

# STRATEGIC PROCUREMENT IN THE FACE OF UNCERTAINTY

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**ABSTRACT**

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<p>Supply chain management as a field of study has received increasing amounts of attention from researchers in the past few decades. Procurement is widely identified as a primary component in growing a firm's profitability and efficiency, resulting in research interest from various perspectives. Global supply chains and continual changes in the economic landscape have constituted in profuse risks and uncertainties regarding the operational and strategic processes of companies. Lacklustre approach by companies dealing with these risks and uncertainties can result in outcomes of devastating consequences. Previous research concludes that there are gaps of knowledge in the research surrounding supply chain management and its subsections - emerging trends and new developments demand further research. Additionally, past research has been relatively limited on the matter of strategic procurement toward the elements of risks and uncertainties. Researchers categorize the current time period in supply chain management research as the modern time, where new theories are constantly evolving.</p> <p>The purpose of this study is to understand how firms deal with these complicated uncertainties and risks, as well as how their strategic processes could be improved. The study incorporates the view of exploration and exploitation in order to cross-analyse it to strategic procurement. Data collection for this research was done with 10 procurement professionals across different industries and professional backgrounds with the method of semi-structured interviews.</p> <p>The results of the research indicate that firms have a passive approach on risks that have not yet been materialized, and that their progressive efforts in the matter are hindered by rigid organizational structure, lack of resources and market factors. Procurement professionals were aware of the possible instabilities facing them but were not reactive in their demeanour. Risk management was found to be in place, but with varying success.</p>	
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<p>Toimitusketjun hallinta tutkimusalana on saanut kasvavaa huomiota tutkijoilta viimeisen parin vuosikymmenen aikana. Hankinta on laajasti tunnustettu ensisijaiseksi komponentiksi yritysten kannattavuuden ja tehokkuuden kasvattamisessa, mikä on johtanut tutkimusintresseihin aiheeseen monesta eri näkökulmasta. Globaalit toimitusketjut ja jatkuva muutos taloudellisessa kokonaiskuvassa on muodostanut ylenpalttisia riskejä ja epä-tietoisuuksia liittyen yrityksen operatiiviseen ja strategiaan prosesseihin. Mitäänsanomaton asennoituminen yritysten puolesta liittyen riskeihin ja epä-tietoisuuksiin voi tuoda turmiollisia seuraamuksia. Aikaisempi tutkimus esittää, että on olemassa aukkoja tietoisuudessa liittyen toimitusketjuihin ja sen alakohtiin – nousevat trendit ja uusi kehittyminen alalla vaatii lisää tutkimusta. Lisäksi aikaisempi tutkimus on ollut rajoitettua strategisen hankinnan asennoitumista riskejä ja epä-tietoisuuksia kohtaan. Tutkijat kategorisoivat tämän hetkisen aikajanan toimitusketjujen hallinnan tutkimusalalla olevan modernia aikaa, missä uudet teoriat kehittyvät jatkuvasti.</p> <p>Tämän tutkimuksen tarkoituksena on ymmärtää, miten yritykset käsittelevät monimutkaisia epä-tietoisuuksia ja riskejä, ja miten heidän strategisia prosessejansa pystyisi parantamaan. Tutkimus sisällyttää näkymän tutkiminen ja hyödyntäminen -vinkkelistä mitä verrataan strategiseen hankintaan. Datan keräys tutkimukseen tehtiin kymmenestä hankinnan ammattilaisesta halki eri toimialojen ja ammattitaustojen temahaastattelu-metodilla.</p> <p>Tutkimuksen tulokset näyttävät, että yrityksillä on passiivinen toimintatapa riskejä kohtaan, jotka eivät ole vielä aineellistuneet, sekä että heidän edistysmieliset pyrkimyksensä vaikuttaa asiaan on estynyt jäykästä organisaatiostruktuurista, resurssipulasta ja markkinatekijöistä johtuen. Hankinnan ammattilaiset ovat perillä mahdollisista epävakauksista, jotka heitä kohtaavat, mutta eivät ole reaktiivisia olemuksellaan. Riskienhallintaa esiintyi yrityksillä, mutta ailahtelevien tuloksien.</p>	
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# 1 INTRODUCTION

Procurement is a field that will undoubtedly face numerous changes in the upcoming years or decades, especially due to automation. One could assume that automation is already executed to a progressive extent in procurement, however only five percent of procurement leaders have said they are using highly automated processes (SAP Ariba, 2018.). Despite the miniscule numbers of companies using the full force of automation, it will be a pivotal priority for companies in the forthcoming years. Problems can arise with companies dealing with severely complex sourcing and procurement issues that can result in hitting a brick wall in their efforts of fully automating the processes. Supply chain management (SCM) as a research field has evolved much from its inception in the 1980's with the increasement of the extent and scope of the research; however there are still numerous uncertainties as well as the possibility to augment from earlier research (Stock, 2009.).

Strategic procurement has been found to have interlinkage with marketing, and choosing the correct decisions in procurement is paramount in competitive success (Rajagopal & Bernard, 1993.). Therefore, it is rather clear to view strategic procurement as an imperative component in businesses that purchase goods. Gaining insight on companies' processes, strategic thinking and decision-making on procurement, especially when critical decisions are made, can further the research in a positive manner and pave the way to future research.

Procurement that is ill-managed can lead to haphazard consequences to a company due to its vital part in the supply chain (Masterman, 1992.). The outcomes of these consequences can differ drastically depending on the product, service or business model of the company. For example, a business of made to order manufacturing can make or break their competitive advantage depending on the efficiency and strategic delivery of their procurement process.

When analysing the competence surrounding the topic of procurement and supply chain management, the consensus of the researchers has pointed towards the integrated supply chain management (ISCM) - an approach that can also be discussed as lean thinking or supply. One of the integral points that influences all these factors is the power-matrix between the buyers and the suppliers. (Cox, 2006). Inspecting this relationship between these two indispensable roles is crucial when researching procurement in any way.

The attributes surrounding the thesis topic are to be considered industry- and product-specific, which could be deemed the greatest obstacle of the research. However, the focus of the paper will be to find variables in strategic procurement that can be viewed as universal. The sophisticated decisions the buyers must make on operative fields and sourcing have incremental impacts on the business. This also leaves an opening for human errors, which can be difficult to prepare for in a strategic setting.

## 1.1 Research question and data

Above-mentioned factors in the previous chapter relate to the topic of the thesis and as such, help to formulate the research question:

How do companies act with complicated issues regarding strategic procurement and how could the procurement processes be progressed?

The primary data for this paper will consist of semi-structured interviews with procurement experts in Finland, who conduct procurement on an international level. Some of the interviewees in the sample size also do procurement activities on a domestic level. The sample size consisted of 10 procurement specialists spanning from regular operational roles of a buyer to supply chain managers and other managerial-level employees, who have more influence on the strategic decision-making conducted in both operational and strategic fields. Around half of the interviewees were chosen based on the already established networks of the author, and the rest were contacted from firms, which suited the framework of the research.

The theoretical framework provided in the forthcoming chapters will act as a supporting factor for the research as well as provide the necessary observations from past research that are needed in order to answer the research question. The following chapters will display the theoretical framework of the research by providing key theories of past research on procurement, strategic procurement, sourcing and the relationship between buyers and supplies. These concepts will contribute to the latter chapters of the actual research by contextualizing the relevant topics. The topic of the paper is heavily interrelated to supply chain management, which will be also covered in the upcoming chapters by researching it from the point of view of procurement and strategy.

## 1.2 Structure of the study

Chapter 2 focuses on the organizational theory of exploration and exploitation, with the objective to conduct a theoretical background on the matter, which in latter will be used to analyse the research findings of this study. Research done on exploration and exploitation on accordance to supply chain management is highlighted in this phase.

Chapter 3 of the study acts as literature background of the research and the backbone for establishing the concepts and themes surrounding the subject. The purpose of this chapter is to dwell deep into the past and current research revolving around supply chain management, procurement and strategy. The literature background also contributes to the two topics at the very central of this study –

uncertainties and risks. Additionally, the chapter provides insight on the future of procurement and the possible challenges it brings.

Chapter 4 concerns the data and methodology of the study, explaining the factors relating to research methods, data collection and the analysis method of the study. The data structure of the research is presented in this section to shed observation on how the themes and concepts of the data are represented. This chapter displays on how the semi-structured interviews were constructed and whom the participants of the study consisted of.

Chapter 5 spotlights the data findings of the research, deciphering the answers of the interviewees and analysing the results as well as conducting the appropriate links to previous research. This part provides observation on the results of the interviews and additionally, compares them to each other.

Chapter 6 is the final part of the study, centred around the contributions of the study in academic value as well as the managerial implications the results show. Possible links to past research is displayed and new theory is presented.



## 2 LITERATURE REVIEW

### 2.1 Procurement and supply chain management

Procurement has been researched under supply chain management, which is why it is integral to pinpoint the relationship between the two concepts. From a practical perspective, procurement establishes crossroads for companies – only when it is operating in the firm at a strategic level it can influence the profitability of the corporation. Systematic review of purchasing literature indicates that the progress of matching the concepts has been relatively slow, which is why in many companies the purchasing part of procurement has not been able to reach the uppermost potentials. (Ellram & Carr, 1994). Purchasing is a subset of procurement, however in the academic literature the terms are often handled simultaneously.

Procurement is identified as a worthy topic for research given the requirement to understand the phenomena of its effect in supply chain management to better the abutment of building theories, which will then have real life implications to managers, and will help them achieve better decision-making (Murray, 2009.). Lambert, Stock & Ellram's (1998) research progressed the conceptualization of key processes in supply chain management in the terms of performance and profitability. The researchers proposed that a firm must overthrow their silos in favour of a processed approach to an efficient supply chain management. One of the key processes recognized in the research in the previously mentioned regard was procurement processes.

The terminology behind supply chain management is multi-layered and it can be perceived by different perspectives. Supply chain management as a term is relatively new in the academic field, coined 37 years ago in 1982 in a journal by Keith & Webber (1982) titled "Supply Chain Management: Logistics Catches Up with Strategy". Beforehand, SCM was under logistics. However, even after 15 years from the incubation of the term, academic research was still deciphering the true meaning of SCM and its distinction from logistics. Lambert, Cooper & Pagh (1997), pioneers in the research in supply chain management were still decoding the differences between the terms. Their research suggested that supply chain management transcends logistics, going beyond processes, firms and functions. In order to be executing it accordingly, demands that all these attributes are involved in the management process. Fawcett & Waller (2013) recognized the complexity and lacking consensus in supply chain management's identity and considered the fact that maturation is at the centre of professional identity's lifecycle. Additionally, Fawcett & Waller (2013) further explained that supply chain management's social and economic contributions are extraordinary, but more research is obligatory to reach the value-creation promise of SCM. The ex-

tended period, that the terms have been under debate in the academic field, suggest the terminology and its implementation is not as black and white as it would seem. Academic disciplines have commonly identity crises, especially when considering that disciplines evolve and mature as research progresses – in this regard, SCM's situation is nothing out of the ordinary.

Lambert, Stock & Ellram (1998) defined the term supply chain management as follows: *“the integration of business processes from end use through original suppliers that provides products, services, and information that add value for customers.”* However, multiple definitions have been termed in the quest to find a common foothold in the effort to define the term. Moreover, in the most cited academic journals revolving around the definitions, authors have defined the exact same concept utilizing different words and structure.

Supply chain management and its evolution as a research field can be divided into three distinctive phases since its induction. From its beginning in 1982 toward late 1990s the discipline was experiencing a pre-growth phase, where the research was focused on practical applications. From late 1990's until 2005 the field was undergoing a growth period, where the research was primarily theory-driven. The current ongoing period can be categorized as the modern period from 2006 onwards, where new topics and theories have been and are still introduced. (Swanson, Goel, Francisco & Stock, 2018). The evolution of supply chain management's research as a discipline shows great promise and its development has auspicious basis for future research. Especially within its modern period, where new subjects are being evaluated and researched could advance the discipline with modernistic implications for practice.

Since the inception of the term supply chain management, the field has gained a strong foothold in academic research, with over 40 000 articles and books published within the time span of 1982 to 2015 (Asgari, Nikbakhsh, Hill & Farahani, 2016.). Asgari et al. (2016) conducted a bibliometric analysis of the existing academic literature surrounding the subject and concluded that there are numerous factors of uncertainty. There are emerging trends, gaps of knowledge and probable new developments that are currently evolving in the academic field and require further research. Furthermore, concepts within supply chain such as insourcing, competition, disruption and risk and human behaviour are areas that lack profound understanding in the field.

When analysing the definitions surrounding supply chain management and its underlying methods, the term can be categorized in to three different approaches: relational, technological and analytical. Relational approach handles the development of relationships within and between companies. Technological approach, on the other hand is focused on yields from technological advancement, such as enterprise resource planning (ERP). Finally, analytical approach revolves around the environment of tools and processes to drive understanding in suppliers, methods, customers and competitors. (Larson & Rogers, 1998).

One of the most common approaches is to focus on SCM as a management philosophy in the form of its activities in a strategic context – however, Mentzer,

DeWitt, Keebler, Min, Nix, Smith and Zacharia (2001) make the distinction of terming it supply chain orientation (SCO). Thus, conducting the orientation in an inter-company level in the supply chain can be better termed as supply chain management. Mentzer et al. made also the distinction in their efforts to define supply chain management terminology that complex terms have hindered discussions in the field, and thus restricting firms' management comprehension of the topic and applications to practical elements. Lambert, Cooper & Pagh (1998) made the distinction in the terminology that it is much more straightforward defining supply chain management compared to implementing it. From the academic literature on supply chain management this seems to be ringing a familiar bell, the complexity between the definitions of the field and the application are far off from each other, which has been a driving force in moulding the more current research in the field.

From a historical perspective, procurement as well as supply chain management have undergone huge transitions, especially in the 1990s by various manufacturing industries having to deal with pressures relating to cutting costs and increasing profits. Procurement as a function started to be a viable key process to be outsourced in the hopes of increasing profitability (Handfield & Nichols Jr., 1998.). Lately, it has become more evident to companies that a robust strategy in supply chain management will yield positive results in terms of overall performance and profitability, which can make outsourcing it a burdensome challenge. This is highly dependent on the industry and the core functions of the business, however, e.g. a make-to-order manufacturing businesses can face a herculean task in their efforts to outsource procurement, given the predicament of relying on an outside partner to support their supply chain's core function.

The competitive nature of supply chains has shifted in today's business environment where companies rarely survive working as an independent entity. Successfulness of integrating a cross-functional strategy in supply chain has evolved into a prerequisite of persevering against the competition of the market. Supply chain management is no longer a straightforward process between uncomplicated partnerships, but rather an intra- and intercompany network. (Lambert & Cooper, 2000). Lambert et al. (2000) argue that the competitive disposition of supply chain management has alternated the previously common structure which could be described as a chain or a pipeline to an uprooted tree dependant on networks and synergy to thrive.

The transformation in supply chains, where isolation from other entities and suppliers no longer suffices, also increased the amount of interest towards the concept of SCM, especially regarding the collaborative partnerships and their effectiveness. The development in the field surged the attention toward the concepts and emphasis towards the necessity of having universal definitions. (Lummus & Vokurka, 1999).

In procurement, pricing and inventory management - core processes relating to supply chain management, operations management literature has been in consensus relating to the fact of a research issue clouding the field (Arcerus et al., 2012; Federgruen & Heching, 1999; Fumero & Vercellis, 1999.). This mainly

stems from the factors relating to the troublesome task of integrating a pragmatic and systematic approach to handling and executing of these processes in a business. Nielsen & Saha (2018) suggest that an integrated multi-period supply chain in procurement planning can mitigate risk and improve profitability compared to a linear approach to supply chain planning. Concretely, this involves a retailer to mix procurement, inventory planning and pricing in a way that manages them in multi-period. The multi-layered approach to supply chain however requires a basis on product categories relative to their product distribution strategy. Additionally, the research conducted by Nielsen et al. (2018) made implications that an intermediary in the procurement planning process can damage the retailer in their efforts in making it profitable, which supports the abovementioned claim about outsourcing procurement.

Before IT was implemented into supply chain management, more precisely purchasing, procurement and sourcing, most of the processes were manually executed. Firms started to shift their strategic planning with the premises of IT in mind with long-term objectives to enhance their competitiveness in their respected markets. The marketing reasons for this was simply to adjust and reconfigure their resources to accommodate themselves amid changing requirements. One aspect of leading the colossal change with IT and SCM was electronic procurement (e-Procurement), a term pointing towards the action of enabling firms to use the internet for their procurement needs, mainly with the ERP systems. (Gunasekaran & Ngai, 2004). However, the term has become quite old-fashioned in the professional field given the ubiquity of IT in modern world's business environment. There cannot be any denial how much of a gargantuan effect information systems and IT in general have had in supply chain management, given their current integral part in almost all processes involving SCM.

### **2.1.1 Risk management in supply chains**

Risk management is an integral part of efficient strategy in a firm's supply chain management given the possible implications poor risk management can result in. Shi's (2011) research on enterprise supply chain management concentrated in strategic approach to risk management and concluded that from the perspective of supply chain design, sourcing strategy and portfolio management, the ideal framework points toward leveraging, diversifying, hedging and restructuring. Succeeding in a solid strategy in risk management is not an effortless process; however, firms should be aware of their operational and financial leverage to alternate their risks. Supply management's motion towards a progressive and strategic approach has demanded a more rigorous practices in risk management to deal with the increasement of risks, this will in turn have an outcome on more dynamic and effective ways to implement SCM practices (Giunipero & Eltantawy, 2003.).

Risk management in supply chains is paramount when dealing with liabilities. Academic research has focused more on the theoretical aspects of risk management opposed to case studies, however couple of well-known examples

exist when risk management in supply chain results in devastating outcomes, which are repeatedly cited in journals centralized on risk management. Perhaps the most commonly known event occurred with telecommunications companies Ericsson and Nokia in the year 2000 when their primary supplier of semiconductors, Philips Electronics, had a lightning strike that resulted in a fire and shut down their plant operations for weeks (Latour, 2011.). Latour (2011) explained in his case study that the supply disruption endangered the manufacturing process for mobile phones for both companies, and their core businesses were at stake. Nokia was the first mover in the terms of risk management and rolled a crisis program to combat the possible losses from the supply halt by visiting alternative sources of suppliers within a short time. Hence, Nokia was able to only suffer miniscule issues in the process. Ericsson had issues in information flow to the upper management and were sluggish in their reaction to the supply disruption. When the call to action came, it was already too late - resulting in a catastrophe with over \$400 million lost in revenue, and more importantly, lost market value with shares below 50% where the shares were before the supply disruption. For global firms such as Ericsson and Nokia, it was a merely thunderstorm over 6000 kilometres away that resulted in the consequences it had. A solid procurement strategy and crisis risk management made all the difference for Nokia, who at the time was able to cement itself as the leading technology company in Europe in the aftermath. (Latour, 2011.). Shi (2003) argues in his research that events such as these are not uncommon - an integrated approach implemented enterprise-wide can be the deciding factor between nearly avoiding calamities to suffering the full-extent of ramifications.

Ericsson-Nokia case is not the only publicly studied firm case where risk management in supply chains has gigantic complications; however, case studies remain quite undocumented. Supply disruption or material deficiency are not threats that risk supply chains - inadequate demand forecasting and stiff procurement deal with contractors lead Cisco to have inventory write-offs worth of \$2,2 billion, which also resulted in 8,500 lay-offs (Berinato, 2011.). Supply chain risks do not stop at profit or market value loss, which became evident with the case of Ford Motor's Explorer cars' issues with the quality of their tires and their supplier debacle with Firestone which lead to over 100 human casualties in highway accidents, later resulting in colossal recalls, brand value decrement and multi-billion dollar legal exposure for both Ford Motor and Firestone (Bradsher, 2001; Kashiwagi, 2001; Gibbs, 2000.).

Human error is not the sole cause of supply chain risks and its overall security, where risk identification includes natural disasters (Ho, Zheng, Yildiz & Talluri, 2015.) and even the threat of terrorism, which has risen to be within the top five factors of affecting supply chain risk management (Khan, Akhtar & Merali, 2018.). Uncertainties in the realm of risk management have increased in the face of ever complexifying economic systems where approaches in risk management have remained quite heterogeneous. The evolution of risk management in supply chain has been stemming from the "what if" -factors, referring to unplanned events that could involve natural disasters, external events and their

consequences. These events are referred to as scenarios and they are an essential part of understanding and evaluating potential risks from the perspective of the firms, and even from the perspective of conducting research. (Heckmann, Comes & Nickel, 2014).

Heckmann et al. (2014) categorized the characteristics of supply chain risk based on existing academic literature to objective-driven risk, risk exposition, disruptive triggers, affected supply chain, time-based characteristics and risk attitude. Objective-driven risks focus on the controlling, planning and anticipating risks within the resources of the firm to establish measures based on the objectives of the company. Risk exposition alternates toward the objectives, where the goal is to understand the risks in the terms of uncertainty, which correlates with the triggers that start risks within supply chains. Disruptive events relate to the factor of probability, how common or uncommon certain risks can appear as well as the factor of event, which is a time constraint where risks occur. Affected supply chain is the target or dimension of the affected function or part within the supply chain that is analysed in terms of having a solid strategy in place. Time-based characteristics are viewed as the time constraints when an emergency happens and preconditions that the company has in place to combat the event and their actions shortly after, e.g. in the aforementioned case of Ericsson and Nokia. Risk attitude describes the attitude of the decision-maker in charge of conducting swift and burdensome decisions in the event of a disaster, which can result either in improvement or in damage of the risk event. The issue with understanding the circumstances and characteristics of supply chain risk from the point of view of decision-makers come with an added predicament – quite many aspects of the previously conducted research focuses on the conceptual part of the risk, rather than the mathematical side. There is still a quagmire in the research of supply chain risk that must be advanced to further the grasp of prevention tools in real life business scenarios. (Heckmann et al., 2014.).

Supply chain risk management has undergone monumental changes, mainly through technological advancement, but globalization has also been a driving factor which has resulted in numerous advantages. Globally, the benefits are clear: establishment of facilities, plants and distribution centres across continents and countries, which has enabled multiple advantages, e.g. costing, raw material sourcing and recruitment (Choi, Narasimhan & Kim, 2012.). Today's trends in firm environment have been focused toward globalization, which in turn has created challenges alongside its opportunities. These challenges affect more than the core processes of the company and supply chains are not an exception. The challenges that birthed from globalization include increased complexity for the processes alongside various risks for supply chains (Chopra & Soodhi, 2004; Blackhurst, Craighead, Elkins & Handfield, 2005; Tang, 2006.). Tang (2006) reiterates that outsourcing manufacturing and product diversity as initiatives are better suited for stable environment, where they excel in their competence. However, they also open the door for risks in the form of supply chain

disruptions that can appear from economic cycles or consumer demands as well as from natural disasters.

One key practice to help mitigate these risks is supply chain integration (SCI), which relates to the strategy of interconnecting and aligning a firm's supply chain along with its upstream and downstream partners. Previous research indicates that SCI practices aid companies to manage their supply chains correctly and to reach exceptional performance. Current evidence suggests that supply chain integration is beneficial in a high-risk scenario, which can yield promising results in environments where liabilities are steep. (Wiengarten, Humphreys, Gimenez & McIvor, 2016). Wiengarten et al. (2016) reinforce that data does not suggest SCI implementation on a strategic manner being very dependent on the contextual risk environment, which suggests that the strategy can be implemented in a low-risk and high-risk environment. Considering different perspectives from the managerial point of view is incremental when dealing with the correct way of handling supply chain risk management.

Blackhurst et al. (2005) theorize that the practical implications in supply chain risk management research have still gaps, especially when referring to the supply chain designs where global initiatives are taken. The negative aspects of restructuring a supply chain design in the form of global sourcing or outsourcing can potentially have surfacing negative consequences that mainly stem from disruptions in the supply chain, as the abovementioned study also suggests. Blackhurst et al. (2005) found from their interviews with supply chain professionals that predictive analysis has become a primary component in trying to understand and resolve upcoming disruptions before their inception. Global channels can kick-off issues in lead times where information flow is subpar within the supply chains, which is why prediction has become a top priority in risk management.

Another perspective to consider when analysing supply chain risk management is the perspective of interpersonal relationships. In sourcing and purchasing, interpersonal relationships can be a fundamental part in solving disruptions in the supply chains. Durach & Machuca (2018) argue that these established relationships can act as social lubricants, however, no evidence was found toward knowledge-sharing acting as a precursor to company resilience. Additionally, managers can leverage interpersonal relationships in interorganizational mechanisms of governance. Investments made in the field of interpersonal skills lead to reciprocal benefits in the buyer-supplier relationships that effect the resilience in an organization-level. Research in buyer-supplier relationships has grown to be an integral part of supply chain risk management research alongside research concentrated on its effect on supply chain disruptions.

Li, Fan, Lee & Cheng (2015) augmented the research on the subject by supporting a theory as a joint supply chain risk management strategy from agency and collaboration perspectives. Practices in risk information sharing and risk sharing mechanism benefit financial performance of the firms that enable themselves in an interorganizational joint relationship strategy. Supplier trust and duration of the relationship reinforce financial performance, and additionally, they are heightened by a shared understanding of supply chain risk management.

Agency theory has relevance for the case of joint supply chain risk management as it includes issues such as opportunism, dissimilarities between risks and objectives, which can be destructive toward risk management in the case of principal-agent issues.

Collaborative effort between the buyer-supplier relationship can be strengthened by involving top management in the development of the relationships and by practicing involvement in supply chain risk management. Maintaining, improving and furthering the buyer-supplier relationship should be amongst the first concern for the top management as a part of their firm strategy, given how many key activities revolve around their relationships with their partners. Past research suggests that top-level involvement of the management is incremental in the successfulness of a firm's effort in conducting a solid supply chain risk management. The involvement should not limit to only the attributes of the relationship, but also assisting collaborative efforts between different functional areas, conducting long-term planning and overseeing resource allocation within the supply chains. In the case of material deficiency or disruption, the information flow between the stakeholders is a top priority, which is why top-level management should be in favourable terms with their suppliers in order to sustain optimal buyer-supplier relationships. (Siagan, Tarigan & Hee, 2018).

## 2.2 Strategic procurement

Strategic procurement has grown into a key component for corporate strategy with firms realising the strategic importance it facilitates to supply chain management and business processes. Over 10 years ago, companies surprisingly felt that procurement was a reactive function, opposed to its effective capabilities (Benito, 2007.). Ordinarily, exceptional competitive advantage was perceived as the function a firm coordinates its resources to separate themselves from the competition in the market (Barney, 1991.) and in its competence to operate with lower costs (Porter, 2008.). The connection toward the competencies which strategic procurement enables has become evidently clearer since practices and research on the matter has advanced.

Strategic procurement has been widely researched from the perspective of public-sector organizations, mainly driven due to the factors in complexity of product categories and innovativeness in technology (McCue & Gianakis, 2001.). Public procurement has received much interest from the researchers given its practical implications, which is why the Journal of Public Procurement (JOPP) was established in 2001. Public-sector and private-sector procurement share many similarities, but there are also multiple dissimilarities, which is why not all research on the field of public procurement is applicable to the private sector. CIPS Australasia (2013) expanded the benefits of procurement for firms, explaining that the benefits surpass the commonly approached positives in reduced costs



and in ensuring stable supply. Procurement in a strategic manner aids organizational goals in the terms of market expansion and product innovation, which establishes it as a vital role in any organization.

Procurement can be perceived also as a prelude for economic growth, stemming from the factual basis that superb procurement ensures more investment, thus enhancing the commitments made by investors leading towards scenarios where money ensures the best value, and savings are derived from expenditures. Economy is categorized into the goals of procurement, which is why it is important to make the distinction toward its economic benefits (Erridge & McIlroy, 2002.).

There are numerous of different perspectives to approach strategic procurement from, which is why the research on the matter is relatively diversified. The advantages are however clear; robust procurement reinforces the supply chain, leading to increasement in customer satisfactory and customer deliveries, thus also assisting in the acquisition of new clients. These attributes are heavily linked into the profitability of the company. (Masudin, Kamara, Zulfikarijah & Dewi, 2018). Masudin et al. (2018) further argue that highly linked to procurement is inventory management, which is a gigantic responsibility given to its form of physical investment in the company. A strategic approach is a necessary to establish required stock levels, which is a precursor to increasing revenues and safeguarding the continuity of the business. Controlling inventory in activities such as coordination of distribution, purchasing and production is critical to accommodate towards the needs of the market (Ogbo & Ukpere, 2014.). Inventory control became a valued process in the evolution of supply chain management, when businesses started to realise the benefits surrounding it. Increased productivity from Japanese companies was a raising threat to western companies in the 1980s, which pushed the initiative toward the implementation of different strategies derived from the Japanese corporate world, especially in the form of lean management practices. The accommodated new practices in SCM and inventory management pushed new heights in productivity with improved quality in processes, which involved suppliers in their efforts to advance process and product design. (Stevens & Johnson, 2016).

Common strategy in inventory management is holding inventory at certain stock levels to have a precautionary and transactional purposes, which assists the uncertainties revolving around demand levels (Bragg, 2015.). Even though holding inventory can be viewed as an essential strategy in inventory management, companies want to lower their inventory holding costs to reduce the assets placed in inventory. Inventory optimization is a crucial task to maintain an ideal inventory turnover ratio. Based on a data set from Gaur, Fisher & Raman (2005) research, inventory presents that 36% of total assets and 53% of current assets to U.S. retails. The significance of inventory management is crystal clear when reasoning with the fact of how much assets companies hold in their inventory at any given time.

Strategic procurement can be viewed by the perspective of original equipment manufacturers (OEMs), but the question arises if contract manufacturing

can be used in manufacturing and procurement for a competitive advantage. The benefits for outsourcing manufacturing for OEMs are rather straightforward – the companies can shift their focus more for their core competences. In the case of contract manufacturing, the dilemma of control or delegation comes into question. Numerous large-scaled manufacturing companies have recently changed their strategy from outsourcing to in-house. Commonly, large OEM firms share the same suppliers as their competitors as a source for their critical components, which can decisively hinder their competitive advantage or in the matter of material disruption result in blockades. (Bolandifar, Kouvelis & Zhang, 2016). Safeguarding the supply chain against disruptions have become evidently clear as a success factor in today's global business environment. An extreme example is the aforementioned Nokia and Ericsson case, where material disruption had disastrous results (Norrman & Jansson, 2004.). Bolandifar et al. (2016) further discuss the relations between direct and indirect procurement strategies and their consequences against competition of the market and their influences in the market pricing. Moving from indirect procurement to direct procurement will ramp up component prices for OEMs, because of the discount-sharing effect. Discount-sharing effect stems from the process of delegation, where the discounts from large quantities of components is shared by both the OEM and their contract manufacturer. Companies in the downstream section of the supply chain have lower incentive toward large-scaled orders of components, which will result in higher component prices. The control or delegation dilemma has surprising outcomes for OEMs trying to figure out the most effective combination of procurement for their supply chain, which is why the negative and positive aspects are relatively organization specific.

The control and delegation from the perspectives of the buyers and supplier has a strong relevance toward the contending forces by Porter (1979), where Porter theorized that suppliers or buyers can apply bargaining power by reducing costs or lowering quality. As a form of strategic action by firms, the bargaining power equilibrium still has substance in the modern business world. The power matrix described as the relationships between buyers and suppliers and their influence toward one another has been further researched and developed in the past decades. Cox (2006) later iterated that the power attributes formed in the power matrix between buyers and suppliers should be considered as a potentially double-edged sword. Connotation being that the power attributes in the perspective of the firm and their suppliers in resources can be often misinterpreted by an objective analysis. The power attribute can be favourable towards the buyer or the supplier, which is why the power matrix is not straightforward and requires deep understanding. The ultimate objective in asserting a power matrix from the perspective of the suppliers is establishing buyers which are dependent on them, yielding above average returns.

Power as an attribute in relationships within supply chains has received growing interest from researchers, and it would seem its importance is not ramp-

ing down. Theoretically, its growing influence on supply chains and firm performance can also push firms to abuse said power – to revamp performance at the cost of other supply chain partners. Research focus has been mainly on the common exchange relationships between buyers, hence why there is not research evidence on how firms manage power under crises. (Reimann & Ketchen, 2017). Given that drastic circumstances have the greatest impact on a firm's business, it would be incremental to form strategies that have preventive mechanisms in place.

Being aware of the relationships factors and constraints which wield trust and commitment between buyers and suppliers has become a relevant subject to research under supply chain management and procurement, especially how it can be strategically taken advantage of. Sherman (1992) concluded that one-third of strategic alliances between partners are unsuccessful due to an absence of trust between the partners. The level of trust shared between partners is determined by a wide range of attributes that effect the commitment in their respected transactions. Reputation of a firm within the market has a strong impact in the level of trust, contrariwise, unpredictable behaviour by a partner has negative effect in the level of trust. Collaborative effort between partner relationships in the terms of information sharing by partaking in a framework that shares critical information, which will result in minimising supply chain uncertainty and augment of trust. (Kwon & Suh, 2004). Scholten & Schilder (2015) argue that information sharing as a strategy in collaboration for supply chain also has additional benefits, that improve the overall resilience of the supply chain by expanded velocity, adaptability and visibility.

Strategic procurement has been studied also in a stochastic environment extensively, which has been a popular subject among supply chain and inventory management in addition. Stochastic market demand is defined as a random demand, where it is difficult to conduct accurately numerical forecasts on the demand. From the basis of supply chain management, this can also include stochastic lead-times. In the growing uncertainty of the demand, coordination between supply chains has become a necessity. (Luo, Li, Wan, Qu & Ji, 2015). Goh, Lim & Meng (2007) argue that stochastic demand creates additional problems in the supply chain, relating to risks in supply, demand, disruption and exchange that appear externally and must be tackled. In the terms of procurement, Luo et al. (2015) pinpoints that a mixed procurement strategy is considered optimal in the case of stochastic demand. Procurement from mixed sources, such as the spot-market and the contract supplier must be utilized to maximize the success rate. However, procurement from the spot-market also materializes price and supply risk for the buyer. Price risk has negative consequences for the manufacturer in the terms of profit, but handily benefit the supplier of the material.

Fundamental part of procurement is purchasing, which is an imperative activity for a firm's strategic planning. Purchasing is a category in supply chain management that is very industry-specific, stemming from different needs in goods and capability from the perspective of the firms. Brandon-Jones & Knoppen (2017) found out that under the contingency approach, there are differences

under industry, primary between service-industry and manufacturing industry that relate to dynamic strategy models in purchasing. The needs vary from the perspective of the industry the firm is operating in, creating different means to approach their planning. Brandon-Jones et al. (2017) further explain that strategic purchasing is heavily dependent on knowledge scanning by firms enabling recognition of attributes related to purchasing they can create beneficial relationships between purchasing recognition, dynamic capabilities and involvement. Additionally, knowledge scanning the areas related to strategic purchasing by managerial individuals, firms can leverage their strategic potential in the market. The involvement of top management in strategic purchasing is the first stepping-stone in unravelling the firm's potential in their supply chain, which will result in improved performance. Furthermore, the recognition and attitude toward treating strategic purchasing as a vital ingredient in the firm's performance by top management is widely considered unquestioned as a primary rule in the research field of strategic purchasing (Ogden, Rossetti & Hendrick, 2007; Wolf, 2005.).

The issue with numerous theories, analysis and scientific discoveries presented by the field's researchers in strategic purchasing during the past few decades however come with an asterisk; how to successfully transfer strategy into practice. Comparable to the abovementioned research, it starts with acknowledging different functions and cycles of purchasing and realizing the risks they bear as well as their impact in value creation while decreasing costs for the company. (Knoppen & Sáenz, 2015). From an operational level, the connection between the importance of divergent skills in individuals to integrate strategy into reality for purchasing has been established. Skills such as technical understanding, interpersonal skills and management skills are fundamental in purchasing, which is additionally linked to performance. (Cho, Bonn, Giunipero & Divers, 2019).

Aligning strategic purchasing toward the firm's own competitive competences clears path for the purchasing organization to fulfil their duties more efficiently, and thus, helps them to create more value to the business. Evaluation of core purchasing activities and strategies is a must for the firm to meet and execute these expectations. This can create unnecessary problems for the firm, if they are too highly concentrated on supplier evaluation and not on their own internal processes that shape the core value creation methods of the purchasing department. Cost, quality and time are generally the most inspected indicators on performance, but many firms still leave important factors out of their strategic evaluation such as flexibility and innovativeness of their purchasing activities. (Caniato, Luzzini & Ronchi, 2012). Innovativeness in purchasing processes outside internal competencies can also yield unexpected benefits. Luzzini, Amann, Caniato, Essig & Ronchi (2015) argue that collaboration under sourcing with suppliers in purchasing activities such as involvement, development and integration has a positive impact on innovation performance stemming from strategic sourcing and purchasing information sharing. Innovation as a priority in purchasing

activities with the abovementioned factors in mind leads to higher innovativeness in the supply chain. Purchasing can be viewed as the fundamental interface between the firm and the supplier, which is why collaboration and innovativeness yields the benefits it does.

Strategic sourcing has gained increased prevalence in supply chain and procurement research, mainly due to its implications to firm performance. Smeltzer, Manship & Rosetti (2003) defined strategic sourcing as an extensive process of obtaining inputs and controlling supply chain relations by attaining firm's long-term goals. However, Anderson & Katz (1998) approached the definition as a procurement framework to add value and competitive points. Combining strategic sourcing and e-procurement functionalities within a firm has a positive effect on firm's performance even in differing business conditions. When approaching a turbulent market with high intensity in competition, strategic sourcing and e-procurement has additional benefits as a strategic tool. Business conditions varying on product life cycle, manufacturing functions and processes aid strategic sourcing as a moderating impact. There are limitations in research in strategic sourcing and e-procurement's benefits in some business sectors, such as the service sector. (Kim, Suresh & Kocabasoglu-Hillmer, 2015). Strategic sourcing requires the firm to act in the form of establishing dynamic or static procurement processes which aims to lower total costs without adding any unnecessary threats to the supply chain. Dynamic procurement relates to multi-sourcing which can strive from inter-temporal competition, which correctly leveraged can lower costs up to 50% when compared to static sourcing, which is highly contingent on capacitated suppliers. (Daschi & Guler, 2018).

The phenomena of collaboration between the firm and supplier can be also perceived as a cross-functional integration in the supply chain management and purchasing activities of a firm. Functional coordination can be defined as the frequent management of processes, services and products and the suppliers within the international organization, which creates synergy opportunities from its operations. Both functionalities have impact toward overall firm performance and purchasing, but the compelling fact is that functional coordination has more significance over cross-functional integration. Two important antecedents toward cross-functional integration and functional coordination are talent and performance management from the perspective of the firm. (Foerstl, Hartmann, Wynstra & Moser, 2013). Costa & Grilo (2015) theorize in their case study that procurement collaboration can be furthered with a building information modeling (BIM) -based solution, which promotes cooperation between stakeholders by providing an interactive platform that is based on 3D-modelling. BIM is mainly currently used in the construction industry but can be potentially used for e-procurement in other industries and fields in mind. It creates the possibility for an affluent information flow between the firm and the supplier, where seamless transaction of various kinds of information happen electronically without the needs of normal business interaction. However, the benefits of incorporating a

such information system to progress a firm's procurement might get overshadowed by the cumbersome complexity it brings to the firm trying to integrate it and use it to its full potential.

### **2.2.1 Uncertainties of procurement**

Uncertainties in procurement can be considered as the major obstacles in planning and preparing a strategic approach in supply chain management. Research focusing purely on uncertainties in procurement or in supply chain management are rather sporadic. Lee (2002) described issues in procurement as ineffective inventory, excessive costing, profitability and poor return on assets. Mainly, the uncertainties stem from partners and the market, where the previously mentioned attributes are a direct cause. Lee (2002) further iterates that when taking a product perspective on the issue, an effective method to implement an efficient strategy can be described as the uncertainty framework. Uncertainty framework in the case of product focuses on two primary components of supply chain – supply and demand. Mason-Jones & Towill (1998) argue that uncertainties in the supply side and the manufacturing area can be tackled by lean thinking principles to alleviate the uncertainty factor, however, demand and control systems require understanding in a larger scale, especially from systems behaviour. From an overview perspective of supply chains, the uncertainties in supply and demand with growing manufacturing, increasingly globalisation of the market as well as briefer product and technology lifecycles, the result has been a heavily complicated risks that must be taken account for. (Christopher & Lee, 2002). Childerhouse, Mason-Jones, Popp & Towill (2003) argue that supply chains have developed in a way that even preparing for uncertainties can bring chaos and disruption to the supply chains by unnecessary interventions and lack of information flow within stakeholders within a firm. Christopher et al. (2002) add that these unwanted characteristics have brought the necessity for controlling supply chain operations in a proficient manner. However, the contradiction being that there is very limited amount of control especially in procurement once a purchase has been made, which breeds even more uncertainty in the supply chain. Mitigating the risk between supply partners can be achieved by collaborating and ensuring an information flow that allows the identification of critical nodes within the material flow (Stiles, 2002.).

Santoso, Ahmed, Goetschalckx & Shapiro (2003) explain that a key component in any manufacturing firm is the design and operational capabilities of its supply chain. Strategic alignment of resources in the supply chain includes determining aggregate quantities and material flows in purchasing as well as in distribution. The critical parameters in the supply chain design are inflicted by uncertainty factors especially in resource capacity. Furthermore, from the globalisation aspect of economic alliances have prompted toward global supply chains where uncertainties have more complex risks such as transfer prices, exchange rates and dependability of transportation channels. Unless these uncertainties

and risks are tackled with a robust supply chain design, potential disruptions and delays in the supply chain will increase.

<b>Uncertainties in procurement</b>		
Supply and demand (Mason-Jones & Towill, 1998.)	Collaboration between partners (Luzzini et al., 2015.)	Globalisation's effect on the supply chain (Santoso et al., 2003.)
Ineffective inventory & costing (Lee, 2002.)	Supply disruption and material deficiency (Berinato, 2011.)	Uncertainties in coordination (Luo et al., 2015.)
Power matrix between buyers and suppliers (Cox, 2006.)	Pitfall in strategic implementation (Knoppen & Sáenz, 2015)	Lack of intersection in strategy between SCM and strategic management (Ketchen & Giunipero, 2004)
Technological and information barriers (Fawcett, Magnan & McCarter, 2008)	Cost reduction & estimation (Askarany, Yazdifar & Askary, 2010)	Market pricing & competitiveness (Bolandifar et al., 2016)

Table 1: Uncertainties in procurement

### 2.2.2 Future of procurement

Future of procurement in the supply chain is filled with multitude of questions and uncertainties. The fourth industrial revolution will potentially shape procurement to new heights with the possibility of enabling a fully autonomous supply chain with the power of internet-of-things (IoTs) and other technology advances. The phenomenon is called the industry 4.0, a term coined in 2015 by the German government with the initiative to define the impacts of digital technology evolution in industry production (BMBF, 2015.). Presumably, the most affected areas are order fulfilling and transport logistics. Research analysis shows that procurement has 71,43% opportunities to withdraw from industry 4.0, with the remainder being possible threats in new technologies. (Tjahjono, Arez & Pelaez, 2017). SAP Ariba's (2018) newly conducted research concluded that only 5% of respondent companies had highly automated processes in use, with 21% respondents having mostly manual functions. Surprisingly enough, 83% of respondents think future digital transformation will have impacts over procurement, supply chain and finance functions with 63% already having automation on the roadmap for their firms. Major roadblocks that were identified in the research include talent management and inadequacy in talent strategy, which can be analysed that firms lack proper skills to transform their procurement and supply chain systems to the next level. Tjahjono et al. (2017) state that even though the benefits are clear for automation, new threats will emerge that must be accounted for, especially in the terms of possible liabilities, ethics and legal aspects as well as managerial issues in implementing these functions.

Glas & Kleemann (2016) analysed industry 4.0 from the perspective of procurement and the supply chain with separating the functionalities they can potentially offer to different processes inside organizations. From the interviews conducted, it was analysed that labour resources are expected to cause savings (e.g. layoffs) and that manual coordination would reduce with product quality remaining stable or even increasing with the new functionalities. Some interviewees even saw industry 4.0 as a possible pathway to combat lost business to low-cost production countries in Eastern Europe. Even though procurement and supply chain could benefit hugely from the implementation of new technologies, analysis suggests that it will take years until it can be effectively taken advantage of. Professional supply chain experts also have their own share of sceptics, with interviews dictating that some see it as a marketing buzzword, with no practicality. Stock & Seliger (2016) theorize that industry 4.0 also includes leeway to make manufacturing more sustainable. Given how incremental procurement is to manufacturing, it can be argued that these functions will have further supportive activities in the future.

Even with the sceptics of industry 4.0 or procurement 4.0, recent research shows that digitalization of procurement processes has multitude of benefits. Apart from overall increasement of firm performance, it supports daily administrative tasks and complex decision-making processes. The advantages will sheer new focus into procurement as a strategic interface and increase the strategic importance procurement adds to the firm even further. Organizational effectiveness and profitability will be heightened, alongside potentials for establishing new business models, services and products. Digitising supply chain and procurement processes comes with blockades related to the existing procedures and processes that a firm entail, that must be overcame to fully use the improving qualities of industry 4.0 as an asset. (Bienhaus & Haddud, 2018).

### **2.3 Exploration and exploitation**

Exploration and exploitation viewpoint is added to this research to provide necessary supplementary academic rigour. The objective is to analyse the subject with the guidance of a literature review as well as to provide additional theoretical understanding from the perspective of this study. Past research on exploration and exploitation has interpreted the topic from various contexts, also on the angle of supply chains and their resilience. However, there is still limited amount of knowledge on the topic from the perspective of supply chain. Given that supply chains are currently evolving, and new concepts are emerging, the matter is of academic importance.

Exploration and exploitation is an organizational learning theory instituted in 1991, which gave insight on the affiliation between the exploration of new possibilities and the exploitation of old certainties. The paradigm is that there is a trade-off between the two concepts that contend over the same re-



sources (March, 1991.). The trade-off from the perspective of supply chains becomes evident when analysing the resilience of it. Resilience is derived from the strategic decisions the organization conducts and these decisions come with a trade-off. Jüttner, Peck & Christopher (2003) explain that there are attributes of risk mitigating strategies that adjacent toward risk drives, where the cardinal trade-off is of managing risk vs. delivering value. Managers must extinguish fires in their supply chains as well as make the best possible decision to prevent them. Handling part of these different attributes comes down to trade-off decisions, which are highly important factors for managers.

Further research on the subject matter has attained a consensus on the strategic argument that organizations must balance their activities on exploration and exploitation in order to reach optimal performance (McGrath, 2001; Benner & Tushman, 2002; Gupta, Smith & Shalley, 2006.). Uotila, Maula, Keil & Zahra (2009) theorize that exploration and exploitation in the concept of firm's financial performance is heavily related to the longitudinal measurement and that there is a linkage in technological dynamism and organization's adaptation of exploration and exploitation. The research further iterates that when approaching the contextual perspective of the continuum, the trade-off factor toward incompatible objectives becomes more evident.

The previous research conducted on the matter have active relevance to supply chain management and procurement uncertainties. Organizations adapt approaches individually and their technological dynamism varies – even industrial organizations tend to be reactionary toward change. The trade-offs in resource allocation are bound to happen with increasing difficulties of keeping a balance between exploration and exploitation.

Exploration and exploitation can be analysed by different lenses in supply chains, popular research topics include cooperation strategy between partners, resource allocation and strategic decision-making. When reasoning with the terms that exploration and exploitation represent, the connections to the core processes becomes self-evident. Exploration comprises of themes risk taking, discovery, experientialism, adaptability, investigation and innovativeness – exploitation rather consists of refining, competence, production, application and execution (Tokman, Richey, Marino & Weaver, 2007.). The themes of these concepts aid in understanding the factors relating to firm's specific characteristics and their ability to withstand change. In modern business, the only constant is change – which beseeches for comprehensive understanding of how firm's react in facing uncertainties.

Considering exploration and exploitation from the perspective of supply chain cooperative partners is a challenging task. Exploration or exploitation of resources through relationships by the actions of a partner is a pivotal incentive for a company when they evaluate their contentment. Furthermore, the competitive environment where the companies are situated in has connotation. For example, SME's operating in less unfavourable competitive environments tend to be more satisfied with their cooperative relationship partners which consist of high percentage of exploration-orientated partnerships. (Tokman et al., 2007).

Exploration and exploitation can be captured from the viewpoint of social capital and its impact on supply chain resilience. Noel (2013) theorized that social capital is intertwined between partners, acting as a reinforcement in both ends. Exploration of these factors as well as understanding the characteristics that drive them benefit the resilience of the firm. From the perspective of the organization, it is of paramount importance to grasp the elements that drive their partnerships. Exploration and exploitation of possible advantages brought upon them can have exceptional results.

One key concept that has surfaced in the research of exploration and exploitation is organizational ambidexterity and how companies should approach it to ensure sustained performance. Raisch, Birkinshaw, Probst & Tushman (2009) explain that past research on the topic has generated tensions regarding the stance organizations should apply. These dilemmas heavily rely on strategic approach on achieving ambidexterity – should it be static or dynamic, where and how does it happen, and finally on how it should be achieved. Andriopoulos & Lewis (2009) argue that managing the ambidextrous tensions comes with a paradox that requires further examination, especially in the case of innovation. Additionally, the responsibility of managing these ambidexterity paradoxes is a shared burden of top management and other levels in the organization. Excelling in the practical side of managing these ambidextrous tensions can be tricky, and there is not one existent “correct” path for managers to take on the issue. The correlation of this dilemma to supply chain management and its subsections in sourcing and procurement is straightforward; organizations and managers must conduct their decision-making against ambiguous circumstances.

Organizational ambidexterity as a subject touches the very core of firm survivability in the long-term. March (1991) concludes that the issue stems from participating in satisfactory levels of exploitation to guarantee its present viability, and simultaneously provide adequate efficiency toward exploration to guarantee the future viability of the organization. The problem facing practitioners lies in understanding precedents and aftereffects of exploration and exploitation as well as the other acute issues of managers (Lavie, Stettner & Tushman, 2010.).

To achieve organizational ambidexterity, it is critical to analyse how these two concepts correspond with each other as a strategic practice. Piao & Zajac (2016) hypothesize that exploitation which focuses on incremental innovation i.e. distinctive and smaller improvements, were more inclined to stay explorative over time, opposed to exploitation that focuses on repetitive innovation, which resulted in lower adaptableness to change. Organizations must be aware on how different approaches on exploitation and exploration yield different results in the long run.

From the basis of supply chain management, the primary concept of exploration vs. exploitation derives from efficiency and flexibility paradigm – will value be created through trade-off or ambidexterity in their supply chains. Exploitation in the supply chain can manifest from production and efficiency, relating to their commitment in their partnerships in order to commercialize and

existent technologies or to initiate reciprocal partner competencies. (Lavie & Rosenkopf, 2006). Certain type of degree in alliance formation and cooperation is recommended in order to balance the firm's efforts in exploration and exploitation – not only progressively, but across firm domains. Flexibility invokes the capabilities of the firms in which they can promptly respond to the changes in their environment. Uncertainties and probabilities exist in manner of forms, which is why far-reaching approach is needed. Huang, Yen & Liu (2014) state that flexibility and efficiency have contradictory characteristics, but their findings propose that they can be ambidextrous or contradictory contingent on the environmental factors they embody.

The ambidextrous hypothesis has been researched through multiple lenses; however, the managerial implications of these studies tend to be challenging in nature – especially regarding technological adaptation and innovation. Whereas, firms should be aware of the possibility to take advantage of their external partners to fix their deficiencies and surmount ambidexterity by their supply chain portfolios. There are two concepts that are required to understand when analysing the exploration and exploitation capabilities of supply chain portfolios – diversity of suppliers and supplier repetition. Supplier repetition refers to reusing existing partnerships and leveraging the resource possibilities they bring to reinforce capabilities. Diversity in suppliers drives exploration ventures, benefiting both partners in knowledge and technological advancement. The downside of engaging in excessive diversity in suppliers is that a firm will become perplexed by the quantity of knowledge, thus lessening their exploration competence. (Chiu, 2014). Exploitation and exploration through repeated partnerships can yield unexpected results, but the complexity of it requires the collaboration of both partners involved. Exploring requires the search of new knowledge, where repeated partners can be an issue if handled incorrectly.

The concept of exploration and exploitation fundamentally challenge the straightforward thinking of firms and provide frameworks to establish their exploration and exploitation opportunities toward different business operations. The organizational learning theory fits the purpose of this study and produces insight on procurement professionals' decision-making in the larger picture.

## **2.4 Literature review summary**

This section provides a summary of the literature review by managing a table with the most essential and relevant studies covered in the literature review. By assembling a recap of the subjects touched in this paper, it aims to create a visual and conceptual image to steer the empirical part of this research. Given the extensiveness of the conducted literature review, the summary was required to be concise and substantive to the study, thus requiring only a selected number of journals to be included.

Reference	Study design	Objective of study	Findings	Recommendations	Limitations
Ketchen et al. (2004)	Multidisciplinary approach	Examining overlapping in SCM and strategic management	Interaction benefits knowledge development and goal-reaching	Cross-organizational strategies to be developed	Proprietary data not included
Stevens et al. (2015)	Conceptual approach, 25 years scope	Conceptualizing SCM and analysing association with financial performance	SCM models, including collaborative supply chain clusters	Dimensional models for SCM managers	Analysis limited by recent changed in global economy
Luzzini et al. (2015)	Theoretical framework tested with a sample of 498 companies	Effects of supplier collaboration to firm innovation	Innovation leads as a priority to prominence in supplier collaboration and strategic sourcing	Purchasing knowledge is a precondition for success in supplier collaboration and strategic sourcing	Specific supplier and purchasing contribution focus
Norrmann et al. (2004)	Explorative study	Examine Ericsson's SCRМ approach	Proactive SCRМ manages risk sources along the supply chain and enforces collaboration with suppliers	Supply chain risks should be placed in trade-off analysis, to find adept level of risk and prevention	Study focuses on one organization and their approach
Knoppen et al. (2015)	Combined quantitative and qualitative study	Understanding the gap in the bridge of strategy and daily action, provide solutions	Pitfalls exist a lack of scale and scope, no time for reflection and unaligned incentives	Dynamic capabilities must be strengthened to combat continuous and unpredictable change	
Lambert et al. (2000)	Framework for SCM, case studies on multiple companies	Determining how to successfully implement cross-functional SCM integration	Three unrelated elements of SCM are necessary for superior competitiveness and profitability	Supply chain process integration must be designed for the effectiveness of entire supply chain	Lack of normative model for managerial implications
Masudin et al. (2018)	Secondary data collection to analyse financial performance/customer satisfaction	Investigate inventory management and procurement practices to organizational performance	Implementation of automated procurement practice increases organizational performance	Implementing different optimal procurement practices increases organizational performance	Secondary data collection limited the scope of the study

Figure 1: Literature review summary

## **3 DATA AND METHODOLOGY**

### **3.1 Research method**

The research study is conducted in a qualitative manner by inductive reasoning with semi-structured interviews with supply chain and procurement professionals. Qualitative research was selected as a research tool primarily because of the implications of the topic, that would have been challenging to research from a quantitative perspective. The purpose is to understand uncertainties from the point of view of the professional alongside the strategic connotation of uncertainties. Additionally, the study aims to understand why further technological advances have not yet been efficiently made of use to counter human error and uncertainties. The fundamental aspects of the study require a more experience-based outlook from the interviewees, where conclusions can be made from the narrative. Flink (2018) states that properly conducting and succeeding in qualitative research by reaching from preliminary assumptions to interpretation and finally theory is the very backbone of qualitative research. Additionally, Flink (2018) describes that theories can be considered as versions of the world, which alternate and develop overtime.

Inductive reasoning to the research allows for a methodological approach, with the objective of creating new theories. Generally, to have a purposeful research, one should always aim for generating new theories. Gioia methodology approach will be used to benefit the qualitative research with rigor, an attribute usually criticized to be lacking in qualitative research. Gioia, Corley & Hamilton (2012) approach the issue by setting up a systematic approach to concept creation and grounded theory diction. Gioia et al. (2012) inductive approach to qualitative research provides for a framework that utilizes in making the data structure of the research into theory. Furthermore, it is critical to understand and capture the interviewees' experiences and thoughts into theoretical terms. Achieving this allows for building dynamic relationships between the related concepts and in aiding to conduct important leeway in data-to-theory links.

### **3.2 Participants of the study and data collection**

When preparing for selecting participants for the study, the objective was clear: interview professionals in the field of supply chain management, primarily those that have weekly tasks in procurement. Furthermore, the participants were selected in a manner that enabled a long-range of perspectives, especially in those that participated from the same company. For example, the task portfolio can vary tremendously between buyers, given their distinctive areas in which they

operate in. In manufacturing companies, these individuals can oversee mechanics, electrical appliances, components or even indirect sourcing activities, which support the day-to-day functionalities of the company. It was an important factor that these individuals have different job descriptions and they cooperate with a wide-range of both domestic and international suppliers to guarantee the withdrawn data to be dynamic and diverse. Some challenges and uncertainties for international partners can vary tremendously compared to domestic ones. A selected sample of participants in one company deal with make-to-order manufacturing, which gives incremental knowledge on complex issues regarding their procurement work – due to the factor that supply chains are present in the very core of business.

Half of the participants were chosen as acquaintances of the author, past co-workers and partners. Given that there is a personal connection between the interviewer and interviewee, it brings a heightened level of trust, where certain topics or issues might not be revealed to the interviewer if they were a stranger. However, personal connections might also have a negative side effect, where the interviewee feels obligated to assess themselves in a manner positive to the interviewer. Other half of the participants were selected by cold-approaching firms and individuals that might have had an interest in participating in the study. The sizes of the firms in which the individuals worked were rather heterogenous, which aided in receiving a comprehensive amount of perspectives in the study. Smaller companies must deal with multitude of tasks within their supply chains personally compared to large-scaled enterprises, which provides insightful knowledge on a deeper level.

The data collection method involved face-to-face semi-structured interviews that had the objective to gather useful data for the premises of the study from the point of view of supply chain and procurement professionals. The interviews acted as tool to bring experience- and knowledge-based information for the study, which is at the very centre of the individuals' capabilities as a professional in their field.

The interview began by asking the interviewees how long they have worked as professionals in supply chain management or its subsections. The reasoning behind this was to justify the quality of the data gathered and to find possible variance on professionals and their thoughts on the matters based on how much experience they had on the field. The timespan that the interviewees had worked on the field varied greatly; four people had 10-20 years of solid experience and expertise on supply chain management, whereas six people were rather new in their professional endeavours, spanning from one year to four years of experience. The second question focused on generalising the subjective perspective of the interviewees on their daily and weekly tasks, concerning if they consider their duties on operational or strategic level. Primarily, all professionals thought their work tasks are a combination of both. Those with more yearly experience and a higher position tended to view their duties as more dependent on

the strategic side. Additionally, some long-term professionals thought their duties on strategic procurement should be increased to fulfil their potential.

Interviewee	Years of experience	Industry	Title
Professional 1	3	Wholesale	Entrepreneur
Professional 2	20	Electrical engineering	Senior Buyer
Professional 3	10	Electrical engineering	Supply Chain Manager
Professional 4	15	Electrical engineering	Senior Buyer
Professional 5	20	Electrical engineering	Senior Buyer
Professional 6	1	Technology	Key Account Manager
Professional 7	3,5	Retail	Country Manager
Professional 8	3,5	Wholesale	Brand Manager
Professional 9	3	Forestry	Sourcing Specialist
Professional 10	2	Food industry	Buyer

Table 2: Interviewees

Industry-wise, the gathered data is rich, however slightly skewed on electrical engineering when considering the data set comprehensively. However, the interviewees on that specific industry had a wide array of responsibilities that heavily differentiated from each other, which was essential to have a cluster of diverse perspectives on the subject. The remainder of respondents and the industries that they represented had much different duties and tasks, but their thoughts and analysis corresponded with others.

### 3.2.1 Semi-structured interviews

The primary and singular method in the data collection of this study was semi-structured interviews conducted face-to-face with the participants. Face-to-face interviews allow a more personal touch to qualitative research, which is more difficult to achieve by a telephone or video interviews. The interview consisted of open-ended questions with possibility for the interviewer to ask extended questions regarding to the answers of the interviewee. Additionally, in the end of the interview there was a reserved free comment that enabled the interviewee to discuss any subject related to the interview questions. The interviews were recorded via a recorder and later transcribed into text to analyse for the research.

The interviews consisted of two generalised questions to understand the experience-level of the interviewee in the field of supply chains and procurement alongside their job title. The interview followed with 10 open-ended questions and an additional free comment in the end, which tallies up to total of 13 questions. The interview questions can be found in Appendix 1 of the document. Professional experience as a background was an important factor to include in the interviews, in a way to understand better if individuals who have worked longer in the field have different insight on the uncertainties and issues regarding procurement.

Interviews are considered useful as a data collection method for receiving different perspectives and opinions for the basis of the research. Additionally, they act as a powerful tool to understand and analyse expert knowledge within a field. Harrell & Bradley (2009) state that semi-structured interviews are primarily used in a research where a deep dive into a topic is required as well as to interpret the answers accordingly. The questions are rather standardized; however, certain probes are a necessity to uphold consistent information flow during the interview. Horton, Macve & Struyven (2004) explain that semi-structured interviews offer a degree of flexibility, which is not attainable by statistical analysis for example. Furthermore, it enables the researcher to analyse the weight of the credibility of the answers as well as permit the interviewee to have freedom with their thoughts and experiences. It can be argued that this level of flexibility from the semi-structured interviews fits the purpose of the research considerably better than simple “yes” and “no” answers. Horton et al. (2004) conclude that the openness of semi-structured interviews provides an invaluable mechanism for the researcher to test out how their prior theories reflect from the perceptions of important actors, thus also aiding in the formulating of new theories.

Theoretical solutions regarding in qualitative research can be described as conducting research in an objective manner, in the form of what individuals think about certain topics. Barnham (2015) describes this opposed to qualitative research as a method to understand what individuals “really” think. These types of perceptions allow the researchers to dwell in deeper into the subject layers, thus enabling to gather critical information regarding to the research topic. Smith & McGannon (2017) argue that qualitative research demands the researcher to develop and judge rigor from the basis of data analysis in progressive manner compared to preserving some of the issues regarding it in the past. Barnham (2015) reiterates that in academic world qualitative research has been criticized often for lacking the bridge between the data collection and the interpretation of the data. However, this gap ceases to exist when the researches can make the distinction between treating the analysis as a continuation process of data collection in the research opposed to separating them as different entities.



### 3.3 Method of analysis

The analysis method for the qualitative research was done by inductive reasoning by applying the Gioia methodology. The objective in using this method is to pinpoint and compile concepts and themes that can be later transcribed into new theories. Given that there is a singular method of data collection, the presentation and analysis of the data is of utmost importance. After the interviews were concluded, they were transcribed and categorized to each question with additional comments if they were attained during the interview. The interviews were carefully analysed to find similarities and dissimilarities between the data to construct themes, as well as possible discrepancies. Given that the uncertainty subject from strategic perspective tends to be heavily industry-specific and the data set involves angles from different industries, a systematic approach in analysis method was needed to provide needed rigour in the research.

Based on the data collected, the secondary object was to cross-examine and analyse the results to the previously conducted research in the matter of risks and uncertainties that were displayed on the literature review. Finding possible links between the data and previous research provides a certain extent of verification for the data; however, dissimilarities opposing the previous research can arise as well. The Gioia methodology follows a very systematic pattern to data analysis, where first-order codes and second-order themes are constructed, which are then built into a data structure that acts as a backbone for the research. Even with the critical importance of the data structure, Denny Gioia, the architect behind the methodology, explains that it's merely a static photograph of an unavoidably dynamic phenomenon (Gehman, Glaser, Eisenhardt, Gioia, Langley & Corley, 2018.).

Gioia, Corley & Hamilton (2013) explain more in-depth regarding the strategy in constructing the data structure and moving beyond in the analysis by remarking the part in being a pivotal moment where the researchers move toward thinking and analysing the data theoretically, moving from the methodological thinking. Moving forward from the data structure, the Gioia methodology follows a strong pattern in moving from data structure to grounded theory to display the findings of research. Setting a narrative story in the findings section on the support of the transparent data that moves toward new concept development and theoretical revelation that is completed with an attentive display of evidence.

Gioia's idiosyncratic methodology, which has a strong focus on rigorous systematic approach on the data analysis with the aim to build new concepts and theories, fits the contents and purpose of this study perfectly. The below figure displays the data structure of the study.

1<sup>st</sup> Order Concepts

2<sup>nd</sup> Order Themes

Aggregate Dimensions

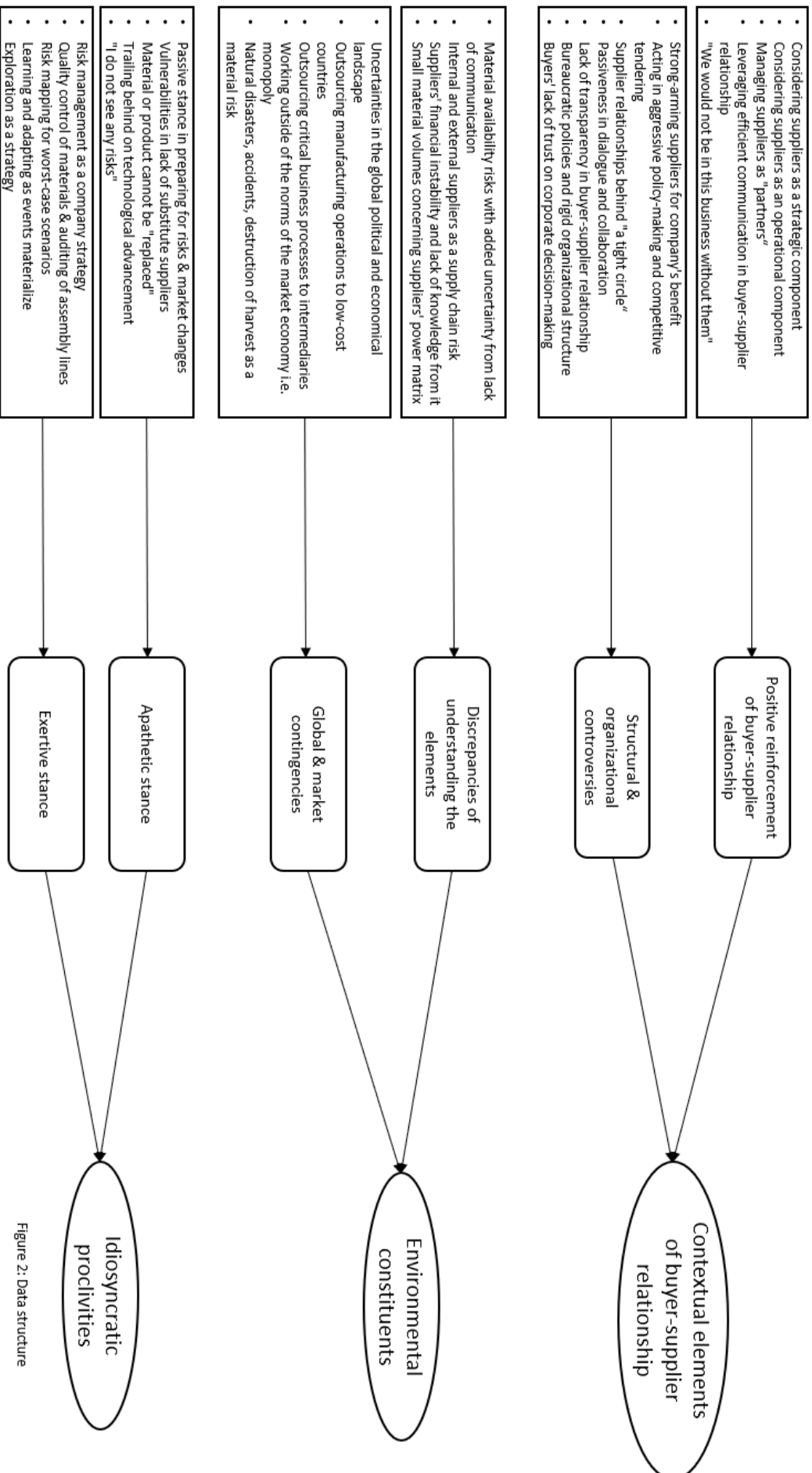


Figure 2.: Data structure

## 4 RESEARCH FINDINGS

### 4.1 Professionals' field of work

Gathering insight on the tasks and duties of the procurement professionals was the first step in the interviews in order to understand the working environment of each individual and to analyse correlations between uncertainties in their work to previous research. Additionally, a generalised question was asked regarding the professionals' key partners geographical location. Globalisation of the supply chain brings modern risks into question, which is important to analyse in the data findings.

Interviewees were asked about their daily and weekly duties, and whether they consist of more strategic or operational work. Especially strategic work is important to the subject of the research, but operational work can be categorized into strategic segments.

"I have very much both strategic and operative tasks. In the operative side it's focussing on material availability, managerial duty on my team as well as interfering with problematic issues. Quite often there are cases where we must escalate things toward suppliers and so on. [Strategic tasks] are primarily focused on cost saving projects with suppliers. Additionally, we brainstorm with the team about our cost savings and how we can develop them."

(Professional 3)

"Both. Traditional work is demand calculation and then doing orders based on that information, purely operational work. Also, procurement proposals that come in. Strategic tasks go well into the upcoming year, mainly due to the outraging delivery times on materials such as capacitors and semiconductors. In certain materials we have two suppliers, but only one of them is approved by the company which leads to complex work tasks. In some purchases, the time in planning and preparation takes months or even over a year, which is why you cannot categorise it as operational work."

(Professional 5)

All respondents reflected in their answers that their work tasks mainly consisted of both strategic and operational work. Those with more years of expertise in the field and with a higher job title tended to have more strategic duties than operational. Two individuals stated that operational procurement tasks must be learned in order to be able to perform tasks of strategic importance. It could be

argued that operational experience and knowledge from procurement is necessary to understand the larger picture in supply chain management. Without this experience, decision-making of strategic importance becomes problematic. Professional 2 explained that versatile experience and skills are required from the procurement professionals because of the complex nature of supply chains. Broader experience in varied tasks means that professionals can adapt faster and better to operational environment and thus, proactively recognise procedures and how to advance them.

Secondly, the interviewees were questioned about their key strategic suppliers and their geographical location. Key strategic partner is described as a partner where the largest volume is bought, and/or their supplied materials are of key importance to ensuring day-to-day business. Notably, there were a lot of variance in the countries; however, Finland's largest import countries were mentioned repeatedly. The acumen behind asking the interviewees about their key suppliers was to understand and connect if their global supply chain is interlinked to their risks or uncertainties.

“Our relationships with the two primary suppliers [here] are our strategic suppliers. These suppliers are included into a very viable set of suppliers in our factory here in Finland but also in the EMEA category.”  
(Professional 2)

“In terms of strategic importance, the suppliers come from USA and in the terms of volume, they come from China.”  
(Professional 6)

Interviewees approached their key suppliers in terms of strategic importance to their core business or the sheer volume in supply quantity they provide for the companies. Strategic importance of key suppliers is of complex nature, mainly stemming from the side that their supply cannot be substituted to other suppliers efficiently. Especially the interviewees from electrical engineering pinpointed that their strategic partners enable the continuity of their business. In terms of Make to Order (MTO) -manufacturing, where materials are assembled or manufactured only at the time of a customer's order, usually abiding strict blueprints by the customer, can be perceived as a difficult process to replicate.

The geographical location of key partners is vital to understand and analyze, given that in the case of supply chain disruption, the delayed delivery times and substitutes are connected to the location of the supply. The below graph displays the key strategic partners mentioned by the interviewees.

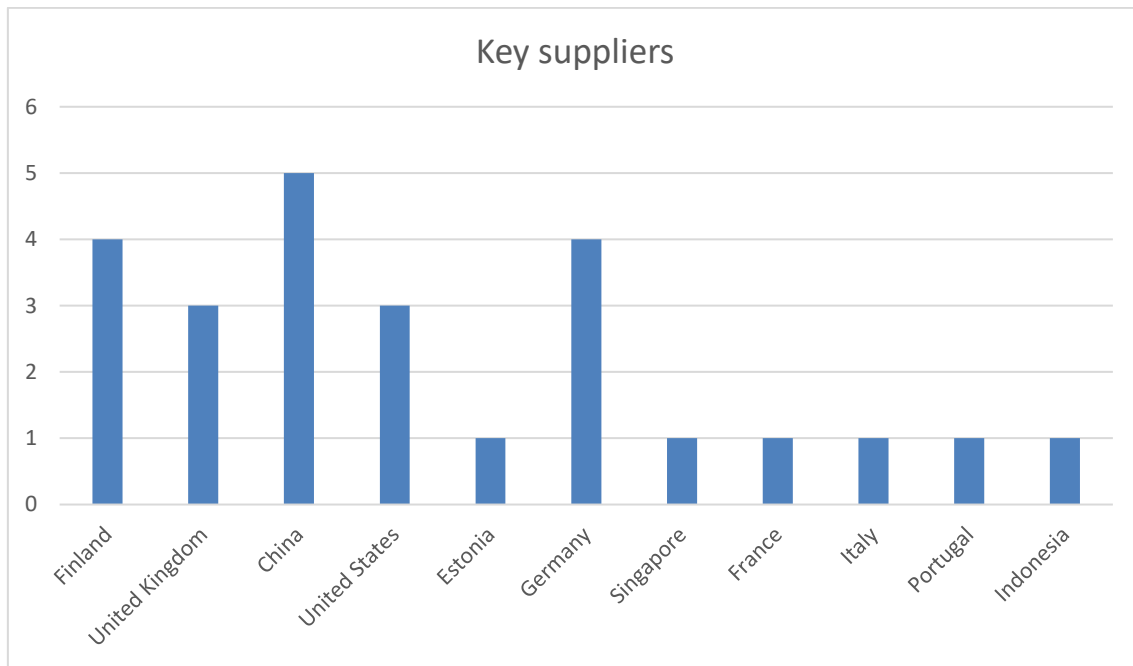


Figure 3: Key suppliers of interviewees

## 4.2 Supplier relationships and challenges

Moving forward from the generalized part of the interview, the interviewees were asked questions regarding their perception about the importance of their relationships toward their suppliers and the challenges they have faced with their relationships and business operations. The relationship perspective between the buyer and the supplier is noteworthy mainly due to the power-matrix conundrum that resides in every relationship. Another meaningful perspective is to interpret the fashion the professionals talk about concerning their suppliers, and how they evaluate their suppliers' importance to their business.

“[Supplier relationships are] very important, you cannot conduct business in this industry without stable and good relationships with the suppliers. Overall even to start in this business you need relationships, practically the circles are very small and tight. Outsiders are not welcome without a recommendation or if they are not known to the supplier. If you have an idea and think that you will execute it and establish contact – they will show you the door, do not come back. They are very important in this industry.”  
(Professional 1)

“I would describe them to be extremely important. Generally speaking, procurement brings profitability if the company is even slightly longer withstanding. Procurement has a tremendous part in profitability and sup-

plier relations. Procurement is going in that direction that we are discussing about partners, opposed to suppliers. It describes much about the change of thought that has arrived [in procurement]. Suppliers are taken into cooperation already in the planning phase to manage products. We ourselves do not need to have that know-how on the products, rather we try to find partners that already have that know-how and can develop certain products.”

(Professional 4)

“I think that they are very important. You cannot work in sourcing without good relationship toward your suppliers.”

(Professional 10)

Unsurprisingly, all respondents heavily reinforced the concept that supplier relationships are a pivotal factor when working in procurement as well as the profitability of the company. Two respondents who are working around a monopoly in Finland explained that without a healthy relationship toward their partners, their business would not be able to operate. Outside of the normal boundaries of a market economy, this type of environment comes with imminent challenges and obstacles. Procurement professionals who worked in abnormal market environment made the case that strong supply chain relationships are a predicament for succeeding in their respected business. Siagan et al. (2018) research argued that collaborative effort to further supply chain is a necessity for advancing mutually benefiting qualifications and top-level management’s participation is needed to achieve these improvements. The needed collaborative effort to strengthen the supply chains of the companies was clearly noticed in the data; however, the pathway there was not distinctive. Professionals wanted the change to come from the organizational level – to further their progressive means to achieve a more rigorous collaborative design in their supply chain. Mainly by changing how they approach their suppliers and how they select the supplier of strategic importance. Centralization of suppliers could aid their management capability to oversee their partners, which could lessen the resources required from the company.

Professional 4 made an intriguing argument regarding the level change in procurement on how suppliers are seen and approached by the business in general, with the shift of treating them as partners, opposed to mere suppliers. When the interviewee was asked to elaborate on the point, he stated the following:

“It tells much because I have worked 15 years in procurement and in the beginning of 2000’s the mindset [of companies] was very much on squeezing, changing and the competitive tendering of suppliers. Currently we are very much shifting towards cooperation with suppliers. Procurement’s most important issue is to find the correct partner to work with.”

This statement provides insight on how larger companies are choosing to treat and approach their suppliers in modern supply chain management. Suppliers are not only 'objects' to control, change and pressure, but strategic partners where reciprocity is sought alongside respected exchanges.

Secondly, the interviewees were asked what kind of challenges they perceive toward their suppliers. Reasoning behind this inquiry was to receive a better understanding of the detailed structure of their relationships alongside their intricacies.

“Challenges with my suppliers are mostly revolving around the cost savings - achieving and enrolling them. I have noticed a passive stance on the suppliers to take initiative, put suggestions on the table and create possibilities for savings. It is currently very much eccentric to our company and my activities. If we want to achieve them, I must initiate them forward. I must suggest product relocation. This is what I have considered as the biggest challenge. Not so much on the environment where we must act or the capabilities of our suppliers. What I would see is the cost side, which is our primary goal in matching our objectives. Additionally, how the suppliers view our company and their strategy as well as future views, which is restricted.”

(Professional 2)

“I would say that we have challenges with the cultural and language aspects with our suppliers. Especially with partners in Spain and Italy, we usually have to have a third party there as an export specialist to consult these cases. With the language barriers there can be misunderstandings easily, which is why it is good to have a third party there present. These can also provide challenges, when there are more people involved with the negotiations. Cultural differences result in misunderstandings with the suppliers, but they are mainly accidental.”

(Professional 7)

“Mostly [we have faced] basic issues, especially with smaller suppliers who do not communicate properly in case of a delivery time being prolonged. Internal suppliers have been the most challenging, not sure if it comes from the fact that they do not have the same level of customer relationships toward us as our external partners.”

(Professional 9)

Evident in the answers given by the professionals is the power-matrix relationship between the buyer and the supplier, theorized by Cox (2006). It can be a force of greater good in the correct circumstances, but it can also hinder the proficiency and profitability of the company by different approaches. If a supplier or a buyer have preeminent resources and power over their partner, it can result in problematic situations for both parties. Leveraging the power buyers have over

suppliers must be done accordingly to not damage their existing relationship, but rather work in collaborative manner. Collaboration and transparency are a key issue in this section additionally, which requires careful tending by the procurement professionals. Practically combating the challenges is a harder task, where pitfalls exist in the organizational environment. Knoppen et al. (2015) concluded that lack of scale and scope as well as unaligned incentives make it difficult to transform supply chain strategy to real life environment. Organizations must be more aware on the pitfalls and barriers that affect their strategic implementation of their supply chain processes. In practice, this can relate to contract and category management, which must be conducted with the practical essence in mind.

Professional 5 recognized an environment in answering this question regarding the challenges that surface when the buyer i.e. your company starts to dictate policies and strongarm suppliers.

“Yes, it has to be that both parties involved benefit from the operation. You cannot go down that road which this company is going, where we start to dictate everything because we are high and mighty. \*imitates a dropping sound\* You will take the hit for it. When a partnering relationship with a supplier ends, you still need to be in good terms with your ex-partners. Because one day might come that you need a certain material from that specific supplier and there is no other alternative. It would be embarrassing to start calling their call centre and trying to re-establish contact.”

(Professional 5)

Primarily, the interviewees mentioned challenges with suppliers consisting of communication issues with shipments or lack of involvement in cost saving projects. Communication problems and shortcomings in understanding your partner happen frequently in procurement. An added layer of transparency is a vital element in global supply chains. Professional 7 was the only respondent who pinpointed the cultural and language challenges which can occur with partners from foreign cultures, which importance is augmented from their industry-specific characteristics.

### 4.3 Risks and uncertainties

Moving forward to the most central part of the research, here the mission was to understand what kind of risks and uncertainties professionals face in their duties in procurement and supply chain management alongside the possible precautions and strategies the company has in place to combat these risks. This section provides the keyframe for answering the research question of the study, which is



why it was imperative to inquire the right type of questions from the professionals. Interviewees were first asked to describe what kind of uncertainties or risk they face in their supply chains and procurement.

“Risks are that we cannot progress fast enough these changes that impact our future, we should be much more focused on. For example, e-procurement, where we are very much trailing behind on. Supporting these systems in procurement, so I would say these two things. As an environment, Brexit will have an influence but our spending there is rather minimal. From the global perspective, the change won't impact our industry that heavily. There is enough metal and there are plenty of other options [on suppliers]. I don't see that much risk there, but rather in the fast transitions on where we should be currently.”

(Professional 2)

“Risks and uncertainties are plentiful. In risks, material availability and how we can ensure that our key suppliers have the capacity to match our demand. Because we do not view it that openly that we would see what they have. If we talk about our local suppliers, they also have other large customers and they could start buying larger volumes, resulting in our shipments taking a hit. Regarding this, [the issue of] our visibility to our suppliers' suppliers. For example, we do not really have this in any way and we have to trust that the suppliers are proactive and inform us in time if they have material issues that will affect us. That we have time to act upon, so this type of visibility to our supplier field is completely lacking, which of course is a risk. Secondly, we have a lot of smaller suppliers. Even globally we have too many suppliers, which are hard to oversee. We see communication issues and we will have a strategy in place to radically to downsize the number of suppliers. However, locally there is the issue that there are suppliers that are our only option e.g. for a specific component. There is of course the risk that our business to them is not that great, and they could feel that we are not viable business for them which makes problems come our way. Specifically, the guidelines of our global corporation such as terms of payment etc. could prove to be too much burden for these smaller suppliers. This is a definitely a big risk, that we are dependable on these suppliers.”

(Professional 3)

Uncertainties relating to rigid corporate structure, lack of transparent visibility and global supply chain dilemmas can be distinguished. Populous portfolio of different suppliers can extent into problems regarding the actual management of suppliers. It becomes increasingly difficult to conduct cost saving projects among other process advancement projects when the number of suppliers is high. These uncertainties are firmly linked to the more traditional elements of supply chain management and procurement – organizational issues, material and supplier

availability and the buyer-supplier relationships. The competitive disruption and disposition that can be gathered from here correlates with Lambert et al. (2000) study where supply chains restructure according to the interactions of the company. Global supply chains from the perspective of uncertainties caused by economic impact or disruption is of complex nature that is harder to approach. Other interviewees explained more thoroughly on how political and economic crises affect their core business.

“We have thought about Brexit, but personally I think it won’t have any effect. The industry is specific, and our suppliers from Scotland are specific. The business is rather global as well as lucrative, so even if there could be some tariffs or added taxations, I do not believe it will influence this type of business. For Scotland, the business is large, so there will be some solutions if things look bad.”

(Professional 1)

“From the supply chain uncertainty, I would say that USA-China economical friction, which also effects here. Raw materials are being produced somewhere far away from Europe, which is why it creates uncertainty. Good example is that Pakistan and India had a quarrel a month ago and it immediately affected the transport of goods. Sea freight channels had one-week longer delivery times because they had to circle around. Uncertainty of the markets, the component bubbles and how large it is. Correspondingly when lead and copper went up in price, it was basically like playing games. From the perspective of this factory, one uncertainty is our eastern neighbour, Russia. If their sanctions would be lifted, this house would be working around the clock.”

(Professional 5)

“Brexit is currently a challenging factor for us. We have one key supplier who has their primary warehousing in the United Kingdom. Even if the products would come outside of UK, they are still in storage there. Even though a product would come outside of Europe, the importer has to be within Europe. In the end of March where it seemed that hard Brexit would occur, we had to rationalize with the etiquettes of our products because they could have not been from UK. We had to ensure our deliveries and take more storage on products. We had to guarantee the continuance of products even with hard Brexit when it seemed that no deal was going to take place. Our company and our supplier conducted a Brexit strategy, a plan in case of a hard Brexit.”

(Professional 7)

Brexit was a problematic issue for more than couple of the companies, mainly stemming from the factor that three interviewees named a supplier from United

Kingdom as their key partner. Professional 1 explained that mostly all of their suppliers originate from Scotland, but in their perspective, there is nothing to be alarmed on, based on the reasoning that the industry itself is massive and shipments will still keep rolling out as they have done in the past. Other professionals were more concerned about the possible repercussions, especially in the case of a hard Brexit. Political ambiguity in emerging markets where manufacturing of materials is outsourced can create risks in material availability that makes it difficult to have procedures in place. Given that the study scope revolves around the uncertainties and risks on an international level, the variance of risks is vast. In an international environment there are stakeholders in various parts of the supply chain and managing the overlapping in supply chain management and strategic management can be troublesome. Ketchen et al. (2004) argue that organizations and managers must implement and develop cross-organizational strategies to match the multidisciplinary components of the supply chain. The data of this study supports this factor, especially when considering how fragmented the unified strategic approach by the organizations is with their supply chain. Consolidating efforts on a strategic level would make the organizations more flexible to undertake not-yet materialized uncertainties in the market, which would benefit the overall performance of the organization.

Secondly, the interviewees were asked if their companies have any precautions or strategies in place to alleviate risks or uncertainties in their supply chains. Furthermore, if these strategies have proven useful or if something else could be done to better their proactiveness on the matter.

“We have done risk mapping, which was a direct result of auditing. From category management we have a strategy in place that maps the possible substitute suppliers. The work is happening around-the-clock, category management is screening options both externally and internally. Also, the possibility of could we produce something in-house or derive it from other sources – balancing the effort. Risk management is being taken care of. Recently we started using a substitute supplier to feed a small portion of our business in certain materials, that could be taken as a precaution in a worst-case scenario.”

(Professional 2)

“We do have a plan in place. For example, we will check the financial report of our suppliers every quarter and analyses if they have any potential financial risk that might also damage our reputation. Secondly, we rank our partners/suppliers based on how important they are to us. Although our American partner is not the biggest supplier by volume, they are a very important strategic partner and we have been doing business with them for years. When a partner is ranked tier one; we do more collaboration with them and do more support with them. If the company is ranked bottom tier, we do limited amount of support with them opposed to the tier one partners.”

(Professional 6)

Preparedness in the face of uncertainties or risks by having strategies or precautions in place varied excessively between the respondents. Representatives from smaller companies did not really have any policies in place or could not properly estimate the effectiveness of their strategies. Categorizing suppliers based on their strategic importance to the company as well as deciding on how they are coordinated is a resource-based approach, that has been previously identified by Lambert et al. (2000). Two companies in the sample size have outsourced some parts of their logistics or purchasing to external partners, which decreases their responsibility in risk management. Respondents from larger companies elaborated that they have risk management in place on a corporate and company level with mixing results. Inventory control management and optimization was another mentioned precaution by the professionals, which corresponds to earlier research done on procurement strategies (Ogbo et al., 2014; Bragg, 2015.).

To ensure that companies can commit their supply chain strategies on a practical level, there needs to be a process in place that implements them in action. Lambert et al. (2000) determined that when designing the supply chain process integration, it must be done according to the effectiveness of the complete supply chain. Achieving this cross-functional feat is related to the organization's willingness to change. Normann et al. (2004) recommendations for risk management places a setting where risks in supply chain are conducted in a trade-off analysis, where the aim is to find proficient levels of risk and how to prevent them. From the data gathered, these aspects are not implemented in the supply chain. However, the risk management is rather adaptable, where change in process comes when the supply chain is aggravated through an impending risk. Theorizing what element of strategy could help the companies in contending these risks when they occur is complicated. Proactiveness in risk mapping alongside reviewing past risk cases in supply chains could lead to betterment in integrating strategy to reality.

Finally, the interviewees were asked to describe a case or an event where an uncertainty or risk in supply chains resulted in damages to the business, e.g. loss of revenue, damage to the brand image etc.

“We moved mechanic production to another factory location of our supplier. We noticed that their production line was defective in the terms of quality. Risks in material quality came about, which we are tackling currently. This is only something we noticed afterwards. Everything seemed to be in order, but only when the quality of the materials started to lack, we started investigating where the problem was. We started doing auditing immediately. Learning from this case, I would choose a supplier which would have a better-quality environment per se, where you could identify that the quality of materials will be enough. Not going towards to the second choice of the supplier, e.g. in a lower-cost country. Then thinking if

we would even need to change the supplier. Not pushing the situation into a single point, rather scattering the business activity. Choosing an option based on quality and resources, which would diminish the risk. Equipment, machinery and resources are very critical when changes are required. Strategically thinking, weighing options clearly and maybe selecting a different site for this case.

(Professional 2)

“One time there was a post in a magazine describing that our product was the best. What happened was that it run out from all the stores from the surge of popularity. And you must guarantee certain level of shipments, especially because our customer is quite challenging, and you can lose business if you cannot guarantee enough shipments. Long supply breaks bring us pressure in trying to guarantee enough supply and deliveries for our customers. Normally this product was supply x, but with the surge of demand by the popularity and attention for the product we had to do quick decisions. We flew the product to Finland outside of Europe, which was challenging. This was a positive problem of course; we wouldn't necessarily lose anything except the possibility of more product flow. Generally, we have more cases where the products have been ruined by mold or otherwise unfit to sale, which tend to be handled with the delivery companies. Usually we have smoothly resolved these issues. Mainly the difficulties are with the longer delivery times and the man hours we have to use in trying to understand who is responsible of a shipment gone wrong.”

(Professional 7)

“We had a large order for an important customer. The sales team didn't inform the purchasing department in advance and the materials we needed came from overseas with a long delivery time. We couldn't get the extra material in time which resulted in longer delivery times for our customer. I think better communication is needed between departments without added bureaucracy. Information flow between departments is really important.”

(Professional 10)

Multitude of case examples were provided by interviewees in this section, where root causes for events situated from numerous reasons. Primarily, it can be identified that damages happened to the business based on company decision-making, supplier or supply chain uncertainty or lack of transparent communication between partners. Outsourcing manufacturing processes of materials to lower-cost countries can result in differing outcomes. Nielsen et al. (2018) argued that outsourcing procurement operations or the use of intermediaries can lead to damaging the company's profitability, which can be identified from some of the respondents' description of events and results. Couple of respondents argued that when the company is searching for cost savings by single material unit, the

total cost (variable and fixed cost) can culminate into a much higher sum. Furthermore, increased issues in material quality and shipment among other things can elevate the total cost of the material.

Given how intricate supply chain processes are and how incremental procurement is for companies, there is no better way to analyze risks and uncertainties than previous cases of mishandling. In theory, many concepts and strategies in supply chain management sound effective, yet they do not have any practical implications when placed in use. Knoppen et al. (2015) argued that companies must heighten their dynamic capabilities toward establishing their preparedness for continuous and unpredictable change. In the research data there were two standpoints that could be categorized into apathetic and exertive stance in organizations' readiness for uncertainties. Apathetic stance was reactive to already materialized risks or belittled the effect of possible risks. Exertive stance was proactive in risk management as well as learning from past mistakes. Both categories could implement dynamic capabilities in risk management and mapping where priority would be flexibility in their approach and to continuously outline the required procedures for change. The data suggests that there are considerable gaps in the way the companies conduct risk management, but approaches made differ. Transitions in risk management are achieved better in some companies than other.

#### 4.4 Future perspective

To conclude the interview, the professionals were asked two questions regarding a futuristic perspective of supply chain. There is a limited amount of research done on the future of supply chains, creating an ideal situation to ask directly from the professionals themselves. Moreover, it enabled to understand their company's perspective on their lack or readiness toward technological advancement in supply chains. This can be contextualized into risks and uncertainties of the study. Firstly, the interviewees were questioned on their viewpoint on how supply chains will evolve, what it meant for their company and what technologies will play a factor.

"I would say that we are in the fast lane for electronic shape, which will focus on lessening the routine-like work where the focus can shift towards more creative, strategic and added value activities. These require that tools support this way of transforming. I would see this as a remarkable change in the coming years. Shifting away from circumlocution of Excel files in procurement must stop, it is not current day. It is a swish of history, but we are doing it currently in the year of 2019. Additionally, I would see that product development time (time-to-market) must gradually take less time. Simply, it won't work in the future that products come to the market with a long-time span. Markets are extremely rapid, which would mean that a

product launch could already come too late. Changes have happened with the increase of competition, where it is increasingly important to launch a product to the market fast. We need to strive towards lessening the time that additional processes take, not eliminate them, but shorten them. In this company, we have a strong investment in the left side of these processes, the early involvement part. Productionalizing needs to have the product mature, without any additional changes no longer needed. We do not invest in this, rather conducting the final product when it is already productionalized. This is currently a horrendously wrong way of doing things. It needs to be clear strategic action from the company, understanding what we need to do and executing it accordingly. Currently, it is so fragmented in our factory and in our corporation, where it would almost seem like an impossible task to pull through.”

(Professional 2)

“I think forecasting will provide more challenges in the future, you cannot really have a crystal ball where you know what is going to happen and how. Environmental and energy factors will probably have some impact, but I do not see it happening in the next couple of years.”

(Professional 7)

Technology-wise, automation alongside IoT and AI were mentioned as the main drivers toward supply chain evolution. Interviewees had a consensus on relative approach toward the issue that when new technologies emerge, and supply chains evolve that it also brings never-before-seen challenges and risks. Depending on how flexible (or non-flexible) and prepared the company is to overhaul their old processes and adapting new ones can be the spiral factor on how well they can acclimate in the face of these challenges. Some interviewees elaborated more on the barriers of their corporate culture or organizational structure in achieving a more modernized supply chain.

“I see challenges based on the perspective of this company. Conservative culture where there is lack of courage in taking the first leap in taking these new technologies to action, whereas the investment will not be made because currently everything works okay. This is what many large global corporations have, they are not agile enough to take control of new technologies and put them to use. The need to learn something new in using and enrolling these technologies. I think it will be easier for the younger generation to take these technologies in use, being digital natives who are used from a small child in using different technologies, whereas it is harder for the older generation. I wouldn't say it's purely an age question, but partially. What I previously mentioned, a challenge to reach those objectives would require sharing quite much information between suppliers and customers. There would be a large barrier on what type of information you would be willing to share and how in-depth you would be ready to

tell these suppliers e.g. about your current situation. Which would be a big challenge. Even in this company, where the relationship is rather traditional buyer-seller relationship. We tell them enough that we see fit that they are still able to serve our needs in a level where we want. Appositively, they only tell what we need to know – the relevant information. This type of openness would require a lot of changes from the firms.”  
(Professional 3)

“I think the challenges are mainly regarding the actual implementation of these processes. Usually there are always added problems and issues with any new technology or automation. Sometimes companies leap in without actually thinking what will result from their decision.”  
(Professional 10)

New technology such as IoT or AI connected to the fourth industrial revolution might seem as lucrative investments on companies; however, professionals were skeptical about the possible barriers regarding their implementation. Defining the risks before they even exist is a problematic and complex task. Conservative corporate culture of rigid organizational structure can hinder the ability of the company to successfully implement these technologies in an efficient manner. Professionals representing smaller companies could not precisely identify barriers in technological advancement, rather explaining that when their company and their position in the market matures, they will react accordingly.

Professional 3 made an intriguing point toward implementing these new technologies and the overall approach to change, by stating that for the younger generation, i.e. younger professionals in procurement, it will be easier to implement and take these technologies to use opposed to the current generation of professionals. It could be a provocative theory to declare that with the impending generation swap of procurement professionals, it would be less complicated in achieving the usage of these new technologies. This could be abridged to Luzzini et al. (2015) argument that purchasing knowledge is a precondition toward successful supplier collaboration and strategic sourcing. However, there are additional challenges that face the implementation of these technologies. Technologies such as automation and IoT require a certain level of information transparency that might become problematic between the buyer and supplier. The question arises that which is the amount of information the partners are willing to share within one another and how in-depth and sensitive this information could be. Taking this argument even one step further: in a fully automated supply chain process, that stems from e.g. AI, automation and IoT, who is liable for possible damages? This perspective requires further research and could be possibly only explored when this type of environment emerges.



## 5 DISCUSSION

### 5.1 Contributions to research

This section concludes the academic contributions to research made in this study. Firstly, the contributions to supply chain management and strategic procurement research are presented, following with the contributions to exploration and exploitation research from the viewpoint of procurement professionals.

#### 5.1.1 Contributions to SCM research

The objective of this research was to find understanding on how companies and procurement professionals act against the uncertainties and risks in the supply chain management as well as to theorize if these already implemented precautions could be improved. The study itself consisted of diverse topics in supply chain management, from supplier relationships to future implications.

The results of the study show that companies have a set of standards in place adjacent to risks in the environment they conduct business, which manifest with varying results. However, toward the multitude of uncertainties regarding their supply chain processes, they tend to be more passive concerning risks that have not yet materialized. It can be theorized that companies have an adaptable approach toward these uncertainties, where they only start providing procedures and precautions in place during or after the damage has ensued. The answers gathered from the procurement professionals suggest that their description of the “unknown” risks regarding their supply chain can be described as a static approach.

Previous research focusing on the effects of proper and robust strategic procurement have concluded that it correlates strongly with company's profitability - Masudin et al. (2018) furthered this thought by explaining that the surrounding functions to procurement also support the profitability of the company. The results of this study also support this theory from the perspective of the procurement professionals. Most of the correspondents agreed that procurement plays considerable part in the strategy of the company and acts as a backbone of their respectable business. Evolvement of supply chain processes with the aid of new technology had attentive responses in the data set; however, their approached to the manner was relatively insignificant, mostly due to conservative corporate culture, market reasons or scarce resources of the company.

The results depicting on how supply chain processes could be progressed to better companies' ability to plan and prepare for these risks were deemed inconclusive. Nonetheless, it can be argued from the results that rigidity in organizational structure and culture obstructs the competence of these companies to proactively progress their strategies and precautions toward risks. Poor information flow or lack of information flow entirely was identified as a hinderance

within internal or external partners. Lambert et al. (2000) research pinpoints organizational structure as an issue in supply chain management alongside the power and leadership structure. Improper exercise of power by leaders or lack of exercising power efficiently in supply chains affects engagement level of other stakeholders in the channel, i.e. procurement professionals. This thought could be seen throughout the study, where few procurement professionals were unapproving of the actions by their leaders or the corporate.

Professionals interviewed for this study represented a wide range of industries, from which all oversaw international business in some matter and global supply chain partners. Risks and uncertainties relating to the global environment were present in all cases – political and economic risks such as Brexit or United States vs. China friction were commonly brought into the discussion by the procurement professionals. Although these uncertainties did not bring onto any gung-ho approaches with their procurement strategy, companies were unequivocally aware of possible repercussions in worst-case scenarios.

The acknowledgements and theories displayed by the results of this study correlate with the ongoing modern period of supply chain management portrayed by Swanson et al. (2018), where new theories and evolution of processes are currently happening inside organisations and within a global scale.

### **5.1.2 Contributions to exploration and exploitation research**

The exploitation and exploration factors are highly present in this study, even though the actual research premises were focused on strategic procurement. The results show that procurement professionals and their organizations are firmly enforcing their exploitation activities with a trade-off in place. This is most evident when approaching the discussion of their supplier portfolios – the themes can be identified in refining, capabilities, application and execution, which are presented in Tokman et al. (2007) study. The controversy of the research results considers the approach procurement professionals have on their supplier repetition. Chiu (2014) argues that supplier repetition compels the complexity of knowledge and hinders the ability to explore new information. The procurement professionals see opportunities in this regard – not only to refine their existing partnerships but to explore new possibilities.

Even though the ambidexterity of exploration and exploitation is not necessarily fully achieved, the strive to merge them in their efforts to maximize their competence exists vividly. Results further indicate that exploration of possible new undertaking in bettering their supply chain management operations exist, but the experientialism and adaptability is lacking. Primarily, this facilitates in the structural and behaviour mechanisms of the organization which handicaps their ability to achieve ambidexterity.

## 5.2 Managerial implications

This segment outlines the managerial implications of the study, specifically, on what managers and executive personnel should be aware of when conducting decision-making regarding their procurement and supply chain management operations. Secondly, managerial implications on exploration and exploitation are touched with the frame of reference in supply chains.

### 5.2.1 Managerial implications to SCM

The study highlights the necessity of competent information flow within internal partners of the company and external suppliers and intermediate partners. Preparation for uncertainties and risk, which will affect the company's capabilities and performance, must be dealt directly. Internally, decision-making power normally resides in couple of people, usually senior managers or corporate executives. The people in charge with the decision-making power must be aware of the possible implications their actions have on the entirety of their supply chain. Furthermore, decisions on outsourcing or intermediaries based on cost-saving must be calculated and accounted altogether. Approaching single material costs can prove detrimental either on total cost of material or the quality of material, increasing working hours spent. Internal communication and information flow between departments must be put under a spotlight, in order to improve the capabilities of procurement professionals as well as to ensure the efficiency of the supply chain. Meagre blunders in communication can cause unfortunate controversies in almost any operational part of the supply chain, given the small margin of error when relaying important information.

From the internal perspective of the company, organizational structure and culture also requires scrutiny. Rigid organizational structure stemming from conservative or bureaucratic culture can lead the company unable to transform according to the evolvement of supply chains and its modern risks. Flexible and lean way of handling elements in industrial change is required by companies to maximize their proficiency in the everchanging global landscape. As a suggestion, senior managers should listen more closely on what their procurement professionals have to say regarding their supply chains and its deficiencies. Given that these deficiencies can be identified on the root-levels of operational procurement, it makes sense to have an effort to understand these issues on a deeper level. Moreover, sometimes barriers exist either in the market or industry level that prohibit the preferred actions to encounter these uncertainties. Limited access to resources can also be combined to this regard, which can obligate the company to make do what they have.

Toward a company's external partners, the same anecdotes remain. Inadequate information flow with suppliers or collaboration partners can lead to substantial problems. Reoccurring theme in the study was the desired transparency between the buyer and the supplier. In practice, this is not as easily accomplished

as assumed. There is a necessary action on both partners making the initial investment in improving transparency, stemming either from technological advancement or exclusively on information sharing.

### **5.2.2 Managerial implications on exploration and exploitation**

Managers involved with supply chain management or procurement should be more aware of the contingencies regarding exploration and exploitation. The first step would be to understand and integrate the antecedents of organizational ambidexterity. Specifically, managers should strive toward a dynamic strategy that would incorporate exploration and exploitation – practically, this could be achieved through managing different phases and circulating them based on underlying environmental conditions, as first proposed by Nickerson & Zengel (2002). Furthermore, the results of the study show that managers and senior procurement professionals understand the importance to explore new capabilities through discovery, investigation and innovativeness, but they have an underlying reactive approach to the manner. The trade-off between exploration and exploitation exists, which is mostly manifested in the decision-making conducted by managers. Understanding the attributes of the trade-off decisions is a prerequisite for managers succeeding in their implementation of supply chain strategies.

The elemental factors of environment must be considered that not only affect organization's operational and strategic proficiency, but the exploration and exploitation of new and old. In the grand scheme of everything, the managers and decision-makers of organizations are acting toward multiple uncertainties even with the most careful preparation and planning. This functional field could be described as the theatre of unknown, where flexibility is of vital essence.

## **5.3 Study limitations and further research**

This study consisted of semi-structured interviews as the primary data set. The interviews were conducted face-to-face which augmented the interactivity in the data collection. However, most of the interviewees were old acquaintances of the author, which can eliminate some professional attributes in the qualitative method. Nonetheless, the personal connection to interviewees enhanced the openness of participants, which was seen in the results of the study. Some participants shed light on distressing topics regarding their work, which could have been more difficult to achieve otherwise.

The most substantial limitation of this study is the sample size of only 10 procurement professionals, which could be a restricting factor when conducting generalized theories from the data set. However, the industries that the procurement professionals represented was diverse, even though there was a slight sway toward mechanical and technical fields alongside wholesale operations. It could

be argued that this fact made the data results richer, since more perspectives from different environments in procurement were existing.

Another limitation is the discrepancy on the experience levels of interviewees. Four participants were hardened procurement veterans, when the other six participants in their experience level could be categorized as beginners or intermediates. The differences in these results can be identified in the study, those with longer careers in procurement could give profound answers regarding the larger picture, whereas those with less experience were more specific on their answers. However, the objective of the study was to include a diverse viewpoint on the uncertainties and risks in procurement and a diverse experience level of participants gave the opportunities to make comparisons and detailed assumptions.

Another limitation is the angle on exploration and exploitation, which acts as an extension of the research. Profound approach on the subject would have produced a more in-depth analysis on how organizations and supply chain managers handle exploration and exploitation, perhaps it could have been added into the data set in the interviews. Nevertheless, it was relatively straightforward to gather the subjects and themes from the data set that had resemblance in exploration and exploitation.

Further research could explore the uncertainty and risks factors from an industry-specific level, which would generate rich data. It could be clearer to create new theories when the environmental factors of the industry and the organizations would be the less or more the same. Another worthy research aspect would be to investigate a larger organization in its entirety, alongside their suppliers and supply chain partners to make distinctive claims on how their perception of uncertainties and risks differ. The aspect of how strategic procurement against uncertainties could be improved practically requires further research and analysis - additionally this would benefit from a sample size that includes executives or senior personnel with decision-making power.

Exploitation and exploration research could be studied as a cross-examination with strategic procurement and the uncertainty factor. Given that the concepts are easily connected to strategic decision-making and planning, it would be a valuable subject to explore.

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## APPENDIX 1 - INTERVIEW QUESTIONS

Please state your job title and how long you have worked professionally with procurement or supply chains? // Kerrothan ystävällisesti ammattinimikkeesi ja kuinka kauan olet työskennellyt hankinnan tai toimitusketjujen parissa?

How long have you worked professionally in supply chain management/procurement? // Kuinka kauan olet työskennellyt hankinnan/toimintaketjujen parissa?

How would you describe your daily duties? Would your job description consist of both operational and strategical tasks? // Miten kuvailisit päivittäisiä tehtäviäsi? Kuuluuko työnkuvaasi operatiiviset ja strategiset tehtävät?

Could you mention some of the countries in which your suppliers operate from? // Voisitko kertoa mistä päin maailmaa avaintoimittajanne tulevat?

How important would you describe your relationships with your suppliers? // Miten tärkeäksi kuvailisit suhteitasi toimittajiin?

Could you describe what kind of challenges have you faced with your suppliers? // Voisitko kuvailla minkälaisia haasteita olette kohdanneet teidän toimittajienne kanssa?

Please describe possible uncertainties or risks related to your supply chain? // Kuvailisitko mahdollisia epätietoisuuksia tai riskejä, jotka liittyvät toimitukseen sekä hankintaketjuunne?

What type of precautions or strategies are in place to encounter these uncertainties or risks? If yes, have they been proved useful? If not, what would you implement as a precaution? // Minkä tapaisia ennaltaehkäiseviä varotoimenpiteitä tai strategioita on paikallaan epätietoisuuksien tai riskien varalta? Jos kyllä, onko ne todettu toimiviksi? Jos ei, minkä kaltaisia varotoimenpiteitä toimeenpanisit?

Please describe an event or a case where a supply chain risk or an uncertainty resulted in damages? In hindsight, what kind of policy or strategy could have prevented such an event? // Kuvaile tapahtuma tai case, missä toimintaketjun epävarmuudesta tai riskeistä seurasi vahinkoa? Miten tilanteen olisi voinut välttää?

Where do you see supply chains evolve in the coming years? What type of technology would have the strongest impact? // Miten näet hankinta- ja toimitusketjujen kehittyvän tulevina vuosina? Millä teknologialla olisi suurin vaikutus?

What obstacles there could be towards automating different supply chain processes? // Minkälaisia esteitä näet hankintaketjujen automaatioon?

Any additional thoughts on the subject matter / free comment // Mitään lisäkommentteja aiheeseen liittyen / vapaa kommentti?