

**Sourcing organization and
management model in spare parts
business**

Case study

Kimmo Kilpeläinen

Master's thesis
April 2017
Degree Programme in Logistics

Author(s) Kilpeläinen, Kimmo	Type of publication Master's thesis	Date April 2017 Language of publication: English
	Number of pages 74 + 7	Permission for web publication: X
Title of publication Sourcing organization and management model in spare parts business Case study		
Master's Degree program in Logistics		
Supervisor(s) Nieminen, Sanna		
Assigned by Konecranes Finland Ltd.		
Abstract <p>The aim of this study was to find the best sourcing organization and management model in the spare parts business, co-operating with global sourcing in division-structured organization.</p> <p>The first phase of the research was done using quantitative research methods. The organization models A, B, and C were built based on the findings from literature review and an internal survey in the global spare parts organization. The internal survey covered answers from 14 countries inside case study company.</p> <p>The second phase of the research was done using qualitative research methods. The internal survey results and the created organization models were discussed in the interviews. The interviewees were selected based on their experience in service operations or sourcing.</p> <p>The results show that the best organization model was a hybrid organization, where the spare parts organization co-operated with global sourcing with common suppliers. The head of spare parts sourcing would co-ordinate the actions and set annual sourcing targets together with the head of spare parts and global sourcing. Sourcing in spare parts would operate with the supplier without supplier managers according to the given targets.</p> <p>The study can be applied to several different aims. The case study company can use the results for planning the organization model in the selected region. The results can be applied in other case study company regions or by other companies who operate in both manufacturing and after-sales business.</p>		
Keywords/tags (subjects) Spare parts, after-sales, sourcing, organization model.		
Miscellaneous		

Contents

1	Introduction.....	7
2	After-sales and spare parts	9
2.1	Types of after-sales	9
2.2	Main differences between OEM and after-sales	10
2.3	Customer service	11
2.4	After-sales challenges.....	12
3	Procurement.....	14
3.1	Added value.....	14
3.1.1	Product costs	14
3.1.2	Operating costs.....	15
3.1.3	Capital employed	15
3.1.4	How to measure procurement performance	16
3.2	Sourcing.....	17
3.3	Supplier relationship management.....	18
3.3.1	Supplier introduction.....	18
3.3.2	Supplier performance management	19
3.3.3	Supplier phase-out	20
3.4	Spare part sourcing	20
3.5	Purchasing after-sales services	22
4	Organization models	24
4.1	Organization theory paradigm	25
4.2	Organization structures.....	26
4.3	Organization in procurement.....	27
4.3.1	Centralized purchase organization.....	27
4.3.2	De-centralized purchase organization.....	28

	2
4.3.3 Hybrid purchase organizations.....	29
4.3.4 Sourcing team.....	30
4.4 Other organization standpoints	30
4.4.1 Organization mission and targets.....	30
4.4.2 Organization management and development	30
5 Working culture.....	32
5.1 Definition of culture	32
5.2 Country-specific cultural characteristics	34
5.2.1 British.....	34
5.2.2 Finnish.....	35
5.2.3 French	35
5.2.4 German	36
5.3 Working culture and groups.....	37
5.4 Working culture and demographic diversity.....	37
6 The case-study company.....	38
7 Research implementation	41
7.1 Research process and methods.....	41
7.1.1 Internal survey	42
7.1.2 Organization models A, B, and C	44
7.1.3 Interviews	45
7.2 Data collection.....	47
7.2.1 ERP data.....	47
7.2.2 Internal survey.....	47
7.2.3 Interviews	48
7.3 Reliability of the results.....	49

8	Results	51
8.1	Internal survey (data 1)	52
8.1.1	Sourcing resources	52
8.1.2	Co-operation with global sourcing	53
8.1.3	Spare parts business and sourcing	54
8.1.4	Survey open comments	55
8.2	Interviews (data 2)	56
8.2.1	Spare parts business	56
8.2.2	Co-operation with global sourcing	57
8.2.3	Sourcing organization models	58
8.2.4	Country and company culture	61
9	Conclusions.....	61
9.1	Internal survey.....	62
9.1.1	Spare parts business and procurement.....	62
9.1.2	Sourcing value to spare parts business	62
9.1.3	Spare parts business SRM and sourcing targets.....	64
9.2	Interviews	65
9.2.1	Organization models.....	66
9.3	The best sourcing organization model for spare parts	67
9.4	Company culture	69
9.5	Summary.....	70
10	Discussion	72
10.1	Research implementation	72
10.2	Results	73
10.3	Research evaluation and limitations	73
10.4	Research application and future research	74

References.....	75
Appendices	77

Figures

Figure 1 The structure of the report	8
Figure 2 Procurement's effect on ROCE according to the DuPont model.....	14
Figure 3 Passive and active sourcing.....	20
Figure 4 Service purchase process	23
Figure 5 Elements affecting an organization.....	25
Figure 6 Organization theory paradigm.	25
Figure 7 Konecranes organization in sourcing and spare parts	39
Figure 8 EMEA Parts supply and other Konecranes spare part units	40
Figure 9 Research implementation process.....	42
Figure 10 Survey question by role.....	43
Figure 11 Summary from the results	51
Figure 12 Open comments by the group	56
Figure 13 Sourcing organization models A, B and C.....	59
Figure 14 Alternative way to manage suppliers in spare parts	60
Figure 15 Conclusion	62
Figure 16 The best organization model for spare part sourcing.....	68
Figure 17 Sourcing organization management model	71

Tables

Table 1 After-sales and OEM supply chain differences.....	11
Table 2 Organization types.....	26
Table 3 Characteristics of context of culture	33
Table 4 Internal interview respondents.....	46
Table 5 External interview respondents	46
Table 6 Internal survey response analysis	48
Table 7 Internal survey analysis by the role.....	48
Table 8 External interview respondents	50
Table 9 Sourcing analysis in country level.....	52
Table 10 Spare part business co-operation with global sourcing.....	53
Table 11 Spare part expectation from sourcing.....	54

Definitions of keywords

CEO	Chief Executive Officer
CFO	Chief Financial Officer
CPO	Chief Procurement Officer
ERP	Enterprise Resource Planning
Global sourcing	integrate and coordinate parts, processes, technologies, designs and sources of supplies across corporate level purchasing, engineering and operating locations
KIBS	knowledge-intensive business service
OEM	original equipment manufacturer
Purchasing	is a commercial transaction between a buyer and a source of supply
Procurement	includes all operations that are needed for product or service to be delivered to its final destination from a source of supply
Sourcing	finds, selects, contracts and manages the best possible source of supply.
SRM	supplier relationship management
ROCE	Return on capital employed

1 Introduction

The after-sales and spare parts business has become a big business. Companies who have originally been founded as a manufacturer currently have huge opportunities to provide revenue and profit in the after-sales business. Some companies have organized the service as a separate organization to ensure proper customer service and spare parts for end customers. In the era of industrial internet and pace of business, expectations for the spare parts business are increasing. In addition, competitors might penetrate the company's profitable spare parts business.

Companies operating in both manufacturing and after-sales service need to continuously modify their operations and organization to meet market expectations. After-sales has a clear impact on the company image, and procurement has a strong impact on profitability. In the daily after-sales business, spare parts and procurement can be vastly different from each other. Still both organizations are able to provide added value to the company.

This thesis objective is to find the best sourcing organization model for spare parts for the company who operates in both manufacturing and spare parts businesses. In addition, the thesis finds the best management model for spare parts sourcing. Furthermore, it raises arguments on whether sourcing can create extra value for the spare parts business. The academic literature has unexplored areas in spare parts sourcing, supplier relationship, and performance management. Hence, the research is done using both qualitative and quantitative research methods for better reliability in the results. The quantitative research is used in the internal survey, where all spare parts units are able to give their expectation towards sourcing and supplier relationship management. In the second part of the research, three organization models are built based on the literature review and internal survey results. These results and organization models are tested in the interviews in the third part of the research. These results are analyzed using qualitative research methods. All results and proposals for the best organization model are presented in the discussions and conclusions.

The survey is assigned by Konecranes. The company is in the midst of completing a historically huge acquisition with Terex material handling and port solutions. Part of

the acquisition includes the re-organization of the global sourcing and spare parts operations. The result of the research can be used in the decision making of how sourcing is organized for the spare parts.

This thesis is formed in ten chapters: Chapters 2 - 5 discuss the relevant literature. The purpose is to present the academic research regarding the topic of this thesis and form a framework for the thesis. In chapter 6, the case-study company is introduced, and the main elements for the organization update are presented. In chapter 7, the research methodology is clarified. The chapter discusses the research process, data collection, and the reliability of the results. Chapter 8 presents the results of the empirical part of this thesis. The results are formed according to results A and results B. Chapter 9 discusses the key findings of the previous chapter, comparing them to the literature and giving suggestions for Konecranes. Chapter 10 summarizes the key findings and discusses the future research. The thesis structure is presented in detail below in figure 1.

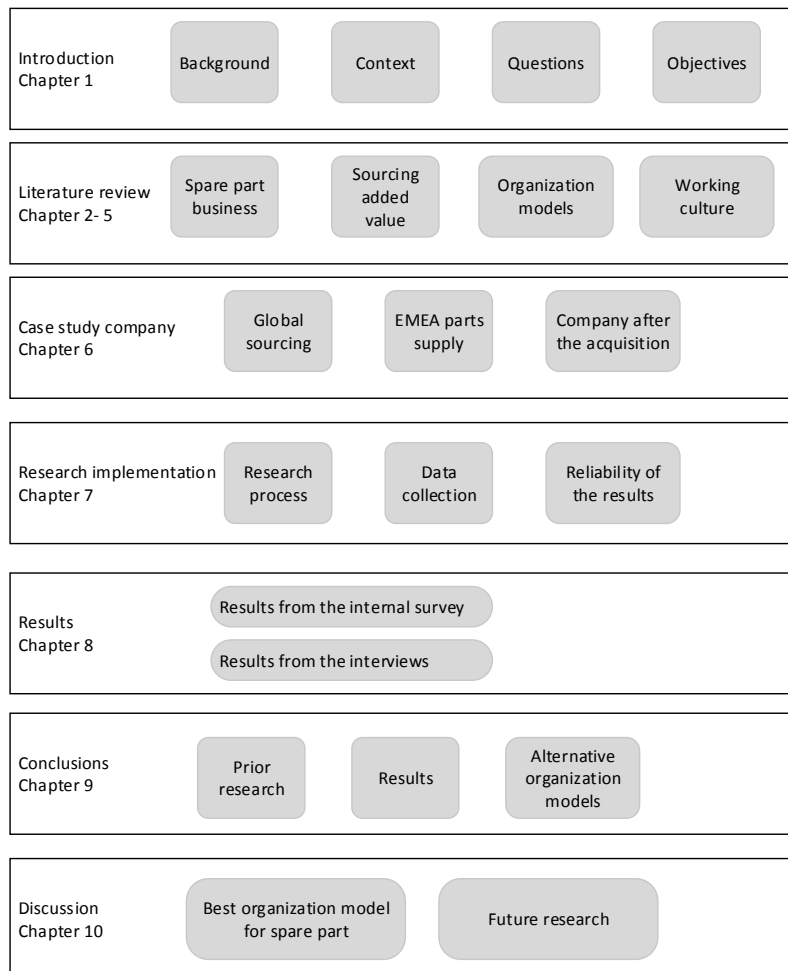


Figure 1 The structure of the report

2 After-sales and spare parts

2.1 Types of after-sales

The aim of after-sales services is to extend the lifetime of the original equipment. After-sales customer service can be divided into preventive or corrective maintenance, retrofits, modernization, spare part or service sales.

Preventive maintenance can be inspection or service of the equipment after certain hours of usage. The aim of preventive maintenance is to change spare parts to the equipment before brake down. The importance of preventive maintenance concerns equipment that is defined as strategic for production or otherwise important for the safety of operations. The owner of the equipment is able to arrange preventive maintenance at a set time. In preventive maintenance equipment downtime has the minimum effect on the customers' production operations.

Corrective maintenance is done after the equipment brakes or does not operate in a normal way. The cost for maintenance depends on the criticality of the equipment. Some manufacturing customers might have production losses for tens of thousands of euros per hour if an equipment breakage stops the whole production. The cases in which the equipment does not operate in the normal way but does not have a big effect on the customer's operations have another level of urgency.

Retrofits are products that are changed on equipment in order to add technologies or new features, such as LED lighting. Retrofits do not typically require as much pre-planning and downtime compared to modernization and they are agreed like preventive maintenance. Modernization is an alternative when the cost of modernization is smaller compared to the purchase of totally new equipment. Typically, modernization for lifting equipment is done in cases when the original equipment manufacturer (OEM) cannot provide spare parts for the components. A typical example in the lifting business is electronic components where the lifetime of a product is shorter compared to a mechanical part.

After-sales services can also be service without any materials. Some companies offer consultation services or trainings. A consultation service can analyze the customer's

manufacturing operations. The aim of consultation is to help the customer to improve their production. As an example in the lifting equipment business, consultation can be a safety review by checking that all hoists operate according to the legal requirements and safety rules. In addition, the training can be offered to persons who operate cranes. In ship-to-shore cranes the aim for the training can be move more containers what increases the efficiency.

2.2 Main differences between OEM and after-sales

After-sales services are a big field of business. In the United States 8 % of the annual gross domestic production comes from after-sales services. This makes the after-market business bigger than a billion US dollars (Cohen, Agrawal & Agrawal 2006, 2). After-sales services, especially spare part sales are a profitable business. In the manufacturing and engineer driven firms, after-sales services can bring from 40 to 50 % gross profits of the roughly 25 % of a company's revenue (Wagner & Lindemann 2008, 1; Cohen, et al. 2006, 2).

After-sales services are not easy to manage, and the management of after-sales supply chain differs from that of the OEM. Table 1 summarizes some of the characteristics for both supply chains (Cohen et al. 2006, 4). Breaking down of equipment makes the spare parts demand unpredictable and sporadic. After-sales utilize spare part stocks to guarantee a quick response to the customers. For a company performing both manufacturing and aftersales-services it is important to understand that inventories are not managed in the same way. Prior research show that executives have limited understanding of how aftermarket should be managed. (Wagner & Lindemann 2008, 5) (Cohen et al. 2006, 1).

Table 1 After-sales and OEM supply chain differences

PARAMETER	MANUFACTURING SUPPLY CHAIN	AFTER-SALES SERVICE SUPPLY CHAIN
NATURE OF DEMAND	Predictable, can be forecasted	Always unpredictable, sporadic
REQUIRED RESPONSE	Standard, can be scheduled	As soon as possible
NUMBER OF SKU'S	Limited	15-20 times more
PRODUCT PORTFOLIO	Largely homogeneous	Always heterogeneous
DELIVERY NETWORK	Depends on nature of products; multiple networks necessary	Single network, capable of delivering different service products
INVENTORY MANAGEMENT AIM	Maximize velocity of resources	Pre-position resource
REVERSE LOGISTICS	Doesn't handle	Handle return, repairs and disposal of failed components
PERFORMANCE METRICS	Fill rate	Product availability (uptime)
INVENTORY TURN	6...50 / year	1...4 / year

A company might sold equipment for many years. The company after-sales might be four to five time bigger larger in revenue than manufacturing. OEM has the benefit in after-sales that there is no need to find new customers, but for the competitors whom are penetrating to OEM markets the situation is different (Cohen et al. 2006, 2).

2.3 Customer service

Many articles focusing on improving after-sales can be found in the academic field. Gallegher, Mitchke, and Rogers (2005) agree that companies who are able to give after-sales customer service of good quality have a better image in the markets. After-sales needs to be aware about the competitive situation. One needs to analyze the markets if they have competition and on what level. OEM after-sales might be in

a competitive situation when there are (low-cost) competitors in the market. This should affect the pricing of the spare part. (Ibid. 2-3). Cohen et al. (2006) highlight the importance to identify the spare parts to be covered in after-sales. For the company it must be clear what products are supported in after-sales. The company can decide to provide spare parts for all its own products and also penetrate the competitor product area. Before a final decision, the company must understand if this is something that the customer is willing to pay for and if the decision creates synergies. (Ibid. 133)

When a customer's critical equipment for production is down, the after-sales' focus should be on supporting the repair the equipment as soon as possible. In this case the customer most probably accepts a higher spare part price compared to the price of the same part when there is no urgent need for maintenance. (Gallegher et al. 2005, 2-3) Cohen et al. (2006) found the same element in customer service. After-sales should create a portfolio of different service priorities, build business models on those and define pricing levels according to the customers willingness to pay on the services. After the customer has chosen the most suited after-sales business model for them, it drives the incentives for all the players in the supply chain – including procurement. (Ibid. 133-134).

2.4 After-sales challenges

In the academic field there are prior research on how to improve after-sales inventory management. This thesis does not cover the topic in detail, but generally, it can be stated that the co-operation between inventory management, supplier performance and customer behavior is essential for whole after-sales service supply chain (Jouni, Huiskonen & Pirttilä 2011, 3). The challenge of after-sales service inventory and procurement management arises with companies that operate in both the EOM and spare parts business.

Wagner and Lindemann (2008) argue that only a few companies operate separately in OEM and after-sales processes (Ibid.7). Companies operating in the OEM and after-sales business with the same processes might have challenges in setting their ERP systems in order to optimize both the OEM and after-sales inventory

parameters. Wagner et al. (2008) state that after-sales supply chain management concerns the planning and operational levels. The development of an after-sales supply chain would need more focus on the strategic level (Ibid.9). Wagner (2008) finds support in Pourakbar's, Frenk's, and Dekker's (2012) statements on why executives do not have sufficient understanding of after-sales services. Pourakbar et al. (2012,2) states that companies' organizational structures might not support after-sales targets and that the organizational structure might be an obstacle for a company's growth in sales and profitability. Cohen et al. (2006, 135) highlight the importance of a proper organizational structure and the lack of attention paid to in organizations.

One organizational element can be seen in inventory management. Despite the earlier statement that inventory management is not covered in detail in this theses, it is important to be aware of the value of professional inventory management in the after-sales business. Pourakbar et al. (2012) raises the challenge of end-of-life inventory decisions with electrical products. Electrical products' life-time in the OEM business can be less than two years. Still the sales might be committed to providing the same electrical parts as spare parts from four up to thirty years. Research highlights the importance of co-operation between the sales, inventory management and supplier relationship management (Pourakbar et al. 2012, 2). This was also stated by Jouni et al. (2011) in the beginning of this chapter.

As the last identified after-sales challenge can be seen the issues that Gallagher et al. (2005) have raised. The challenge occurs with companies who act in both the OEM and after-sales business. These companies need to be aware about the challenges in customer segmentation. To an OEM customer this might not be interesting, but for an after-sales the customer this might be very important (Ibid. 2-3). In the customer segmentation it is good to note that when after-sales have a close relationship with a customer, they have a better possibility for a deeper understanding of the customer's operation and equipment. This gives valuable information for the development of OEM's equipment (Gallegher et al. 2005, 2; Cohen et al. 2006, 2).

3 Procurement

3.1 Added value

A great number of prior research highlights the added value of professionally managed procurement. Procurement affects to a company's profitability in many ways. Reductions of product costs i.e. savings, are the most well-known procurement action for a company's profitability. Figure 2 presents with the DuPont analysis the main points where procurement can create added value to a company's different cost elements. The cost elements are product costs, operating costs, write-off's and elements in the capital employed. All mentioned elements effect to ROCE. (Eloranta and Pajunen-Muhonen 2012, 31; Van Weele 2014, 13; Niskanen 2010, 78). ROCE and other Figure 2 cost elements are clarified in appendix 1.

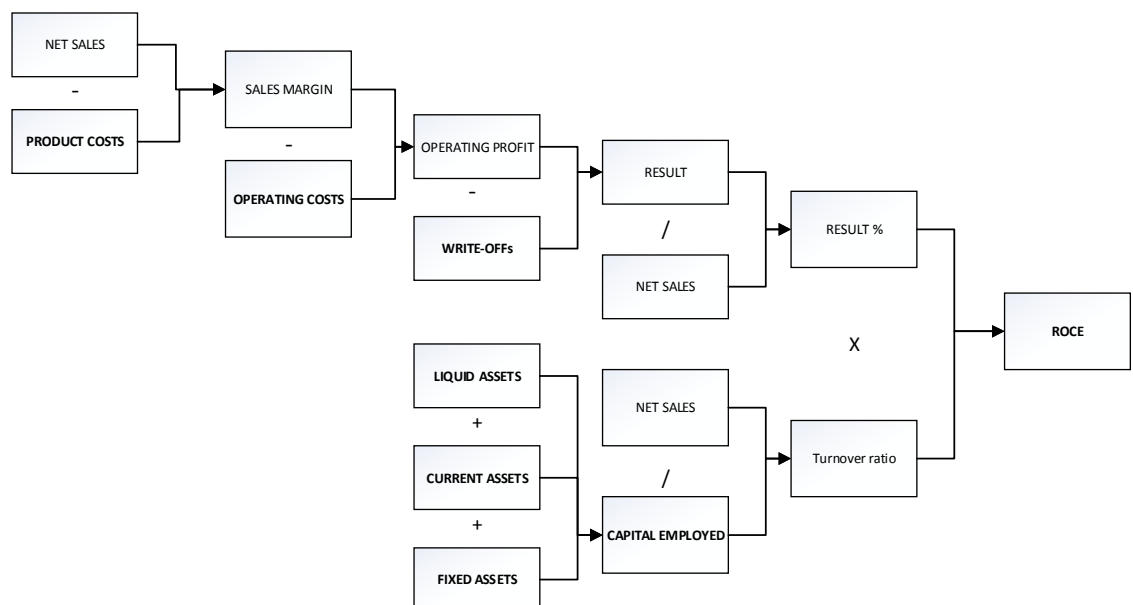


Figure 2 Procurement's effect on ROCE according to the DuPont model

3.1.1 Product costs

Procurement actions to product costs lead to an improvement of the company's sales margin. (Van Weele 2014, 12) Studies show that 50 % - 80 % of the cost of goods sold come from product costs (Heikkilä, Vuori & Laine 2013, 10; Eloranta et al.2012, 21). Van Weele (2014) argues that procurement policies affect a company's profitability in many ways. "A euro saved in purchasing is a euro added to the bottom

line. (13) Procurement is able to affect product costs, for example, by negotiating cost reductions to raw material purchase prices, improving product standardization or sourcing substitute materials (Van Weele 2014, 12). By decreasing the product costs a company's sales margin goes up. Alternatively, if the product costs are not managed and the costs rise, the sales margin will go down. (Eloranta et al. 2012, 31)

3.1.2 Operating costs

Operating costs can be salaries, rents, management expenses, cleaning, security, travel, sales expenses etc. Operating costs are usually categorized inside procurement under indirect purchasing. (Heikkilä et al. 2013, 25–27)

Companies operating as OEM or in manufacturing generally allocate the machine cost into operating costs. When machines or other equipment such as lifting equipment operate well, the operating costs are more stable. When equipment need corrective maintenance, the operative costs will increase and affect to company's operating profit. (Heikkilä et al. 2013, 137)

For other operating costs, such as travel or manufacturing related "bolts and nuts," procurement can offer a E-procurement tool as a solution. An E-procurement tool is an electronic marketplace established to meet defined needs. By using E-procurement tools, such as internet-based business travel booking or an E-order of a new mobile phone, procurement is able to bring added value to the business by providing products with the best total cost of ownership. When E-procurement tools are implemented and used, procurement is able to manage purchases, re-negotiate purchase prices and ascertain that correct products are available. Company's operating costs can be saved also in the invoicing phase. (Van Weele 2014, 43) When invoice payment can be automatized, company needs less workforce for the invoice management. This reduces the salary costs and affect positively to the operating profit.

3.1.3 Capital employed

Capital employed is the total amount of capital used for the acquisition of profits. Capital employed consists of liquid assets, current assets and fixed assets (Eloranta et al. 2012, 31). Capital employed is clarified in more detailed in appendix 1.

Procurement can influence to the capital employed by negotiating longer terms of payment with suppliers. Terms of payment affect the days payable outstanding (DPO) and liquid assets positively.

Money spent on inventories impact on a company's capital employed. Procurement can bring added value when a balance between the accepted inventory level, agreed service levels and usage of just-in-time deliveries is agreed, implemented and used in the business. The result is shown in the current assests. When procurement is able to support the business with products that have a short life-time and a higher risk of going as waste, the work affects to the current assets in a positive way.

A fixed asset is a long-term tangible piece of property that a company owns. Fixed assets are not expected to be consumed or converted into cash in a short time period, for example, within a year. Procurement is able to bring added value by helping with the possess-or-lease decisions regarding buildings or with machinery in order to provide support in the purchase process. As an example, procurement can agree with the machine sales that after-sales service support is guaranteed for certain years and with fixed costs. Cohen et al. (2006, 130) state that there are still companies that see after-sales as necessary evil and this results in poor customer service. The poor customer service might not be visible in fixed assets, but it will later show in the operating costs and possible delays in production. Professionally managed procurement might bring added value in theses cases to the business.

3.1.4 How to measure procurement performance

Procurement's added value to business is not always easy to calculate. However, the added value of procurement is clear (Van Weele 2014, 285). In the prior chapter the added value was presented from the DuPont model point of view. In addition, the agruments raised in prior chapter, there are other elements where procurement is able to affect to the companys profitabilitly in the long run. Cohen et al. (2006, 130) state that some companies do not see the importance of after-sales and this affect to customer service. Professional procurement is capable of affecting supplier relationships and customer service together with other measurements. Still, in scholars seems to have fuzzy guidance of how to present and calculate the added

value of a procurement to company's result in clear way from the other elements in the after-sales business.

Nevertheless, prior research has listed some of the procurement performance measurement as follows (Van Weele 2014, 290):

- Material purchase price or cost control
- Material purchase price cost reduction
- Product quality costs
- Logistics costs and inventory costs
- Supplier delivery reliability
- Purchasing organization costs.
 - Personnel cost
 - management cost
 - information system costs

Gallegher et al. (2005, 2) highlight the importance of speed especially in corrective maintenance cases. Procurement is able to affect to supplier customer service and delivery performance in many ways. The added value of on-time delivery is clear, but procurement might face challenges at the time of reporting and following the performance. The question is, how much procurement has effect on the supplier performance compared to situation where order to supplier is done without any follow up.

Procurement can also impact on revenue by generating potential. For an OEM business an early supplier involvement with new products and process development may lead to higher profitability. (Van Weele, 2014, 13) Procurement can bring extra value to after-sales, for example, by proposing new commercial parts to the spare parts organization's sales portfolio from the supplier base and markets. Normally this task is done by the sourcing.

3.2 Sourcing

Sourcing enables companies simultaneously achieve competitive and comparative advantage. Sourcing is expected to make high-quality decisions based on precise, accurate and timely information (Stanczyk et al. 2015, 160). To deliver set expectations sourcing has to get commitment from executives, processes need to be well-defined, resources have to be qualified and adequate. Sourcing needs to be able to utilize the information technology, the communication has to be clear and the

tools for measuring savings needs to be agreed. (Trent & Monczka 2005, 30) Many prior research highlight the importance of sourcing organization design. Organization needs to be clear, the best for the business targets and in line with sourcing strategy (Trent et al. 2005, 30; Trautmann, Bals & Hartmann 2009, 195) (Stanczyk et al. 2015). Eloranta et al. (2012) found that companies who are able to take advantage from the markets understand the different types of purchases, supplier markets, business logics and competition situations (151). Sourcing can support companies by providing the information from the supplier markets. Supplier markets can be managed in multiple ways. One approach to manage suppliers is the supplier relationship management concept.

3.3 Supplier relationship management

This thesis did not cover supplier relationship management (later SRM) in detailed because of the huge amount of prior research. However, it is important to understand the basics how sourcing can bring added value to the business by managing supplier relationship. In addition, the supplier relationship management affect to the amount of sourcing resources needed in the after-sales and spare part business. For the reason, the SRM is discussed in the theses.

Before supplier can be managed, the strategy for co-operation has to be clear. Business needs to define what is expected from the output of the supplier. Sourcing can create different strategies from different types of suppliers. Performance-based partnership, competitive binding and securing continuity of supply needs different activities on supplier relationship management (Van Weele 2014, 166–67). SRM have similar phases in co-operation and it can be divided into three phases - supplier introduction, supplier performance management and supplier phase-out (Eloranta et al 2012; Van Weele 2014). These phases are discussed in the next chapters.

3.3.1 Supplier introduction

The hypothesis is that, at this point the supplier and sourcing have already gone through the quotation and pre-assessment phases. In the supplier introduction phase commercial terms need to be agreed. Commercial terms are terms of delivery, terms

of payment, penalty clauses, warranty conditions and other term such as general terms of purchase (Van Weele 2014, 35–38). Commercial terms and the purchase price are important part of the future co-operation. Primary all commercial terms mentioned above should be agreed in written to avoid possible later misunderstandings.

In the supplier introduction phase sourcing should also note to discuss with the supplier about more operative issues. What is the reason for order acknowledgement, how and who to contact if the there are issues for supplying the materials. What is the correct package and markings instructions for the products. In addition, some organizations might operate with new suppliers by agreeing only purchase price in this phase. This approach makes SRM harder specially if co-operation with supplier has become a routine.

3.3.2 Supplier performance management

Supplier performance management is one of the main tasks for sourcing. Prior research points that supplier performance management leads to better decision-making when performance management measures are clear and can be measured. Supplier performance management lead to better communication and creates transparency.

Supplier performance management measures can be:

- Number of supplier quotations obtained per month
- Number of order issues per month
- Number of rush order issued per month
- Number of on-time deliveries
- Number of incomplete deliveries
- Premium transportation cost due to rush order
- Percentage rejected deliveries related to the number of total deliveries
- Number of non-matching invoices

(Van Weele 2014, 288–300)

Eloranta et al. (2012) notes the different approaches for sourcing. Supplier performance management in the daily level, was seen as passive or active sourcing. The characteristics for both type of sourcing is presented in figure 3 (151).

Passive sourcing professional	Active sourcing professional
Causes expenses	Seeks value
Aims to save expenses	Aims to develop businesses
Waits suppliers to contact	Finds new suppliers
Waits active suppliers to reasons their propose superiority	Advertise his/her company, ideas and needs to selected suppliers
Trusts to given information from suppliers	Visits suppliers and does assessment to their know-how and performance
Does the decision based on given offers and solutions	Describes actively the needs for new solutions to be developed together with supplier
Approves or declines the enhacement given by the suppliers	Re-develop the enhacement given by the suppliers

Figure 3 Passive and active sourcing

3.3.3 Supplier phese-out

Prior research notes in the SRM the situation when co-operation with supplier becomens to end. Scholars point the importance to end the relationship in the good manner, not only to stop sending purchase orders to the supplier (Van Weele 2014). Companies who are performing as OEM and spare parts need to remember that when manufacturing has no longer need for the products, they need to internally make sure that after-sales needs are secured in future.

3.4 Spare part sourcing

The prior research on spare part or after-sales sourcing can be stated missing . Many scholars in after-sales research mention sourcing with only one or two sentences. The same applies to procurement literature. Heikkilä et al. (2013) focus in their book “Purchasing services” on the sourcing topics of R&D, marketing, IT, industrial services, but after-sales or spare part purchasing is missing. Other procurement and supply chain literature covers multiple topics, but spare parts are missing (Eloranta et al. 2012; Van Weele 2014). The same applies to academic reviews – after sales or spare parts souring topics are missing in the academic literature in general.

A few examples were found that touched sourcing indirectly. Pourakbar, Frenk & Dekker (2012) examined the end-of-life inventory problem. Their reseach analyzed electrical part purchase from OEM at the point when manufacturing ends. This is a

typical situation for after-sales who use electrical parts as a part of a bigger product or a machine under maintenance. The study presented a model for spare part purchasing. They proposed one big purchase order with a review to cover the after-sales need until the end of the customer warranty period or the agreed service level.

Pourakbar et al. (2012) findings affects to spare part sourcing in many ways. In companies where a product is used in manufacturing, it is important that either a person from manufacturing internally passes the product purchase responsibility to spare part sourcing or agrees with the supplier that they are responsible for informing that the production of the part will be discontinued. Both cases, spare part sourcing needs to be aware of product availability, which is one of the most important requirements in after-sales.

This after-sales chapter highlighted the importance between inventory management, supplier performance and customer behavior (Jouni et al. 2011, 3). Spare part sourcing is responsible for supplier performance so that the co-operation between the spare part customer service and inventory management need to be seamless. After-sales normally operate with bigger inventories than manufacturing. When the inventory parameters of purchasing quantities are changed, sourcing needs to inform the changes to suppliers. The hypothesis is that the spare part business has some spare parts in the inventory where some contingency occurs. For those, sourcing is able, together with inventory planning and sales, to estimate some consumption forecasts. With the forecast, sourcing has better opportunities to manage the costs of these products. Spare parts sourcing can agree with the supplier that when the forecast quantity and the actual need do not match, the remainder will be purchased in the next period.

Spare parts might support after-sales with products that are not kept as stock material but purchased when needed. These materials are the most challenging for spare part sourcing and for the supplier when purchasing takes place. In these cases spare part price lists are of great importance to the spare part sales and to the supplier. New spare parts are added to the price list with a quotation process. Sourcing of spare parts can bring added value to the spare part sales by finding suppliers who are able to give quick responses and high quality customer service.

3.5 Purchasing after-sales services

In chapter two the characteristics of after-sales and spare parts from the sales point of view was discussed. In this section we will discuss the topic from the procurement point of view. Hypothesis is that purchasing after-sales services is purchasing (maintenance) service. The spare parts can be a part of the service purchase.

Eloranta et al. (2012) argues that companies purchase know-how regardless is purchase a product or a service (208). Purchasing service differs from purchasing products in many ways. Service is intangible, perishable, unique and is produced and consumed at the same time (Van Weele 2014, 79). In the academic field service purchasing can be divide into knowledge-intensive business service (later KIBS) and industrial services.

Industrial service can be as example healthcare, catering, office supplies, security, travel or temporary labor. KIBS can be technical consulting, marketing & media, product design services, training, technology & innovation related services. ICT services, industrial maintenance and logistics services overlap to both industrial service and KIBS. (Heikkilä et al. 2013, 27) Purchasing services costs are normally part of companys operating costs (see figure 2).

Many organizations think buying service is easy despite the fact that professionals argue it to be more difficult than buying goods. Traditionally personal relationship is considered to be more important in purchasing services than purchasing product. In some cases purchasing organization are included in the process for handling only administrative matters because budget holders have dominant role in service purchasing decision making. As a result there is risk that strong bonds are developed between internal user and external service provider. For procurement the bond is difficult to change and that explains why improving professionalism for purchasing service is not easy.

Purchasing service differs from purchasing products. Procurement approach to purchasing service needs to be done more service result driven than cost driven. Research show that professionally managed purchasing service can bring savings up to 29 % to company. (Van Weele 2014, 77-79) Service levels are seen as important

part of business in both procurement and after-sales literature. (Van Weele 2014, 79) (Gallegher et al. 2005, 4) The purchaser of service and service provider agrees the response time to start or complete agreed work. Figure 4 illustrate the process for purchasing services.

In principle purchasing service process can be used in all types of purchasing. Only the importance of different stages changes. Eloranta et al. (2012) state that most important parts in the process is proper and clear definition of needs, comparing needs against supplier markets and finding the best solution with cross-organization team (215). The process of purchasing service presents the required steps for procurement to create added value.

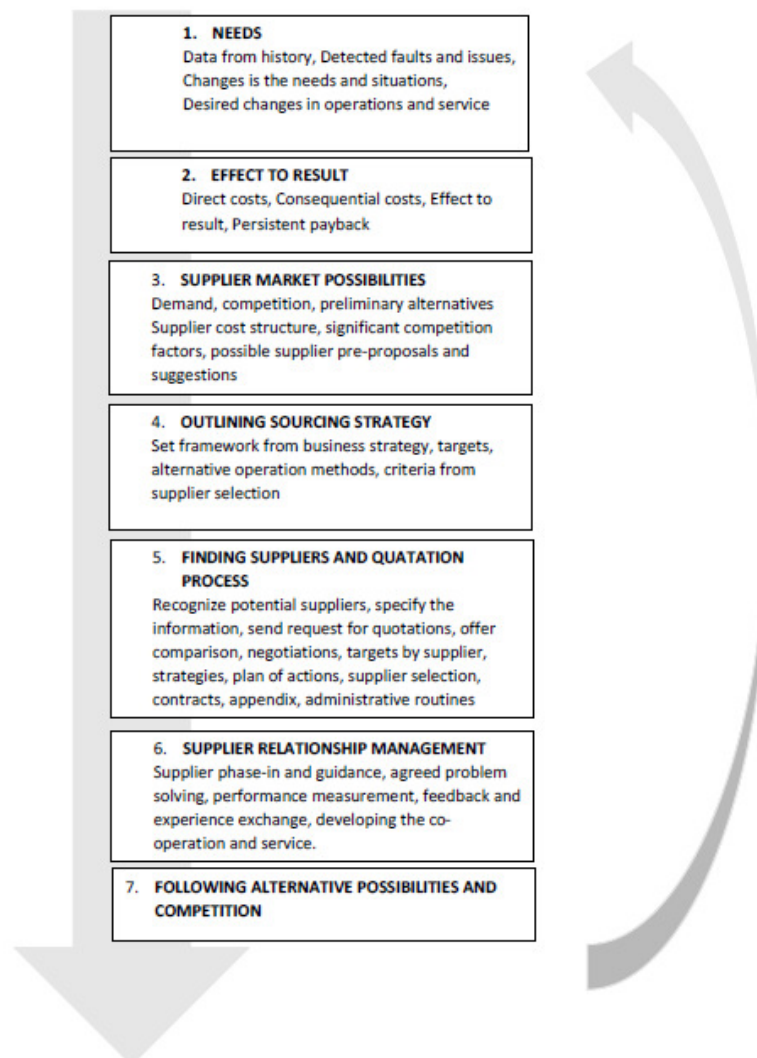


Figure 4 Service purchase process

Purchasing services or purchasing spare parts require resources in both purchasing and sourcing. When management has decided what are the company's procurement objectives, how procurement shall support company's missions, the next step is to analyze and decide how procurement shall be organized.

4 Organization models

Organizations are known to be complex systems (Jensen 1998, 1983). This chapter raises the findings from prior research why organizations are needed and how organization were discussed in literature. The focus is on the models of procurement organization.

Organization can be defined in many ways. Rissanen, Sääski & Vornanen (1996, 12) define organizations as social units that are built and rebuilt in order to achieve set targets. Peltonen (2010, 9-10) defines an organization as a consciously modified social system that is set to support the set targets. Both definitions highlight the statement that organizations are social systems or structures. The reason for an organization's existence is to achieve the given goals and targets. Organizations can be seen as tools or ways to achieve set targets. Organizations are built based on the relationships and interactions between people and groups. Social structures, such as hierarchy and communication channels are built to be as operational as possible. For this reason, organizations are consciously shaped. Organization represent the result of joint operations, but they are separate from the external environment.

Organizations have clear boundaries that separate them from other organizations and from a wider operational environment. (Rissanen et al. 1996, 12; Peltonen 2010, 9-10.)

Rissanen et al. (1996,11) found two elements affecting to the organization modelling. Figure 5 presents the elements and how they influence each other. The mission and the targets for the organization has to be defined and clear. In addition, organization management needs to be placed.

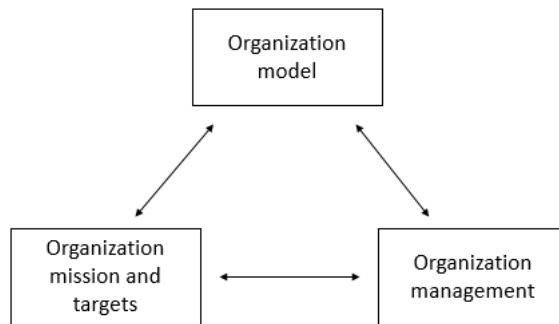


Figure 5 Elements affecting an organization

4.1 Organization theory paradigm

Prior research to the organization and the theories exists from the many decades ago. Scholars found that organization theory includes many different paradigms. A paradigm can be considered a new way of looking at or thinking about something. Four of the most known organization theory paradigm are radical humanism, radical structuralism, interpretive paradigm and functionalism. Figure 6 presents the main differences of mentioned paradigms from the perspective of the nature of social reality and information.

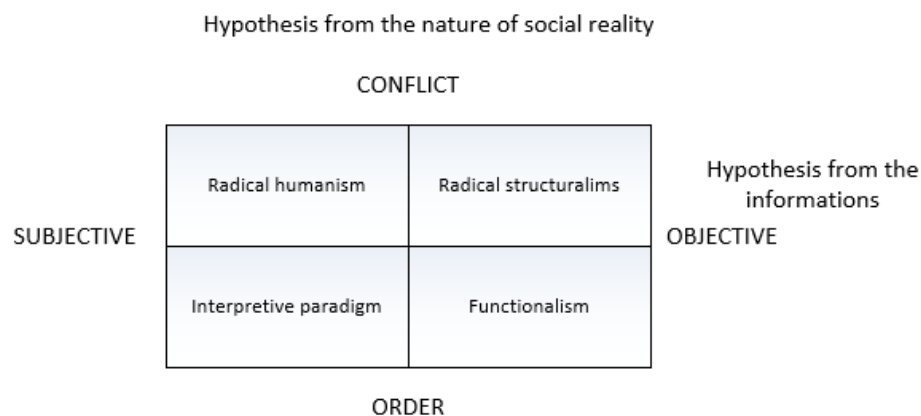


Figure 6 Organization theory paradigm.

In the prior research the most widely used paradigm is functionalism. Functionalism highlights the balance of the organization from the function point of view. Functionalism focuses on how different functions can co-operate without conflicts, what the system's goals are or what functions and decisions support the system's

balance. Alternative theories highlight mental means or political aspects. Radical humanism focuses more on social structures and tensions than functionalism. Radical structuralism aims to criticize the weaknesses in functionalism from the capitalist point of view. The interpretive paradigm relies on naturalistic methods, such as interviewing and observations. (Peltonen 2010, 14–17)

4.2 Organization structures

The organizational structure defines responsibilities and authorities as well as determines how tasks are allocated to the members and which resources are available for achieving the organization goals (Glock & Hochrein 2014, 154). In the organizational structure, the functions, their relationship between other functions and employee relationships are defined. The environment where the organization exists has a strong influence to the organization structure. Table 2 presents a summary of the known organization types, their characteristics and some of their pros and cons (Rissanen et al. 1996, 22-33; Karlöf & Lövingsson 2006, 21–41).

Table 2 Organization types

	Characteristics	Pros	Cons
Line organization (LO)	Hierarchical model where all commands come from the management. Employee gets all commands from his/hers managers only.	Authority and responsibility is defined clearly	LO works well only in a small organizations
Line-staff organization (LSO)	Similar than line organization, but management has staff who gives support and instructions. Staff has no authorisation to give commands.	Management know-how increases compared to line organization	Organization might have challenge to separate commands and instructions. Instructions from staff might be reads as command due to authority of staff.
Project organization (PO)	Is typically found for a project. Organization independency and form are project dependent. Organization is lead by project manager.	PO can take advantage of people competence and expertise.	Responsibility of tasks inside PO might be an issues.
Functional organization (FO)	Is typically used in big organizations. Different functions can be managed by line of staff. The expertise of people is implemented well - in different functions.	The scale benefits can be utilized well. Little internal competition. Management has great possibility to control whole organization.	Might have challenges in customer deliveries. Partial optimization and cultural differences might occur. Responsibilities and jurisdiction needs to be defined all around. When FO is growing there might raise conflicts, distractions or territory thinking. Long reaction time were are typical.

Matrix organization (MO)	Steering in the organization comes from dual directions. The model is normally used in multinational or big corporations. Matrix is more developed model compared to functional organization.	Quite flexible organization. Can modify to changing and complex environment. Resources are used efficiently due to constant interaction between parts of organization. People can move from task to other quite fast.	Vulnerable for conflicts. Managers and subordinate might be unsure whom they should report. Decision might need long discussions and there might occur fobias to make decisions.
Division	Functions are divided into divisions. Division can be (1) product, (2) market-area or (3) customer segment. Essential for this organization is the independency of divisions.	Every division is responsible of the result. Short reactiontime to changes in the markets. Utilize of scale benefits. Opportunities for grow.	All benefits if scale are not capitalized as well as in FO. Overlapping work in different divisions. Internal competition. Challenges in internal pricing.
Profit center organization (PCO)	Is established for profit center. PCO can be created by area, product group or some other argument.	Employees has possibility to see his /her work contribution effect to profit center result.	Profit centers might compete each others. Profit centers are not totally independent. Organization top management can limit the freedom in the organization for better big organization performance point of view.
Network	Organizations rely to others and establish co-operation relationship to reach set targets. One unit can belong into many networks at the same time. A unit steer others in the networks with their own competence and expertise.	The members in the network has possibility to influence to assignments and work methods.	Responsibility of work result is in the group. In networks authority and hierarchy lose the meaning.

4.3 Organization in procurement

In the prior research three organization models are discussed in procurement. Those are centralized, decentralized and hybrid procurement organization (Glock et al. 2014; Trautmann et al. 2009; Pagano 2009). In addition, Van Weele (2014, 267) adds a cross-functional sourcing team as a fourth organization alternative. In the next chapters these organization models are discussed in more details.

4.3.1 Centralized purchase organization

Glock et al. (2014) summarized that only those organizations are considered centralized which concentrate authority on higher hierarchical level. Generally, a centralized purchase organization can be found on many levels in an organization – a highly centralized purchasing organization can be found on a low level in the organization. Scholars state that a centralized purchase organization utilize major corporate activities and sophisticated purchasing techniques better than a decentralized organization. Companies where purchasing volume are high, tend to have high degrees of centralization in purchases. When the primary mission of a purchase

organization is related to costs reduction by utilizing scale benefits, the centralized purchase organization has been found to be the dominant organization type.

Bigger organization have been found more likely to have more available resources but their structures are more complex than in small organizations. When the size of an organization grows, departmentalization has been found to increase at the same time. Companies have been found to utilize a higher degree of centralization when the purchasing is seen important, complex or when risks have been identified.

When the size of purchasing organization grows, the formalization of purchase increase at the same time. The size of a purchasing organization varies during the lifetime of organization age. The size of purchase organization have been found to be larger at the new buying situation than in repeated purchase. An empirical study state that an increase in the size of purchase organization leads to higher decision quality in the purchase process.

Between the scholars some of the research findings have been in contradictory. Some authors have been found that increasing size of organization leads to more people being involved in purchase process. Another study have been found that more people are involved specially in early stage of buying process. Third study has found centralization to be lower at the end of the purchase process. All the finding had opposite opinions or founding in other research and authors. (idib. 157, 159-161).

4.3.2 De-centralized purchase organization

De-centralized purchase organization have been found more likely in the companies with a business unit structure (Van Weele 2014, 267). De-centralized purchasing organization provides higher flexibility and shorter lead times. When company want's to co-operate closely with suppliers in product development, de-centralized purchasing organization enables better local competence and closer proximity to the suppliers. When company has non-routine products what need quick decision making de-centralize purchase organization was found to be beneficial. In addition, use of performance measurement forster de-centralization. (Glock et al. 2014, 158; 161) Van Weele (2014) raise some of the disadvantages of de-centralized purchase

organization. In the big size companies de-centralized purchase organization might negotiate with the same supplier and same products. When supplier capacity is tight, purchase organizations have found to compete with same supplier capacity. (ibid. 267).

4.3.3 Hybrid purchase organizations

Hybrid purchase organization presents the combination of centralized and de-centralized purchasing organizations. Terms “hybrid”, “pooling” and “co-ordination” has the same definition in this context. (Van Weele 2014, 269) Both Van Weele (2014) and Glock et al. (2014) had similar findings. Research have been state that hybrid purchase organizations are most commonly used in many industries. Hybrid purchase organization have been found to have large number of variables, so those are difficult to compare. (Van Weele 2014, 264; Glock et al. 2014, 158 and 195) A hybrid purchase organization can be purchase organization with global integration and local responsiveness. Characteristics for hybrid purchase organization is that there is a division of tasks between the head office and local. (Trautmann et al. 2009, 195)

Van Weele (2014) found three characteristics what help to understand the variables in hybrid purchase organization: Voluntary co-ordination, lead buyership and lead design concept. Voluntary co-ordination organization was seen free to decide the level or co-operation with the corporate level procurement. This have been found mostly used approach in hybrid purchase organizations. The characteristics for lead buyership have been the idea that unit who has the greatest volume for purchase is responsible for negotiating corporate agreement with the supplier. As a third characteristics was found the lead design concept. There the operating unit, who owns the design of the specific product or component, was found responsible for contracting the suppliers. In addition, Glock et al. (2014) found that the degree of lateral involvement in purchasing increases as the purchase decision becomes more uncertain and risky. (156)

4.3.4 Sourcing team

Van Weele (2014) raised the cross-functional sourcing as the fourth category in the procurement (267). Glock et al. (2014) found that sourcing teams have been established specially in case of complex purchases. Sourcing team performance depends highly on the team leader. Challenge in the sourcing team occurs in cases when a sourcing professional was assigned to a team on a part-time basis. Promoting motivation and commitment was found as a critical factor in that case.

Success factors for implementing cross-functional sourcing were found from the availability of key organizational resources, participation and involvement of key suppliers, levels of internal and external decision-making authority and the effort spent on the assignment of teams to tasks. (Ibid.164)

4.4 Other organization standpoints

4.4.1 Organization mission and targets

Prior research found that organization mission and targets has correlation to organization model (see figure 5). After the organization mission and target have been defined and communicated, planning of organization model can be started. Same apply to organization management. Scholars state that organization management has direction to go forward after the mission and targets are known. (Rissanen et al. 1996,11)

4.4.2 Organization management and development

Scholars note that successful organization has two important features: dynamic and effective management. In the prior research management was divided into two categories: management of subjects and people leadership. (Rissanen et al. 1996, 67) Regardless on the organization model, the decision making process and people leadership have been founded to be the most important element for organization success. Management have been found to have a direct effect to employee retention. "Employees do not quit companies, they quit managers" (Whittington & Galpin 2010, 17).

Prior research gets support from scholars from the procurement. Glock et al. (2014) argue that procurement officer existing in the higher level in the organization have been found critical to organization design effectiveness. In addition, companies where CPO have been represented on high hierarcial level in the organization use more spohisticated purchasing techniques. The organization level where CPO have been represented also states the importance what procurement enjoys in the company. (idib. 56, 159)

Van Weele (2014) continues that the organization structure have been dependent on view of management hold towards procurement. When procurement was seen mainly as operation function, purchasing department was found positioned quite low in organizational hierarchy. (264) Strategic purchasing has been found significant impact to organization performance (Glock et al. 2014, 160, 168). Structure of a company has been a critical determinant of performance. Companies that use appropriate design features exceedingly achieve better purchase performance than companies relied on a simple purchase organization. Firm pursuing a cost strategy should adopt a centralized purchasing structure. Companies pursuing a differentiation strategy can improve performance by decentralized purchasing model.

Scholars state that executive leaders should not overlook the importance relationship between organization design and the success of major initiative, including sourcing initiatives (Trent & Monczka 2005, 29). Prior research has been proven the value of purchase organizations for the profitability and competitive position of company (Glock et al. 2014). In general organization development target has been to reform organization to perform better to achieve set targets. In the prior research organization development has included many aspects: standardize work methods, sharing best practice and formalization of rules and procedures are few example of the development areas for organizations (Rissanen et al. 1996, 56–57; Pagano 2009, 910; Glock et al. 2014, 155). Prior research notes the organization management during the different times. According to Whittington and Galpin (2010) less than 30 % of workforce has been truly engaged to work. The research stated that it was crucial to make sure that employees are engaged specially during recession. (Ibid.15.)

5 Working culture

In this chapter the aim is to understand the impact of the culture. The target is to raise findings from prior research regarding the country and working culture.

Furthermore, understand better how British, Finnish, French and German cultures differ so that the findings can be used in the organization model design.

5.1 Definition of culture

Culture has been seen as an integrated system of learned behavior pattern that is characteristic of the members of a society. (O'Hara-Devereaux & Johansen 1994)

Culture refers to the total way of life – the underlying patterns of thinking, feeling and acting – of particular groups of people. Culture is seen learned, not inherited, and transmitted from generation to generation primarily through conditioned learning. (O'Hara-Devereaux & Johansen 1994)

Social culture have been found to be the most powerful level of culture, with represent the values and behavior that guide people lives. Social culture was seen direct people behavior, patterns of thinking and feeling by providing answer, automatically and by reflex, in most areas of life. Social culture have been defined as an integrated system of values, beliefs, rules and rituals what tell us for example how to raise children. (O'Hara-Devereaux & Johansen 1994)

Corporate culture was found deliberately shaped and consciously learned. Corporate culture directs processes, information, internal relationship and values. Corporate culture reflects assumptions about employees, customers, mission, products, and activities. Corporate culture have been found more adaptable than social culture. Prior research state that when conditions demand new direction, corporate culture have been found to change to fit into changing environment. (O'Hara-Devereaux & Johansen 1994)

Long (1997) defines organizational culture in term of values, norms and practices. Value have been defined as a organization member believe something is worth doing or having. Norm have been defined as belief how people in the organization should behave or should do to complete the given work. Practice have been defined as

formal or informal routine to do the given work. Practice has been found as the most visible symbol of culture. (Long 1997, 6)

Organizations have been found to have overall culture and multiple subcultures. The influence of overall culture and the amount of conflict among subcultures vary in organizations. Culture and specially subcultures heavily influence what have been defined as useful, important, or valid knowledge in an organization. "Culture embodies all of the unspoken rules about how knowledge is distributed between organizations and the individuals in it." (Long, 1997, 8-9, 11)

Companies with low trust culture have been to rebuild trust levels in their culture before they can expect individuals to share expertise freely without worrying about the impact of this sharing on their value to the company. A culture that clearly values some units over others have been found more likely to undermine cross-functional knowledge sharing, in part, by supporting subcultures that seek to defend their knowledge bases. (Long, 1997,14) Culture have been found to mediate the relationship between individual and organization level knowledge. Culture have been found to create the context for social interactions that determines the value an organization derives from knowledge. In addition, the culture have been found to shape the processes by which new organizational knowledge in captured, legitimated and distributed. Table 3 presents characteristics of content of cultures.

Table 3 Characteristics of context of culture

Low context	High context
<ul style="list-style-type: none"> • Tend to separate different aspects of their lives and relationships • Require detailed information in a communication • Prefer direct approach • Value rules and regulations • Separate feedback as subjective and objective 	<ul style="list-style-type: none"> • Have extensive information networks among family, friends associated and clients • Have relationship that are close and personal • Prefer indirect approach • See rules and regulations as personal • Take all feedback as personal

5.2 Country-specific cultural characteristics

5.2.1 British

British have been found as inquiring and polite people who value humor and certain traditions. Characteristics for British culture have been to discuss about holidays and other family related matters during and between meetings. People in business have been found to think that it was better to be self-deprecating than self-promotional. People who were found verbally positive about themselves may have been disbelieved and disliked. British have found to differ from other Europeans in communication. British strongly placed diplomacy before directness in communication. In addition, British have been found try to say negative in positive way.

In British business structure the board of directors have been found to do the decisions. Furthermore, the “old boy network” have been found a reality in British executive life. Prior research found that many British companies have been found moving from hierarcial structure to less bureaucratic approach. Managers have been expected to have interpersonal skills to meld a team together and the management style tended to be more generalisation than specialisation.

At the first business meetings British have been found to be rather formal. After two or three encounters the first names can be used. British rarely make the final decision in the first meeting. Since, British have been placing diplomacy before directness in communication, they have found not to disagree openly with proposals from other side. In prior research humor have been found important in business sessions. British managers have been found often give instructions to subordinates in a very indirect way. This type of language have been found to be confusing for the non-British.

British have been found to have meetings frequently. The prior research found British to consider themselves to be punctual. However, it have been found typical for British to arrive to meeting five to ten minutes late. British have found to prepare to the meetings relatively little. Over-prepared for meeting have been found resulted to negative feelings towards those who had not prepared in advance.

Meetings have been found to be inconclusive and agendas are followed loosely. (O'Hara-Devereaux & Johansen 1994)

5.2.2 Finnish

Scholars found that Finnish are democratic and reliable people. They value modesty and time spend close to the nature. Prior research found that Finnish use titles and address others by their name only if that has been seen necessary. Scholars found that the way of address others is a country specific custom - this does not mean Finnish have been rude. Small talk was found unnecessary and insincere in the Finnish culture. Strangers have found not to engage easily in conversations.

Prior research states typical Finnish is not introvert. However, Finnish culture have been found to have higher tolerance for silence than generally in Europe.

Characteristics for Finnish have been that they speak only when they have something important to say and they do not need long-standing personal relationship in order to conduct business. Finnish have been found to respect others by trying not to waste others time and getting right to the point. In addition, Finnish people have been found to acknowledge modesty and understatements. Overselling and sales talk in US way have been found not working well in Finland. For Finnish "yes" was found to mean yes. Furthermore, it was found a sign of definite agreement.

Prior research founded that everyone knows what is expected of them in the Finnish organization. The organization trust that employees has the needed levels of skills to perform given tasks. Finnish employee have been found to prefer clear goals and objectives and people do not like close supervision. In addition, Finnish employee have been found a high standards of honesty, reliability, punctuality, technical knowledge and education. (O'Hara-Devereaux & Johansen 1994)

5.2.3 French

In prior research French have been found to be independent and polite people, who value good communication skills and have a strong national identity. French have been found to stick to logic at all times. They do not appreciate "hunches" of feel for situations. In addition, they have been found to like a good talk. French may think

people are not very smart if they don't talk enough. French have been described as clear-sighted, perceptive thinkers who often show emotions.

In the meetings French have been found to maintain polite and formal style. Meetings have been likely to be long and wordy, since French like to analyze issues that are discussed. French arrive at a meeting formally dressed. Surnames and formal introduction have been found to be used. Moreover, seating have been found to be hierarchical. French negotiation style includes presenting their demand and revealing their hand as late as possible during the negotiations. Hence, other cultures have been found interpret French negotiation style might as cunning in. French dislike being rushed into decisions although they have been seen themselves on quickness of mind. French rarely have been making important decisions during meetings. Characteristics for France culture have been found that French see more important to have long-term relationship more than quick deals. (O'Hara-Devereaux & Johansen 1994)

5.2.4 German

Prior research found Germans sincere, dutiful people who value loyalty and straightforwardness. They generally stick to what have agreed orally. In the meetings Germans were found to arrive on time, well dressed and with disciplined appearance. Germans have been found expecting others to do the same. During the meetings they have been found to observe hierarchical seating and order of speaking. In addition, Germans arrive well informed, present logical, often weighty arguments to support their case. Germans have been thinking over possible counter-arguments and will have their second line of argument ready. They categorize arguments and each member speaking was found to speak his or her specialty. Germans like to go over details many times for avoid misunderstanding later. They like to make decision within meeting, but not like to be rushed.

Germans are found to not liking humor or jokes in the business. Jokes can be used after the business. In the business Germans have noticed not to appreciate casualty. Serious questions are expected to received serious answers. Germans try not to make mistakes. When mistakes occur they are noted and discussed. Characteristics

for German have been that they put truth and directness before diplomacy. Fact have been found to be an important issue. (O'Hara-Devereaux & Johansen 1994)

5.3 Working culture and groups

Heterogeneous work groups have been found to be less socially integrated and to have experienced more communication problems, more conflict, and higher turnover rates than homogeneous groups. Prior research state that people who have been more different from their coworkers in term of age, tenure, education, sex and race have been reported feeling more uncomfortable and less attached to their employee organization. (Chatman et al. 1998, 749) An organization have been found to rely on members to cooperate with one another in accomplishing goals to enhance its survival. Member of a important in-group have been found more likely to cooperate with in-group members and to compete against out-group members. Scholars state that identifying the factors that cause people to categorize some people as in-group members and others as out-group members was seen important. (Chatman et al. 1998, 750–51).

5.4 Working culture and demographic diversity

People have been found frequently use demographip characteristics to categorize others and predict their likely behaviors. A research have found that immediatelly apparent physical features, such as sex and race, have been widely used to form impressions of others. Demographic attributes have been tend to be used as a basis for social categorization. Scolars state that that is because demographically similar people have been likely to share similar backgrounds and experiences. Demographic attributes have been often assumed to be associated with underlying attributes, such as value, cognitive styles or past experiese. People who have been more demographcially different from their coworkers was found to view demographic attributes more imporant than people who are more similar to one another. (Chatman et al. 1998,751)

Chantman (1998) found that the importance of demographic attributes as social category has been higher in heterogenous organizations only when sex was exluded

from demographic attribute scale. The importance of organizational attributes as social category has been higher in collectivistic organization culture. Members who were more similar to their coworkers has been found more influenced by their organizations's focus on either individualism or collectivism. Face-to-face interaction has been found to be the enabler for organization to complete the work. In addition, sending memos has been found less effective for conveying information and resolving problems.

Scholars have found conflict existing more in individualistic cultures. When similarities decreases, the impact of culture creativity has been found greater. Culture have been found influence more on productivity among coworkers who were demographically similar than among those who have been more different from one another. Similar people have been found significantly more productivity in individualistic culture. (idib. 772-774)

6 The case-study company

The purpose of this chapter is to present the case-study company and the environment in which the company operates. In this chapter, the company organization models from 2016 and 2017 are discussed in high level. In addition, the company's global sourcing and spare parts organization are presented.

Konecranes customers operate in manufacturing and process industries, shipyards, ports, and terminals. In 2016, The company was organized into two divisions - industrial equipment and service. The equipment division manufactures lifting equipment for the customer segments stated earlier. The service provides after-sales services and spare parts for all types and makes of industrial cranes, hoists, machine tools, and port equipment. The company's net sales were 2 118 million euros, where 44 % came from the service division. In addition, the service division had more than 460,000 pieces of equipment under maintenance contracts. ("Financial Statements Bulletin 2016" 2017, 3,7, 8 and 41) Global sourcing was organized under the equipment division. The head of global sourcing had two managerial layers between him and the CEO. The organization is presented in Figure 7, on the left side.

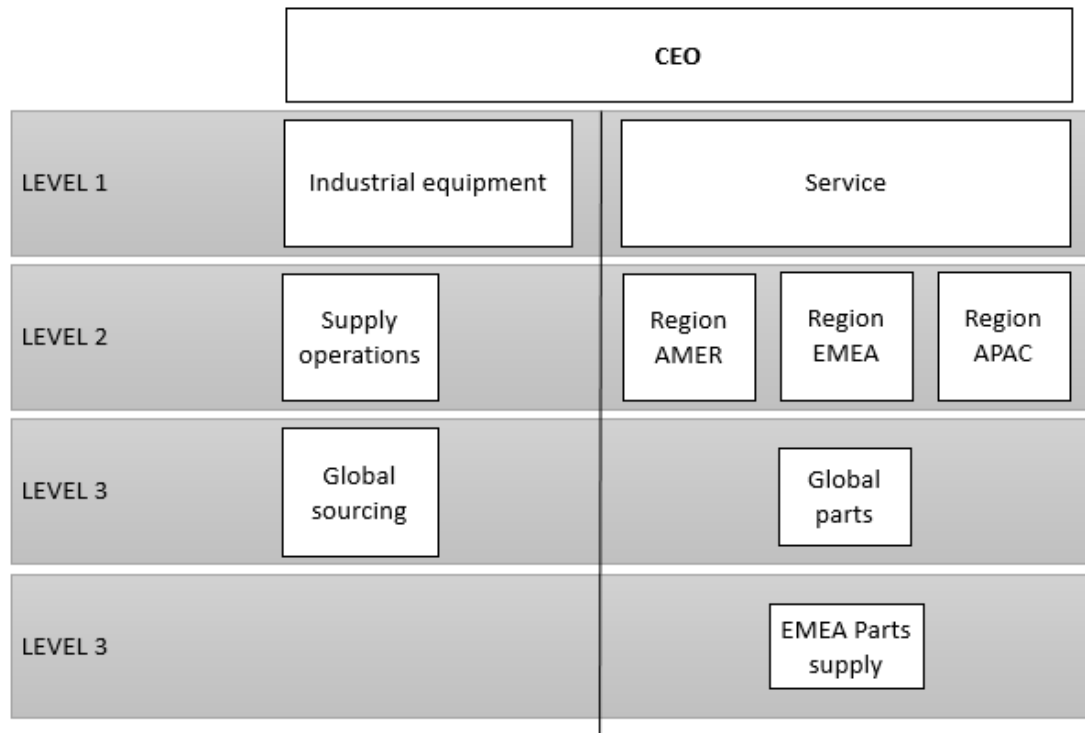


Figure 7 Konecranes global sourcing and spare parts organizations in 2016

The head of global sourcing had five sourcing categories under his management. All categories had a nominated sourcing director. The categories were:

- Mechanical components and assemblies
- Electrical components and assemblies
- Parts subcontracting and steel
- Logistics
- Indirect

Konecranes global sourcing implemented the targets and actions to the supplier base through the nominated supplier managers. In 2016, Konecranes supplier manager coverage was around xx %, from the supplier annual spending point of view.

Konecranes managed suppliers with supplier managers to around xxx suppliers. In total, the company had around xx xxx suppliers in the supplier base. Konecranes spend from the suppliers was around xx % of the annual revenue. The after-sales and the spare parts suppliers were covered by the global supplier managers. However, the spare parts supplier base was multiple times larger compared to the supplier base in manufacturing.

The EMEA parts supply organization was founded in the second half of 2016. The organization mission was to support spare parts with materials management and

procurement operations in the area of Finland, France, Germany, and the United Kingdom. Materials management includes spare parts warehousing and logistics. Procurement includes operative purchasing and sourcing operations. At the beginning of 2017, all operations, with the exception of sourcing, were operated in the countries. The head of the EMEA parts supply operation reports to the Vice President of Global Parts. The EMEA parts supply organization is presented in Figure 7, on the right side. In addition, figure 8 presents the EMEA parts supply locations and other Konecranes spare parts units. EMEA parts supply operations are presented in the picture with red triangles. The rest of the spare parts units are presented with yellow circles. Located in Sweden is a Lifttruck spare parts unit, which is not included in the EMEA parts supply.



Figure 8 EMEA parts supply and other Konecranes spare parts units

On January 4, 2017, Konecranes completed the acquisition with Terex Material Handling and Ports Solutions (later HMPS). Konecranes estimated that after the acquisition of Terex MHPS, the company had around 18,000 employees in 50 countries. The combined sales revenue would be around 3 400 M€. The service portion of sales revenue was estimated to be approximately 40 % (“One Technology Company” 2016). In the first week of 2017, Konecranes reorganized into three divisions. The business area service and industrial equipment remained, and port

solutions was founded. Global sourcing and material management was organized under supply operations, which was under the business area industrial equipment.

7 Research implementation

In this chapter, the research methodology is clarified. The chapter discusses the research process, data collection, and result reliability. The purpose of this chapter is to highlight the research method used in this thesis and the process in which this study was made. The chapter illustrates to the reader that the thesis is based on considered choices.

7.1 Research process and methods

The research process started from defining the research problem and questions. The literature review was utilized to form a theoretical framework to answer the research questions. Based on the literature review, an internal survey was created. The internal survey was analyzed using quantitative research methodologies. Data 1 was completed when the internal survey and ERP data were analyzed. Based on data 1 and the literature review, the organization models A, B, and C were created. Data 1 and the organization model were presented in the interviews. Data 2 was analyzed using qualitative analysis. Finally, the conclusion and suggestions were made after comparing the literature review, Data 1, and Data 2. The research process is presented in figure 9.

This research was completed using both qualitative and quantitative research methods for a few reasons. Hirsjärvi, Remes, and Sajavaara (1997) state that both research approaches fulfill others. In addition, the interviews will give better validity to Data 1. (idib. 132–37).

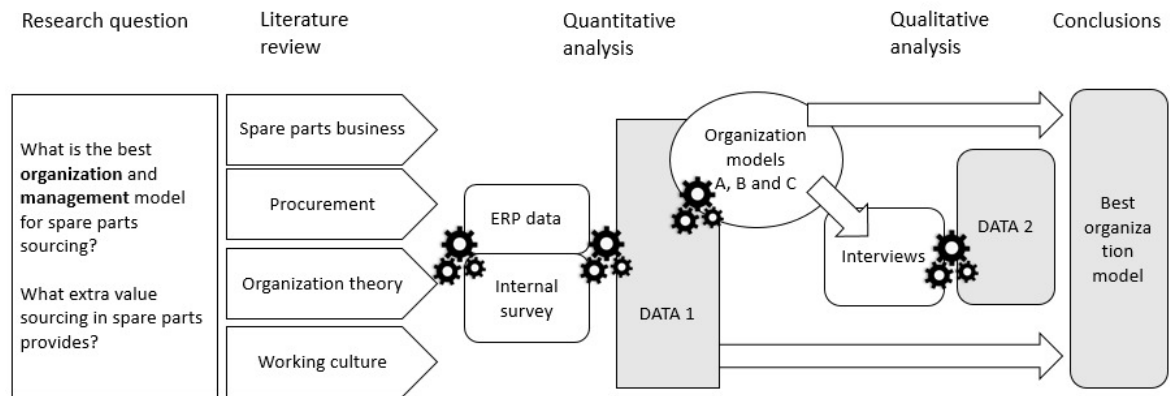


Figure 9 Research implementation process

7.1.1 Internal survey

The internal survey was created based on the prior research and writer's experience. The survey questions were set to cover the thesis questions and other internal analysis needs in the same survey. The first draft of the questionnaire was created in beginning of December, 2016, after the completion of the literature review. The survey was presented and discussed with four professionals in the company. The people were:

- Director, EMEA parts supply
- Business development manager, spare parts
- Sourcing director, global sourcing
- Director, group technology (former head of global sourcing)

After the discussion, the survey was limited to the total amount of 26 questions. The questions are presented in Appendix 2. The strategy for the internal survey was that there are tailored questions for different respondent roles. The strategy was that the internal survey gives responses from the Konecranes spare parts business organization culture point of view, from the role and region point of view, and from the thesis focus group point of view. Based on the strategy, the question was defined from the role perspective. The survey questions by role are presented in figure 10.

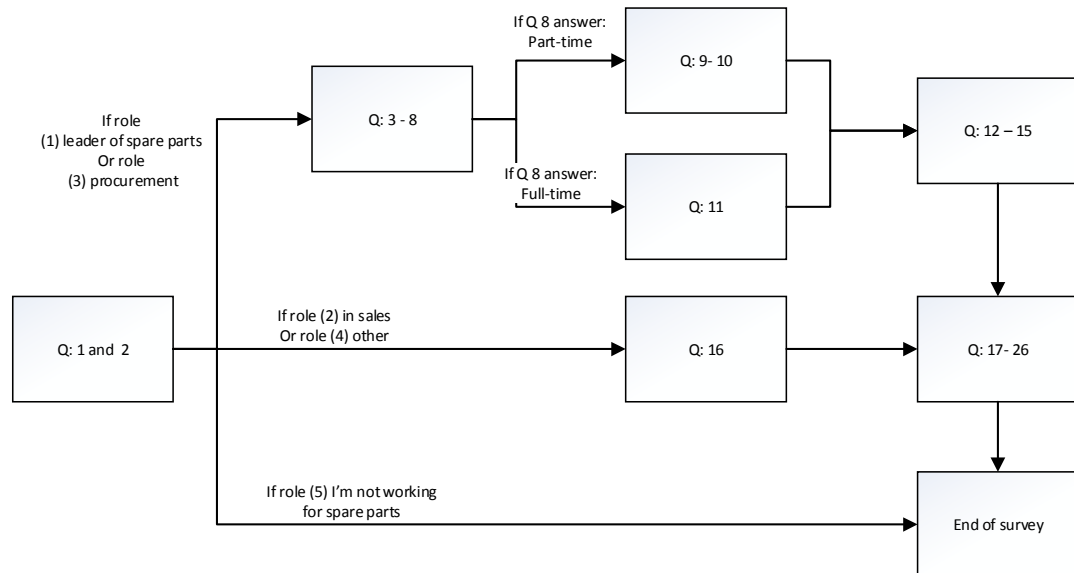


Figure 10 Survey questions by role

The tool used for the survey enabled the creation of multiple types of questions. The survey had 21 questions with single select, 3 multiple choice, and 2 open answers. The multiple choice questions were questions 20, 24, and 26. The open-answer questions were questions 22 and 25. The strategy for single-select options was that the respondent would not have to think about the correct answer for too long. For example, question 5, how many agreements were made by your organization with external suppliers in 2016? The single-select answers were:

1. No agreements made
2. Less than 5
3. 5 – 15
4. More than 15
5. I don't have the information

The survey respondents were pre-selected from the global spare parts organizations. The leaders of the spare parts unit were known and the skype for business enabled to find other respondents from the spare parts organization. Skype for business has the feature contact card, and from there, the organization and the people were found. Nevertheless, the survey had the option "I am not working for spare parts." By this, the target was to minimize the responses from the people who had changed their position in the company and were not working in spare parts anymore.

7.1.2 Organization models A, B, and C

The organization models A, B, and C were created after Data 1 was analyzed in January 2017. The research strategy was to present the organization models to the interviewees. Hence, the organization models are considered to be part of Data 2. The foundation for the organization models came from the literature review and from prior experiences and observations.

Organization model A was seen as a centralized sourcing organization model when comparing the model to the organization literature. In addition, organization model A was the valid organization model for Konecranes. In model A, the suppliers are pursued and managed from the global sourcing organization. Global sourcing manages SRM, contracts, and price negotiations. In the model, global sourcing, or the nominated supplier manager, collects the ERP data independently, (re)negotiates new prices, and updates the purchase prices to every spare part ERP system.

Organization model B was seen as a hybrid purchase organization. In the model, the business has the responsibility for the ERP data. The business gives global sourcing or to the nominated supplier manager the list of spare parts. The nominated person negotiates new prices with the supplier and shares the list with spare parts. After that, person from the spare parts updates the new prices to the systems.

From the prior research point of view, organization model C represents the decentralized organization. In this model, all sourcing was done in the spare parts units. The reason for having this model as an option was due to the results from the internal survey – the spare parts business has a different supplier measurement than manufacturing. In addition, the co-operation between the divisions was found an issues of prior research.

The organization models A, B, and C are presented in more detail in Appendix 3. The organization models' visualization was intentionally kept as simple as possible. The strategy for visualization was to enable the interviewees to understand the organization models' main differences as clearly as possible. In addition, the simple visualization was considered to give the interviewee enough interpretation for his / her own proposals.

7.1.3 Interviews

The purpose for the interviews was to get verification of Results 1. In addition, the purpose was to get new data to the research questions and answers to the proposed organization models (Hirsjärvi et al. 1997, 205). The interviews were completed between January and February 2017. One internal interview was done via a Skype call and the rest in face-to-face meetings. The interviewees were selected based on the role or business area of the interviewee; the interviewee worked either in service, spare parts, or sourcing. The target was to have a sourcing interviewee with working history at different levels in the organization. This was achieved.

The interview process was similar with all interviews - introduction, objective of the meeting, and the interview. The meeting started with Data 1 presentation. Data 1 was modified to be more detailed in the internal interviews. Consequently, in the external interviews, Data 1 was presented in a more general way. The interview's focus was put on organization models after the presentation and interview about Data 1 was completed. The strategy for this was multidimensional. By presenting first the findings from Konecranes, the interviewee had a better chance to get inside the topic. In addition, the trust between the interviewee and interviewer became stronger, which enabled the interviewee to comment without restrictions.

Furthermore, the interviewer could make notes during the Data 1 presentation from the interviewee. At the end of the interviews, when everyone was focused on the topic, organization models were presented. In addition, the interviewee had the opportunity to propose alternative organization models.

The strategy for external interviews was to record the interviews. Permission for recording was requested at the beginning of the interview, and the recording device was on the table all the time. The strategy for internal interviews was different. Internal interviews were not recorded. The hypotheses were that if internal interviews were recorded, the interviewees would not share all the comments that they really want to tell. For that reason, the recording from the internal interviews is based on writing.

7.1.3.1 Internal interviews

The internal interviewees were selected from two groups. The strategy for internal interviews was to invite people from the business areas of service and sourcing, which was achieved. As the company had completed the acquisition of Terex HMPS, the availability of people was very limited. In addition, the reporting period affected the availability of people. Nevertheless, four interviews were completed. The original aim was to interview the head of the service division, but that was not possible.

Table 4 presents the internal interviewees by title, organization, and the duration of the interview.

Table 4 Internal interview respondents

Interviewee	Date	Title	Organization	Duration
A	20.1.2017	Vice president	Service	90 minutes
B	1.2.2017	Vice president	Global sourcing	40 minutes
C	2.2.2017	Senior vice president	Service	90 minutes
D	6.2.2017	Sourcing director	Global sourcing	55 minutes

7.1.3.2 External interviews

The external interviewees were selected mainly from the searches made in LinkedIn (www.linkedin.com). Two of the interviewees had prior experience working at Konecranes. Three of the interviewees were unknown before the interviews. Table 5 presents the role and the duration of the external interviews. Two of the interviews were held in the meeting room of Konecranes, in two cases in benchmark company meeting rooms, and one in a restaurant.

Table 5 External interview respondents

Interviewee	Date	Role	Duration
A	24.1.2017	Vice president, global sourcing	150 min
B	24.1.2017	Global category manager	120 min
C	27.1.2017	Former CPO of case study company	180 min
D	31.1.2017	Director, MRO sourcing	150 min
E	31.1.2017	Logistics manager	120 min

7.2 Data collection

7.2.1 ERP data

The ERP data in this context represents two systems: the data from the Konecranes official document management system (Pactum) and the SAP. All Konecranes legal agreements were instructed to be located in Pactum, which was implemented a few years ago. The strategy was to analyze the agreements made by the spare parts unit. Pactum has a data filter where the business unit is selected. One of the options is spare parts. The strategy for analysis from the ERP systems was done using data from the year 2016. The report from Pactum was relatively easy to run, but the report needed some further analysis before usage in Excel.

An important element for this research is that Pactum does not show if the spare parts units have used the agreement. For that reason, the purchasing history needed to be analyzed. The next step was to analyze the purchasing history from SAP, with the help of Qlikview. Qlikview provides the 2016 purchasing history from the units that use SAP. The purchasing history transfer from Qlikview to Excel was a fast operation. The next step was to combine the data from SAP and Pactum in Excel. The combination was possible to realize with Excel tooling. The ERP data was later analyzed using quantitative research methods.

7.2.2 Internal survey

The internal survey was done between December 19, 2016 and January 3, 2017. The survey covered all spare parts units. Table 6 presents the survey response analysis. Answers were received from Australia, Canada, China, Finland, France, Germany, India, the Middle-East, Russia, Singapore, South-Africa, Sweden, the United Kingdom and the United States of America. From the survey focus group, 2/3 of the answers came from Finland. The rest of the focus group answers came from France, Germany, or the UK.

Table 6 Internal survey response analysis

Survey	Total	Focus group
Research group	46	23
Respondents - completed	28	15
Respondents - uncompleted	3	2
No Response	15	6
Response rate	60,9 %	65,2 %

The survey included three roles. In Table 7, the roles and how respondents are divided by the role are shown. The roles in procurement included the roles of purchaser, purchasing assistant, purchasing manager, sourcing manager, or similar role. The role leader of the spare parts organization was responsible for profit and loss of the unit. The roles in sales or other included the roles of sales manager, sales engineer, sales representative, logistics manager, or similar role.

Table 7 Internal survey analysis by role

Role	Total	Focus group
A role in procurement	11	7
A leader of spare parts organization	10	2
A role in sales or other	7	6
Total	28	15

The internal survey was done with Questback essentials – a web-based survey tool. The tool made it possible to follow the internal survey in real time. In addition, the tool enabled the sending of reminders about the survey to the respondents. The Questback essentials enabled analyzation of the internal survey results from many directions. The previous tables (Tables 6 and 7) are examples of the capabilities of the tool in the survey. The survey results were combined with the ERP data, and the results were analyzed using qualitative research methods.

7.2.3 Interviews

The internal interviews were based on the notes made during and after the interviews. From the internal interviews, a total of five pages of notes were written. The external interviews were recorded. The total recording time was 720 minutes. All interviews were listened to and the results were transcribed based on the discussion.

A total of 9 pages of notes were transcribed from the external interviews. All interviews were analyzed using qualitative research methods.

7.3 Reliability of the results

The preparation for the internal survey was done as diligently as possible. The questions were pre-analyzed together with four professionals, the respondents were pre-selected, the survey was done based on the respondents' roles, and the survey was designed to be as easy to answer as possible. However, the survey does not exclude the risk for misapprehension or how seriously the question was answered. In addition, some of the single or multiple select answer alternatives might not fit the purpose. Three respondents started the survey but did not complete it. This can be seen as a low number and a hypothesis that the question was set clear. (Hirsjärvi, Remes, and Sajavaara 1997, 195)

The ERP data was based on the data from SAP and Pactum. The SAP data was analyzed with the help of Qlikview. Qlikview uses SAP purchase order data. However, frame purchases and indirect purchasing is missing from the Qlikview data. In addition, the SAP is not implemented in all spare parts units. The Qlikview data from the year 2016 is valid only from the units in Australia, Canada, Finland, Germany, the UK, and the USA. The rest of the spare parts units did not use SAP in 2016.

The analysis from Pactum was based on the information that the agreement is marked to be used in spares part. The marking of the agreement unit is part of the Pactum process but still leaves room for human error. In addition, the result from the internal survey stated that not everyone knows what Pactum is. If people are unfamiliar with sourcing tools, the hypothesis is that many agreements are missing. The ERP data was used in Table 9 to give support to question 6, stated in the internal survey.

The interviewees spoke fluent Finnish. Hence, the interviews were held in the Finnish language. One interviewee was originally from Hungary, one from Sweden, and two were Finnish-Swedish. The nationalities of the interviewees were taken notice of in the analyzation of the country cultural issues. The comments written in the results are translated into English. The translation was done so the message would be clear.

The essential notes from the internal interviews were because the recording was not part of the interview strategy. The reliability of the results was based unequivocally on the interviewer notes. In the external interviews, the recording was part of the interview strategy. Hence, the results were more reliable than in the internal interviews.

In both internal and external interviews, the competence of the interviewees working experience was seen as comprehensive. Table 8 presents the external respondents' experience in procurement of after sales. The interview answers were similar with those working in service, regardless of whether the interviewee was internal or external. This supports the reliability of the research.

Table 8 External interview respondents

Interviewee	Experience in procurement or after sales	Company industry sector	Company total net sales 2016 (from annual reports)	Service net sales 2016
A	15 + years	Mining	1 008 M€	443 M€
B	5 + 5 years	Mining	2 586 M€	1 741 M€
C	20 + years	Consulting	N/A	N/A
D	20 + years	Paper	9 812 M€	N/A
E	4 years	IT	60 839 M\$ (Finland 99 M€)	N/A

The interviewees and the CPO location in the organization were recognized in the selection of the interviewees. The data 2 is based on the experience of the interviewees, either acting as a CPO or working close to the CPO of the company. The data 2, especially the organization model, is based on the multidimensional viewpoint from the interviewees. One of the interviewees had the experience of working as a CPO and reporting directly to the CEO in the company. Thus, the CPO was located one level from the CEO. The other interviewees' standpoints for the research result came from companies where the CPO location in the organization, compared to the CEO, was level 2 and level 3. The interviewees worked in matrix organizations, divisions, and in the networks. As an example, two of the interview and benchmark companies had similar organization and sourcing structures as Konecranes. In addition, an interviewee worked in a company where global sourcing

reported to the CFO. Consequently, the sourcing was not organized under any division. These statements give more reliability to the survey results.

8 Results

In this chapter, the results are presented. Data 1 presents the results from the internal survey and ERP data. The results show that local full-time and part-time sourcing resources have an impact on the amount of added value for spare parts. The co-operation between spare parts and global sourcing was challenging. In addition, co-operation with suppliers required different elements in spare parts compared to the manufacturing business.

Furthermore, Data 2 presents the results from the external and internal interviews. The results confirm the results from the internal survey. The co-operation between the spare parts business and global sourcing was seen as challenging. The organization model B was seen as the best organization model, and company culture was seen as more important than country culture. A summary of the results is presented below in Figure 11.

Internal survey results (data 1)	Results from the Interviews (data 2)
<p>8.1.1. Sourcing resources</p> <ul style="list-style-type: none"> Local full-time sourcing makes more price lists, agreements, and uses official systems more often than part-time resources. <p>8.1.2. Co-operation with global sourcing</p> <ul style="list-style-type: none"> Spare parts has difficulty finding how many suppliers were supported by global sourcing. Global sourcing grade was 2,8 (scale 1-5). Spare parts needs support from sourcing. <p>8.1.3. Spare parts business and sourcing</p> <ul style="list-style-type: none"> SRM in spare parts requires a different approach than in the manufacturing business. Fast and reliable delivery was the most important supplier performance measurement. Low purchase price least important. 	<p>8.2.1. Spare parts business</p> <ul style="list-style-type: none"> Spare parts business was seen differently, compared to the manufacturing business. <p>8.2.2. Co-operation with global sourcing</p> <ul style="list-style-type: none"> The cooperation was seen challenging. <p>8.2.3. Sourcing organization models</p> <ul style="list-style-type: none"> Alternative organization model were presented. Organization model B was seen as the best organization model. <p>8.2.4. Country and company culture</p> <ul style="list-style-type: none"> Company culture was dominant compared to country culture.

Figure 11 Summary from the results

8.1 Internal survey (data 1)

8.1.1 Sourcing resources

The internal survey stated that eight countries had full-time sourcing resources in the spare parts. The results are presented in Table 9. Finland, India, and the USA had more than one full-time sourcing resource. Other countries had one full-time sourcing resource. In addition, Finland and the USA had both full- and part-time sourcing resources. In the countries where sourcing had part-time resources, the estimated time spent on sourcing was less than 30 % of one person's working time.

Table 9 Sourcing analysis at the country level

Country (Q:2)	Sourcing resources (Q:8)	Locally made price lists (Q:4)	Locally made agreements (Q:5)	Agreement storage to system (Q:6)	Number of documents in system
<i>Finland</i>	<i>full-time</i>	<i>10 to 25</i>	<i>5 to 15</i>	<i>Yes</i>	<i>XXX</i>
<i>Germany</i>	<i>part-time</i>	<i>10 to 25</i>	<i>Less than 5</i>	<i>?</i>	<i>X</i>
<i>France</i>	<i>full-time</i>	<i>Less than 10</i>	<i>Less than 5</i>	<i>?</i>	<i>X</i>
<i>UK</i>	<i>full-time</i>	<i>?</i>	<i>?</i>	<i>?</i>	
<i>Canada</i>	<i>full-time</i>	<i>10 to 25</i>	<i>More than 15</i>	<i>Few</i>	<i>XX</i>
<i>USA</i>	<i>full-time</i>	<i>10 to 25</i>	<i>5 to 15</i>	<i>Few</i>	<i>XXX</i>
<i>India</i>	<i>full-time</i>	<i>10 to 25</i>	<i>5 to 15</i>	<i>Few</i>	
<i>Singapore</i>	<i>full-time</i>	<i>Less than 10</i>	<i>Not made</i>	<i>No</i>	
<i>Australia</i>	<i>part-time</i>	<i>Less than 10</i>	<i>Less than 5</i>	<i>No</i>	
<i>China</i>	<i>part-time</i>	<i>Less than 10</i>	<i>Not made</i>	<i>No</i>	<i>XX</i>
<i>Middle-East</i>	<i>part-time</i>	<i>Not made</i>	<i>Not made</i>	<i>No</i>	
<i>Russia</i>	<i>full-time</i>	<i>Less than 10</i>	<i>5 to 15</i>	<i>Few</i>	<i>XX</i>
<i>S-Africa</i>	<i>part-time</i>	<i>?</i>	<i>?</i>	<i>?</i>	
<i>Sweden</i>	<i>part-time</i>	<i>10 to 25</i>	<i>Less than 5</i>	<i>No</i>	<i>X</i>

The internal survey inquired about the local procurement actions. Table 9 summarizes how many price lists or agreements were done by the spare parts organization in 2016. In addition, the table summarizes the agreement storage into the official database and the analysis from the official database. A question mark (?) in the table means that the respondents did not have the information to the question.

8.1.2 Co-operation with global sourcing

Through the survey, answers to the level of co-operation between a spare parts unit and global sourcing were sought. Table 10 presents the results of these questions.

The focus group represents the answers from Finland, France, Germany, and the UK.

In question 12, the “I do not know” answers came from Finland, India, the Middle-East, Sweden, the UK, and the USA. Respondents from Finland and the USA, with the role of procurement, gave answers to multiple alternatives to question 12. In question 18, five was the best grade for support received from global sourcing. The results show that the grade varies between the roles. A role in procurement gave an average grade of 2.09 (focus group 2.14), the leader of the spare parts unit 3.3 (4.0), and the role of sales or other 3.28 (3.0).

Table 10 Spare parts business co-operation with global sourcing

Question	Total	Focus group
12. How many of your suppliers are supported by Global Sourcing?		
Answer: Don't know	28.6 %	22.2 %
Answer: More than 10	28.6 %	33.3 %
18. Give a grade to global sourcing from the support received in 2016 (1-5).	2.82	2.73
21. How confident are you that sourcing is capable of bringing extra value for the spare parts business (0-10).	7.53	7.6
17. Does your business need support from sourcing?		
Answer: Yes	64.3 %	80.0 %
Answer: Partially Yes	28.6 %	20.0 %

In question 21, a grade of ten was the best number for sourcing’s extra value for the spare parts business. The research focus group answers by role were:

- A role in procurement 7.5
- A leader of spare parts unit 7.8
- A role in sales or other 7.0.

Question 17 inquired to the need for sourcing support. The definition of sourcing was stated as follows: “Corporate-level sourcing or supplier managers including indirect (traveling, hotels, MRO, company cars), Logistics, and material suppliers.” The results show that 92.9 % of all respondents state that the spare parts business

needs support from sourcing. In the focus group, the result was 100.0% to question 17.

8.1.3 Spare parts business and sourcing

The survey included questions or declarative sentences, where the target was to get a better understanding of the spare parts business expectations for sourcing. Table 10 presents the results to the questions. The question was mandatory for every role in the internal survey.

Table 11 Spare parts expectation from sourcing

Question	Total	Focus group
19. Does SRM in spare parts require a different approach than in the manufacturing business?		
Totally agree	53.6 %	53.3 %
Partially agree	42.9 %	40.0 %
20. Prioritize the supplier performance measurements (1 most important -5 least).		
Reliable and fast delivery	1.39	1.26
Quality of products	1.64	1.53
Fast response to purchase request	1.89	1.66
Fast order confirmation	2.21	2.00
Low purchase price	2.75	2.80
22. Who should set the annual targets for sourcing?		
(A) Business line	28.6 %	33.3 %
(B) Global sourcing / BA sourcing	14.3 %	11.1 %
A and B together	57.1 %	55.6 %
24. Prioritize what you think the focus areas to develop sourcing in the spare parts business should be.		
Enable faster response to purchase request	1.75	1.53
Agree on purchase price and delivery time	1.54	1.66
Contractual issues & Risk management	2.18	2.33
Co-operation with manufacturing if direct co-operation exists	2.46	2.45
Reduce the number of used suppliers	2.96	2.86

The results show that 96.5 % of the respondents partially or totally agree that the spare parts business requires different supplier relationship management (SRM) than manufacturing. The rest of the respondents partially disagreed with the question 19 statement. 93.3 % were in agreement with the statement from the survey focus

group. Question 20 asked the respondents to prioritize pre-selected supplier performance measurements. The respondents had the opportunity to select multiple rank one answers. The results show that the measurements are in the same order in the AMER and EMEA regions – reliable and fast delivery was the most important supplier performance measurement. However, in the APAC region, results state that the product quality is the most important supplier performance measurement. The results show that all countries and roles stated low purchase price as the least important supplier performance criteria.

Questions 22 and 24 were written in future tense. In question 22, the majority of the respondents state that the annual target for sourcing should be set together with the business line and the global or business area sourcing. In question 24, respondents gave one point to the most important criteria and five points the least important. The results show that most important priority was agreement of purchase price and delivery time (aver. 1.54). The focus group ranked the answers in different order. Enable faster response to purchase request (aver. 1.53) was seen as most important. Reduce the number of used suppliers resulted as least important.

8.1.4 Survey open comments

The survey had two questions where respondents had the opportunity to answer in free writing. Question 21 asked in what way sourcing could create extra value for the spare parts business. Question 25 asked what else is important to develop sourcing in spare parts.

The respondents gave a total of 39 comments. Some of the comments included multiple clauses. The comments were grouped into eleven categories, which are presented in Figure 12. The "Other" category includes comments from ERP, resources, and logistics. It is possible that one comment can include arguments belonging to multiple categories.

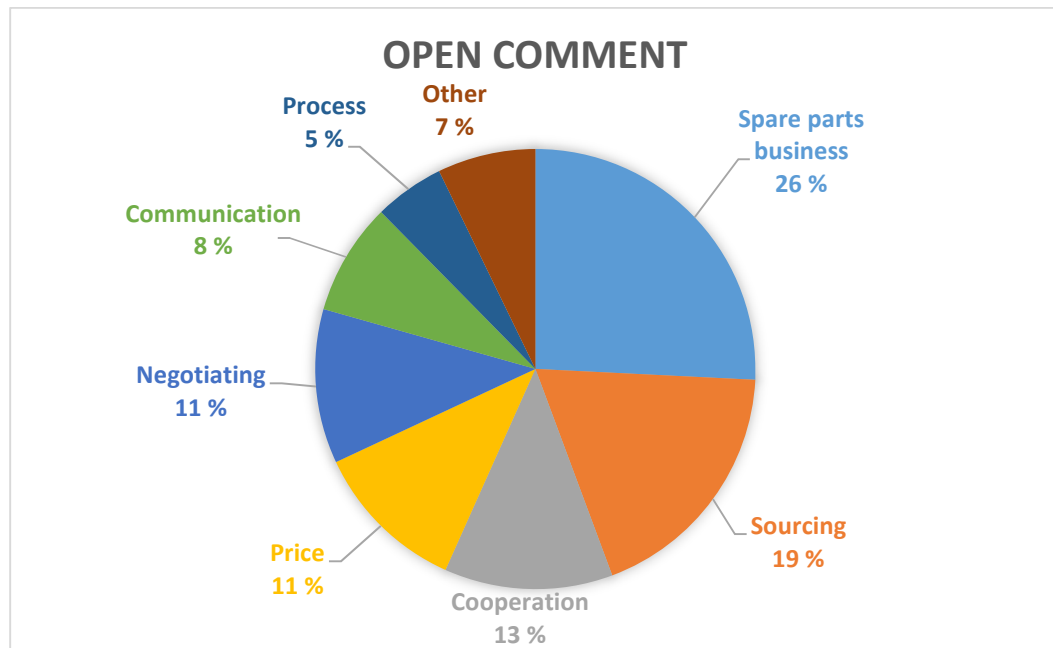


Figure 12 Open comments by the group

The importance of the spare parts business, and the difference from the manufacturing, was raised many times in the open comments. Many respondents wrote that sourcing needs to understand the speed, process, and supplier base in which spare part works. Information sharing and communication was raised as topic many times. “Spare parts do not get enough information and the co-operation with global sourcing and spare part purchasing is too low.” The local suppliers, supplier base management, and price negotiations with local suppliers were found in many respondent comments. Sourcing was seen to create extra value for the spare parts business in the cases when the supplier is allowed to give the business new products and product trainings. With the product training, spare parts could offer new solutions to customers.

8.2 Interviews (data 2)

8.2.1 Spare parts business

All interviews supported the internal survey results regarding the difference between the spare parts business and the manufacturing business. Spare parts delivery reliability was seen as the most important supplier performance measurement. The purchase price was a topic of discussion with all interviewees. The results show that the spare parts business has cases where the purchase price has a higher priority

than stated in question 20 (table 10). “At the harbor, a business customer is able to purchase the spare parts directly from our suppliers. And our supplier is aware of this.” Similar comments came from others. One interviewee challenges the organization to define and inform the criticality of the spare part. “Do all spare parts need same customer service level?”

Other results from the interviews include information sharing regarding the spare parts delivery. Both spare parts and sourcing need to make sure that a confirmed spare parts delivery date is secured. The logistics was raised as an important element of the spare parts business. Logistics needs to manage smaller and faster deliveries than in manufacturing. Reverse logistics was found to be an area that is needed in spare parts but not in manufacturing. The interviews showed that spare parts internal orders from manufacturing caused issues in cases where spare parts is under a separate division than manufacturing.

8.2.2 Co-operation with global sourcing

During the interviews, a lot of comments were made about the spare parts co-operation with global sourcing. The internal interviews showed that interviewees from the service side do not co-operate with global sourcing. One internal comment summarizes the interview: “Who is the leader of company procurement and who else is working there?” The internal interviewees from the service division showed to have a strong focus on service operations and customer service. The internal and external interviewees with sourcing had more comments about the amount of suppliers and tail spend. The amount of suppliers was not raised as a comment from the interviewees from spare parts or the service side.

The co-operation between spare parts and global sourcing was seen as difficult in the interviews. The majority of the external interviews worked in companies that had a separate division for service and manufacturing. In cases where global sourcing was organized under the manufacturing division, co-operation and support was seen to be challenging. The interviews state that global sourcing support to spare parts was at an excessively high level. It was commented, in a few cases, that global sourcing only creates frame agreements with suppliers, which did not give enough value to the spare parts business. Another result was that global sourcing did not understand

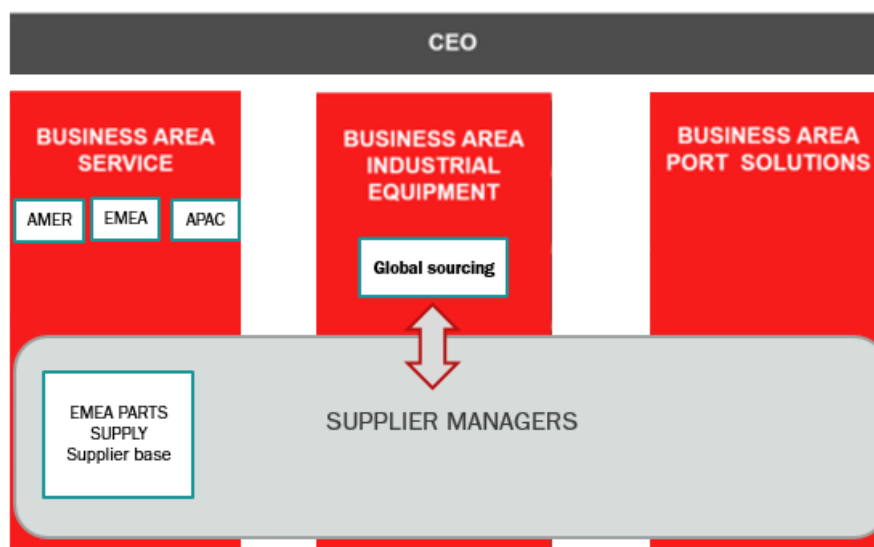
the spare parts business well enough. “Global sourcing does not understand what is needed locally.” The response time from global sourcing was, in a few cases, too long, or the details were not understood. The interviewees who were working in sourcing reported cases where the spare parts business was not willing to accept help from global sourcing or the message was clear: “We do not need your help.” In the interviews where sourcing was organized to cover all divisions, similar issues were not found.

8.2.3 Sourcing organization models

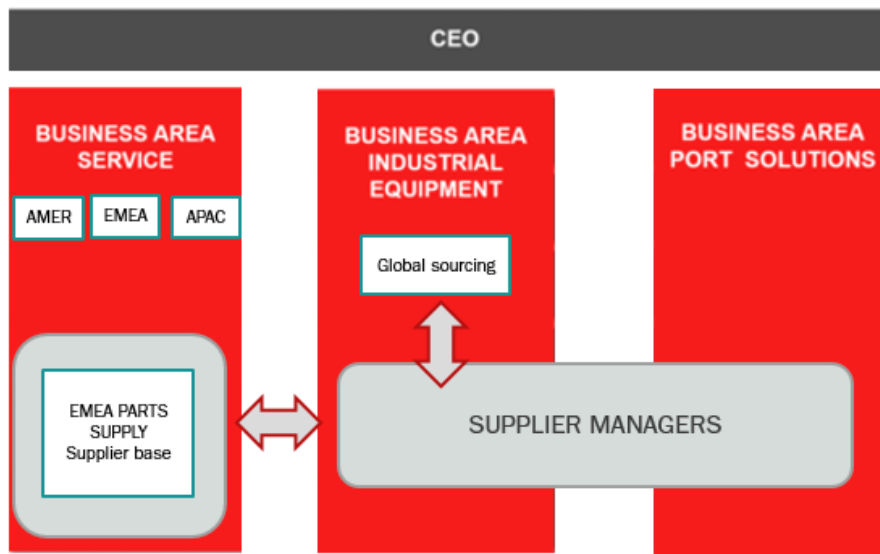
8.2.3.1 Proposed organization models

During the interviews, three organization models were presented to the interviewees. These organization models are presented in Figure 13 and more detailed in Appendix 3. A fourth organization model was found during the interviews. The alternative organization model is presented in Figure 14. During the external interviews about organization models, an observation was made that the question regarding why sourcing was not organized globally in a matrix occurred many times. Another observation was that the category management was commented to be missing from the models. A result was that the supplier managerial role needs to be defined clearly within the models.

OPTION A



OPTION B



OPTION C

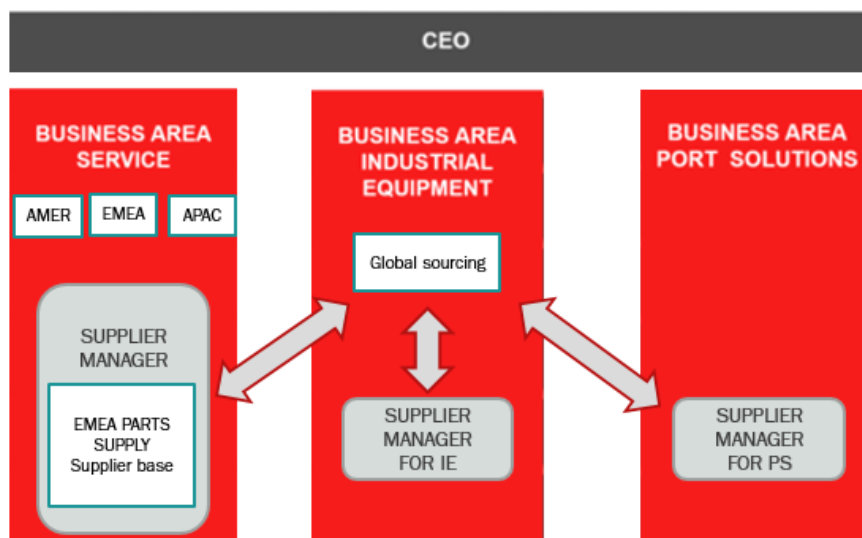


Figure 13 Sourcing organization models A, B, and C

In option A, the supplier manager needs to note his deliverables. In addition, the system ERP data needs to be in excellent shape. Supplier manager focus to purchase spend, not to spare parts, was seen a big risk. “If the majority of the purchasing goes to manufacturing, then service will suffer.” Option B was seen as the best organization model. The internal interviewees stated that service and spare parts should be presented in global sourcing. The spokesman should make sure that service and supplier managers utilize scale benefits for the company. The external interviews supported the same idea. The general agreement was that every organization should be participating in the same supplier meeting. “This is company

versus company.” The last organization model, option C, was seen as the worst option. “The supplier might be confused if two people from the same company are coming to meet the same supplier. This is a waste of time and resources.”

8.2.3.2 Alternative organization models and comments

Option B was developed during the interviews. The result was that there is opportunity to create a process where a certain person prepares the supplier meeting. “The person gets the data from the spare parts units and asks about the expectations.” Purchase prices will not be confirmed in the supplier meeting from the purchaser side. Prices will be closed after an internal meeting, where prices are confirmed by the business.

During the external interview, a new organization model was proposed. In the model, products are divided into two sections: Spare parts that are used currently in production (A) and end-of-lifetime spare parts (B). The model is presented in Figure 14.

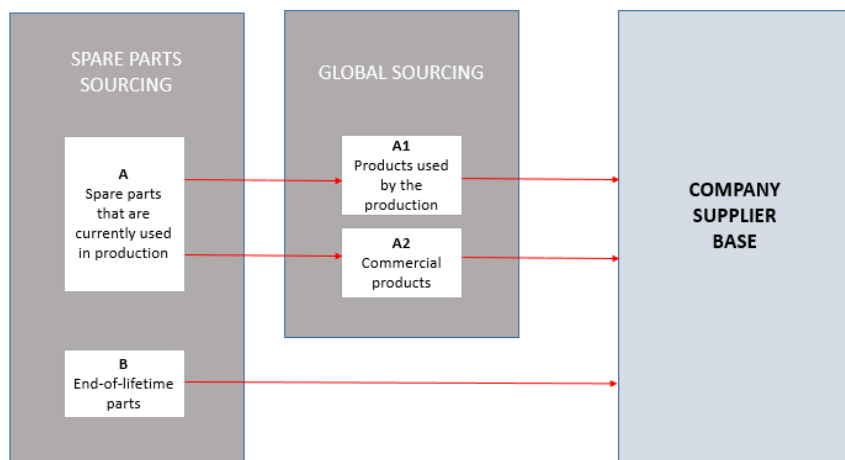


Figure 14 Alternative way to manage suppliers in spare parts

In the model, spare parts would co-operate with global sourcing with group A products and create its own sourcing organization and resources in group B. Group A was proposed to be divided into two sections: Products that are used by the production (A1) and those used as commercial components (A2). The interviewee proposed spare parts to purchase A1 products from manufacturing and A2 products directly from the OEM. The interviewee stated that spare parts can benefit from the manufacturing scale benefits for the A1 products. In addition, logistics can be

optimized. In the product group A2, global sourcing was seen to be motivated to support spare parts because the products are the same as manufacturing uses.

8.2.4 Country and company culture

All internal and external interviewees note the differences between country and company culture. The result was that company culture is the dominant culture. During the interviews, many examples were presented about the country culture. Most cultural issues came from the communication. Many interviewees stated e-mail communication as an area where misinterpretation occurred. Furthermore, America, China, India, South-Africa, and Australia were noted as the geographical areas where misinterpretation with Finnish people happened more often than with other cultures. The interviewees stated that there are companies where working culture is much different compared to the local country culture, but no issues have occurred. The result was that a good company culture includes clear roles, targets, a clear message, and governance from the management. Other factors were seen as secondary.

9 Conclusions

The purpose of this chapter is to summarize the key findings. First, the results are analyzed and compared to prior research. Then, conclusions are made based on the information presented below in Figure 15.

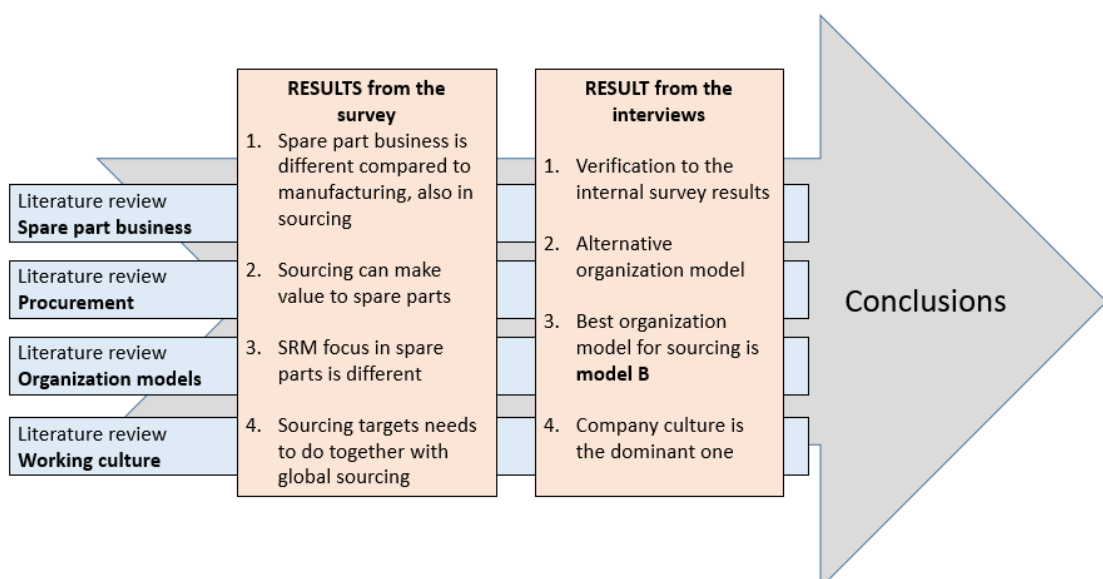


Figure 15 The conclusion process

9.1 Internal survey

The internal survey was the foundation for the research. The purpose of the internal survey was to increase the understanding of the Konecranes spare parts business procurement maturity and the spare parts business working culture. Preparation for the survey was made to be as comprehensive as possible.

After the first week, when the survey was still open, a sample of the results was analyzed. The observation was that the respondents had ranked much lower grades to question 18 than was reported in the official results in Table 10. In addition, the texts to questions 21 and 25 were much longer than the texts that were received after the middle analysis. The hypothesis is that the respondents were motivated to answer the survey. Another hypothesis is that the respondents had bad experiences from the co-operation with global sourcing and now had the opportunity to report it.

9.1.1 Spare parts business and procurement

Prior research shows that the spare parts business affects customer service and the company image. In addition, prior research shows the difference between after-sales and OEM business. The research data supports prior research – the spare parts business supply chain differs from the manufacturing supply chain. The conclusion is that the spare parts business sourcing differs from the manufacturing sourcing. In the literature review, it was found that prior research for spare parts sourcing is nearly missing. Prior research focused mainly on inventory management or end-of-lifetime product purchase strategies.

9.1.2 Sourcing value to spare parts business

The research shows that full-time sourcing provides value to the spare parts business. In Table 9, the spare parts local sourcing value, by making agreements and price lists, was presented. Question 8 asked about the local sourcing resources. At this point, the question was not described as clear as needed. The question gave an opportunity to answer about full-time resources, if the spare parts unit was in a country where a manufacturing unit operates. The respondents had, in a few cases,

responded about full-time sourcing resources, hence there was no sourcing resource in the spare parts unit. The cases where an incorrect answer was given came from France, the UK, and India. Taking notice of the results in Table 9, the conclusion can be made that in units where local full-time sourcing occurs, more price lists and agreement are made compared to part-time resources. The prior research stated that full-time resources enable better quality of work and the results are better. The same conclusion can be made from Table 9. Full-time resources work better with corporate tools. The research results support the prior research from that perspective.

In the prior research, the added value for sourcing was analyzed to ROCE according to the DuPont model. The research shows that Konecranes spare parts, and especially focus groups, is confident that sourcing is capable of bringing extra value to the spare parts business. The research shows that the local suppliers, supplier base management, and price negotiations with local suppliers as new area to manage. In addition, sourcing has the opportunity to create value when inviting suppliers to present new products and trainings. The conclusion is that sourcing has many opportunities to bring added value to the spare parts business. Value can be made through co-operation with global sourcing and the supplier base. Value can also be made by enabling the availability of end-of-lifetime spare parts or activities supporting sales.

One extra value regarding spare parts sourcing was not found from the prior research or from the results. Spare parts sourcing should be involved in the cases where company manufacturing is ending and the responsibility passes on to spare parts. The cases where the product, in this case the spare parts, was purchased from a subcontractor needs spare part sourcing involvement in the supplier phase-out decision. From the equipment point of view, the supplier relationship for the product is phase-out, but from the spare part point of view, relationship management is phase-in. The conclusion is that manufacturing and spare parts sourcing need to meet the supplier together to agree on the next steps for the spare parts. The spare parts sourcing can agree with the supplier on whether spare parts should (A) do an end-of-lifetime final purchase, (B) still use the same supplier, or (C) acknowledge the

transfer so that spare parts sourcing can start to source a new supplier for the spare parts.

9.1.3 Spare parts business SRM and sourcing targets

The research shows that SRM in spare parts needs different approaches than in the manufacturing business. However, similarities do occur. Prior research has shown that spare parts have different criticality levels. The spare parts customer service for preventative or corrective maintenance has different strategies. These strategies need to be noted in spare parts sourcing and supplier relationship management. The research shows that reliable and fast delivery is the most important supplier performance measurement for the spare parts business. In addition, good quality and fast response to purchase request or order confirmation are more important than lower purchase price. The sourcing has great possibilities to support the spare parts business to increase profitability in many ways. The research shows that costs savings are parts of sourcing actions. However, the weight and calculation method for costs savings needs to be analyzed between sourcing and the spare parts business. The same applies to other supplier performance measurements.

The research raises logistics as one of the important areas where sourcing has opportunities to affect the spare parts business success. Prior research found the difference between logistics in the supply chains. The research shows that sourcing can affect the profitability and customer service by offering new logistics channels and involving spare parts deliveries as part of company logistics routes.

Inventory management was an area where sourcing needs to pay attention to the spare parts business requirements. Prior research shows that inventory management in spare parts has a different strategy than in manufacturing. Scholars show that spare parts inventory turn and performance measurement differ from that of manufacturing. Sourcing needs to make note of spare parts business requirements in the supplier relationship and performance management. The spare parts business requires inventories to serve customers with sporadic needs. Nevertheless, this is not an obstacle for sourcing to discuss with the spare parts that who carries the capital employed costs – supplier or the company.

9.2 Interviews

The interviews were divided into two groups and a few subgroups. The groups are analyzed in more detail in research implementation. The internal interviews were agreed on primarily by e-mail other, after face-to-face discussion. With two interviewees, the original meeting time needed to be rescheduled. The message came from the interviewees, and they proposed a new interview time in the same message. The interviews were held at a hectic time – a few weeks earlier the company had finalized the acquisition of the company and closed the reporting period. The external interviews started primarily from the e-mail message. The majority of the interviewees were not known beforehand. In three cases, the original meeting time was postponed. In all cases, it was easy to agree on a new interview time. The hypothesis is that all external and internal interviewees were motivated to discuss the research problem.

The interviews started on time. However, one internal and one external interview started a few minutes late. In both cases, the delay was not caused by the interviewee. Not all interviewees used their laptops or mobile phones during the interviews. There were a total of two events where the phone was answered during the interviews. In addition, in one event, an e-mail was written during the middle of the interview by the interviewee, but that was informed at the beginning of the interview. The conclusion is that all interviewees were active, motivated, and present during the whole interview.

The external interviews primarily took place in a meeting room. One interview was completed in a restaurant outside rush-hour. The first few minutes of the interviews were spent on introductions. On average, after first fifteen minutes, the discussion started to run smoothly. The observation was that the first level of trust was gained. During the last part of the interview, the discussion went into a deeper level. As an example, during the discussion, a few “bad experience” examples were given, which can’t be reported in the research. The reserved interview time ended earlier than the discussion. The observation was that the discussion could have being taken into a more detailed level if time was not an obstacle. The conclusion is that the interviews lead to a level where mutual trust and information sharing were achieved.

During the internal interviews, some frustration was observed. The event was observed in the discussion of co-operation with service and global sourcing and in the discussion of calculating savings. The frustration was observed in the tone of voice and body language. The conclusion is that the co-operation needs to take place at a personal level, and the key performance indicators need to be communicated and opened to the management.

9.2.1 Organization models

Three organization models (A, B, and C) were created after the analysis of the result A. Three organization models were presented to the interviewees. The interviewees had the opportunity to propose alternative organization models at the end of interview. The interviewees had 30 to 60 minutes' time to comment about the given organization models. In the results, one alternative organization model was presented and two alternative viewpoints to the proposed models. During the external interviews, most comments came from the interviewees, who had long-term experience in sourcing. An interviewee who had shorter working experience was able to give assumptions about the models but not nearly as valuable comments as the other interviewees.

The results state that the proposed organization models "A" and "C" (Appendix 3) were not seen as suitable organization models for spare parts sourcing. The conclusion is that the organization model needs to achieve given goals and targets - just in the way in which the prior research states. From the research, it can be concluded that option "A" included risks that the spare parts business would not get support and system data will not be up-to-date. Furthermore, in option "C", the company will create overlapping work and dual supplier relationships. The proposed A, B, and C organization models were defined after the internal spare parts survey. Already at that point, the hypothesis was that options "A" and "C" did not get the majority of the votes. The conclusion is that the research result confirmed the prior hypothesis.

One new organization model was found during the interviews. The alternative organization model is presented in Figure 13. The model includes many positive points: the focus is clear from the spare parts point of view. Spare parts can benefit

from the corporate purchasing scale benefits. Global sourcing can focus purely on equipment needs if the spare parts are purchased from the equipment division. However, there are some obstacles in implementing the proposed model. The prior research states that co-operation between divisions is challenging. The research found the same.

The challenge might occur when the discussion for the internal transfer prices are discussed with spare parts that production still uses (products "A1"). The same challenge might occur when calculating the cost for global sourcing resources. How management calculates the sourcing operating costs and how much of that is allocated to business area services? The research raised fast and reliable delivery as the most important supplier performance measurement. Global sourcing needs to make note of this requirement in the supplier negotiations. In addition, the research raised the importance of ERP data. The proposed alternative model would mean investments to ERP to modify the product data in a manner where the system enables the proposed model to be used. Moreover, as a challenge for the proposed model are the joint suppliers where products "A" and "B" are sourced. Global sourcing would meet the supplier for the production needs. Spare parts would have separate meetings with the same suppliers for the end-of-lifetime products. The proposed model would not prevent dual meetings with a supplier. The SRM would remain under global sourcing, so the risk that after-sales needs are forgotten in the contacts remains. For these reasons, the alternative organization model is not the best one for Konecranes spare parts.

9.3 The best sourcing organization model for spare parts

The results state that the best sourcing organization model for spare parts is option B. The prior research raised the hybrid purchase organization as the most used organization model. The winning organization model can be seen also as a hybrid purchase organization. The best sourcing organization model for spare parts is presented in Figure 16.

OPTION B

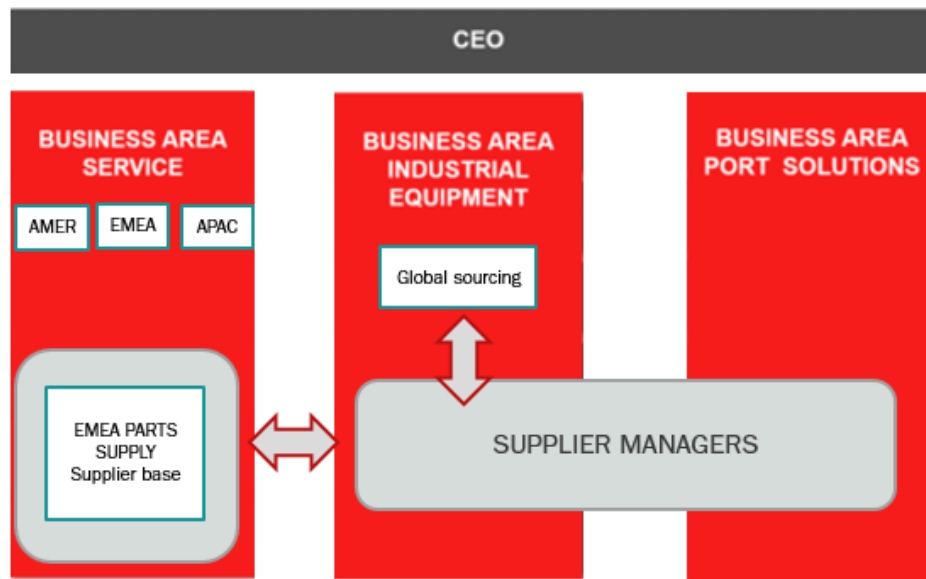


Figure 16 The best organization model for spare parts sourcing

The selected organization model for the spare parts business sourcing has some weaknesses. Prior research notes the challenges in the division organization modeling - the co-operation between the divisions is challenging. The results support prior research - there was a clear challenge in sharing information and co-operation between the divisions. Nevertheless, the prior research raised the importance of sourcing, SRM, and the added value to the business. The research states that the added value can be created when suppliers are managed centrally and by one nominated person. In addition, the research states that the co-operation between the divisions must be achieved so that sourcing can utilize their competence in the best way. The conclusion is that the hybrid organization model has the best balance from the added value and SRM points of view for the spare parts and corporation in general.

Another point in the organization modeling was the business. Prior research noted the difference between manufacturing, spare parts business, and inventory management strategies. Organization model B enables spare parts to co-operate with global sourcing and common suppliers in the way that is best for the business. In addition, the spare parts item level and ERP systems management remains in the business. This approach enables the setting of inventory parameters to the level that

is best for spare parts and customer service. Furthermore, it gives the opportunity to co-operate with logistics in the way that is best for the business. The best organization model does not become an obstacle for the company's growth in sales and profitability – as was found as an obstacle in the prior spare parts research organization structures.

Prior research states that a centralized purchasing organization utilizes major corporate activities and sophisticated purchasing techniques. The research presented in Table 9 shows the results of how sourcing utilized corporate agreements and systems. The results show that in the units where a local full-time sourcing resource exists, more agreements and price lists have been made compared to those who do not have full-time sourcing resources. The research raised the worry inside procurement about tail spend suppliers. The hypothesis is that units which have full-time sourcing resources can affect the amount of suppliers i.e. tail spend suppliers.

Another conclusion is that the local spare parts sourcing is able to affect the SRM with suppliers where the corporate spending is not high, or the supplier is not "important" from the corporate point of view. With those suppliers, the spare parts sourcing can create closer co-operation and enable proper customer service for the spare parts needs. In addition, the hypothesis is that the spare parts suppliers are not big companies. In those cases, the spare parts sourcing can note the supplier country and corporate culture more in the co-operation.

9.4 Company culture

The prior research increased the understanding of working culture. Scholars have found that companies have overall cultures and multiple subcultures. The results state that the spare parts business differs from the manufacturing business. The conclusion is that spare parts is one subculture inside the company culture. The results state that information sharing inside the case study company was missing between global sourcing and service's upper management level. The conclusion is that the information-sharing culture was missing. In Konecranes, the Finnish cultural characteristics can be seen as having a dominant culture in global sourcing. The same characteristics were found from the other internal interviews. The results stated that

company culture is the dominant culture in the business. The results highlighted that a good company culture includes clear roles, targets, a clear message, and governance from the management. In the beginning of 2016, Konecranes made a historically big acquisition. The conclusion is that clear roles, targets, a clear message, and governance from the management is more important than working culture.

9.5 Summary

Based on the results, sourcing in spare parts has different requirements towards the suppliers than in the manufacturing business. The spare parts business differs from the manufacturing business in many ways. It must be clear for the company as to which products are supported by spare parts. Without this information, sourcing is not able to support the spare parts business.

The case study company organization was based on the division structure. Furthermore, global sourcing was organized under manufacturing and spare parts located under service. The conclusion is that the global sourcing organization location is not the best model if support should be given to all divisions and businesses. The results show that division structure makes the sourcing co-operation between the divisions challenging. Nevertheless, the target of the thesis was to find the best sourcing organization model for spare parts with the limitation that company organization enables.

The best sourcing organization model was the model where suppliers are managed by one person, i.e. supplier manager. The supplier manager collects the spare parts needs by asking the business requirements before meeting the supplier. After the supplier negotiations, the prices are given to spare parts, who maintains a correct date in their ERP systems. In addition, spare parts should have a representative in the global sourcing society, who makes sure that the needs of spare parts are included in the supplier negotiations. Hence, the supplier managers notes the needs of spare parts and provides support in all cases. In addition, the spare parts representative should work in close co-operation with the leaders of the spare parts units so that sourcing is continuously aware of the spare parts business targets.

The representative from spare parts, who is co-operating with global sourcing, coordinates the supplier base where global supplier manager is not nominated. The person has an important role in the spare parts sourcing organization. This person has to make sure that co-operation with spare parts inventory management and supplier performance are in alignment. In addition, the role must co-ordinate a continuous discussion between spare parts sourcing and spare parts sales, so that the customer behaviors are noted in the supply chain management. The representative of spare parts, who is co-operating with global sourcing, can be appointed as head of spare parts sourcing operations.

In the prior research, the decision-making process was seen as the most important element for the organization's success. The results confirm the prior research. The head of spare parts sourcing operations has to make sure that global sourcing, and especially supplier managers, note the spare parts' specific supplier performance measurement stated in the results. The head of spare parts sourcing should agree on the annual target with the head of the spare parts business and with the service region heads. They will then have a discussion and finally an agreement with global sourcing about the business targets and later inform the targets to the supplier managers and sourcing in the spare parts. The sourcing management model is presented in more detail in Figure 17.

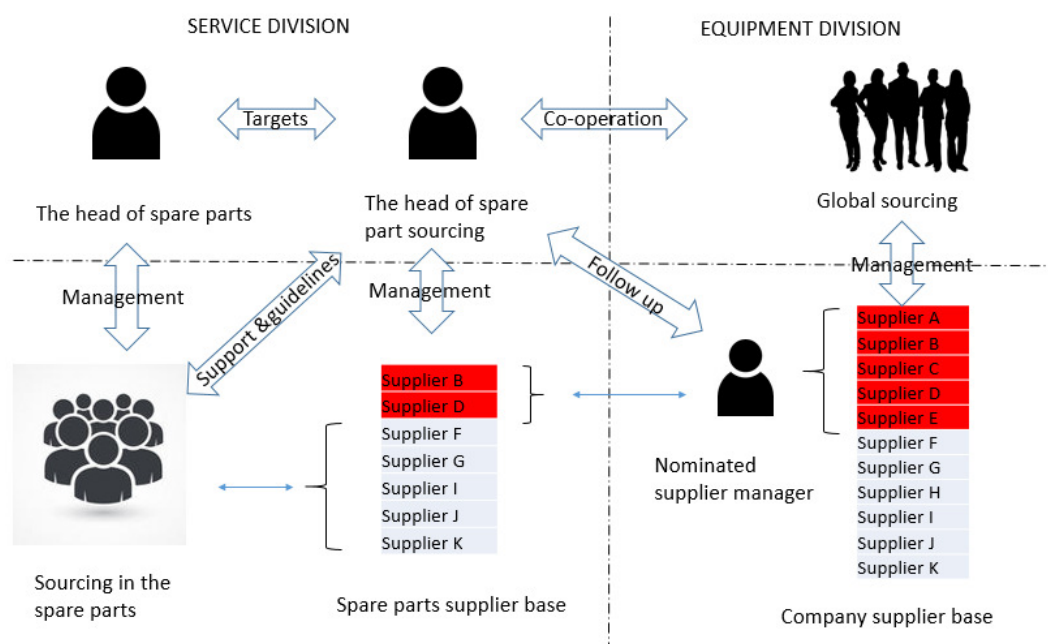


Figure 17 Sourcing organization management model

In addition to the prior comments, the spare parts organization model management, with the role of head of spare parts sourcing, enables one important element. The role can better support the sharing of information. In addition, support is needed in the transfer of end-of-manufacturing products to become new spare parts. In cases where manufacturing is about to end the product manufacturing, therefore ending the relationship with the supplier, the head of spare parts sourcing can remind supplier managers to invite spare parts sourcing into the discussion with the supplier about passing the responsibility of purchasing to a new organization from the supplier point of view. The target for the proposed model is to secure the product transfer from production to spare parts and to secure the future source of after-sales service needs.

10 Discussion

Previous chapters have highlighted the research topic, the research implementation, the results, and conclusion based on the results. The purpose of this chapter is to summarize the key findings and discuss the limitations and suggestions for future research. This thesis objective was two-fold. The objective was to find the best sourcing organization and management model for spare parts for the case study company. In addition, the thesis raised arguments on whether sourcing could create extra value for the spare parts business.

10.1 Research implementation

The research was done in two phases. At first, the quantitative research was done as an internal survey to selected people in spare parts. Based on the results and literature review, the organization models A, B, and C were built. Furthermore, the organization models were tested in the qualitative research, in the form of interviews for a selected amount of people. The research methods were selected after long and systematic analysis. The research needed both research methods, since prior research for spare parts sourcing was missing.

10.2 Results

The amount of results from the internal survey was extensive and gave plenty of material for later organization model building and for the interviews. The results from the interviews supported the results from the internal survey. In addition, one organization model was found from the interviews as a spare parts sourcing model. This can be interpreted that the interviewees' professionalism level was high.

The results state that sourcing for the spare parts business requires a different approach than in the manufacturing business. The internal survey results state that in units where full-time sourcing resources exist, more price lists and agreements were made for the spare parts business. In addition, the official systems were better used compared to the spare parts units where part-time sourcing resources were found. The results state that the support from global sourcing to spare parts is at a satisfactory level. Spare parts gave an average grade to the support received from global sourcing, a 2.8. The scale was from one to five. The internal survey result states that spare parts needs support from global sourcing, but the SRM requires a different approach compared to the manufacturing business. In addition, the results state that fast and reliable delivery is the most important supplier performance measurement for spare parts. Low purchase price was least important.

The interviews confirmed the statements from the internal survey. The results state that the co-operation between service and global sourcing was challenging, especially if the operations were organized in separate divisions in the company. In addition, the results state that organization model B is the best organization model for the case study company. In the conclusion, the organization management model was built based on the organization model.

10.3 Research evaluation and limitations

The research was done to be as comprehensive as possible. The target of the quantitative research was to understand the situation of the case study company's spare parts sourcing. This part of the research was done using the survey. The second part of the survey was done using qualitative research methods. The purpose for qualitative research was to better understand the spare parts phenomenon and

the co-operation with sourcing. The purpose of combining the quantitative and qualitative research enabled more reliable results for research.

There are limitations to this thesis. First of all, the case study company's environmental division set some limitations. The after-sales services that Konecranes provides are based on a multidimensional approach. Konecranes provides spare parts to Konecranes' brand and other EOM equipment. In addition, Konecranes operates in machine tool service. All of the business areas of Konecranes have a different supplier base and ways of working in spare parts and after-sales. The research was completed, limited to the operation model of 2016, before Konecranes acquired Terex HMPS. Furthermore, the research was limited to the EMEA parts supply operations, not covering all EMEA spare parts businesses.

10.4 Research application and future research

In general, it can be stated that the thesis gives new information to both spare parts and sourcing. After the systematic search of academic literature and references, it became clear that there were gaps in the after-sales and especially spare parts sourcing literature. Prior spare parts research was done mainly from the sales and inventory management point of view. In the procurement literature, the supplier relationship and performance management was discussed mainly from the manufacturing perspective. Further study is suggested to analyze deeper the supplier relationship management from the spare parts business point of view. Furthermore, the product ownership transfer management, from production to after-sales, is proposed to be investigated in the future – from the procurement point of view.

References

- Chatman, Jennifer A., Jeffrey T. Polzer, Sigal G. Barsade, and Margaret A. Neale. 1998. "Being Different Yet Feeling Similar: The Influence of Demographic Composition and Organizational Culture on Work Processes and Outcomes." *Administrative Science Quarterly* 43 (4): 749–80. doi:10.2307/2393615.
- Eloranta, Kari, and Hanna Pajunen-Muhonen. 2012. *Hankintojen Johtaminen*. Tietosanoma Oy. 3. Helsinki.
- "Financial Statements Bulletin 2016." 2017. Konecranes PLC.
- Hirsjärvi, Sirkka, Pirkko Remes, and Paula Sajavaara. 1997. *Tutki ja kirjoita*. Kariston Kirjapaino Oy. 15. Hämeenlinna: Kirjayhtymä Oy.
- Karlöf, Bengt, and Fredrik Helin Lövingsson. 2006. *Organisaation Olemus*. Helsinki: Edita Publishing Oy.
- Long, David De. 1997. "Building the Knowledge-Based Organization: How Culture Drives Knowledge Behaviors." Ernest & Young LLP.
- Niskanen, Eeva. 2010. *Yritystaloutta esimiehille*. WSOYPro Oy. Juva.
- O'Hara-Devereaux, Mary, and Robert Johansen. 1994. *Global Work, Bridging Distance, Culture & Time*. Jossey-Bass Publishers.
- "One Technology Company." 2016.
<http://www.konecranes.com/sijoittajat/combo-of-konecranes-and-mhps>.
- Stanczyk, Alina, Kai Foerstl, Christian Busse, and Constantin Blome. 2015. "Global Sourcing Decision-Making Processes: Politics, Intuition, and Procedural Rationality." *Journal of Business Logistics* 36 (2): 160–81. doi:10.1111/jbl.12090.
- Van Weele, Arjan J. 2014. *Purchasing and Supply Chain Management, 6th Edition*. 6. Andew Ashwin.
- Cohen, Morris A, Narendra Agrawal, and Vipul Agrawal. 2006. "Winning in the Aftermarket." *Harvard Business Review*, May, 129–38.
- Gallegher, Tim, Mark D Mitchke, and Matthew C. Rogers. 2005. "Profiting from Spare Parts." *The McKinsey Quarterly*, February.
- Glock, Christoph H., and Simon Hochrein. 2014. "Purchasing Organization and Design: A Literature Review." *Business Research* 4 (2): 149–91. doi:10.1007/BF03342754.
- Heikkilä, Jussi, Mervi Vuori, and Jari Laine. 2013. *Purchasing Business Services*. Tampere: The Federation of Finnish Technology Industries.
- Jensen, Michael C. 1998. "Organization Theory and Methodology." SSRN Scholarly Paper ID 94036. Rochester, NY: Social Science Research Network.
<http://papers.ssrn.com/abstract=94036>.
- Jouni, Paakki, Janne Huiskonen, and Timo Pirttilä. 2011. "Improving Global Spare Parts Distribution Chain Performance through Part Categorization: A Case Study." *International Journal of Production Economics*, Leading Edge of Inventory Research, 133 (1): 164–71. doi:10.1016/j.ijpe.2010.12.025.
- Pagano, Alessandro. 2009. "The Role of Relational Capabilities in the Organization of International Sourcing Activities: A Literature Review." *Industrial Marketing*

Management, Organizing and Integrating Marketing and Purchasing in Business Markets, 38 (8): 903–13. doi:10.1016/j.indmarman.2009.02.007.

- Peltonen, Tuomas. 2010. *Organisaatioteoria*. WSOYPro Oy. Helsinki.
- Pourakbar, M., J. B. G. Frenk, and R. Dekker. 2012. “End-of-Life Inventory Decisions for Consumer Electronics Service Parts.” *Production and Operations Management* 21 (5): 889–906. doi:10.1111/j.1937-5956.2012.01340.x.
- Rissanen, Päivi, Kaija Sääsäski, and Jouni Vornanen. 1996. *Uudistuvat Organisaatiot - Käsikirja Organisaatioista Ja Henkilöstöjohtamisesta*. Kirjapaino Raamattutalo. Pieksämäki: Pohjois-Savon Ammattikoulu.
- Trautmann, Gerhard, Lydia Bals, and Evi Hartmann. 2009. “Global Sourcing in Integrated Network Structures: The Case of Hybrid Purchasing Organizations.” *Journal of International Management, Global Sourcing and Value Creation: Opportunities and Challenges*, 15 (2): 194–208. doi:10.1016/j.intman.2008.09.001.
- Trautmann, Gerhard, Virpi Turkulainen, Evi Hartmann, and Lydia Bals. 2009. “Integration in the Global Sourcing Organization — an Information Processing Perspective.” *Journal of Supply Chain Management* 45 (2): 57–74. doi:10.1111/j.1745-493X.2009.03163.x.
- Trent, Robert, J, and Robert Monczka M. 2005. “Achieving Excellence in Global Sourcing.” *MIT Sloan Management Review* 47 (1): 24–32.
- Wagner, S. M., and E. Lindemann. 2008. “A Case Study-Based Analysis of Spare Parts Management in the Engineering Industry.” *Production Planning & Control* 19 (4): 397–407. doi:10.1080/09537280802034554.
- Whittington, J. Lee, and Galpin. 2010. “The Engagement Factor: Building a High-commitment Organization in a Low-commitment World.” *Journal of Business Strategy* 31 (5): 14–24. doi:10.1108/02756661011076282.

Appendices

Appendice 1. Cost elements in ROCE

ROCE

Return on capital employed . ROCE is a financial ratio that measures the company's profitability and the efficiency with which its capital is employed. ROCE is seen as a useful metric for comparing profitability across companies based on the amount of capital they use. ROCE analyses the company's metrics from the investor's point of view. ROCE is useful when comparing the performance of companies in capital-intensive sectors. This is because ROCE considers debt and other liabilities compared to return on equity (=ROE), which only analyzes profitability related to a company's common equity. According to Niskanen (2010) a good level of ROCE for the company would be in the level of 15%. Acceptable level is at the ROCE level of 10 % and poor below 8 %.

(75)

Capital employed

Capital employed also known as funds employed, is the total amount of capital used for the acquisition of company's profits. Capital employed is the value of all the assets employed in a business. It can be calculated either by adding fixed assets to working capital or subtracting current liabilities from total assets. Investments are made by employing capital.

Appendice 2

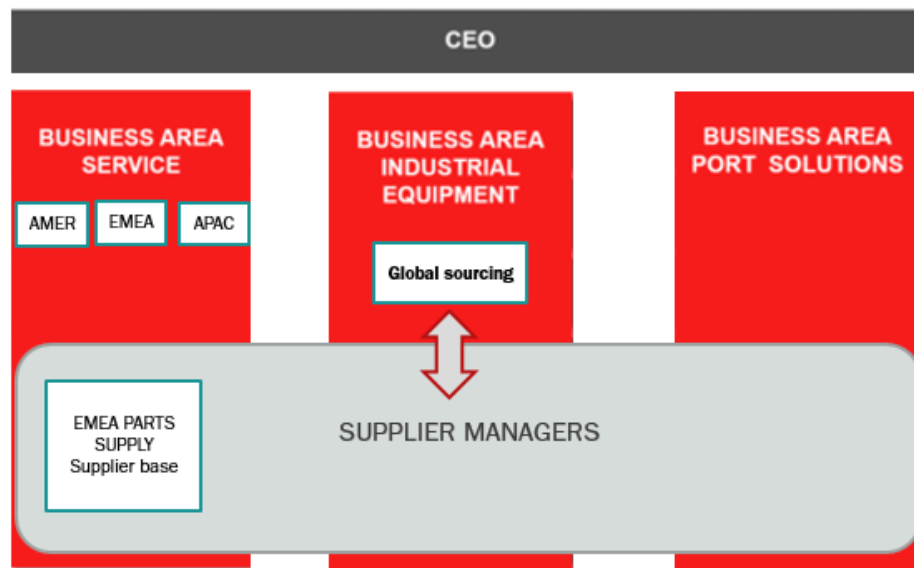
Internal survey - Questions

1. What is your role in spare part organization? (all)
2. Country where you work? (all)
3. How many suppliers are used annually in your spare part organization? (Role A+B)
4. How many price list is agreed by your organization with suppliers within year 2016? (Role A+B)
5. How many agreements is done by your organization with external suppliers in 2016? (Role A+B)
6. Are the agreements or price list storage to Pactum? (Role A+B)
7. Are local supplier price lists updated to your ERP system? (Role A+B)
8. What type of local sourcing resources you have? (Role A+B)
9. How many full time local sourcing resources you have? (Role A+B)
10. How many people do locally sourcing as half time? (Role A+B)
11. How many % of working time is used to sourcing in average with the local resources? (Role A+B)
12. How many of your suppliers is supported by Global Sourcing? (Role A+B)
13. Who should be your organization main contact person for Global sourcing? (Role A+B)
14. Lot of spare parts is purchased from other Konecranes units. Should sourcing follow internal unit performance and co-operation in same way than external supplier should be monitored? (Role A+B)
15. Who is the 1st level of support in sourcing issues? (Role A+B)
16. Who is the 1st level of support in sourcing issues? (Role C)
17. Does your business need support from Sourcing? (All)
18. Give a grade to Global Sourcing from the support received in 2016 (All)
19. Does Supplier Relationship Management in spare part business require different approach that in manufacturing business? (All)
20. Prioritize the supplier performance measurements (All)
21. How confident are you that sourcing is capable to bring extra value for spare part business? (All)
22. In what way sourcing could create extra value for spare part business? (All)
23. Let's assume there would be sourcing professional in your spare part unit. Who should give the annual targets for sourcing? (Role A+B)
24. Prioritize what should be the focus areas to develop sourcing in spare part business? (All)
25. What else is important to develop sourcing in spare part business? (All)
26. If your organization would have more collaboration and support from sourcing. What should be noted in co-operation? (All)

Appendice 3 Organization models presented in external interviews (1/3)

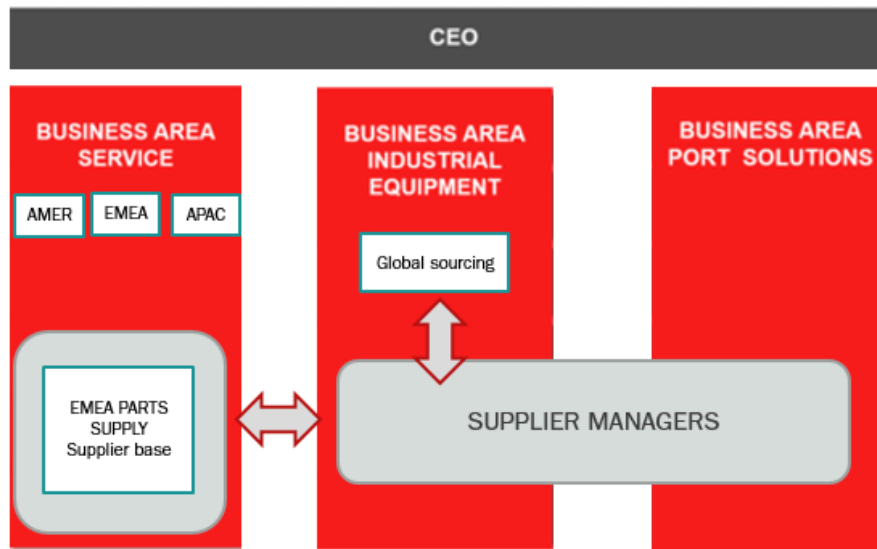
In all models supplier manager is responsible of supplier relationship, contractual and annual price negotiation management. Supplier manger is nominated to external supplier. The purchase price negotiation process was discussed in the interviews is presented below in the options.

OPTION A



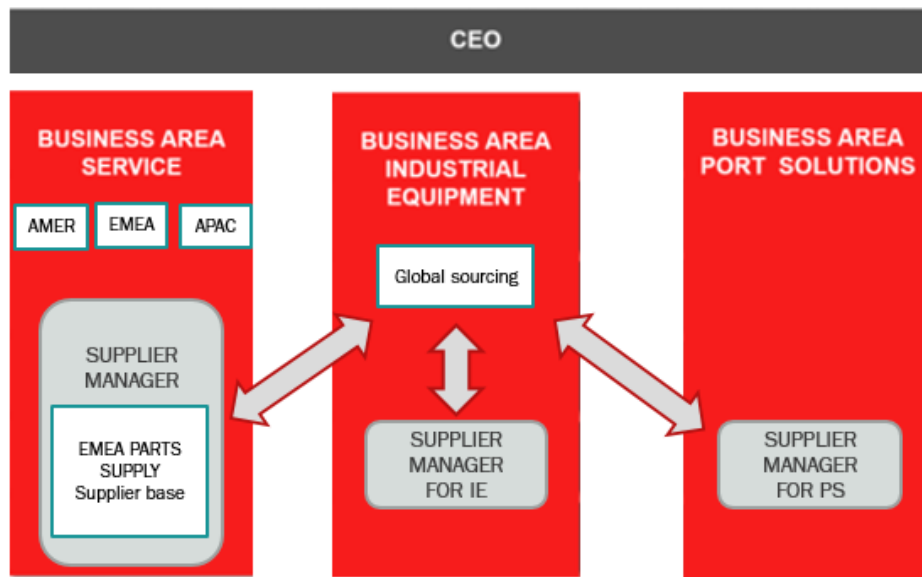
1. The Supplier manager collects independently the ERP data from spare part unit systems. The supplier manager does not ask comments from the spare parts.
2. The Supplier manager has the meeting with supplier where prices and the cooperation is discussed from all unit point of view.
3. The supplier manager updates independently the new purchase prices to spare part unit ERP.
4. The suppliers where supplier manager is not nominated, is managed by the spare part sourcing.

Appendice 3 Organization models presented in external interviews (2/3)

OPTION B

1. The supplier manager contacts spare parts units and informs about coming price negotiation meeting.
2. The spare part business gives to the supplier manager the list of spare parts where new price needs to be agreed. The list has separate information for inventory items and purchase-to-order parts. When possible inventory items include the forecast.
3. The Supplier manager has the meeting with supplier where prices and the co-operation is discussed based on the information received from all internal stakeholders.
4. The supplier manager sends new purchase prices to the spare part units.
5. The spare part unit updates the prices to ERP.
6. The suppliers where supplier manager is not nominated is managed by the spare part sourcing.

Appendice 3 Organization models presented in external interviews (3/3)

OPTION C

1. The spare part sourcing meets supplier independently. In the meeting is agreed the spare parts prices, spare part business requirements and monitored the spare part related supplier performance measurements.
2. The spare part sourcing update the prices to ERP after the meeting and shares the information to relevant people in spare parts.
3. Spare part sourcing shares the supplier minutes of the meeting and purchase process to global sourcing.
4. Spare part sourcing manages all suppliers independently.