

Procurement principles and vendor management in technological start-up companies

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<p>Abstract:</p> <p>This study is related to direct procurement in the technological start-up segment. The aim of this study is to find out what direct procurement methods and practices start-up companies are using, and how they manage their supplier relationships. A further aim is to come up with some recommendations on procurement principles for technological start-up companies and Salusfin. The research is limited to direct-procurement activities in technological start-up companies, and may thus not be generalizable to other procurement activities or bigger companies. The research material was gathered with 5 semi-structured interviews. The main theories used were the Kraljic purchasing portfolio analysis and the Dutch Windmill analysis. Due to company confidentiality and the extremely competitive nature of the start-up area, the research material obtained remained on a more generic level. The findings of the research indicate that most technological start-up companies do not have a defined procurement strategy in place, but may however have procurement principles and practices in place which could be developed into strategies. With regards to vendor management, the technological start-ups could benefit from using Porter's five forces, the Kraljic portfolio analysis and particularly the Dutch Windmill analysis in order to better understand their purchasing positions. A technological start-up company can manage its vendors efficiently through analyzing the buyer-supplier relationship and striving for mutual benefits and cooperation with other start-up companies in order to reach for example minimum order quantities. Some of the procurement principles and practices described in this thesis will be analyzed and implemented at Salusfin during the autumn 2016.</p>	
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<p>Sammandrag:</p> <p>Denna studie är kopplad till direkta inköp inom teknologiska start-up företag. Målet med studien är att undersöka vilka direktupphandlingsmetoder teknologiska start-up företag använder sig av samt att få reda på hur de sköter sina leverantörförhållanden. Ett vidare mål är att och på basis av resultaten ta fram inköpsrekommendationer för företagen och för Salusfin. Forskningen är begränsad till teknologiska start-up företag samt deras direktupphandlings aktiviteter, och kan inte med säkerhet generaliseras till att gälla andra typer av företag eller upphandlingar. Undersökningsmaterialet består av fem semi-strukturerade intervjuer med start-up företag inom teknologisektorn. Huvudteorierna för undersökningen består av Kraljics portföljanalys samt Dutch Windmill analysen. På grund av att konfidentiella uppgifter har uteslutits ur undersökningen och den extremt hårda konkurrensen inom det teknologiska start-up området blir undersökningen på en mer allmän nivå än den annars hade blivit. Slutsatserna tyder på att de flesta teknologiska start-up företag saknar en direktupphandlingsstrategi, men däremot utgår från principer samt praxis vilka kunde utvecklas till strategier. De teknologiska start-up företagen kunde ha nytta av analytiska metoder såsom Porter's femkraftsanalys, Kraljics portfolioanalys samt Dutch Windmill analysen för att bättre förstå sin ställning i förhållande till sina leverantörer. Ett teknologiskt start-up företag kan ha nytta av att i sina leverantörsrelationer analysera försäljar-inköpar relationerna samt sträva till gemensamma mål. Endel av de föreslagna inköpsprinciperna och praxisen förklarade i detta examensarbete kommer att analyseras av Salusfin samt implementeras under hösten 2016.</p>	
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FOREWORD

This Master thesis has been made for Salusfin Oy, a technological start-up company, working within the IoT area. The subject has been something of a learning process for me as it has been deepening my knowledge about procurement and small businesses as well as providing some new insight into the IoT area. My thanks are directed to Radovan Janoso, Manoj Sharma, Tommi Immonen, Rauno Huttunen and Ilkka Sillanpää for the interviews. I also want to express my gratitude to my supervisors Radovan Janoso (Salusfin) and Niklas Eriksson (Arcada) for their help and support during the writing process. Last but not least special thanks should be given to my family and my husband Henrik Jakobsson for giving me the time and opportunity to fulfil my Master's studies.

Charlotta Jakobsson

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Terms and abbreviations

IoT	The internet of things, “Anything that can be connected, will be connected.” (Techtarget.com, u.d.)
Lean	A systematic method for the elimination of waste (Lean Enterprise Institute, Inc., 2016)
TPS	Toyota Production System (Ohno, u.d.)
KPI	Key performance indicator (Business Dictionary, u.d.)
NDA	Non-disclosure agreement, an agreement not to give away company confidential information.
Escrow agreement	Agreement to under certain, so called release conditions, providing a copy of the source code of a software to the beneficiary. (Overly & Karlyn, 2013, p. 261)
Crowdsourcing	A combination of the words crowd and outsourcing, with the principle of reaching out/contracting out something to a group of people for getting information/to get the work down (Crowdsourcing.org, u.d.)
Slush	Slush is Europe's leading start-up event where founders and tech talent meet with top-tier international investors, executives and media. (Slush, u.d.)
Start-up	“A start-up is a company working to solve a problem where the solution is not obvious and success is not guaranteed,” (Robehmed, 2013)

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1 INTRODUCTION

In this chapter the author will present the background and problem statement and of the research, the company, the market, the purpose of the study, the demarcation, the structure of the study and the literature used for the thesis.

1.1 Background and problem statement

Much has been written about procurement and logistics for larger companies but as start-up companies have more limited amount of time and resources there is a need for a “light version” for the more specific procurement needs of start-up companies. This Master thesis has been commissioned by Salusfin Oy, a technological start-up company, working within the IoT area. The need from Salusfin is to find out the best procurement practices of start-up companies within the technological area and to receive some more concrete suggestions what the company could do to improve their direct procurement activities. The aim is to find out what direct procurement methods and practices start-up companies are using, and how they manage their supplier relationships. A further aim is to come up with some recommendations on procurement principles for technological start-up companies and for Salusfin.

The author decided to start the research by having a look at some technological start-up companies on the market, and making an effort to find out how they have arranged their direct procurement activities. The research was conducted as a qualitative research study with interviews with purchasing professionals from five technological start-up companies Existing literature also provided guidance of the most suitable procurement theories and practices to use.

1.2 The case Salusfin Oy

This Master thesis is commissioned by Salusfin Oy, an international technological start-up company, operating in the current mega-trend, “internet of things” area (Young, 2015). The company was founded in April 2013, and its’ headquarters are located in Espoo, Finland. Apart from the head-office in Espoo the company also has subsidiaries

in India, Germany and the USA. The company is offering a scalable home automation application/solution and services related to the solution. (Salusfin, 2016). The solution consists of the mobile application, which can be accessed through a smartphone, tablet or notebook device and a number of different hardware components that are integrated with the mobile application. The system offers the possibility for the end user to control lighting, home appliances, energy consumption and home security, with motion sensors and an alarm system seen in the figure 1 below. In the autumn 2015 Salusfin was asked to develop an enhanced industrial automation solution. This new solution was largely operating according to the same principles as the home automation solution, but it had been customized to fit the specific needs of a lean industrial environment. The industrial automation solution is an Andon solution specifically targeted for a lean production process, where the system will use automated responses to notify management and co-workers of problems occurring in the production process.



Figure 1 Salusfin solution, excluding backend integrations from the picture

The strategic competence of Salusfin is in integrating their applications with mobile solutions. Due to the expertise of the founders of the company and close co-operation with its partner-company the company has been able to develop its product offering within a very short time. The products sourced by Salusfin from its suppliers abroad are mainly

software development services, as well as white labelled strategic products (Weele, 2010, p. 196) i.e. high tech products that are supplied at customer specification.

The vision, mission and values of Salusfin are described in the following way:

- **Mission:** Our mission is to make your life easier and smarter by bringing automation solutions to your pocket.
- **Vision:** We want to be a recognized provider of user-friendly, smart IoT solutions.
- **Goal:** In 5-years-time we want to be among the top 5 most used providers of IoT-based solutions in those countries where we operate.
- **Values:** Honesty, innovativeness, customer focus and winning together.

The values explained:

Honesty: We deal with people and issues honestly and openly, taking personal responsibility for our actions, and keeping our promises.

Innovativeness: We innovate, creating new, secure and affordable IoT-based solutions

Customer focus: Together with our customers we focus on finding the best solutions to fit their particular needs.

Winning together: We work together, as a team, using our unique skills and know-how, to serve our customers in the best possible way.

1.3 The market for Salusfin

According to Forbes (Forbes, 2014) “smart is the new green”, which means that there will be a growing demand for smart products that can sense, process, report and take corrective actions when needed. When Salusfin was founded in 2013 smart-home solutions was a quite new thing and there were not that many companies providing this kind of solutions. However, at the moment smart-home solutions have become increasingly popular. In January 2015 Huffington Post (Newlands, 2015) listed 18 home-automation companies, with well-known names such as Apple, Google and Samsung among others. One could argue that the good thing is that there seems to be a growing market for smart-home solutions, but from a start-up point of view the “big players” have a lot more resources to put into product development and marketing, but of course also bring

increased awareness to the whole home automation industry. Bigger companies also have set-up procurement practices in place, while smaller companies may not have the same the same practices. Smaller companies can on the other hand benefit from increased agility and speed in decision making while bigger companies may be struggling with their own bureaucratic rules.

1.4 Purpose of the study

The aim of this thesis is to find out what direct procurement methods and practices start-up companies are using, and how they manage their supplier relationships. A further aim is to come up with recommendations on procurement principles for technological start-ups and for Salusfin. The implication of this study will be analysing the procurement principles and best practices used by technological start-up companies in handling their direct procurement activities and supplier relationships. This will be achieved through a combination of theory and practice. The theoretical part of the study will introduce some common practices and theories used within procurement and also look into the vendor management from a start-up perspective. The research part will go more deeply into the actual research and the answers obtained from the companies participating in the study. The conclusions part of the study will provide some general recommendations for technological start-up companies, some recommendations for the commissioning company Salusfin and give suggestions for further research. The outcome of the research will be used for helping the commissioning company, Salusfin Oy with its direct procurement activities, and the research will also be available for the other technological start-up companies participating in the study.

1.5 Demarcation of the thesis

Procurement encompasses all purchasing inputs into the company's value chain, or all activities needed to get the product from the supplier to its final destination (Weele, 2010, p. 407). This is a very broad field including among others purchasing, storage and transportation. The purpose of this study is not to analyse the whole field but to limit the thesis to examining only those parts that seem to be the most relevant ones for the activities of the commissioning company Salusfin and the other technological start-up com-

panies interviewed for the thesis. The author presents and analyses some common methods and practices generally used in procurement, with special focus on the direct procurement practices of start-up companies, but does not aim at presenting or discussing all elements in procurement in general. This means that only the procurement of the goods or services or development activities going into the end products of the participating companies will be analysed and all other procurement activities, such as the logistic transportation arrangements for the companies will be left out of the study. The author has put special emphasis on thoroughly describing the supplier search and selection process, as part of the vendor management of start-up companies and the supplier relationships, as her opinion is that these areas belong to the challenges that many start-ups are facing today. The interviewed persons are aware of that the research will be published, and have given their consent to publishing the information. This means that any financial figures or company confidential information such as names of the vendors, and more detailed information about the company strategies have been left out from the answers. The companies have chosen not to disclose any financial figures, and this means that the research will remain more on a general level, and cash flow or forecasting figures cannot be used, and consequently these parts have been excluded from the thesis. The interviews are limited to technological start-up companies, and the results may thus not be generalizable to other types of start-up companies, or bigger companies.

1.6 Structure and sources

This thesis starts with chapter 1, with an introduction providing the general statement and background for the topic. The chapter continues with a presentation of the commissioning company Salusfin, going into the market, and the purpose of the study, problem statement the demarcation of the thesis, continuing with the structure and sources and concluding by presenting the books, articles and web sources used for the theoretical part of the study. The theoretical part of the thesis is divided into three parts, chapter 2, chapter 3 and chapter 4. Chapter 2 introduces procurement principles and processes starting with a categorization of the procurement activities and proceeding with some common principles determining the scope of the company's core activities, and thus having a direct impact on its procurement activities. The rest of chapter 2 is aimed at

explaining and listing some common analytical tools used in procurement. Chapter 3 is presenting vendor management from a start-up point of view. The chapter follows the process of searching for a supplier, selecting the supplier and retaining and developing the supplier relationship. The last part of chapter 3 presents some common agreements and policies protecting the company's interests, which may be particularly useful from a technological start-up point of view. Chapter 4, IT-systems in procurement is the third theoretical part of the study. Chapter 4 presents some ERP systems for small businesses and goes into the concepts of IoT and Big Data. The research part of the thesis, chapter 5 presents semi-structured qualitative interviews as a research method, the interview questions and the logic behind the interview questions. Chapter 6 presents the results of the data collection and data analysis. Chapter 7 discusses the results from chapter 5, and chapter 6 presenting the conclusions about the research and chapter 8 analyses the outcome of the thesis, giving some recommendations for further studies of the topic.

1.6.1 The books

The most crucial book for the whole thesis is without doubt Purchasing and Supply Chain Management (Weele, 2010). This book has proved very valuable for listing and explaining the different theories, concepts and strategies within procurement and supply chain management. This is also why this book is quite frequently used as a reference in the thesis. Hankintatoiminnan nykytila ja kehittäminen kysyntä- ja tarjontaverkostossa (Aminoff, Pajunen-Muhonen, & Risto, 2002) has provided useful information particularly for the research part of the thesis. Other important books worth mentioning are Kaizen Express (Narusawa & Shook, 2009) explaining the lean production process with concepts such as TPS and JIT in a lean production environment, both on the conceptual level and in practice in a very straight forward and applicable way. The lean theories are particularly important for Salusfin as a company since one of the important strategy set by its cofounders was to keep the company lean and agile, and their industrial automation solution is also designed for the lean production environment. The book A Guide to IT-Contracting (Overly & Karlyn, 2013) was used for finding out more about Escrow agreements and Non-disclosure agreements, which Salusfin and other companies are using for their partners, suppliers and subcontractors, as well as for anyone else having access to company confidential information. The Essence of Small Business (Barrow,

1998) gives a comprehensive view of the basic pros and cons of being an entrepreneur as well as provides some useful recommendations, which the author has used when writing this thesis. This book has also provided the basis for some of the interview questions.

1.6.2 The articles and web sources

The author of this thesis has mainly chosen the articles related to procurement, company culture and IoT. The reason for choosing articles for these topics are that these fields are moving forward very fast, especially within the IoT area, and the articles will provide new information. Articles worth mentioning are for example Comparing National and Business Culture in the Nordic Countries-a Finnish Perspective (Jakobsson, Lokteva, Lawson, Strömberg, & Rosenbröijer, 2014) which gives a good insight in the differences and similarities of the business cultures in the Nordic countries. This article has also been used as material for the analysis of the business culture both within Salusfin Oy and the other start-up companies which were interviewed for the thesis. An interesting article used for the IoT section of this thesis is How Big Data and Analytics Are Transforming the Construction Industry (Marr, 2016). Daniel Burrus from Burrus Research also published some IoT related articles on the web which are predicting some of the changes that will happen in the IoT sector in the future (Burrus, 2014). IoT has become quite of a “buzzword” and will probably continue so. In Kauppalehti’s vieraskynä section many people have written interesting articles about IoT (Pensar, 2016), which gives an indication that this is currently a quite big topic not only elsewhere in the World, but in Finland as well.

2 PROCUREMENT PRINCIPLES AND PROCESSES

This chapter will point out some procurement related theories and business practices, as well as making an effort of applying them into the start-up environment. The first part of this chapter will look into the classification of purchasing activities and the parts two to five capture the strategic choices of a company in relation to its production and inventory. Part six introduces different analytical tools used in procurement and the parts seven and eight will introduce KPI’s and measurements of quality.

2.1 Categorization of Procurement Activities

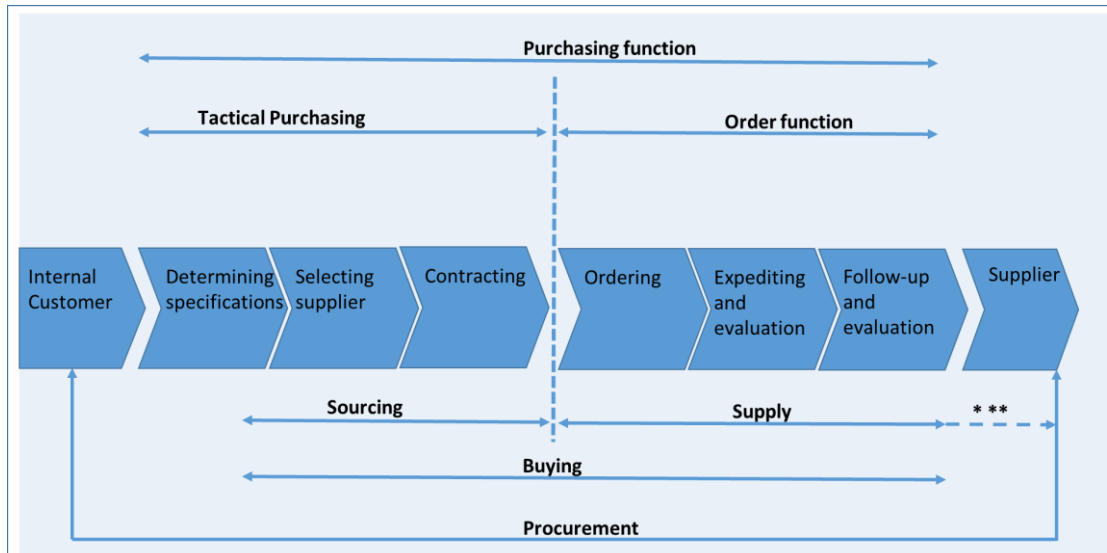


Figure 2 Purchasing Process model and some related concepts - redrawn (Weele, 2010, p. 9)

Traditionally purchasing function has been seen as operational activity which encompasses; determining of the purchasing specifications, selecting the supplier, getting the price of the product, specifying terms and conditions issuing of purchase order or contract and ensuring proper delivery and payment for the goods (as shown in the figure 3), or the purchasing department negotiates agreements with suppliers and checks that the agreements are followed (Weele, 2010, p. 8). This approach can be said to be mainly cost-driven, and the focus has mostly been on immediate spend reductions and cost avoidance for particular items. However, nowadays procurement is increasingly seen as a value-driven activity, where the main purpose is no longer short-time cost reductions but contributing to the value creating process for the whole company. In order to get a better understanding of the procurement activities of start-up companies today one should start by classifying the different spend categories.

2.1.1 Classification of direct, indirect and investment purchasing

Purchasing activities are often divided into two main categories: direct and indirect purchasing (Loi, 2013). Direct purchasing is purchasing of raw material, components or

products that are going into/are part of a company's end product that is being sold to the end customer.

Indirect purchasing is purchasing of products, materials and services that are not going into the company's end product but may be needed in order to keep the company functioning. Electricity, rent, office supplies and internally used software are examples of purchasing activities that belong to the indirect side. In Salusfin's case the procurement activities done in Finland consist of indirect activities, and the international procurement activities can be considered direct procurement activities, as the company purchases its components from abroad. Salusfin also purchases its research and development activities partly from abroad. However, these activities the author would categorize as project activities although they also are on the direct side. Investment purchases would be purchasing land or production equipment, which will be depreciated during a couple of years' time. As Salusfin is basically purchasing ready-made components, and has no own production, no production machinery is needed, and as the company does not own the land or the building where the office is located the company stock is the only investment it has.

Salusfin's direct procurement activities can be classified in the following way: Cloud solution supplied by its partner alliances, R&D solutions supplied by software developers and hardware supplied by hardware manufacturers (Janoso, 2016).

As direct purchasing activities the company has listed:

Hardware solutions from hardware manufacturers:

-Gateway (Z-Wave)
-Components (door-window sensor, motion detector, smoke-detector, CO-detector, smart-plug, smart insert-relay, power-relay, humidity-lux sensor, thermostat, electronic door-lock, dimmer, RGB-light bulb, infrared communication unit, IP-cameras, power reader, siren) (Salusfin, 2016)

Software and services from software developers:

-Mobile applications (Android, IOS)
-GW firmware

- Cloud solutions from Partner alliances

2.2 Make or buy analysis

The make or buy analysis is used as a method for determining if it would be more beneficial for a company to produce goods or services by themselves or to outsource the production of the goods or services to some external party. It can also be described as a tool for finding out possible savings opportunities if production activities were contracted out to a third party. Buy or lease analysis is a similar method (Weele, 2010, p. 64) which can be used in the same way. At its early stage Salusfin was considering producing hardware by itself, but after doing some investigation the company found out that the production costs would have been substantial and that it would therefore be better to use some of the hardware devices already existing on the market and have them customized for the company's needs. (Janoso, 2016).

2.3 Purchasing from manufacturer or retailer/wholesaler

When thinking about optimization of the supply chain, and the price and product mix companies often have to consider sourcing items directly from the manufacturers or to rely on wholesalers (Anderson, 2014). Purchasing the goods directly from the manufacturer may seem like an attractive alternative from the price point of view, but according to (Anderson, 2014) there are often hidden costs that the companies have not taken into account especially when purchasing from big manufacturers. These hidden costs could be described as increased warehousing costs due to manufacturers having bigger minimum order quantities, the risk of having big stock volumes that may become obsolete, longer lead-times, increased shipping costs when factories are not close-by, and less overall flexibility in handling the purchase orders. Purchasing directly from the factory instead of from the retailer, may also cause additional managerial responsibilities from the purchasing company, including the cost of lost sales revenues in case the warehouse replenishment system is not properly set up and maintained. Salusfin has chosen to supply its components primary from manufacturers, but has the ability to purchase from wholesalers when needed. For services such as software development the company has chosen to rely on the company developing the software solution.

2.4 Inventory planning and warehouse replenishment

If the customer demand was fixed and could be forecasted precisely companies could arrange their production and purchasing processes to have the right inventory available when customer wanted it. In reality, demand is not completely known and safety or buffer stocks of finished goods must be maintained to absorb the variation. (Ross, 2004, p. 305). Companies need to continuously maintain adequate levels of inventory in stock. This requires knowledge of the product portfolio, product turnover ratio; re-order point, and the order quantity/stock to be placed. Companies can choose to have a continuous review process, where the inventory levels are constantly reviewed, and a re-order is placed as soon as the inventory levels go under a certain level, i.e. hits the level of “safety stock”. Some companies have a periodic inventory planning where the inventory levels are checked at a certain predetermined frequency. This system is often used when there is no electronic real-time inventory measurement system in place. The benefit of the periodic inventory system is a stable ordering cycle, though the downside is that the stock level may sometimes fall below the level of safety stock, and the company may thus find itself in a situation when there are no items in stock. A high level of inventory with a low turnover ratio may not only cause a lot of extra warehousing costs, as the products need to be stored somewhere, but also provides a substantial risk to the company as some of the items may become obsolete and impossible to sell further or to use in the production process. This kind of inventory is often referred to as idle inventory. Many companies nowadays try to minimize the inventory risks by keeping their inventory “on the road”. This means that the companies do not have any warehouse of their own, but orders are only placed when customer orders arrive. This kind of approach will help to decrease the risk of having idle inventory in stock, but shift the risk to their suppliers and freight-forwarders not being able to deliver on time. The tendency to minimize the need of keeping inventory can also be seen among the start-up companies that were interviewed for the thesis.

2.5 Core-None Core product analysis

Core products are said to be those critical for the business, and none core products those that are less important. According to the old view core products or services should be

kept in-house and none core products or services should be outsourced to external partners. However, nowadays the concept of customer value and competence has been brought into the picture and the distinction of what to keep internal and what to outsource is not that clear anymore, as companies are increasingly thinking about competence. If there is a competence to produce the products in-house it might make sense to do so, but if the external partner has better competence it makes more sense to use their skills for the production instead (How to Manage 8 common outsourcing risks, 2014)

2.6 Analytical tools in procurement

This subchapter presents some tools and methods that are used in procurement: starting with Michael Porter's five forces analysis for analysing the balance of power in business relationships, continuing with the Kraljic portfolio analysis, and concluding with the Dutch Windmill analysis containing elements of the two previous analyses (Cheverton, Velde, & Paul, 2010, p. 94). The fourth parts of this subchapter presents lean and the TPS which are also linked together with the ABC analysis, primary used for categorizing inventory. The last parts of this subchapter present the concept of quality and Key Performance Indicators, which are commonly used for measuring quality and performance.

2.6.1 Porter's five forces analysis

In 1979 Michael Porter created a five Forces analysis (Porter's Five Forces Assessing the Balance of Power in a Business Situation, u.d.), to analyse the level of competition within an industry and develop a business strategy. These five forces analysis has traditionally been used to analyse the potential for making profit regarding a new product service or business, but the tool can be used for understanding the balance of power in other situations as well. The steps are: Supplier power, buyer power, competitive rivalry, threat of substitution and threat of new entry (How-competitive-forces-shape-strategy, u.d.). The five forces can be explained in the following way:

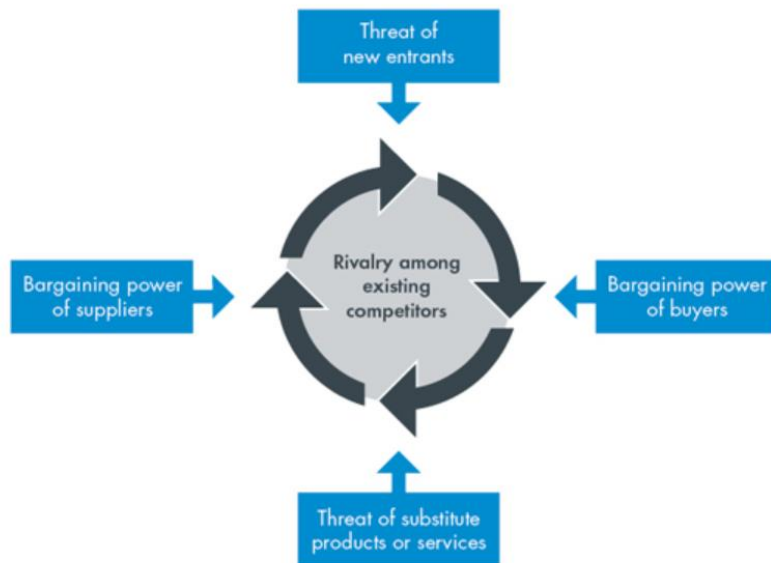


Figure 3 Porter's five forces of competitive position analysis. (Porter's Five Forces, 2013)

Supplier power/bargaining power of suppliers

How easy is it for suppliers to increase their prices?

- number of competitors your suppliers have
- uniqueness of product
- cost of switching to another supplier

Buyer power/bargaining power of buyers

How easy is it for the buyer to get lower prices?

- number of buyers
- importance of the buyer/business
- cost of switching to another product

Competitive Rivalry

- How many competitors do you have?
- Is your product unique?

Threat of substitution

- Can your customers obtain what you are doing for them in some other way, i.e. substituting it to something else?

Threat of new market entry

-Is it easy to enter the market you are in, or are there barriers to entry? If you have not protected for example your technologies, it could be easy for a new competitor to enter the market, and take your position.

2.6.2 Kraljic's purchasing portfolio analysis

In 1983 Peter Kraljic (Poirier, 2004) created a portfolio purchasing model, which was presented in Harvard Business Review. The model is still very popular and used in companies around the world. (Mind Tools editorial team, 2016) This model has also contributed in changing the perception of how procurement is viewed from a transactional activity to becoming a strategic activity.

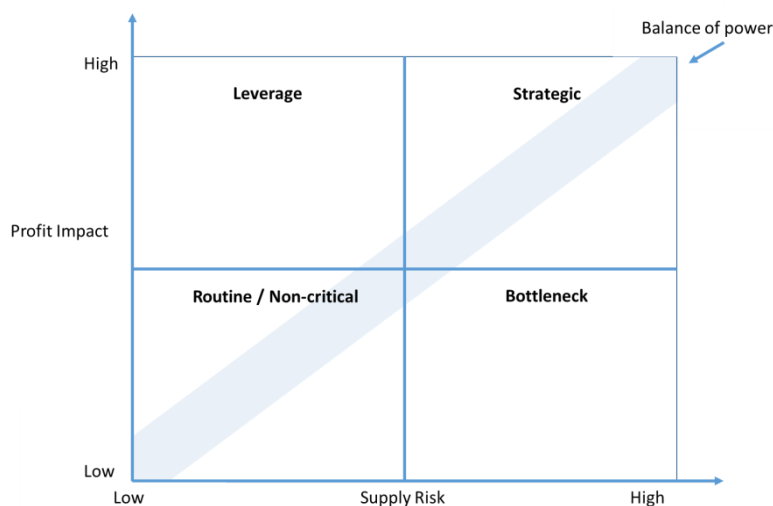


Figure 4 The Kraljic Matrix, Redrawn from Kraljic HBR, (1983)

The steps in Kraljic's portfolio model are:

1. Purchase classification according to supply risk/difficulty and profit impact/purchasing cost or value (Weele, 2010, p. 200)
 - a) **Strategic products** with high profit impact and high supply risk
 - b) **Leverage products** with high profit impact and low supply risk
 - c) **Bottleneck products** with low profit impact and high supply risk
 - d) **Non-critical products** with low profit impact and low supply risk

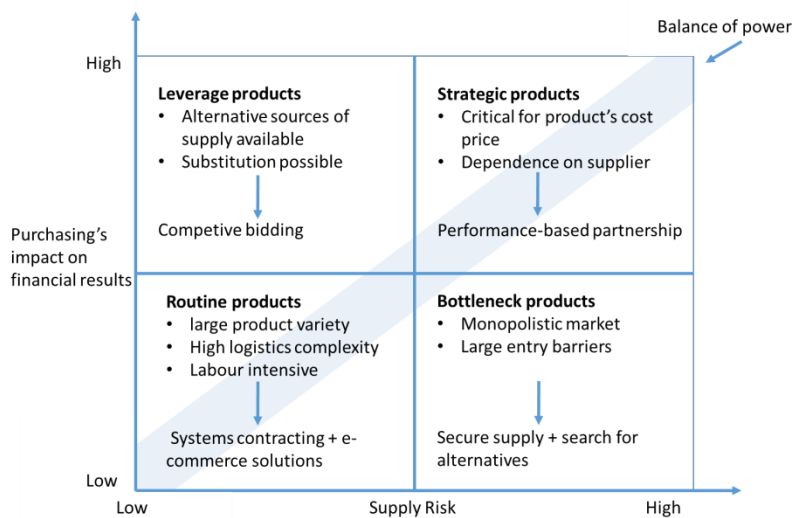


Figure 5 Purchasing product portfolio, redrawn (Weele, 2010, p. 197)

The purchased products should be ranked using a score of 1-10 on the specific dimensions, and thereafter be inserted in the 4 boxes as shown in the picture above. Kraljic explains that companies tend to focus on non-critical products, when they should put more emphasis to the other products, especially the strategic ones. All the different purchase situations or products need different strategies. Non-critical Products or Routine products can easily be handled by the purchasing department, whereas sourcing needs to focus on the bottleneck products, while the leverage products should belong to materials management, and the strategic products to supply management. Non-critical products should be handled efficiently and with as little time invested in them as possible. Bottleneck products are difficult as their importance is minor, though they may cause problems in the end if they cannot be procured. This problem can be avoided by exploring alternative sources of supply for them, and by keeping some safety stock in the warehouse. The leverage products which are high cost/high value items are the items where the purchaser/purchasing manager can use his or her negotiating power to obtain savings. The Kraljic's portfolio model can also be applied to suppliers, where the power of the suppliers should be analysed according to their impact on the company's financial results as well as supply risk. (Cheverton, Velde, & Paul, 2010, p. 93)

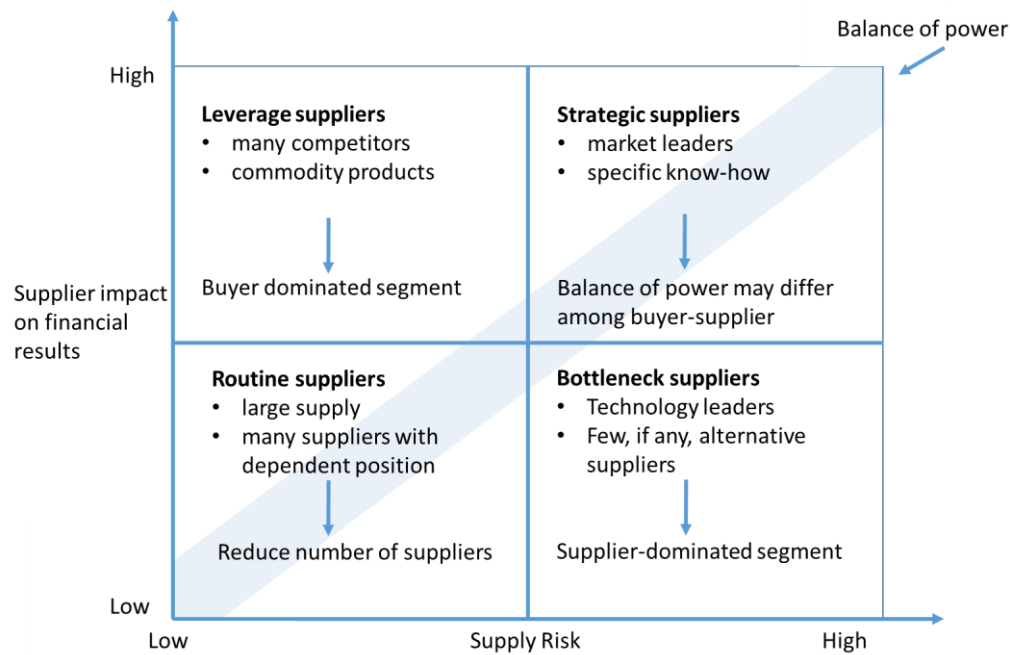


Figure 6 Purchasing supplier portfolio redrawn (Weele, 2010, p. 197)

2.6.3 The Dutch Windmill analysis of the buyer-seller relationship

The Kraljic analysis gives a good picture of how the buyer looks at an item from a sourcing point of view, but this view is only the buyer's point of view. The Dutch Windmill uses the same approach as the Kraljic analysis, but adds the supplier's view of the market, and the financial importance to the supplying company.

The relationships between the buyer and the seller can sometimes be difficult to understand, and the Dutch Windmill analysis (Cheverton, Velde, & Paul, 2010) provides a tool for understanding it better. *"This portfolio approach allows the buyer to mirror his view to the one used by the supplier"* (Weele, 2010, p. 200)

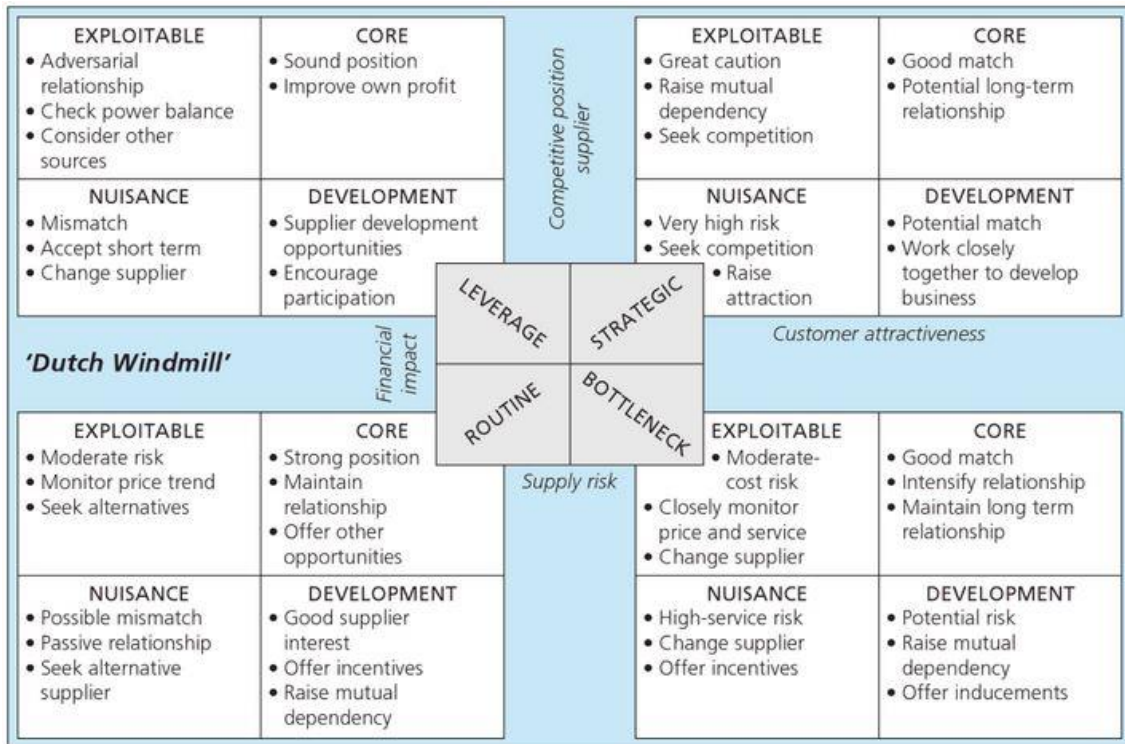


Figure 7 "Dutch Windmill": analyzing the buyer-seller interdependence (Weele, 2010, p. 202)

When these approaches are combined they create a strategy and tactics that can either support the efforts of building a better business relationship, or provide an explanation to why this type of relationship did not succeed. One way of assessing the items from a sales point of view is by looking at their current turnover ratios against their potentials in the market, which would indicate the future importance of the item.

The product categorizations from a sales point of view are:	
Development item: high attractiveness and low turnover	Nuisance item: low attractiveness and low turnover
Core item: high attractiveness and high turnover	Exploitable item: low attractiveness and high turnover

Table 1 Categorization from a sales point of view

The theory states that final decisions always will have elements of the general attractiveness for the customer. This means that all the classifications by the buyer; routine, leverage, bottleneck and strategic have their equivalent match on the sales side in devel-

opment, nuisance core and exploitable. However, some combinations are less likely than others to occur.

Buyer's perspective

Routine items:

Limited spend for the buyer, limited attention and the buyer will not to spend too much time on these.

Seller's perspective:

- a) **Core sales item** => good sales relationship if the seller can take care of all these items
- b) **Development sales item** => could work out if the seller is the one taking care of the development
- c) **Sales nuisance item** => probably won't work. Neither party is willing to "invest" in this kind of item.
- d) **Exploitable sales item** => could be a good combination as the seller wants to supply this item, and develop processes for doing this, but after that no more development should be expected.

As described by (Cheverton, Velde, & Paul, 2010, p. 93)

Buyer's perspective

Leverage item: the buyer has many sourcing options but is also interested in spending time on the item as it offers good returns.

Seller's perspective:

- a) **Core sales item** => the buyer will apply major leverage as the seller needs to sell this item, but the buyer could also source it from elsewhere. Hard negotiations are likely.
- b) **Sales development item** => Not a very likely case, because a supplier would probably not want to develop a "commodity" product in a market where there already is big competition, however if the supplier nevertheless chooses to do so, the buyer will use his/her bargaining power.
- c) **Sales nuisance** => very unlikely to happen. The buyer will see the market as competitive and wants to use his/ her bargaining power. The supplier is thinking of exit...

d) **Exploitable sales item** => Here tactical deals could be reached, but it is also (perhaps more) likely that the buyer will turn to another supplier. As described by (Cheverton, Velde, & Paul, 2010, p. 93)

Buyer's perspective

Bottleneck item: The buyer will try to reduce the supply risk. The buyer will nevertheless not put in as much effort as with strategic items and this creates better opportunities for the seller to increase margins.

a) **Sales core item** => the buyer doesn't need to worry so much, and even though this may be a bit higher priced but it doesn't matter so much. For the seller there is a good chance to get better than average margins.

b) **Sales development item** => both the seller and buyer are interested in developing this item, and they are also mutually dependent on each other.

c) **Sales nuisance** => Buyer needs the item but the seller may stop selling it. For the seller there is a good opportunity to continue supplying this item, getting better than average margins, and to perhaps move the item to the exploitable ones.

d) **Sales exploitable** => the buyer needs the item, but as security of supply is not a problem, and he or she will likely keep looking for alternative items. As described by (Cheverton, Velde, & Paul, 2010, p. 93)

Buyer's perspective

Strategic items:

This item is very important for the company's profit. The buyer will try to build a secure relationship.

a) **Sales core item** => very good basis to build a secure relationship perhaps even with key account management structure

b) **Sales development item** => like the core item, but the buyer will be slightly more vulnerable

c) **Sales nuisance** => Very high risk for the buyer, seek competition, the seller needs to raise the attractiveness of the item.

d) **Sales exploitable** => buyer should be careful with these items, and raise mutual dependency and seek alternatives. As described by (Cheverton, Velde, & Paul, 2010, p. 93)

Explained in a bit simplified way the Kraljic portfolio analyses the products or suppliers and their importance to your company, whereas the Dutch Windmill theory says that it always takes two parts to build up a relationship. The Dutch Windmill says that you can understand the level of that relationship simply by looking at the importance of the items/or suppliers, as the author would here like to extend the theory to cover suppliers as well, and their impact to the profit or loss of your company. If the product is a strategic product of the buyer, and thus important for their business, and a core product for the seller thus the most important sales item for the seller, the benefits of the relationship will be very high for both parties, and they will likely want to form a partnership. (Cheverton, Velde, & Paul, 2010, s. 94)

2.6.4 Lean and TPS

Lean is as a management philosophy, which fundamental purpose is to create value through eliminating waste (www.lean.org). Waste (muda) is defined as any activity that consumes resources without creating value for the customer, or any activity for which the customer is not willing to pay (Narusawa & Shook, 2009, pp. 2-6). Taiichi Ohno has defined seven types of waste that often can be found in the workplace. These wastes are: overproduction-producing more products than needed or sooner/faster than required by a process or customer. The second waste is the waste of waiting, i.e. operators spending idle time waiting. The third waste is conveyance, i.e. any movement of the parts or products beyond the absolute minimum is a waste. The fourth waste is the waste of processing or over-processing, i.e. the waste of unnecessary or incorrect processing. The fifth waste is the waste of inventory, i.e. keeping more items or raw material in stock than the absolute minimum needed for the process to function. The sixth waste is the waste of motion, i.e. operators or machines making movements that are creating no value. The seventh waste is the waste of correction-which is connected to inspection, rework and scrap.

TPS-or the Toyota Production System was developed by Taiichi Ohno in 1947 when he analysed Toyota’s machine shop and found the waste of waiting. The goal of the TPS is to produce the highest quality at the lowest cost with the shortest lead-time. This target is described by drawing a house with two pillars. The first one consists of a pull system (a system where goods are produced when needed), a continuous flow, and measuring takt time. Together these create the fundamentals of the just-in-time approach. The second pillar is separating human and machine work so that humans are not doing the work which can and should be done by machines, and stopping and notifying for abnormalities, i.e. not letting any “crap” pass through the system. This second pillar is called Jidoka (or automation with a human touch). Jidoka, or automated machines that stop when there is a problem, eliminated the waste of monitoring machines (Narusawa & Shook, 2009, pp. 7-8)

According to the Lean Enterprise Institute lean principles are not just for the production environment, but can be applied across various fields such as services, healthcare and the government as well. (Lean Enterprise Institute, Inc., 2016)

2.6.5 The ABC Analysis

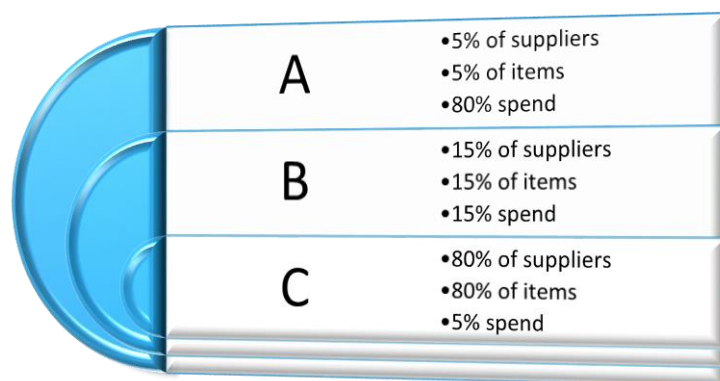


Figure 8 ABC Analyses depicted

A common tool used in inventory management is the ABC analysis. The ABC analysis which is based on the Pareto Rule is a way for a company to group their goods into different categories based on their importance. The category A- products are the most important ones, the B’s are less important and the C’s are the least important ones. A’s generally are very expensive, and have a high turnover ratio (Stickney, Weil, Schipper,

& Francis, 2010), B's are average and C's are the least expensive ones with the lowest turnover ratio. The distribution of these products should follow the Pareto principle where 20 per cent of the items account for 80% of the total consumption value. (Coyle, Langley, Gibson, Novack, & Bardi, 2010). The A products account for 70-80 % of the total consumption value, the B products account for 15-25% of the total consumption value, and the C products account for the lowest 5% of the total consumption value. The ABC-method is an inventory categorization method, which is often used for commodities, but it can also be used within other fields.

2.7 KPI's for measuring of efficiency

Key Performance Indicators or so called KPI's are commonly used for measuring a company's performance with predetermined parameters that are given certain values.

Examples of typical KPI's are response time, lead-time and number of complaints. KPI's are quite frequently used in service agreements as they provide a means for measuring service quality, which needs to be defined in the agreement. Without having predefined KPI's in place it will be impossible for a company to determine if the agreed service terms have been met or not, and it will be impossible to say that the service terms have not been followed unless the terms have been agreed on beforehand. (Weele, 2010, p. 313)

2.8 Measurements of quality

In order to understand quality, one has to first determine what is quality? And which is the appropriate way of seeing quality? In service quality is often described as the difference between expectations and performance. In the start-up context the author has decided to define quality as something which can or will bring additional value to the products and service the end customer is receiving. Quality can sometimes be measured as KPI's or parts of KPI. In the KPI context good quality is measured as meeting the set targets. However, quality can also be seen as consistency, in product and service, like in MC. Donald's where the customer knows exactly what he or she is getting. When think-

ing about quality in a procurement context it is also important to mention the different quality standards like ISO 279001 for information security management.

3 VENDOR MANAGEMENT FROM A START-UP PERSPECTIVE

This chapter will present the supplier search and selection process as well as some common principles of retaining and developing the supplier relationships from a start-up point of view. Furthermore, the chapter will introduce some agreements and policies for protecting the company's interests.

3.1 Searching for suppliers

It is not always easy for companies to find the right suppliers for a certain good or service in terms of price, product offering, quality, quantity and lead-times. In the following chapter the author will present some sources and approaches for searching for suppliers.

3.1.1 Internet search engines

The by far most popular way of finding new suppliers seem to be using internet search engines or “just Googling” the suppliers, as many people would put it. Internet will give a big amount of hits and often it is possible to just type in a product code and your internet search engine will take you to the manufacturer's/reseller's or wholesaler's webpage right away. Internet search engines were also frequently used by the procurement professionals of the start-up companies that were interviewed for this thesis. *Search engines such as Yahoo! and Google provide some of the most powerful resources for the buyer. Search engines allow the user to quickly find and consolidate information found on the internet for just about any specific subject, product, or service.* (Sollish & Semanik, 2007)

3.1.2 Crowdsourcing

Manuel Castells has once said: *“No one can be a major force in the network system. The system itself is constantly changing, and the main force lies in the system itself”* Internet is founded on the open source philosophy, and the culture of sharing. Social media is working according to the same principals. The essence of crowdsourcing is bene-

fitting from the knowledge of the individuals in the group, and being able to share and develop ideas on a given platform.

One of the most famous results of crowdsourcing is the free, online encyclopedia, Wikipedia and the open source system Linux. Crowdsourcing is a growing trend, and the author thinks could be used for sourcing purposes such as supplier search and selection as well. At the moment companies are widely browsing through the internet to find new suppliers and relying on the “word of mouth”, as well as on magazines specializing in certain areas. However, there is a growing trend in internet communities such as Facebook and LinkedIn, where people from different areas are gathering to discuss common topics and sharing information and experiences. These communities could be used as online marketplaces making it possible to connect the buyers and the suppliers with each other. These communities could possibly also be used for benchmarking purposes. In this case companies have to understand what they are doing and have a clear strategy of how to get the needed results, and also be prepared to disclose some information about their companies to suppliers, possibly even to other companies competing within the same industry. In the Article *The Crowd is Wise (When it's Focused)* (Lohr, 2009) Steve Lohr addresses some of the fundamental issues with crowdsourcing, including the point that it is not enough to have a crowd working on a problem together, but that there needs to be some level of administration from the company itself to decide for example which code to use, or which ideas are worth to be developed further.

3.1.3 Slush for start-ups and specialized tradeshow

Slush is Europe's leading start-up event where start-up founders and tech talent meet big international investors, executives and media. (Slush, u.d.). The basic idea of Slush is to promote entrepreneurship and to help start-ups and investors meet each other. Slush is non-profit movement, which has grown from a 300 person event to a big happening. In 2015, when Slush was organized in Helsinki in Finland there were 15.000 people attending Slush from 100 countries.

CeBIT is an example of a tradeshow where suppliers from IoT and the Smart Home companies present their solutions and meet potential customers and partners. CeBIT could be described as a place where companies present their new product innovations and look at attend presentations by selected speakers (CeBIT, 2016).

CES or the Consumer Electronics Show in Las Vegas is a show for companies mainly from the consumer electronics sector. Like in CeBIT the idea is introducing new trends and launching new products to the public. (CES, 2016)

3.1.4 Alibaba

In 1999 Jack Ma founded Alibaba. Alibaba is a big online marketplace connecting sellers and buyers from all around the World (D'Onfro, 2014) The Company provides an EBay-like platform where buyers can easily search for products and connect with sellers providing those products. The platform offers a lot of services, and many of the sellers/manufacturers are located in China. Concluding from the feedback left by customers (Alibaba reviews , 2016) shopping on the site and asking some small companies of their use of the site the author has concluded that it might be a good way for finding manufacturers in the beginning, but the face-to-face interaction is missing, and the quality of the end products is not consistent but may vary a lot. The author would conclude here that as with all business transactions the crucial thing is to know what you purchase, from whom and to guard your money until you have received the final products. Also one should remember that countries have different legislation and business habits which may provide unforeseen obstacles.

3.1.5 Other alternatives

Finpro and the local chambers of commerce are also offering help to get in contact with companies abroad. It is possible to use their services for market research in the countries abroad to find out more about the market situation. (Finpro, 2016)

3.2 The supplier selection process

The supplier selection process has been divided into three sections, the initial stage, bidding and savings.

3.2.1 Initial stage

Before deciding which suppliers to use an organization has to find and examine the best possible bidders. For this purpose, suppliers are carefully checked through references, meeting of agreed standards and ability to deliver the required products in the right price, quality, quantity, and at the right time. The supplier's credit ratings are also checked. In Finland it is also mandatory by law to check the contractor's liability documents when work is contracted out and performed in the contractor's premises. This type of documents should be in place before a contract is made with the supplier. Sometimes the purchasers will audit the suppliers, i.e. schedule meetings with the suppliers and visits to their factories in order to find out more about their production processes and abilities to produce and deliver the goods. RFI (or request for information) (Seshadri, 2005, p. 112), documents are also sent out to the suppliers at this stage.

3.2.2 Bidding

The suppliers which have passed the initial stage will now be asked to fill in an RFQ (request for quotation) (Seshadri, 2005, p. 112). At this stage the suppliers are invited to a process where they should put a price on the item they are selling. In the so called "reverse-auction" suppliers are setting prices and playing against each other. The suppliers can see the bids of the other suppliers and change their own bids, but they cannot know whom they are bidding against. Reverse actions are more often used by big companies that want to obtain better prices for particular commodities or items where the quality of all the items is about the same (Seshadri, 2005, p. 149). In smaller companies the bidding process may be less formal, and in some cases the purchasers will just settle for a supplier whom they have a good business relationship with and whom they trust to be able to deliver the agreed goods on time. As the total cost of a transaction should be taken into account one might argue that it makes little or no sense to spend a lot of time

trying to find new suppliers for low-spend products if there are already suppliers with whom the company has a good long term business relationship. If the products are technical it is normal to ask for a technical evaluation of the quotation from a technical person such as an engineer. The commercial aspects will usually be evaluated by the purchaser or purchasing/sourcing manager, who will check that the quotation is contractually acceptable, and also negotiate better terms when needed. It is common to have the technical evaluation of the quotation made before the commercial one, and preferably both checked before reverting to the supplier.

3.2.3 Savings

Van Weele (Weele, 2010, p. 312) lists 7 different types of savings: competitive bidding, negotiation distribution, purchasing policy, purchasing ordering and logistics, value analysis substitution and standardization and make-or-buy analysis.

1 Competitive bidding	Lower prices
2 Negotiation	Negotiation of a better deal
3 Distribution	Negotiating lower transportation costs & inventory reduction
4 Purchasing policy	Supplier consolidation
5 Purchasing ordering and logistics	Optimizing incoming material flow, lower transaction and logistics costs
6 Value analysis , substitution and Standardization	Changing specifications, lower cost alternatives, standardizing products, detailed supplier and supply chain cost analysis
7 Make or Buy	Outsourcing activities that can be obtained cheaper from elsewhere

Table 2 Classification of purchase savings

What is then so important about savings? Savings are the way for a purchaser to show the value of using his or her negotiation power, and the value of supplier consolidation and one way of showing the value of having a centralized purchasing department taking care of the company's procurement activities. The savings will not only decrease the company's costs but will also be visible on the company's Cash Flow Statement as for example Cash Flow for Operating Activities, payments to Suppliers (Complete Guide To Corporate Finance, Financial Statements-Cash Flow, u.d.).

3.3 Retaining and developing the supplier relationship

Traditionally the relationship between supplier and customer has been seen as a relationship where the customer has more power, as he or she often can decide where to spend his money. This kind of relationship where the customer is free to choose whichever supplier he/she wants implies that the relationship is not a balanced relationship but more of a dependant one, where one party is clearly more influential than the other. This might be true in a market where the customer has many companies supplying the same good or service to choose from. However, the situation might be the complete opposite when the supplier is highly specialised and may be the only supplier on the market supplying this good or service (Weele, 2010, pp. 222-223). The author thinks that in order for a company to have a successful supplier relationship the relationship needs to be built on mutual benefits. In this perspective both companies need to receive some kind of benefit from the relationship. If the supplier does not need your company as a customer, due to for example low order volumes, they may increase the item costs or simply refuse to do business with you. If on the other hand the buyer notices that the supplier fails to deliver the ordered goods or services, the buyer may simply try to change to another supplier, who is more willing to do business with their company. For small businesses it might often be particularly difficult to get the suppliers to comply with their requests since they often do not have the financial power of big order volumes that could make them the more powerful party in the negotiations. This can also be seen from the start-up interviews for this thesis. In a business relationship where the supplier is the stronger party, and there is no possibility to put direct pressure on them, and the only way to handle the relationship is through cooperation and searching for mutual benefits. In this kind of situation, the purchaser will do best in convincing him or herself of the benefits of the relationship and then look at it from the other party's perspective (Lambert, 2008, p. 54). Things to think about are, what are we trying to achieve, and how committed are you to reaching your goal? The purchaser could also try to think about he or she wants the other party to do, know and feel. The "What's in it for them-question?" is of particular importance. Why should they care about your goal, and what does your goal mean to them? Can you find some mutual benefits that they might be interested in, or will your goal just make their life and work more difficult? After finding answers to the above mentioned questions the purchaser should make the goals

more tangible and easy to reach by breaking the end goal into smaller sub-goals. Each of these goals should be measured and recorded along the way.

3.3.1 Suppliers as partners

The relationship between Salusfin and its cloud partner/service provider is a so called “balanced relationship” (Weele, 2010, p. 197), where both parties have mutual interest in keeping the relationship stable, and neither party dominates the relationship. The relationship of the two companies is largely dependent on trust and mutual interests. The two companies are both operating in the Nordics, and partly on the same markets. Both companies wish to sell the solution to their own customers, and need to agree on the terms and conditions. Both companies are small companies employing below 15 persons each. Forecasting future demand is particularly important in keeping the supplier up to date with what’s happening on the market. The supplier needs to take into account the current market situation and make assumptions regarding the behavior of their customers. The forecasts of their clients help them to determine how much raw material/goods they should order or keep in stock. From a purchasing perspective it is important to be able to forecast for example the component lead-times from placing an order to the final delivery, as accurately as possible. Purchasing forecasts are of course partially based on sales forecasts or estimates.

3.3.2 Large suppliers

For hardware supply Salusfin has decided to differentiate itself from its competitors by offering reliable components at a relatively low price compared to its competitors. Instead of manufacturing the hardware by themselves they have decided to use existing suppliers that they know are able to provide top-of the market components at affordable prices. For a small start-up company, it is particularly important to maintain a good relationship with these large suppliers as these suppliers benefit more from big orders than from small ones. Entrepreneur.com Article: Build a Good Relationship with Suppliers highlights the importance of good supplier relation in any size of business (Lemonis, 2010)

3.4 Agreements and policies for protecting the company's interests

It is in the interest of every company to protect its own confidential information. Confidential information is often being shared in the course of a normal business relationship, when the vendors need to know about a company's products, business and procurement forecasts in order to provide the best possible deals. Non-disclosure agreements are a way of protecting this information and it is recommended that companies do not enter into any discussions with vendors before a non-disclosure agreement has been signed (Overly & Karlyn, 2013, p. 28). Escrow agreements are a way of protecting the companies from losing the access to their software, by securing the access to the software source code in case it would be needed (Overly & Karlyn, 2013, p. 261). An ethical and environmental policy is a way of protecting the company "from inside" in making sure that the company complies with general environmental and ethical standards, but also protecting itself by requiring that its vendors comply with the ethical and environmental standards.

3.4.1 Non-disclosure agreement

In a company of any size there should be a need for a non-disclosure agreement. In the non-disclosure agreement, the company has stated things that are considered company confidential information, and should be kept secret. NDA's should only be used for protecting each party's confidential information, and not be made into bigger agreements covering services or other obligations (Overly & Karlyn, 2013, p. 28). The time to bring up an NDA is generally when a company starts discussing the possibility to evaluate business cooperation with the other party. NDA's are also commonly used for employees, contractors and other parties that may get in contact with company confidential information.

The different forms of NDA's include unilateral (one-sided), NDA's that are only protecting the party issuing the NDA, and mutual (or two-way) NDA's that are protecting both parties. Mutual NDA's are generally used in business relationships and unilateral NDA's are used for employees or subcontractors. This is an important distinction since

you should never use a unilateral NDA protecting only the other party in case there is any chance that your company will be disclosing company confidential information in the course of a business relationship.

Key issues to consider regarding mutual NDA's are if you should use your company's NDA or the other party's NDA. Usually the differences are not so big and some minor revisions may be the only thing needed to include the same content (Overly & Karlyn, 2013, p. 29). Otherwise the preference would be to use the NDA of your own company, as that one would include the most relevant aspects for your company. NDA's are generally written for a particular purpose, and one should make sure that the definition of that purpose is not too broad. The term "confidential information" should be well defined to make sure that it covers the information your company wants to protect. You should avoid remarks that your company should mark the information "confidential" or fixing a time-period when the information is distributed, as this may be very difficult to keep track of in practice. If the NDA states that the other party should destroy confidential information at the end of or at the termination of the NDA one should remember to state that the receiving party should keep such confidential information that is needed to satisfy any document retention obligations required by law. The return-and-destroy requirement also needs to be followed-up. Companies often use NDA's limiting the disclosing of confidential information to their employees, but it is better to revise these agreements to cover "employees, agents and subcontractors having a need to know such information". The NDA's should clearly oblige the receiving party to inform your company of any potential or actual breach of the NDA. Even though the companies have signed an NDA it should be stated that none of them is bound to share any confidential information. Any NDA should clearly state that neither party is transferring any ownership or granting any licenses, express or implied in their confidential information. The NDA should also protect copyrighted material and patent methods that may not be considered confidential information. In case highly sensitive information is to be transferred it might be worthwhile including some specific information security requirements, such as encrypting data.

3.4.2 Escrow agreements-mitigating risks in software sourcing

When a customer signs a license agreement for software it always takes a risk that the supplier will go out of business, or just stop providing support. The consequences of this may be devastating for the customer who might have invested a lot of money in the software. Generally, the customer will, when purchasing software receive an object code version of the software, which only a computer can read. The source code, which can be read by humans, is kept by the software provider, and not given out to anyone. From a customer point of view, it might therefore be a good idea to enter an escrow agreement (Overly & Karlyn, 2013, p. 262) to protect itself and its interests, especially if the software purchased from the software provider can be seen as essential to the company's business. The basic idea with escrow is that the software provider will give the source code to an external party, the escrow agent, who will keep the source code, and only provide a copy of the source code to the customer in case of a predefined release condition. A release condition could be that the software vendor files for bankruptcy. There are three different forms of escrow agreements; one-party agreements or self-escrow, two-party agreements, and three-party agreements. In the self-escrow the vendor provides the customer with the source code after a software license agreement has been signed. According to the agreement the customer is not allowed to use the source code, which should be locked in in a safe-unless a "release condition" occurs. The benefit of this arrangement is that the customer will have immediate access to the source code if needed. The more common types of escrow agreements are two and three party escrow agreements. In the two-party escrow agreement, the vendor and an escrow agent sign an escrow agreement, where the vendor's customers each sign a beneficiary form. In a two-party escrow agreement, the terms of the escrow agreement are generally non-negotiable. In the three-party escrow agreement, the vendor and the escrow agent sign an escrow agreement, and the vendor and the beneficiary sign another agreement. In the three-party escrow agreement, the beneficiary can generally negotiate the terms. The deposited source code should be updated quarterly. Sometimes the escrow agent will offer verification services comparing the source code to the object code currently being licensed by the vendor, to check that the source code is up to date.

3.4.3 Ethical and environmental policy

The company code of conduct specifies how a purchaser should behave internally within the company and in dealing with suppliers. Global business today has due to international media become more transparent, and a social or environmental scandal may quickly ruin a company's reputation, resulting in bad publicity and possible law suits. Especially bigger companies often have company-wide codes of conduct with strict rules about dealing with suppliers. Van Weele (Weele, 2010, p. 396) lists different areas such as loyalty to the company, proper dealing with suppliers, supporting fair competition, and upholding the profession's reputation as areas where the code of conduct needs to be followed. The code of conduct ensures that the purchaser will avoid issues such as conflict of interest, actual or perceived bribery, and unethical treatment of suppliers or unfairly preferring one supplier over the other. The code of conduct usually also stipulates how the company's suppliers should deal with their suppliers and what kind of behavior is acceptable or not. As an example companies often ensure that their subcontractors adhere to national and international legislation regarding human rights and working conditions for their supplier's subcontractors. The code of conduct will thus not only concern the company itself and its suppliers but may be extended to other parts of the supply chain as well. The company's environmental policy ensures that the company is compliant in its way of for example dealing with potentially hazardous materials (ROHS), and waste disposal.

3.4.4 Risk assessment

There are many risks in starting your own business. Some of the risks are directly connected to the company and its shareholders and some can be attributed to external circumstances. Internal risks are mainly concerning the composition of the management of the company, their skills, knowledge, corporate culture and way of working together. External risks could be for example risks regarding the suppliers and their deliveries, the customer relationships, and the quality of the products. In the risk assessment the company should consider the possible business impact of the risk (Weele, 2010, p. 175). If the risk can be considered likely to occur and the business impact is high the company will probably want to think of a strategy to avoid the risk altogether. Regarding moderate risks, the company might choose to transfer part of the risk to someone else. This

kind of risks could for example be risks in transportation, which can be transferred from the buyer to the seller, -or the other way around using different incoterms. Sometimes companies may also choose to take calculated risks, when the cost of accepting the risk is less than the cost of avoiding the risk. An example for this would be not investing in more bureaucratic procedures and management but rather let the employees, resources be trusted and given the freedom needed to take responsibility and actions to complete a given task by allowing self-orientating teams (Janoso, 2016).

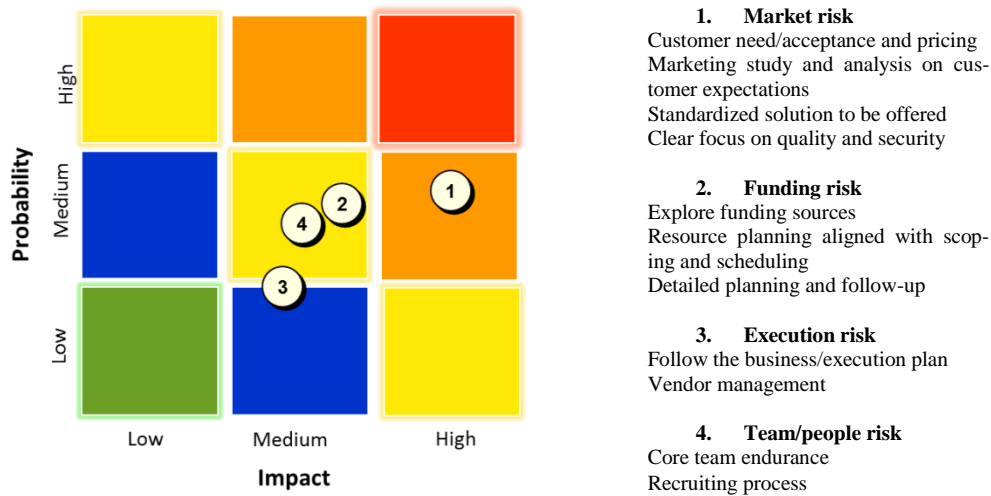


Figure 9 Risk Assessment example for startups discussion (Janoso, 2016)

4 IT-SYSTEMS IN PROCUREMENT

This chapter will introduce ERP systems from a small business perspective as well as acquainting the reader with the concepts of IoT and Big Data, and how they can be applied in the procurement environment.

4.1 ERP systems for small business

Nowadays companies commonly use Enterprise Resource Planning systems for managing their transactions. An ERP system can be defined as a “company-wide information system for managing the company’s operational and support processes, its administrative processes, its human resources, its material resources and financial resources” (Weele, 2010, p. 405)

The benefit of using an ERP system is that it links together the transactions made in different places, provides a way of collecting, tracking and storing information in a relatively easy to use way, and provides the possibility for companies to automate and standardize their processes (Mohammed, 2009). Commonly used ERP systems include SAP, Microsoft Dynamics and Oracle ERP solutions among others. The question from the start-up point of view is if and when these systems become applicable for a start-up. This is a point that the author will look into in the discussion part of the thesis.

4.2 The IoT and Big Data area in Startup Procurement

According to Daniel Burrus, the Internet of Things is a far bigger concept than what is commonly understood today. Daniel Burrus defines IoT in the following way “*The Internet of Things (IoT) is a combination of networked sensors and machines that enable machine-to-machine communications. Enabling technologies include the Internet, advanced cloud services, wired and wireless networks, and data-gathering sensors, making the system instantaneous anywhere, anytime. Advantages of IoT include the ability to monitor and control, real-time asset management, faster response times, major cost savings and, perhaps the biggest advantage, the ability to predict and prevent. IoT will create one of the biggest disruptions and opportunities we have seen in every imagina-*

ble field.” (Burrus, 2014). Since the IoT is said to affect every area, one might wonder how this will affect procurement, and more specifically, start-up procurement activities. In the article *How Smart, Connected Products Are Transforming Competition*, Michael E. Porter and James E. Heppelmann explain the present and future possible implications of IoT for various industries. They state that IoT or, smart connected products, as they call them, will reshape the industry structure. Porter and Heppelmann analyze and predict the effects of IoT according to Porter’s five forces analysis (Porter Heppelmann, 2014). As a conclusion of the analysis one could summarize that the smart connected products will revolutionize each industry, refining industry boundaries and demanding more from the companies in terms of operational effectiveness, and standards when it comes to best practices. Companies will be better able to keep track of their historical data and differentiate themselves and their products with more targeted offers to their customers. The smart connected products can also improve the bargaining power of buyers, providing buyers with more detailed information about the products performance and product usage data. Furthermore, the “product as a service” concept can boost the buyers bargaining power allowing increased ease of switching suppliers. The smart, connected products may raise the rivalry among competitors with the possibility of generating a “product enhancement race”, where manufacturers are competing in adding additional functionalities to their products. Companies may also quickly find themselves competing in totally new and broader market segments. This could even risk the profitability of making the products. In 2015 Gartner presented a hype curve for emerging technologies, as seen in figure 2 below, and one could easily argue that this is exactly what is currently happening within the IoT segment.

Figure 1. Hype Cycle for Emerging Technologies, 2015

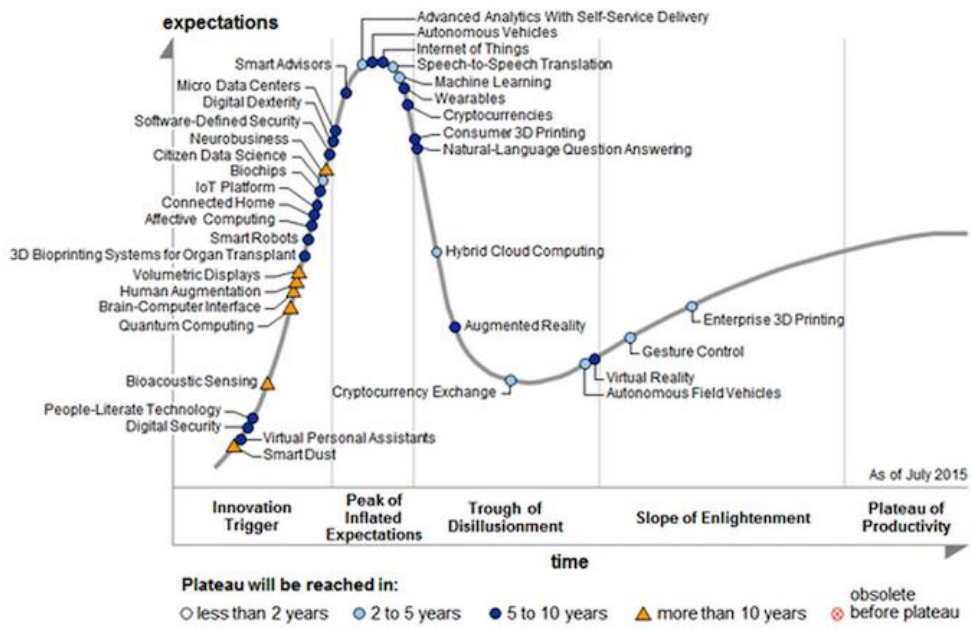


Figure 10 Gartner Hype Cycle for the Internet of Things, 2015 (Gartner, 2015)

5 RESEARCH METHOD

The first part of this chapter explains the choice of the research method, the setting where the interviews took place and how the participants were selected as well as how the interviews were conducted, recorded and analyzed. The second part of this chapter presents the interview questions, and the third part explains the reasons behind asking each of the questions.

5.1 Semi-structured qualitative interviews

The research was conducted as semi-structured qualitative interviews. The main reason for choosing the semi-structured qualitative interviews as the approach for the study was that the qualitative interviews will give the respondents the possibility to freely express their thoughts and opinions, which will provide a valuable base for the research (Galletta, 2013, p. 24). The qualitative interviews also give the respondents the possibility to provide new information which was not known before the interview. The author prepared the interview questions so that they would capture some of the essential parts of a start-up company, with a focus on the company values and on some important aspects of procurement processes and vendor management within that particular company. The questions start with questions about the motivators and measures of success, going into questions about supplier relationships, the company's tools and methods as well as competition and ending with some aspirations about the future.

The Pilot interview was made with Radovan Janoso 9.4.2016 at the interviewer's home. During the interview the interviewer noticed that some of the questions needed to be reformulated to better catch the procurement angle, and explained more in detail. The next interview was held 17.4.2016 (Janoso, 2016) at the same place, and after that the rest of the interviews were conducted with the same questions in order to make it standardized so that the answers would be comparable. The companies picked for the interviews were mainly smaller technological start-up companies in the Espoo area in order to provide more value into the research from the start-up point of view. This also made the companies and their processes more comparable from a benchmarking perspective. Since the outcome of the study will be published it might also provide some value to the partici-

pating companies. The interview with Manoj Sharma (Sharma, 2016), serial entrepreneur and investor gave a more international view on the research. The interview with Professor Ilkka Sillanpää (Sillanpää, 2016), who is specialized in procurement and has a history in start-ups, was also made in order to obtain a broader view of the procurement field within the start-up environment, as well as for checking the common views. The amount of companies interviewed for this study is quite small, as only five persons were interviewed. The interviews were conducted as face-to face interviews with Radovan Janoso, Salusfin Oy, Tommi Immonen Flexound Systems Oy (Immonen, 2016) and Rauno Huttunen, Versotec Solutions Oy (Huttunen, 2016). The interviews with Tommi Immonen and Rauno Huttunen were conducted in a meeting room at the respondent's office and at the respondent's office. The settings could be described as relaxed as the respondents were given a possibility to familiarize themselves with the questions beforehand, and to tell about their companies as well. The rooms used for the interviews were also familiar to the respondents, so they had no reason to be nervous about the interviews, and the general atmosphere during the interviews could be described as a mix of curiosity and trust. The face-to-face interviews were taped using Voice Recorder Pro+ on a mobile phone. The interviews with Manoj Sharma and Ilkka Sillanpää were conducted as phone interviews that were also recorded with a voice recorder. In all cases the respondents had been given the possibility to familiarize themselves with the questions in advance, and ask questions in case there would have been something that needed clarification. As all interviews were taped and transcribed from the tape recording the author was able to make sure that all answers were treated in a consistent manner.

Below is a table with the respondents, the time, the mode of the interview and the date.

Interview	Company	Person	Time(min)	Medium	Date
1.	Salusfin	Radovan Janoso	08.02	Face-to-face	17.4.2016
2.	Investor	Manoj Sharma	18.44	Phone	25.4.2016
3.	Flexsound	Tommi Immonen	14.19	Face-to-face	29.4.2016
4.	Versoteq	Rauno Huttunen	12.22	Face-to-face	29.4.2016
5.	Advisor	Ilkka Sillanpää	11.01	Phone	03.5.2016

Table 3 List of interviewed persons

Based on the data above it is not possible to draw any conclusions if it would take more or less time to conduct a phone or a face to face interview. After the interviews had been transcribed the transcriptions were sent to the interviewees for reading and commenting. The interviewees were given the possibility to rephrase their answers, and take away possible company confidential information that they did not want to submit or publish.

The final transcripts of the interviews were changed in the following way:

1. Radovan Janoso - some changes from readability point of view.
2. Manoj Sharma - minor changes
3. Tommi Immonen - no changes
4. Rauno Huttunen - no changes
5. Ilkka Sillanpää - no changes

The approved, transcribed interviews were later printed and the author highlighted the relevant answers for each question. The answers were highlighted using a pen and after that the answers were grouped into different categories using an excel table. The answers were interpreted so that answers with similar meanings were put into the same columns and the category was named. The author was then trying to find some common patterns by checking how many respondents had answers belonging to the same main category.

5.2 Interview Questions

1. What do you consider as motivators in having your own business?
2. How do you measure success in your company/business?
3. Please describe the direct procurement strategy currently in use in your company-are you purchasing directly from manufacturers or from resellers or are you making some products by yourselves?
4. What methods have you used for finding/or how have you found your suppliers?
5. What criteria do you use for selecting your suppliers, and why?
6. What kind of relationship do you have with your suppliers and what do you do to keep that relationship?
7. Do you use a KPI system for measuring the performance of your suppliers, and in case you do what parameters are you measuring?
8. How do you see that you differentiate yourselves from your competitors in a procurement point of view?
9. Is your company using an ERP system for quotation requests, processing of purchase orders, invoice handling etc.? In case you are, which ERP system are you using and for which functions?
10. The ABC analysis in an inventory measuring method based on the Pareto rule. In the ABC analysis products are grouped in different categories, according to their value: A products being the most valuable items and C products being the least valuable ones. Are you familiar with this method, and is this used within your company in practice? Is this a method that you see that you could benefit from?
11. How do you see that the procurement activities within your company fit in with the general business strategy of your company and why?
12. What are the biggest challenges (if any) that your company is facing regarding its direct procurement activities at the moment?
13. How familiar are you with “The Internet of Things” concept?
14. Do you see that the internet of things or the internet of everything (which has been predicted to come after it) could facilitate your procurement activities in the future?

5.3 Explaining the questions

This part will briefly explain the reasons for choosing the interview questions. As the research was conducted using semi-structured interviews the

Question 1 “What do you consider as motivators in having your own business?” is related to the choice of starting a small business or start-up. Colin Barrow (Barrow, 1998, p. 32), states that for small businesses the three main motivators are: personal satisfaction from success, income and security. The author of this thesis also finds it interesting to see if this would apply to the technological start-up companies interviewed for the thesis. The definition of a start-up used for this thesis, and found in the Terms and Abbreviations in the beginning of this thesis, is “A start-up is a company working to solve a problem where the solution is not obvious and success is not guaranteed,” (Robehmed, 2013). This definition encompasses the element of uncertainty which is part of the start-up life, and consequently this makes it an interesting question since the motivators in having your own business thus need to be strong enough to overcome the element of uncertainty.

Question 2 “How do you measure success in your company/business?” is also found in “The Essence of Small Business (Barrow, 1998, p. 33). Here the three main measures of success are described as quality of product, financial performance and development of an effective management team.

Question 3 “Please describe the direct procurement strategy currently in use in your company- are you purchasing directly from manufacturers or from resellers or are you making some products by yourselves?” is related to the thesis chapter 2 , part 2.2 Make or buy analysis and part 2.3 Purchasing from manufacturer or retailer/wholesaler. The idea with this question is mainly to see which approach the interviewed start-up companies are using and the reasons behind choosing their approach.

Question 4 “What methods have you used for finding/or how have you found your suppliers?” is related to part 3.1 in chapter 3, i.e. Searching for suppliers. The aim of this question is to determine which are the most successful methods used for finding suppliers.

Question 5” What criteria do you use for selecting your suppliers, and why?” is asked in order to find out about the companies criteria for selecting their suppliers. This question will bring some light into the criteria that the companies emphasize and also what they consider to be the

preliminary qualifications for their suppliers (Weele, 2010, p. 242) and also to see if they would use the same criteria as described in the thesis part 3.2.1.

Question 6 “What kind of relationship do you have with your suppliers and what do you do to keep that relationship?” relates to thesis part 3.3 “Retaining and developing the supplier relationship”. The idea with this question is to find out how the interviewed companies are managing their supplier relationships in their daily activities.

Question 7 “Do you use a KPI system for measuring the performance of your suppliers, and in case you do what parameters are you measuring?” is aimed at finding out if the companies are using key performance indicators for their supplier, and also what indicators they would find to be the most important ones. In big companies KPI’s are often used for assessing a supplier’s performance and monitoring contract compliance after a contract has been signed (Weele, 2010, p. 216). This question is also connected to the part 2.7 of the thesis.

Question 8 “How do you see that you differentiate yourselves from your competitors in a procurement point of view?” is asked in order to find out if the companies have a differentiating factor in procurement and also if they are aware of how their competitors are handling their procurement activities. This question can for example be related to the thesis chapter 2 “Procurement Principles and Processes”, chapter 3 “Vendor management from a Start-up perspective” or chapter 4 “IT-systems in Procurement”, depending on what view the interviewee has on the question.

Question 9” Is your company using an ERP system for quotation requests, processing of purchase orders, invoice handling etc.? In case you are, which ERP system are you using and for which functions?” is simply aimed at finding out if the companies are using ERP systems or not, and if they are if they see a benefit of using these systems at this stage. This question is connected to chapter 4 “IT-systems in Procurement” and the purpose with this question is to find out which ERP systems would be best suited for start-ups to use.

Question 10“The ABC analysis in an inventory measuring method based on the Pareto rule. In the ABC analysis products are grouped in different categories, according to their value: A products being the most valuable items and C products being the least valuable

ones. Are you familiar with this method, and is this used within your company in practice? Is this a method that you see that you could benefit from?” is connected to chapter 2 “Procurement Principles and Processes, part 2.6.5. The aim of this question is simply to see how well the ABC analysis as a method fits in with the direct procurement activities of a start-up, and if the method is used by start-up companies.

Question 11 “How do you see that the procurement activities within your company fit in with the general business strategy of your company and why?”, The initial reason for choosing this question was that the author wanted to know if the start-ups would consider their procurement activities to be part of their general business strategy. This question is somewhat connected to the mission, vision, goals and values of the company as the strategy needs to fit with all these. The vision, mission, goal and values of the commissioning company Salusfin are discussed in chapter 1 part 1.2 of the thesis.

Question 12 “What are the biggest challenges (if any) that your company is facing regarding its direct procurement activities at the moment?” can be related to the chapters 2, 3 or 4 depending on the company. It is interesting to see if the challenges are the same for all of the technological start-ups interviewed for the thesis or if they differ among the companies.

Question 13 “How familiar are you with “The Internet of Things” (IoT) concept?” is intended to provide some more insight into the interviewed peoples knowledge about IoT. This question is connected to the chapter 4 “IT-systems in Procurement”, and the idea is that the respondent can elaborate a little bit about their thoughts about IoT.

Question 14 “Do you see that the internet of things or the internet of everything (which has been predicted to come after it) could facilitate your procurement activities in the future?” This is a very broad question, where the respondents are basically asked to elaborate and to try to think of possible fields within procurement where the IoT could help the company in its procurement activities. This question is connected to part 4.2 of the thesis. According to Daniel Burrus (Burrus, 2014) IoT will create huge disruptions and opportunities in all fields, and according to Porter and Heppelmann (Porter Heppelmann, 2014), some effects of the IoT, or smart connected products, as they call

them, may include increased bargaining power of buyers, creating a “product enhancement race” and the creation of new, broader market segments. Some of the benefits brought by IoT should encompass the ability to monitor and control, quicker response times and the capability to foresee and prohibit things from occurring. (Burrus, 2014).

6 RESULTS

This chapter will present the findings from the research method (chapter 5), with special emphasis on data collection and data analysis. The interview results will be presented in the same order as the questions were asked in the interview (see part 5.2 Interview Questions).

6.1 The outcome of the interviews

What do you consider as motivators in having your own business?

1 create own product	own business	financial benefits
2 impact	change lives	financial benefits
3 Innovate	international business	
4 diverse tasks	own business	financial benefits
5 add value, unique	own business	freedom

Table 4, Question 1 with details from the interview

All of the respondents answered in much the same manner to the first question. The motivators of having your own business seemed to be creating something unique, your own product and having your own business. This could be seen as a combination of freedom and innovativeness. (future) financial benefits were also mentioned by 3 of the respondents. See table 4.

How do you measure success in your company/business?

1 Sales	Customer satisfaction, ontime delivery	Quality Product
2 Sales	Change lives	Profit to Stakeholders
3 Strategic goals		
4 Sales		
5 Sales	Growth	

Table 5, Question 2 with details from the interview

Many of the start-ups interviewed measured success in the business or company with “hard measures” such as a growth in business turnover, as well as reaching the strategic goals set for the business, but also soft measures such as satisfying customer needs was mentioned. See table 5.

Please describe the direct procurement strategy currently in use in your company-are you purchasing directly from manufacturers or from resellers or are you making some products by yourselves?

1 HW manufacturers	SW development	Prototype-resellers
2 Raw material from suppliers	content inhouse	
3 component from suppliers	Marketing from suppliers	Prototype from suppliers
4 Manufacturer	resellers	
5 no clear strategy	best fit	

Table 6 Question 3 with details from the interview

The direct procurement strategies of the companies seemed to depend largely on what was purchased. One company reported not having a clear direct procurement strategy at all. See table 6.

What methods have you used for finding/or how have you found your suppliers?

1 Internet/online search	branch related boundaries	networking, getting introduced
2 Internet/online search	Competitor check	
3 Internet/online search	Social Network	embassy/chamber of commerce
4 Internet/online search	Networking	contact network
5 Googling	Exhibitions or Fares	

Table 7 Question 4 with details from the interview

All of the interviewed people brought up the Internet or online search as a way of finding their suppliers. The other most commonly used method was using an existing contact network, i.e. getting introduced. Additional ways mentioned were branch-related boundaries, fares and the chambers of commerce. See table 7-

What criteria do you use for selecting your suppliers, and why?

1 Product Portfolio	Reference	Price & Quality & MOQ
2 Reputation, team	Credibility	Website, political views and countries involved
3 Interest	Enthusiasm	Common understanding
4 Quality	Price & Quality	
5 Product Portfolio	Know-how	service minded

Table 8 Question 5 with details from the interview

Criteria for selecting suppliers, mentioned by the respondents were that they match the company's product portfolio, price and quality as well as order quantities, which also

are important from a start-up point of view. In Finland the start-up companies generally do a background check on the companies, checking the maturity of the company, references and product offering as well as market segment, to see if they are competitors. The vendors need to be interested in the business and the end product and have an understanding of the specific requirements of a start-up company. They needed to realize that they cannot get all the benefits of the business relationship within the first year, but that start-ups are new businesses and take time to grow (Immonen, 2016). One respondent mentioned that they do not only check the reputation and credibility the team and website of the company, but also to check their political views as well. See table 8.

Some of the start-ups mentioned that they have a tendering process in place, and for example for projects they will invite both new and already existing suppliers that they have an agreement with into the bidding. However, for critical supplies they would use their preferred vendors that they already have an established business relationship with.

What kind of relationship do you have with your suppliers and what do you do to keep that relationship?

1	Product portfolio (fit)	references	maturity of business
2	cordial	agreement	day-to-day discussions
3	day-to-day discussions	agreement	open and honest discussion
4	day-to-day discussions	integration-automate	
5	day-to-day discussions		

Table 9 Question 6 with details from the interview

The relationships with the suppliers seem to differ from start-up to start-up. For some of the companies the relationship is more about exchanging emails or using the vendor's automatic ordering system for ordering items online. Two respondents mentioned agreements as important. Some companies tried to use multivendor approach, with having at least two vendors offering the same products/services. For other start-ups the buyer-seller relationship would be more of an extended relationship, including tailor making the products, prototyping and testing. This kind of relationship also includes frequent follow-up meetings. In these cases, it is important that the relationship is cordial and the communication flow is smooth, so that there are no misunderstandings that could lead to loss of business for both sides. See table 9.

Do you use a KPI system for measuring the performance of your suppliers, and in case you do what parameters are you measuring?

1 No KPI now, but in the future yes	Leadtime	Price
2 No KPI's in use		
3 No KPI now, but in the future yes		
4 Not		
5 Price	Delivery time	Feeling

Table 10 Question 7 with details from the interview

4 of 5 respondents said that their start-up companies were not using any Key Performance Indicators for measuring the performance of their suppliers. Two of the respondents said that they were keeping track of lead-times. See table 10.

How do you see that you differentiate yourselves from your competitors in a procurement point of view?

1 Direct contact with manufacturers	Sales tie to our business
2 Multivendor approach	Sales tie to our business
3 N/A	
4 Use of different material	Multivendor approach
5 N/A	

Table 11 Question 8 with details from the interview

The question regarding how the company would differentiate itself from its competitors in a procurement point of view was not so easy to answer for all respondents, as the question implies that there are competitors and that the company is aware of what the competitors are doing. Two respondents gave answers which indicated that the vendors should have some sales tie into the business, and two respondents reported using multiple vendors. One respondent answered that they differentiated themselves regarding with their multivendor approach, and one said that they use of different materials. For two respondents the question was not applicable. See table 11.

Is your company using an ERP system for quotation requests, processing of purchase orders, invoice handling etc.? In case you are, which ERP system are you using and for which functions?

1	No
2	No, Excel
3	No, Excel
4	No ERP, free crm
5	No ERP

Table 12 Question 9 with details from the interview

None of the start-ups interviewed for the research reported having an Enterprise Resource Planning (ERP) system in place. One of the start-ups reported that they had tried having an ERP system but realizing that it was just a waste of money, as they could use Excel with Macros just as well. Also there are apps available from Google, Microsoft and third-party vendors that can be used for the same purpose. See table 12.

The ABC analysis is an inventory measuring method based on the Pareto rule. In the ABC analysis products are grouped in different categories, according to their value: A products being the most valuable items and C products being the least valuable ones. Are you familiar with this method, and is this used within your company in practice? Is this a method that you see that you could benefit from?

None of the companies reported using the ABC- analysis as a tool for classifying their inventory (see table 13), though many of the people interviewed were familiar with the method, and said that they would like to use it later on when they get more components in the warehouse, and it would become more useful from a business perspective.

“Ehkä sitte’ ku’, jos päästään myymään enemmän noita pönttöjä, karttoja, nii sitte voi olla jossain vaiheessa tarvetta analysoida varastoakin, jos siel on jotain komponentteja jotenki valmiina.” (Huttunen, 2016).

How do you see that the procurement activities within your company fit in with the general business strategy of your company and why?

1 Business model	
2 Business model	
3 Business model	
4 Cost approach	not too important
5 Usually no strategy	

Table 13 Question 11 with details from the interview

The approach regarding the procurement activities and aligning them with the general business strategy seemed to differ among the companies. For some of the companies the procurement activities would be less and for some more important. The following statements from the interviews clearly show some opposite views regarding start-up procurement activities: “...it is very tightly connected to the business model” (Janoso, 2016), “Procurement is really a big part of our organization and I mean a good strategy and tools are definitely a welcome match for us” (Sharma, 2016), “...It suits very well, as I have personally been defining the strategy” (Immonen, 2016), “We have not thought about it so much or we have not thought so much about procurement in our strategy. It is basically where we can get the parts at the most affordable price, that’s where we will procure them from” (Huttunen, 2016), and the last answer “ So the procurement activities are mainly the thing that should be “just handled”, so it is usually not so well defined, or there usually are not any strategy for them” (Sillanpää, 2016), Most of the companies thought the procurement activities fit with their business model, one company declared having a cost-approach and one said they usually have no strategy. See table 14.

What are the biggest challenges (if any) that your company is facing regarding its direct procurement activities at the moment?

1 Payment terms	MOQ	Delivery times
2 logistics	customs	Lead times
3 commitment	partner search	
4 logistics	Delivery times	
5 Prices		

Table 14 Question 12 with details from the interview

The biggest challenges regarding the direct procurement activities that the start-up companies operating in Finland were facing were payment terms, minimum order quantities, delivery times and pricing. Regarding the delivery times one company described their

variations in delivery times in the way that sometimes they get their components quickly from Finland and sometimes Amazon is quicker. Finding the right partner for the assembly work may also prove to be a challenge for a start-up company as the partners need to commit themselves to the company in the long-run, and also to make some investments. See table 15.

How familiar are you with “The Internet of Things” concept?

1	Familiar, own business area	
2		Supporter
3		Familiar
4		Pretty Familiar
5	Yes have worked with it.	

Table 15 Question 13 with details from the interview

All of the interviewed companies said that they were familiar with the Internet of Things concept. See table 16.

Do you see that the internet of things or the internet of everything (which has been predicted to come after it) could facilitate your procurement activities in the future?

1	Warehouse replenishment	Logistic benefits	predictability
2	Source Data challenge	Logistic benefits	
3	Warehouse replenishment	Logistic benefits	
4	Information on the delivery is already available on internet services		
5	Yes in those areas where it is relevant		

Table 16 Question 14 with details from the interview

The views of what effect the IoT and the Internet of everything could have on the procurement activities were varying quite a lot. Some thought that it would maybe be good to have the information in the Internet about the shipments, which is being done already, and found it hard to imagine what more it could be used for. One company pointed out that it will increase the logistical efficiency regarding warehousing and suppliers, and also that it will facilitate the material flows and increase the reliability and maintenance of the material flows. Also the alarm levels will be automated. The RFI-tags that are already quite commonly used could also be seen as predecessors to the IoT thinking. One respondent reported that the IoT is largely dependent on the data. “The problem is

the data, and how the data integration point will happen, and the source of data, because if we have bad data it becomes bad information and who controls that information because if we have these layers restrictions on data per node?" (Sharma, 2016)

Three of the respondents thought that the IoT and the Internet of everything could reduce the logistical and channel costs and optimize the procurement effect of goods. This would bring the possible advantage that you could just check for example the shipment, and where it is without contacting the freight-forwarder or the vendor at all. See table 17.

7 DISCUSSION

The author of this thesis has presented some interview questions (see thesis part 5.2), and conducted five semi-structured interviews with procurement professionals from technological start-up companies, to find out what direct procurement methods and practices the interviewed start-up companies are using, and how they manage their supplier relationships. This chapter will analyze the responses to the most relevant interview questions derived from the results, part 6.1, against the purpose of the questions defined in the research method part 5.3 and the theoretical part described in the chapters 2, 3 and 4 of the thesis. The discussion will be centered on the procurement principles and processes and vendor management of the start-ups participating in the study. The discussion has been divided into 3 main categories: Procurement Principles and Processes, Vendor Management and IT-Systems in Procurement. The outcome of the discussion in this chapter will provide the grounds for the conclusions and further studies described in chapter 8.

7.1 Procurement principles and processes

Questions addressing the procurement principles and processes can be described as questions about the use of measurement tools such as the ABC and KPI's, along with the questions about challenges, competitors and procurement strategy. The author found it interesting to see if the ABC analysis as a method would fit in with the direct procurement activities of a start-up, and if the method is used by start-up companies. None of the companies reported using the ABC-analysis, though many of the respondents said that they were familiar with the method, and that they would use it later on when it would become more useful from a business perspective. The ABC analysis was not applicable for the start-up companies as they did not have much inventory in stock. The start-up companies said that they are not using any Key Performance Indicators for measuring the performance of their suppliers. However, some respondents declared that they were keeping track of lead-times. In big companies KPI's are often used for assessing a supplier's performance and monitoring contract compliance after a contract has been signed (Weele, 2010, p. 216). The companies were asked about their challenges to see if they

would be the same for all the companies interviewed or if it would differ among the companies. The biggest challenges regarding the direct procurement activities that the start-up companies operating in Finland were facing were payment terms, delivery times minimum order quantities, and pricing. Finding the right partner for the assembly work could also become a challenge as the partners need to commit themselves to the company in the future as well, and be prepared to put some money into the business. The question about how the companies differentiate themselves from their competitors in a procurement point of view is asked in order to find out if the companies have a differentiating factor in procurement and also if they are aware of how their competitors are handling their procurement activities. This question was not so easy to answer for all respondents, as the question suggests that there are competitors and that the companies know what the competitors are doing. Two respondents gave answers which indicated that the vendors should have some sales tie into the business, and two respondents reported using multiple vendors. One respondent answered that they differentiated themselves regarding with their multivendor approach, and one said that they use of different materials.

The two questions related to the company's direct procurement strategy were the question about where they procure their products from and the question about how their procurement activities fit in with their general business strategy. The companies were mainly purchasing their products from manufacturers and resellers. One company reported using software houses and one company reported making some content. The idea with this question was mainly to see which approach the interviewed start-up companies are using and the reasons behind choosing their approach. The direct procurement strategies of the companies seemed to depend largely on what was purchased. One company reports that they make some content by themselves, but otherwise the companies relied on suppliers and manufacturers for hardware, software, components and raw material.

From the answers to question 11 (see Interview Questions part 5.2) "How do you see that the procurement activities within your company fit into the general business strategy of your company and why?" the author concludes that all of the companies have different ways of handling their procurement activities. The answers "...it is very tightly connected to the business model" (Janoso, 2016), "Procurement is really a big part of

our organization and I mean a good strategy and tools are definitely a welcome match for us” (Sharma, 2016), “...It suits very well, as I have personally been defining the strategy” (Immonen, 2016), “We have not thought about it so much or we have not thought so much about procurement in our strategy. It is basically where we can get the parts at the most affordable price, that’s where we will procure them from (Huttunen, 2016), and the last answer “ So the procurement activities are mainly the thing that should be “just handled”, so it is usually not so well defined, or there usually are not any strategy for them” (Sillanpää, 2016), show very different approaches. However, it should be noted that fact that some companies do not have a *defined* procurement strategy does not mean that there is no procurement strategy (!). Analyzing the interview answers according to Kraljic’s portfolio analysis or the Dutch Windmill analysis of the buyer-seller interdependence answers like “We have not thought about it so much...” and “Procurement activities are mainly the thing that should be just handled”, indicate that the procurement activities mentioned are for non-critical routine products, where both the profit impact and the supply risks are low. Answers like “It is very tightly connected to our business model” (Janoso, 2016) and “It suits very well, as I have personally been defining the strategy” (Immonen, 2016) indicate that the products being procured probably are strategic products which have a high profit impact and high supply risk to the company. According to the Dutch Windmill theory (Cheverton, Velde, & Paul, 2010, pp. 95-97) it takes two parts to build up a relationship. The Dutch Windmill says that you can understand the level of that relationship simply by looking at the importance of the items for both parties. The buyer’s routine product can, from a seller’s perspective be a core sales item, when there will be a good sales relationship if the seller can take care of this item. The product may also be development sales items, which could work out if the seller is the one taking care of the development. If the product is a sales nuisance item there is the danger that the relationship will become difficult at some point when neither party is willing to “invest” in this kind of item. If the product is an exploitable sales item it could also work out as the seller wants to supply this item, and develop processes for doing this, however, after that no more development should be expected. If the strategic item, from the seller’s perspective is a sales core item the companies are likely to form a partnership, as both companies see it as essential for their business. If the buyer’s strategic product is a sales development item the same will apply as for the core sales item, but the buyer will be slightly more vulnerable as the

item's sales turnover has not yet reached the same level as for a core product. If the buyer's strategic product is a sales nuisance item, the item will provide a high risk for the buyer as the item from the seller's perspective has low attractiveness and low turnover. The buyer should be looking for alternative options. In case the buyer's strategic product is a sales exploitable item with low attractiveness and high turnover from the seller's point of view the buyer should be careful and possibly look at other alternatives. (Cheverton, Velde, & Paul, 2010, p. 94)

7.2 Vendor management from a start-up perspective

The questions related to vendor management were questions about supplier search and selection and about retaining and developing the vendor relationship. All of the interviewed people brought up the Internet or online search as the best/most common way of finding their suppliers. Other frequently used methods were using an existing contact network, i.e. getting introduced, branch-related boundaries, fares and the chambers of commerce. The interviewed companies' criteria for selecting their suppliers and preliminary qualifications for their suppliers (Weele, 2010, p. 242), was compared to the criteria described in the thesis part 3.2.1. Criteria for selecting suppliers, mentioned by the respondents were that they match the company's product portfolio, price and quality as well as order quantities (Janoso, 2016), which also are important from a start-up point of view. In Finland the start-up companies generally do a background check on the companies, checking the maturity of the company, references and product offering as well as market segment, to see if they are competitors (Janoso, 2016). The vendors need to be interested in the business and the end product and have an understanding of the specific requirements of a start-up company. They needed to realize that they cannot get all the benefits of the business relationship within the first year, but that start-ups are new businesses and take time to grow. (Immonen, 2016) The author concluded that the companies' relationships with the suppliers seemed to differ. For some companies the relationship was mainly about exchanging emails or using the vendor's automatic ordering system for ordering items online. Two respondents mentioned agreements as important. Some companies tried to use multivendor approach, with having at least two vendors offering the same products/services. Some of the start-ups mentioned that they had a so called extended relationship with their suppliers, with recurring follow-up

meetings and tailor making the products, prototyping and testing together. (Janoso, 2016),

7.3 IT-systems in procurement

The use of IT-Systems for procurement purposes was mainly centered on Excel tables. None of the start-ups reported having an Enterprise Resource Planning (ERP) system in place. One of the respondents had tried having an ERP system but realizing that for a start-up it was just a waste of money, and reverted to using Excel with Macros instead. The use of IoT as a possible facilitator for procurement activities was a matter of opinion. Some thought that it would maybe be good to have the information in the Internet about the shipments, which is being done already, and found it hard to imagine what more it could be used for. Three of the respondents thought that the IoT and the Internet of everything could reduce the logistical and channel costs and optimize the procurement effect of goods. One company pointed out that it could enhance the logistical efficiency concerning warehousing and suppliers, and ease material flows and boost reliability and maintenance of material flows as well as bringing the benefit of automated alarm levels. One respondent reported that the IoT is largely dependent on the data, and the quality of the data. (Sharma, 2016) According to Daniel Burrus (Burrus, 2014) IoT will create huge disruptions and opportunities in all fields, and according to Porter and Heppelmann (Porter Heppelmann, 2014), some effects of the IoT, or smart connected products, as they call them, may include increased bargaining power of buyers, creating a “product enhancement race” and the creation of new, broader market segments. Some of the benefits brought by IoT should encompass the ability to monitor and control, quicker response times and the capability to foresee and prohibit things from occurring (Burrus, 2014). The author would here like to conclude with a citation “IoT is a bit like a color TV, when there has only been black and white TV’s before, everyone has their own idea of what it will look like and nobody really knows before they have seen it” (Janoso, 2016).

8 CONCLUSIONS AND FURTHER STUDIES

The aim of this thesis is to find out what direct procurement methods and practices start-up companies are using, and how they manage their supplier relationships. A further aim is to come up with some recommendations on procurement principles for technological start-up companies and for Salusfin. These aims will be examined in two parts, the first part of this chapter will focus on the general principles, challenges, best practices and recommendations for start-ups and the second part will focus on the direct procurement needs and recommendations for Salusfin. The third part of this chapter will conclude the thesis by bringing up the benefits and limitations of the thesis, as well as recommending topics for further research.

The general principles and processes used by the start-ups participating in the interviews would be characterized as following the Just-in time approach. Products are mainly ordered when they are needed, and the companies are avoiding keeping much inventory. This can also be seen from the interviews and the lack of need for inventory measurement systems such as the ABC analysis (Immonen, 2016). This seems to be a good approach as long as the companies are able to procure their products or components on time. The interviewed start-up companies declared that their biggest challenges regarding their direct procurement activities were payment terms, delivery times, minimum order quantities, pricing and finding the right partner (Immonen, 2016). The author's recommendations for tackling the payment terms would be through supplier relationship management, and re-negotiating the payment terms with the suppliers. The delivery times could also be handled through supplier relationship management and introducing KPI's as well as paying particular attention to the timeliness of the deliveries. The minimum order quantities could be handled through supplier negotiations and procuring from resellers instead of factories. Pricing issues may arise from the seller's and buyer's different perspectives of the good or service procured. The author would recommend the companies to do a Kraljic portfolio analysis (Weele, 2010, p. 197) and a Dutch Windmill (Cheverton, Velde, & Paul, 2010, p. 94) analysis of the product to find out how the buyer and seller are positioning the product. If the discrepancies turn out to be substantial it might be good to look for a substituting product or supplier (Cheverton,

Velde, & Paul, 2010, p. 94). Finding the right partner might be difficult even though Internet search engines have made it easier to find products and suppliers on the Internet. Slush, and specialized tradeshows are other examples of ways for start-up companies to find possible partner companies within the same market segment. Some of the start-up companies mentioned using a multivendor approach. The company needs to find and maintain the supplier relationships which are beneficial from the company's point of view and to bring in new suppliers from time to time in order to keep the competitive angle of the relationship (Janoso, 2016). Bringing in suppliers with new and fresh ideas can also help the company grow (Janoso, 2016). Finally, the author recommends technological start-up companies to read through this thesis to find out some useful tools and methods to apply in their direct procurement activities.

Salusfin is a technological start-up company operating within the IoT area. In order to find out the best ways of dealing with its suppliers the author suggests that Salusfin uses the Kraljic analysis and the Dutch Windmill analysis as tools for mapping their supplier relationships (Cheverton, Velde, & Paul, 2010, p. 94). A technological start-up company should be able to manage its suppliers efficiently through analysing the supplier buyer relationship and striving for mutual benefits and cooperation. In a start-up company the main issue is how to manage the procurement activities with a minimum of spend, uncertainty and time (Janoso, 2016). The author would therefore suggest the company to take a lean and Just-in time approach on their procurement activities. For Salusfin the supplier search and selection should be handled as before, using internet search, and contact network. For the RFQ process a ready-made questionnaire with all the major questions could be made, in order to reduce the amount of emails/phone calls needed to find out information (Weele, 2010, p. 12). Unilateral or mutual NDA should be used in connection to RFQ's for the vendors that have not yet signed an NDA with the company (Overly & Karlyn, 2013, p. 28). Escrow agreements should be used for reducing the risks when purchasing software from any smaller companies (Overly & Karlyn, 2013, p. 263). Smaller amounts of components should be procured from resellers/distributors instead of manufacturers in order to shorten lead-times, and reduce the need of warehousing (Anderson, 2014). This approach would allow for the goods to be ordered on a need basis, and reduce the risk of components becoming obsolete. The

primary focus of finding partners/suppliers should be on continuing to pursue suppliers and partner companies which are willing and able to work according to a long term perspective (Lambert, 2008, p. 54). Like many other start-up companies, Salusfin has not yet made any investments in an ERP system or taken in ABC analyses or any other more formal inventory measurement tools or methods (Janoso, 2016). With this lean, JIT approach the company should not have to invest time or resources in these tools and methods, but could focus more on the sales side. A way of measuring the effectiveness of the new procurement method could be assessing the inventory value and the time spent on procurement activities on a monthly basis. Although the start-up companies may not have a clear direct procurement strategy at the moment the author's opinion is that the company could benefit from mapping and analysing its direct procurement activities using the tools and methods described earlier in this thesis. This kind of analysis would build a foundation and when the company starts to expand it would be better prepared for adopting the strategies and guidelines. The action points for Salusfin are now to follow the recommendations from this thesis and implementing the changes that the company feels are most appropriate, during autumn 2016.

The benefit of this thesis is that it brings up many important aspects for technological start-ups today. The content of the thesis would have benefited from more detailed information including cash flow/spend analyses for the different products/items procured. However, due to confidentiality reasons this kind of material was not available. The author would have needed more information about the companies in order to use Porter's five forces for analysing the bargaining power of the sellers and the buyers. As further study recommendations, the author would recommend that a similar study would be conducted when the companies grow out of the start-up definition, perhaps with early mid-size companies, to see what the situation is there. It could be interesting to conduct a similar study at different stages of the companies, creating a portfolio for small ones, medium size and large corporations, in order to find out what each one of them need in terms of procurement.

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