metrics and input data for these attributes.

Interviewees see that it is important to divide metrics to the financial and non-financial measures. Financial measures should be concluded together with financial team to ensure the visibility of issues which affect to the project or organization performance to achieve profits. The non-financial measure varies highly between organizations and business areas. Financial measures are more easily implemented, but these nonfinancial need the competence from management side.

The interviews prove also, that payment terms are highly followed with metrics. These refers e.g. to the liquidity and has seen to be excellent to measure, because it is so called stiff number, which means that it is hundred percent correct. All organizations approve that it is very important to measure supplier satisfaction, but also internally towards supplier. These metrics refers highly to the relationship management and should provide information about level of satisfaction in terms of cooperation.

The most used measure for procurement performance is cost-savings. Many interviewees state that this needs high effort for follow-up because there is major possibility to evaluate in a wrong way. In many organizations the sourcing team members report their own savings which might lead for too large evaluations. E.g. the interviewee (5 2019) states, that every individual member has enough imagination to show manager, that he or she has been saving money in specific purchase. This statement leads to the next one where interviewee (6 2019) states, that he personally checks all reported cost-savings to be sure that it really measures the performance of sourcing actions instead of referring e.g. to the market fluctuations. This refers also to the pricing phase of companies' products or services. It is been noted, that when procurement personnel deliver prices for budget, they constantly evaluate the price a bit higher to reach their cost-saving targets. This, for sure, affect to the companies selling capability and therefore decreases competitiveness. Interviewee (6 2019) states that they have reduced this risk by implementing special role for tendering phase. This tender SCM manager is responsible of delivering pricing info for budgeting and is measured by tender cost improvement metric. This has been gaining competitiveness, but also transparency for the process. After this role the cost-saving metrics deliver more accurate information and therefore drive performance of SCM organization as a whole.

The interviewees agreed that, the KPI's and spend management should be divided. The spend management is usually specified as area managers responsibility. E.g. in interview (4 2019) it was stated that they are doing spend management in three different stages. These stages are corporate, geographical and business area level. In all levels, the basic fundaments for spend investigation are same, but the entering angle to what to look for might vary. In corporate level the category management e.g. can see how they might centralize volumes between the areas and business areas. In the other hand, business areas might benefit spend management by investigating cost-saving possibilities associated in their specific processes.

However, there is multiple ways of measure performance, it is evidenced in interviews that there is only one accurate measure for SCM performance, company net operating profit. Procurement can show metrics that how much they have done in different fields,

but if the profit is bad it tells the story of failure in total costs. As discussed earlier, the SCM actions bites huge part of the revenue gained, therefore it is clear that the effect to the profit is crucial.

4.2 Discussion

In next chapter the discussion about findings for project organization is delivered and after that, it is necessary to discuss the correlation between literature and results.

4.2.1 Optimal practices in project environment

Considering project-based business, the first uprising thoughts are fast changing environment, multiple locations, different teams, multi-level stakeholder network and lack of time. This wholeness, with one word, could be described to be challenging. To answer to this challenge in terms of supply chain management yells high competence in planning, implementing and executing the SCM strategies aligned besides of corporate targets.

First of all, as described in literature review, the differences between SCM and only procurement, should be considered when organizing the function for project-based company. As the evidences proved in analysis part, the SCM function has a necessary competence for really achieve benefits for the company and instead of that, conventional procurement function therefore, only ensure that business is running by providing materials management activities. SCM includes both ends of the supply chain to be a part of the function, and more importantly notice the effects. Based on the findings of the interviews, further on we use SCM to describe the function studied in this research.

The environment described above demands flexibility from the organization. Very fast needs and changes might include the ability to make decision without any deep analytical investigation and therefore, we can assume that the structure would be a bit different comparing other business environment and support the fast-changing character. Howev-

er, the analysis provide knowledge that still the basic fundaments should be in-line with best practices gathered from the interviews without considering the environment. As described, that successful organization balance between the centralization and decentralization by reaching equilibrium and especially in project organization this should be considered constantly. The differences in project size and teams demands allocation of resources in terms of responsibilities considering reporting, following, measuring and buying. The more stable side of the SCM team, called sourcing, should be centralized to achieve targeted strategic goals. This is the best and only way, if and when synergies exist between different parts of the organization. With centralization, the possibility to reach economic of scales is in higher level.

To further thinking the organization design, the interviews provide knowledge that more often project-organizations design is following matrix-model. This seems to be better way to reach high penetration level of categories through organization. The matrix model ensures that all projects are considered, when buying synergy products or services. The shadow-side of this model is the higher need of resources which is always risk in project-business where the demand fluctuation might affect more than in conventional business. This again support the finding of constant evaluation of equilibrium in SCM organization.

However, for project-organization the concluded design should be balanced to reach targets and demands with strategic actions but also to ensure material flow in ever changing locations in short time-line. As discussed in analysis, the strategic side should be centralized and supply therefore, decentralized.

As mentioned, the sourcing work is crucial to reach as stable SC as possible. Considering supply base, it should be constructed so that it supports the fast-changing nature. This means that the strategic suppliers should be well defined and managed. Actually, the whole base should be considered to be very fluent and capable for quick deliveries with high quality. This, without a doubt, needs support from stakeholder interface not only from project managers, but also from supply side. The information flow through project-organization should be ensured highly and considered from very top of the or-

ganization all the way to down. Transparency internally, but also externally towards suppliers is very crucial to achieve capable network for SCM actions. The supplier selection and evaluation follow the defined best-practices, but still includes the ability for faster decision making in that process. The supplier relationship management should be conducted constantly with high effort. The possible changes in projects might affect also to the suppliers highly and therefore it is clear that deep relationship gains trust to be able to reach win-win situation which is mandate for achieving profitability through SCM actions.

The early involvement, which gains the ability to really influence to the cost structure of the business, is many times hard in project business due to fast nature. This raise up the importance of effective SRM actions. The early involvement in project organizations therefore, should be conducted by constant information flow between major suppliers. This includes the sharing information of upcoming projects already in tendering phase, which gains the suppliers ability to plan their own production and prepare to serve better value for the ordering enterprise. As discussed in analysis, the major suppliers should have counterpart in organization, acting as a key supplier manager, how gather and share information with supplier. For project organizations, it would be necessary to have named persons for smaller suppliers also, depending of stage of engagement, to ensure the single point of contact, but also that necessary information e.g. about performance etc. is shared.

The competitive bidding has been seen not so great way to do sourcing. However, as described that project organizations should have well managed supply base, the needs in different project might be so unique that the proper market knowledge is missing. For these purposes the bidding might be the process to be run to gain that knowledge, but also to ensure that the reasonable prices are achieved. The process should follow the best practices described in analysis. For project organizations the out-going quality from supplier side should be highly measured, because the quality cost associated in project locations are invariable huge, if they are noted after delivery or in the worst case after installation. Therefore, when running bids, the quality risk should be considered highly to be able to reach successful results.

Contracting in project organizations follow the best-practices described in analysis. Still again due of fast changing nature, the common general contract bases have been seen essential for project organizations to ensure that all aspects are considered in fast decision making. It is notable that many times the project locations might vary to the different countries, and therefore might include different law aspects related to the procurement contracts. However, the best way seen to be, by accepting general terms at the first place with the supplier that both parties understand the demands of current situation. Because of high uncertainty in project volumes, the best pricing model for procurement contracts is based on fixed pricing. The price can be negotiated to be checked more often than contract period. Fixed price contracts decrease the pricing risk. The contracts based on forecasted volumes has been seen as risky in project business, because of the characteristics. Still, e.g. with the strategic suppliers, pricing based on the increased productivity can been seen reasonable to be considered.

The out-sourcing in project organizations have significant role in business, based on the interviews. Many parts for construction projects have out-sourced to the other organizations to be made. The project scopes are very wide, and the main contract party have not expertise to handle all parts of it. Here comes the noted fact that for achieving truly the best possible performance the organization should concentrate to the core competences. Due of wide out-sourcing rate, the capability of SCM personnel should be ensured, to be able to manage supplier selection processes. The capability to manage auditing in different environments, very wide market and technical knowledge are mandatory to achieve targets. Also, the organizational capability, to manage the out-sourced entities have to be ensured.

About measurement of project-organization, there are no clear differences comparing others. In project environment the data might be a bit more difficult to gather up considering intangible measures. The financial meters are as reliable as in any other environment. The challenge with the non-financial measures are due of multiple end-locations, which might rise up a problem regarding received materials and so on. Also, the quality measurement has been seen to be challenging, e.g. due of environmental effects.

To conclude this, overall competence and concentration to conducting SCM actions in project environment should be a higher stage than in other organizations. The changing nature gains risks and sets higher standards for procurement, but with correct actions delivers necessary competitive advantage for the organization as a whole.

4.2.2 Comparing empirical findings to existing literature

Major out-come of the thesis research is discussed in earlier chapters and therefore, this section includes only the discussion between literature and findings.

As mentioned, there are almost endless amount of studies available related to the different areas of SCM. The studies are dealing with different parts of SCM from multiple different angles. As we know, management is not a concrete, tangible thing, and therefore we have to recognize that the studied things are just an opinions and methods used by individuals in different specific environments, for managing entities to reach efficient out-come. To clarify this statement, we can conclude that there is no right or wrong way to conduct SCM actions, only general best practices analyzed based on existing researched data.

With certain areas of the study, it is fascinating to see the slight difference between the literature and practice. Mostly the literature supports the findings, but sometimes does not consider human aspect, which might affect to the out-come highly. Therefore, by qualitative analysis, it is possible to further push the existing knowledge by analyzing the phenomena's from different angles in different environments and circumstances affected by individuals.

However, based on the literature review, the companies nowadays, use term SCM over procurement, to involve the whole supply chain under management activities. From the interviews it is quite easy to conclude that, nowadays, best in class organization are acting like this, by involving suppliers highly, but also giving high concentration for customer interface, to be able to deliver necessary value through SCM actions. Still, it is

notable that SCM definition for different organization varies highly. Stock & Boyer (2009) investigate different definitions for SCM in their study and conclude that there is 173 paper delivering unique definition for SCM. This amount does not include books or reports, which probably rise the number higher. Therefore, it is clear that different environments include different characteristics related to the management of SC that there is no correct way to do it.

Literature discusses scale of (de)centralization of an organizations to define how it is been organized. The design is about how decision making is allocated through supply chain (Treiblmaier 2018). The results support this definition highly. Still, one major and highlighted finding was related to the notion of SCM importance in organization, by involving SCM Director to the executive management board. By proper investigation made to the literature, not a single study notes this. Overall, we can conclude that to ensure the level of decision-making capability, it is very important to do it as proposed.

The literature and interviewees highlight the importance of high performing supply base. The literature illustrates the supplier selection to be multi-criteria decision-making problem (Safa et al. 2014), which could be analyzed through known analytical methods. The interviewees agree this but highlights the importance of individuals and their competence to evaluate best possible suppliers. Circa 30% of interviewed companies provides information that they use mathematical models for supplier selection. However, the analytical tools were used more for supporting the decision making considering shaping and developing strategic approach.

One major finding from the interviews is pointing the importance of single point of contact towards suppliers. The literature notes the importance of this in marketing research where there are noted specific roles, as account manager, towards customers. However, author wasn't able to find key supplier manager definition from literature in the same form as interviews described it in the data.

Considering performance monitoring and out-sourcing issues, the all fined best practices are studied in literature earlier.

However, we can conclude that literature supports the findings very strongly with a few exceptions. Therefore, we can conclude that without a doubt, the literature and empirical analysis are in-line with each other without any major differences and therefore defined best practices are valid for use. The crucial notion raised during the past few years in literature is the strategic state of mind in every field of SCM. From interviews we can see that this phenomenon is noted and implemented in to the best-in-class organizations.

5 CONCLUSION

This thesis research was done by order of an assignment company to investigate Supply Chain Management in defined sub-areas called, Organization design, Supply Base Management, Make or Buy and Performance measurement, to gain knowledge, how top-in-class organizations perform. The purpose was to answer research question: "What are the SCM best practices in project-based business". This question was further divided to considering the sub-areas studied.

The literature review of the study illustrates the concepts of the studied area, to be able to understand the concluded best-practices. The aim was to use a wide range of articles with support of well-known books considering SCM in these sub-areas.

The nature of the study was qualitative, and the empirical part was conducted as benchmarking analysis. The data was gathered via theme-interviews, by interviewing persons from best-in-class organizations working in area of SCM. Most of the interviewees were customers or partners with the assignment company, which made it possible to gather very valid data from acting managers. The theme-interviews was chosen for data-gathering by giving space for interviewees and to be able to really deliver knowledge about studied areas by their own high-competence. The interviewees were from many different business-areas, which made it possible to reach as wide picture as possible. Still about 50% of interviewees act in project-based businesses to be able to conclude best-practices for that environment.

The literature part supports the findings tremendously. Therefore, the validity of the study can be assumed to be in good level and that the best-practices found are usable in any project-based business.

The findings support the phenomena, that SCM organization design has huge effect to the overall performance of the function. To reach efficient and effective procurement actions, the continuous evaluation of decision-making allocation, to reach stable supply

chain, is crucial. The “correct” design supports the capability to succeed in every other sub-area studied.

The study highlights the importance of Supply Base Management, by respecting actions as supplier selection and relationship management. The findings illustrate the importance of process-like actions to ensure that these are in line with strategy and are measurable. The out-sourced entities have huge role in project-organizations, therefore, it is not surprising that data provides information to concentrate the core actions and analyze properly the possibilities with out-sourcing. Core finding can illustrate to be concentration of total costs instead of unit-price, which describes the overall nature of the SCM.

The measurement of the SCM performance have been described to be the most important part of the management of the function. By gathering and providing accurate information of the actions made, not only gain ability to aim focus inside the function, but also describe the cost structure and its evolution, of the business. In many stages of the research project, the phrase “*what you measure, is what you get*” rose up, which illustrates the importance, because no matter, how successfully the SCM organization is managed, if measures are defined poorly, the results supports only these, not the best possible out-come.

In overall the results highlighted the strategic importance by ensuring that actions and decisions made, are in line with enterprise level targets and standards and general practices to serve peer functions to reach customer satisfaction, which provides the profitable business.

5.1 Limitations

This research follows the guidelines of the qualitative benchmarking analysis, however, there are some limitations considering the study. As always, more interviews could be done, to reach wider data. However, the data can be described to be valid, comparing

the benchmarking nature, where there are not so many managers willing to share knowledge of best-practices which gain their own performance and competitiveness. Also, it could be discussed, how the interviewed data is analyzed, and how that has influenced to the overall results.

However, the interviewed data is always considering individual opinions based on competence of the interviewees. Therefore, it is clear that there might be different opinions and approaches if the data were wider. Still its notable that the literature supports the findings highly and therefore are in-line with existing knowledge of SCM actions studied.

The scope for the study is quite wide considering the nature of thesis-research. Therefore, we can assume that with narrower scope, there could be found more proper knowledge of the certain areas. Still, by this scope, author was able to deliver accurate information of cross-functional influence considering sub-areas.

5.2 Managerial implications

The most crucial implications based on the research made, consists from acceptance of supply chain management instead of conventional procurement. By implementing supply chain management in enterprise, the possibilities with actions related to the procurement, can truly make difference and thereby influence on to the profitability. In all best in class organizations SCM is implemented over procurement.

By changing name, obviously have not big impact, but accepting the fully strategic alignment towards corporate strategy, involving customer interface, building partnerships, early involve suppliers and achieving transparency through organization levels is worth of effort, according best-in-class organizations.

The management base-point for SCM is the proper understanding of market characteristics and company's strategic purposes. By this knowledge the SCM strategies can be

pictured, mapped, aligned and implemented through organization. By comprehensive spend management and analysis, management can separate categories and aim strategic, tactical and operational activities through matrix-models, which are most used management-tools according the findings. Based on these factors, the supply base can be constructed in most efficient and effective way.

Results prove that by accepting common way of conducting strategic actions in process forms, ensures the comparability and measurability. Also, with process like actions the management can be sure that all necessary and important information is been considered. Therefore, the framework for continuous improvement is possible to construct, when actions is conducted with common way and visualized by core metrics.

Results illustrates the importance of measurement highly. The analysis support management to shape current strategies and design of the decision-making allocation. Most importantly, performance metrics, describe the actions made within the organization. With this knowledge the supply base can be managed by sharing information through supply chain in transparent way. By ensuring that all information gathered and shared is valid, the information flow should be ensured from every part of the chain. Internally in organization this is crucial in terms of chosen organization design. The construction of measurement framework with "correct" metrics is seen to be very demanding, which yells high competence from management to conclude.

However, based on this research, the noted importance of SCM actions in company's top management is a key to be able to implement these best-practices in use. Without capability to make important decisions, it is proved to be very hard to conduct actions which truly gain performance because of cross-functional influence.

By implementing the proposed best practices company can achieve financial benefits. However, many times cost savings are correlating to the achievements of procurement organization, but according the analysis the profit impact overall in corporations is achieved by ensuring the flow of materials and services by respecting the needs of current peer function served. That not necessarily mean, that when money is saved in pur-

chase phase that it corresponds straightly to the overall profitability of the business. This statement describes the major finding where procurement as a function is a significant part of the project organizations functionality and straightly affect its operational excellence through optimal total cost of ownership.

Based on the research made, to reach profitable business, it is mandatory to understand the effects of actions made in procurement, to the end results where those are used. That is why all interviewed managers highlight the importance of close cooperation with stakeholders to understand and implement correct tactics in different situations and environment. It is been stated, that in project organizations the amount paid of the acquisition of any product or service is only 20-40 % of total cost associated, when major part comes from operative sources. Therefore, it is crucial to understand that with SCM, the goal is to eliminate all unnecessary cost trough the chain which might hurt the ultimate end goal as known as profitable business.

It is impossible to determinate the correct financial benefits through these best practices proposed, but by minimizing the total cost due of eliminated quality, transport and operative cost, companies can influence tens of percent to the overall cost structure and achieve competitive advantage towards competitors.

5.3 Future research

Considering studied area, we can say that it has been studied very widely across the globe. However, ever raising interest towards SCM and its influence on the overall performance of any entity, there is still space for further investigation in field of cross-functional influence between areas and actions of the organization. Still suggestions above, consider more future research possibilities for assignment company.

This study provides general knowledge of SCM actions in specific sub-areas and therefore, some research should be conducted to analyze the possible implementation of these findings for assignment company. The analysis should include the possibilities to

gain competitiveness and reducing cost from the process by adopting these best-practices used in top-performing companies.

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