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Barriers and challenges faced in the Swedish defense industry

Mitigation by business model component modification

Master's thesis in Management and economics of innovation

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SUMMARY
The Swedish defense industry is dominated by a handful of suppliers, raising the question of why smaller suppliers find it hard to compete. This thesis investigates the barriers and challenges faced by smaller suppliers in the Swedish defense industry. Furthermore, the thesis examines how these suppliers can mitigate these barriers and challenges by modifying their business model, particularly in terms of key resources, partnerships, customer relationships, and channels. The thesis explores theoretical data regarding business model components and the barriers and challenges within the defense industry. Qualitative methods were also applied through semi-structured interviews with both large and small Swedish defense suppliers. The findings reveal significant challenges in procurement processes, primarily due to stringent requirements and complex specifications that impact smaller suppliers to a greater extent. Key factors such as industry know-how and contacts prove crucial in providing market access in the intricate defense industry environment. The research identifies a need for more streamlined procurement processes and eased supplier requirements that could enable greater participation from smaller entities and enhance innovation within the Swedish defense industry. This study contributes to a better understanding of the dynamics in defense procurement and suggests modifications to business models that could mitigate existing barriers, thereby fostering greater competitiveness for smaller suppliers.

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Keywords: Barriers, Business Model, Challenges, Procurement, Smaller Supplier, Swedish Defense Industry.

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1. Introduction

The introduction gives a background on the European and Swedish defense industry which is the focal point of the master thesis. In this chapter, the scope will be outlined along with the purpose, research questions, and limitations.

1.1 Background

In the defense industry, suppliers face substantial barriers, notably in communication with the Department of Defense (DoD), which often leaves them lacking crucial information for preparing adequate bids (Cox et al., 2014). The bid and selection process is complex and inefficient, requiring deep knowledge of contracting procedures and acquisition regulations, which can be particularly challenging for smaller suppliers to navigate (Cox et al., 2014). Furthermore, identifying the 'customer' in defense procurement is complicated by the different stages of procurement, influencing how suppliers engage with various stakeholders (Shelton & McNaughton, 2007). These challenges highlight the need for strategies that mitigate these barriers in order for smaller suppliers to participate in the defense industry. Market conditions within the defense industry also show a tendency for larger, established suppliers, potentially stifling innovation and discouraging participation from smaller suppliers (Glas, 2017). Limited participation from small suppliers could hinder the procurement of innovative solutions, potentially leading to significant losses in defense capabilities. This concern is illustrated by Kunertova (2024b), which examines the significant impact of drone utilization in Ukraine and the lack of adequate countermeasures. Although the theoretical data primarily focuses on the defense industry outside of Sweden, the industry has similar characteristics in both Sweden and the US, with a few suppliers dominating the market (Glas, 2017; Regeringen, 2024). This similarity makes the research relevant and suggests that barriers might also be comparable. However, there is a noticeable gap in literature concerning the Swedish defense industry, highlighting the need for further research on the specific challenges and barriers faced, as well as potential mitigation strategies through modifications to business model components. The thesis has therefore limited its empirical scope to the Swedish defense industry, since it intends to cover the literature gap.

Over the past decades, the defense industry has undergone significant changes. The end of the Cold War and the reduction in global tensions led to a global reduction in defense spending, as many countries shifted their focus toward economic development and domestic priorities (Pasterick, 1992). However, recent events in Ukraine and other conflicts have escalated the perceived threat level, resulting in European governments dramatically increasing their defense budgets to purchase arms and equipment, support allies, and build up their reserves (Hasselbach, 2024; Borrell, 2024) The donation of arms and equipment to Ukraine by EU and its member states has depleted their inventories, requiring restocking and driving global military spending to a record $2.443 trillion in 2023. (Borrell, 2024; Tian et al., 2024). European defense stocks have seen a significant upturn due to the war in Ukraine, with investors optimistic about the European defense sector's heightened potential (Covachev & Fazakas, 2024). This optimism is complemented by growing investments in the defense industry from private

equity and venture capital globally (European Commission, 2024). These developments point towards perceived potential in the European defense sector, which might incentivize innovation and attract new suppliers..

The Swedish defense industry could be seen as being positively impacted by the aforementioned developments, as Swedish defense exports rose with 18% during 2023, reaching an amount of 18 billion SEK (Regeringen, 2024). However, the industry is highly aggregated and most sales in Sweden and abroad are dominated by a handful of suppliers (Regeringen, 2024). This begs the question of how much small and new suppliers might profit from the developments. Furthermore, Sweden is facing its most serious security challenge since the conclusion of World War II. Between 2020 and 2024, the appropriations for military defense in Sweden have doubled (Government Offices of Sweden, 2023). The budget bill for 2024 allows for large spending in defense materiel and investments in military innovation and development (Government Offices of Sweden, 2023). The possible impact is that the defense suppliers see increased demand for their products and services. The ongoing military situation, particularly as a result of Russia's invasion of Ukraine, might propose a sense of urgency that European armed forces need to be equipped with defense materiel to withstand potential conflicts.

The Swedish Defense Materiel Administration, FMV (Försvarets Materielverk), procures, develops and delivers services and material to the Swedish Armed Forces (FM) (FMV, n.d). FM also has its own procurement organization, however most procurements are within existing framework agreements. This creates a unique market dynamic with only two end customers. An increased demand for suppliers' products and services impacts the workload on FMV given their responsibility for procurement. The increased workload on FMV will require a streamlined approach to procurement to ensure that the supply of defense materiel and services meets the increased demand. There will be a need for efficient procurement processes that can accommodate an increased number of contracts and a broader range of suppliers, including smaller suppliers.

The increased budget for military innovation and defense materiel and services should incentivize smaller suppliers, though this relies on FMV's procurement processes and the stringent requirements that suppliers must meet. Despite the growth of the Swedish defense industry, the market is still highly consolidated. With increased demand, larger suppliers may not have the capacity, posing a risk to Sweden's defense capabilities. If these major suppliers fail to meet the demand, alternative suppliers will need to step in, though they may be hindered by existing barriers. Since Sweden is considered a small state in terms of population and military strength (Rahmati, 2023), the defense industry needs to provide innovative solutions to mitigate the disparities in terms of manpower and enhance the defensive capability in a potential conflict against a larger adversary. As seen in Ukraine, a much smaller military can to some success withstand attacks from a larger adversary with the help of innovative defense solutions sourced from smaller suppliers (Kyzym, 2022; Kunertova, 2023a; Chávez & Swed, 2023). It is therefore worthwhile to explore what barriers and challenges that prevent and discourage smaller suppliers from entering and competing in the Swedish defense industry. Should such barriers and challenges be present, it would be valuable to investigate their influence on the business model components of defense suppliers and whether smaller suppliers are more adversely affected.

1.2 Scope and Limitations

The primary aim of this thesis is to identify and comprehend the existing barriers faced by smaller suppliers in the Swedish defense industry when supplying products and services to FMV/FM. Swedish suppliers provided the empirical data, mainly concerning the barriers they face. Interviews were conducted with both larger and smaller Swedish suppliers to gather diverse perspectives. Additionally, it was thought that larger suppliers would contribute with more extensive experience in navigating the defense industry and its stakeholders. Given the limitations in theoretical data for barriers in the Swedish defense industry, further insights into barriers in the defense industry are provided from a literature review based on the viewpoints of European and US suppliers. Since procurement processes and market dynamics are similar between the countries, the barriers found in the theoretical data are relevant and applicable to the Swedish defense industry. The secondary aim is to explore how current barriers influence the business models of Swedish suppliers. The analysis of theoretical and empirical data led to the selection of key resources, partnerships, customer relationships, and channels as the focus areas of the business model implications, since these components were deemed to be most affected by the barriers. This thesis therefore limits its scope to a detailed exploration of the specific business model components of key resources, partnerships, customer relationships, and channels. Additionally, as the case company is a startup, the focus was on barriers and their impacts on the business model components of new and smaller suppliers.

A natural limitation of the thesis is the inability to gather empirical data from companies that failed to adapt their business models to industry barriers, as these companies often do not survive and thus cannot contribute insights, particularly if they are smaller. Many defense suppliers were perceived to be unwilling to address barriers linked to FMV/FM for fear of harming their business relationships with these organizations. This issue made it difficult to find interviewees and those who were willing to participate choose to remain anonymous. An additional limitation was the difficulty in finding and contacting a suitable interviewee at FMV/FM. The scope was impacted by the lack of publicly available information about the intricacies of the defense industry and in particular the Swedish sector.

1.3 Purpose and Research Questions

The purpose of the thesis is to identify and analyze the barriers and challenges that suppliers in the Swedish defense industry face, understand their effects on particular aspects of the business model, and explore possible modifications to the business model components that could mitigate these barriers.

Research Question 1:
What barriers and challenges do smaller suppliers face when aiming to participate in the Swedish defense industry?

Research Question 2:
How do these barriers influence the business model components of key resources, partnerships, customer relationships, and channels for suppliers in the Swedish defense industry and how can these components be modified to mitigate the barriers and challenges, particularly for smaller and newer suppliers?

1.4 Delimitations

The empirical data for the thesis was gathered from interviews with Swedish suppliers, as the case company seeks to engage with the Swedish defense industry. The choice was also influenced by the authors' Swedish background and to maintain a focused scope.

This thesis limits its scope to key resources, partnerships, customer relationships, and channels within the business model. This selective approach is based on their relevance and helps confine the scope to prevent an overly expansive analysis of the entire business model. The thesis focused exclusively on particular components of the business model. Therefore other key factors that might be significant for succeeding in the Swedish defense industry are not taken into account which could have influenced the perceived relevance of the barriers.

2. Literature study

The literature study will include theoretical data regarding business models and its components as well as barriers and challenges for suppliers in the defense industry.

2.1 Business Models

Every time a business is set up, it adopts a specific business model, either deliberately or by default (Teece, 2010). A business model outlines the structure and methods used for creating, delivering, and capturing value. Teece (2010) explains, at its core, a business model details how a company provides value to its customers, persuades them to pay for this value, and transforms these payments into profits. Essentially, it represents the management's assumptions about customer desires, their preferred way of receiving value, and how the company can efficiently fulfill these needs, earn revenue, and achieve profitability (Teece, 2010). Additionally, Morris et al. (2005), suggest that the distinctive aspects of the business models go beyond the firm's structure or its revenue generation methods. Rather than merely being a collection of components, the business model encapsulates the core focus of the business system as a whole. Some take the contrasting perspective that value creation should extend further, encompassing all stakeholders within the value network (Zott et al., 2011).

Richardson (2008) expands on the value proposition, describing how it encompasses the firm's commitments to its customers, detailing what it will provide, the reasons customers will find it worth paying for, and the company's strategy for gaining a competitive edge. This includes the specific offerings the firm presents, the demographic of the target customer it aims to serve, and the overarching strategy utilized to attract customers and establish a competitive advantage (Richardson, 2008). This strategy integrates both a general approach and the essential elements that contribute to the firm's competitive strength (Richardson, 2008).

Furthermore, Richardson (2008) defines the value creation and delivery system as the system for creating and delivering value through which the firm will generate and provide value to its customers, forming the basis of its competitive advantage. This encompasses the resources and capabilities of the firm, assessed through the VRIO framework (Value, Rarity, Imitability, Organization). It also includes the organization's structure, such as its value chain, the network of activities, and business processes. Additionally, the firm's position within the value network is crucial, highlighting its connections with suppliers, partners, and customers. The final aspect of the business model, the aspect of value capture, focuses on the ways in which the firm generates its revenue and profit. This includes identifying various sources of revenue and understanding the underlying economics of the business (Richardson, 2008).

Sholilah et al. (2019) explain that the distinction between strategy and business model can be understood in two key ways. Firstly, while the business model acts as a representation of the company's current strategy by utilizing its resources to create stakeholder value, the strategy itself is focused on evolving and enhancing capabilities for future business model modifications. Secondly, a strategy represents the organization's roadmap for achieving specific future objectives, whereas the business

model is a snapshot of the company's operational logic at a given moment. These differences highlight the separate yet interconnected roles of strategy and business models in guiding an organization toward its goals. Achieving strategic fit, which is the coalignment of strategy and business model configuration between the strategy and business model, is important since Chereau and Meschi (2019) highlight that companies actively seeking and implementing a strategy-business model fit will have enhanced performance.

According to Ladib and Lakhal (2015), achieving successful co-alignment between a business model and strategy, which is crucial for an organization's evolution, requires several key actions. These include gaining customer favor, securing essential resources for production at reduced costs, and enhancing customer perception of the value gained from the product. Additionally, reducing uncertainty for external stakeholders by managing information and exchange flows is important. Promoting organizational learning, accumulating tacit knowledge, and securing scarce resources are also vital. From a technological perspective, considering the rapid pace of technological change, it's essential to regularly update the company's technological knowledge, promoting innovation in the business model.

Furthermore, De Reuver et al. (2009) suggest that organizations must continually reinvent their business models to remain aligned with rapidly evolving environments in certain sectors. Consequently, business models require reevaluation throughout every stage, from their initial development to their eventual exploitation. Additionally, start-ups in the early phase of developing new products need to adjust their business models to the changing landscape of technology and market forces rather than regulatory forces (De Reuver et al., 2009). Being adaptable to these forces and therefore having the ability to achieve fit with the external environment results in potential changes in the existing elements of the business model, highlighting the interconnectedness of the different components of the business model (Morris et al., 2005).

Business model innovation is defined as the process of designing and evolving novel and distinctive value chain structures to enhance a firm's performance (Amit & Zott, 2012). Yet, a business model can either transition a firm into an entirely new competitive arena or result in significant alterations to the firm's current business operations (Gunzel & Holm, 2013).
Business model innovation focuses not on developing new technology or creating entirely new markets, but on providing firms with sustainable competitive advantages which according to Tani et al. (2022) is one of the key success factors for improving performance of the business. This is achieved by increasing the uniqueness and value of existing products, which are produced using current technologies and marketed to existing customer bases (Haaker et al., 2021). Therefore business model innovation provides a way for differentiation in the digital space, which is crucial for achieving effective performance and customer value delivery, along with successful domestic and international operations according to Chesbrough (2010). Haaker et al. (2021) highlight two main drivers for business model innovation, the aspiration to attract new customer bases by generating new value and the implementation of activities for value capture alongside meeting the unmet needs of existing customers through value creation.

2.2 Business Model Components

The following section expands on the four chosen business model components that were considered to be the most relevant for suppliers in the defense industry.

2.2.1 Key Partnerships

Osterwalder and Pigneur (2010) believe that it is not feasible for companies to possess all resources or handle every activity internally. As many companies do not possess all the resources or execute all the activities stated in their business models, they expand their capabilities by partnering with other companies to acquire specific resources or carry out particular activities (Osterwalder & Pigneur, 2010). These partnerships can mitigate risks in a competitive landscape that is marked by uncertainty. They may also be driven by the necessity to obtain knowledge, licenses or access to customers. Moreover, they can be formed to reduce costs which often involve outsourcing or infrastructure sharing (Osterwalder & Pigneur, 2010). According to Freytag (2019), smaller companies may choose to partner with established companies if they can access customers, data, technologies or production capacities. A smaller company may use the partnering company's sales channels to access customers. It may also be a way for smaller companies to validate their product more efficiently and quicker for customers (Freytag, 2019). Freytag (2019) also highlights that established companies can be good investors if they have a strong market presence since it allows them to provide capital in a startup and growth phase. For the established company, the upside of the partnership can be that it allows them to test new business ideas and decide if these ideas enhance their product portfolio (Freytag, 2019).

Freytag (2019) highlights the balance smaller companies need to strike between the strategic benefits that the partnership generates and its strategic costs. Strategic costs can come from a change of strategy that limits the smaller company's options in favor of the partnering company (Freytag, 2019). A change of strategy can also lead to upsides for the smaller company, hence a strategic benefit. The bigger company may also prioritize its own strategic interests which will limit the autonomy of the smaller company. The strategic cost is then that the smaller company has a narrower range of future options (Freytag, 2019).

To ensure successful partnerships, it is crucial to understand and address the interests and priorities of all stakeholders before and during negotiations (Freytag, 2019). Among considerations is that of the needs of the bigger company's sales organization, which is a key stakeholder in many partnerships. A common strategy for such partnerships is to sell the smaller company's products through the partnering company's existing sales channels which requires the support of the sales team (Freytag, 2019). To gain the support, the product must meet several key criteria, such as being easy to sell, easy for customers to understand and of comparable quality to the bigger company's other offerings. Additionally, there should be a long-term service commitment to ensure customer satisfaction (Freytag, 2019).

Strategic alliances represent partnerships between two or more corporate entities or business units that aim to achieve mutually advantageous strategic goals (Elmuti &

Kathawala, 2001). Both companies still maintain business independence by not forming a new entity between them (Azis et al., 2023). Osterwalder and Pigneur (2010) distinguish between strategic alliances between non-competitors and coopetition. They define coopetition as a strategic partnership between competitors. Choosing an alliance within the same industry can mean that the partnering company has market share in the same product class either in different or similar market segments (Varadarajan & Cunningham, 1995). Essentially, companies may collaborate and compete simultaneously (Chin et al., 2008). Another distinction made by Osterwalder and Pigneur (2010) is joint ventures to develop new business. A joint venture represents a collaboration between two or more companies to engage in business operations through the establishment of a new, independent and legal company (Azis et al., 2023). Each company typically enters into a written agreement that specifies the rights and responsibilities of each company, profit or loss distribution ratios and other aspects concerning each company (Azis et al., 2023).

The potential impact of strategic alliances is substantial and if they are implemented well, they can significantly enhance an organization's efficiency and competitive edge. Businesses are increasingly forming alliances to acquire technology, gain access to specific markets, mitigate financial and political risks and secure or enhance their competitive advantage (Elmuti & Kathawala, 2001). Other motives for strategic alliances can be to broaden a product line or to speed up the process for market entry as well as sharing the cost for marketing, research and development and manufacturing (Varadarajan & Cunningham, 1995). Companies may choose to enter into strategic alliances with companies within the same or within other industries. A reason for choosing a company within another industry may be that it has a product offering that complements their own product offering (Varadarajan & Cunningham, 1995).

In coopetition, companies align diverse interests towards shared goals and leverage opportunities for competitive advantage through the removal of external barriers and the mitigation of threats (Chin et al., 2008). Additionally, Chin et al. (2008) state that coopetition may also happen between competing companies who together want to address challenges posed by customers or other competitors. By forming a coopetition, new markets can be entered by reducing entry barriers (Cygler et al., 2018).

Like strategic alliances, the benefits of joint ventures are many. The benefits include optimizing resources to achieve objectives faster, combining the expertise of both companies, saving costs and creating new product innovations (Azis et al., 2023). Another benefit is the potential of utilizing the networks of both companies to enter into a wider market collaboration (Azis et al., 2023).

2.2.2 Key Resources

According to Osterwalder and Pigneur (2010), the key resources component encapsulates the most crucial assets that enable the business model to work. DaSilva and Trkman (2014) state that business value arises from distinct configurations of resources and that business models are representations of that specific configuration. DaSilva and Trkman (2014) further state that key resources do not generate any direct value for customers, but the transactions using the resources do so. Furthermore, which key resources that are needed to access markets, sustain customer relationships, generate revenues and to offer a value proposition vary with the different types of

business models (Osterwalder & Pigneur, 2010). Key resources can either be owned or acquired from key partners and come in varying forms, such as human, intellectual, physical and financial. The human resource is especially valuable in industries where business models are heavily reliant on knowledge and creativity. Intellectual resources have become increasingly critical elements of a business model and include proprietary knowledge, intellectual property rights, partnerships and customers databases. Osterwalder and Pigneur (2010) emphasize that intellectual resources offer significant value but are challenging to develop. Osterwalder and Pigneur (2010) also highlight which intellectual resources that are important for a company vary with its business model. The physical resources are often capital intensive and include facilities, machines and systems. Depending on the business model, it may require financial resources which include lines of credit and cash. Metallo et al. (2018) highlight that startups and smaller firms usually have less access to human, financial and physical resources, while older firms have access to internal resources, leading to a restricted set of competitive options for the former.

Furthermore, Osterwalder and Pigneur (2010) exemplify how industry trends have changed which resources are considered key in the business model, which in its turns leads to companies needing to develop or acquire these key resources. Osterwalder and Pigneur (2010) highlight three considerations regarding the assessment of key resources, which are difficulty of replicability of key resources, predictability of resource needs and timing of deployment of key resources. Osterwalder and Pigneur (2010) also highlight infrastructure opportunities with considerations regarding optimizing resource use, sourcing resources from partners, under-utilization and valuable non-utilized intellectual property. Johnson et al. (2008) explains how the cost structure is mainly dependent on what key resources the company chooses to deploy in order to create its value proposition. Johnson et al. (2008) goes on to explain that companies must integrate their key resources and processes in a way that perfectly accomplishes the task for a specific group of customers, which if done correctly creates a lasting competitive advantage. Strategy emphasizes creating a competitive advantage by safeguarding a distinct position or leveraging a valuable and unique set of resources (Casadesus & Ricart, 2011). These positions and resources stem from recurring cycles where the company's key resources are expanded, so companies should develop business models that initiate these cycles. DaSilva and Trkman (2014) identify selecting the correct configuration of resources and transactions as the first step for companies trying to outperform competitors over time.

2.2.3 Customer Relationships

The business model component of customer relationships is described by Osterwalder and Pigneur (2010) to encapsulate the relationships the company forms with particular customer segments. The reason for establishing customer relationships can vary from customer retention, acquisition and increasing sales. Gil-Gomez et al. (2020) describe customer relationship management as a vital instrument for business model innovation, pushing SME initiatives to achieve economic sustainability. Furthermore, Gil-Gomez et al. (2020) state that the trend of globalization presents companies with new competitive obstacles which results in companies having to prioritize customer relationships and especially customer satisfaction for survival and revenue maximization. However, Shelton and McNaughton (2007) highlight that having a customer focus in the procurement environment of the defense industry is difficult due

to many reasons, some of them being special rules and regulations in combination with difficulties in defining who the actual customer is. Osterwalder and Pigneur (2010) further state that the companies should determine the nature of the relationship it intends to establish and maintain with each customer segment. The nature of customer relationships change over time and with changes in industry characteristics, which is exemplified as focus on customer acquisition can change to increase sales and customer retention. Hartley (2007) explains that suppliers in the defense industry often choose a role in the value chain in order to target a particular customer segment that is aligned with market changes. The positioning is often done to utilize the supplier's comparative advantage together with economizing transaction costs and making use of potential economies of scope.

Osterwalder and Pigneur (2010) highlight considerations such as customers' expected relationships, established relationships, and the cost of them as well as integration with other components of the business model. Osterwalder and Pigneur (2010) describe several customer relationships, where personal assistance relationships are dependent on human interaction which allows customers to communicate with a real representative for help during the sales process or after purchase. Dedicated personal assistance is based on allocating a company representative to the individual client which creates a strong relationship over time, often seen in the form of key account managers. Self-service is described as having no relationship with the customers. Automated services are described as being a mix of self-service with automated processes in the form of customized services that can simulate a customer relationship. Co-creation is described as utilizing the customers to create value, where the actions from the customer relationship provide the company with value.
Glas (2017) emphasizes the widespread employment of personnel with military experience in defense suppliers, noting that only 14% of the respondents who served as key contacts for the domestic defense force in his study lacked military experience, which points to personnel interrelations between the industry and the defense force.

2.2.4 Channels

Osterwalder and Pigneur (2010) describe the business model component of channels as the methods a company uses to deliver a value proposition by communicating with and reaching its customers. The channels serve as the point of contact with the customers by providing sales, distribution, and communication, therefore being crucial in shaping the customer experience. Osterwalder and Pigneur (2010) state that channels provide several roles such as marketing and selling products, providing customers with assessment and delivery of the value proposition as well as providing customer support. Considerations such as customers' preferred channels, current channels and their integration with the business model, and the cost-efficiency of current channels are highlighted by Osterwalder and Pigneur (2010).

Osterwalder and Pigneur (2010) identify five specific phases, where every channel can potentially encompass one or more of these phases. The different channels are classified in order as raising awareness regarding products, evaluation of value proposition, purchasing of product, delivery of value proposition, and post-purchase customer support. Channels are described as either being owned by the company or partners and further classified as direct or indirect. However, Agapos (1971) states that the market of defense procurement only has one channel available for marketing, which is direct

sales to the Government. Osterwalder and Pigneur (2010) highlight that utilizing partner channels results in reduced margins, however they enable the company to widen its coverage and leverage the strength of its partners. On the contrary, internal channels are described as having higher margins but potentially being costly to operate, it therefore becomes a balancing act to decide on the suitable mix of partner and internal channels.

2.3 Barriers and Challenges

The section highlights barriers and challenges that suppliers in the defense industry can face.

2.3.1 Market Conditions and Preferential Treatment

The findings of Glas (2017) indicate that how attractive a customer is perceived to be significantly impacts the likelihood of them receiving preferential treatment from the suppliers. The attractiveness is shaped by factors such as trust, commitment, and evaluations relative to other customers. Glas (2017) explains how suppliers in the defense industry seek profit and could therefore invest in other business areas than those involving the domestic military, resulting in the domestic military potentially losing out on the preferential treatment from the suppliers. The defense industry could therefore opt to sell to other military customers or the civilian market instead. Furthermore, Glas (2017) describes the defense industry as being dominated by a small group of large suppliers with specialized SMEs as subcontractors. Glas (2017) emphasizes that the military's ability to utilize the latest technology relies on the manufacturing capabilities of the entire value chain.

Defense suppliers typically operate in a highly specialized market that exhibits several unique characteristics, such as monopolistic or oligopolistic formations, spinoffs, intensive R&D efforts and diminishing costs (Dunne, 1995; Hartley, 2007). Glas (2017) highlights that the defense industry is characterized by uncertainty and volatility in the military spending budgets while at the same time requiring resource intensive R&D work for new technologies. These factors have resulted in consolidation of the Western European defense market through enormous defense suppliers with smaller subcontractors that deliver specialized components for their systems (Mantin & Tishler, 2004; Dunne, 1995; Golde and Tishler, 2004). Glas (2017) further identifies distinct characteristics of the defense sector's market, emphasizing its reliance on long-duration projects, detailed regulatory frameworks, political influence, and significant capital and expertise requirements in specialized equipment. Glas (2017) also notes a deep dependence between national defense forces and defense suppliers, where relational constructs heighten the buyer-supplier relationship to more than merely a transactional one.

2.3.2 Communication Within the Defense Industry

Cox et al. (2014) states that the most commonly expressed barrier by nontraditional defense suppliers was gaining access to and receiving prompt responses from the Department of Defense (DoD). Communication between the nontraditional supplier

and the DoD is described as ineffective. Suppliers expressed the absence of satisfactory answers to questions regarding technical requirements of RFPs, bidding procedures, their suitability for projects, explanations for unsuccessful proposals, and general requirements of DoD programs. The suppliers expressed frustration with the difficulty of contacting anyone within the DoD and when contact was established the communication was vague (Cox et al., 2014). The lack of satisfactory communication resulted in nontraditional suppliers feeling they did not have sufficient information to prepare a qualifying bid that was detailed enough.

Cox et al. (2014) highlight the issue of suppliers finding contact points within DoD, both for initial communication but also for follow-up communication. This led to post-award communication being suboptimal, where suppliers found it difficult to understand who got the award as well as getting the essential feedback to refine future proposals. Nontraditional suppliers also expressed difficulty in interpreting non-explicitly stated technical requirements.

2.3.3 Customer Focus

Shelton and McNaughton (2007) shed light on the problematic issue of defining the customer in the US defense industry. According to the authors, the quickest way of defining the customer is by stating the end user, meaning the combat soldier who is going to use the product. However, because of the procurement process in the defense industry, Shelton and McNaughton (2007) highlights that stating the end user as the customer of a product is not the answer. The reasoning behind this is that they are not the party that controls or determines aspects such as capability determination, product procurement or contract awards (Shelton & McNaughton, 2007). Instead, determining the customer is a matter of where the product is in its life cycle. Shelton and McNaughton (2007) highlight that different stakeholders and decision making bodies in the US defense industry, such as the Joint Capability Integration Development System (JCIDS), will be the customer depending on the product's life cycle. If influence is to be obtained, a big factor is to form relationships with the influencing and relevant stakeholders and decision makers. Part of the issue when determining the customer is the slowness of the procurement process. Shelton and McNaughton (2007) compare how entities usually determine and fill a gap in demand at a much faster pace. With the slowness of procurement processes, defense suppliers may face challenges in capitalizing on new innovations or technological breakthroughs since the product can not be sold or marketed to the end user in a rapid fashion.

2.3.4 Bid and Selection Process

After conducting interviews with nontraditional suppliers to the US Department of Defense, Cox et al. (2014) concluded that the bid and selection process is extensive, inefficient and complex. According to the suppliers, it takes knowing contracting procedures and acquisition regulations to a great extent to fully interpret RFPs and to generate successful bids (Cox et al., 2014). Such a level of knowledge requires years to develop, making it costly or even unaffordable for a company. Cox et al. (2014) pointed out the difficult and costly alternative of developing business units or having employees to handle such procedures, which is especially difficult and costly for small companies. Even with the knowledge of the procedures, the suppliers pointed out that preparing a bid could still be very costly and that the procedure is much more complex and resource

draining than creating bids for commercial projects or for state and local governments (Cox et al., 2014). It was also stated that the low rate of winning contracts from making bids to the Department of Defense made companies cautious to acquire such knowledge (Cox et al., 2014). It was also concluded that the procedure was inefficient, which contributed to it being costly and extensive.

2.3.5 Cash Flow Challenges

According to Cox et al. (2014), interviewees pointed out that the time frame for bidding can be a significant barrier. The long period between submitting a bid and receiving the first payment can cause particular issues. More broadly, the interviewees noted that the gap between submitting a bid and being awarded a contract can pose serious challenges for smaller or newer businesses, since they often lack the capital to cover salaries and operating expenses during that period (Cox et al., 2014). It was also stated that the time until final payment is received can be lengthy. Cox et al. (2014) mention that these payments may represent a small fraction of a total contract but may still be important, particularly to small businesses.

2.3.6 Additional Challenges in the Defense Industry

Lorell and Levaux (1998) highlight the issue of enabling innovation in the defense industry, which is described as having overwhelming barriers and often being dominated by a few suppliers or, in some market segments, only one supplier. Cox et al. (2014) highlight that nontraditional suppliers have sensed a preference by the DoD for larger contractors, largely attributed to the military's risk aversion and general favoritism towards prime contractors over smaller ones. Firms prepared to supply innovative technologies to the DoD have highlighted inadequate assistance for advancing new technologies, particularly during the crucial "valley of death" period that bridges initial research with prototype development (Cox et al., 2014). Additionally, suppliers highlighted the lack of incentives to innovate in the areas of technology, performance and quality because of the favoring of bids that are low-cost and meet technical requirements. Furthermore, companies have raised concerns about losing intellectual property or proprietary data, criticizing the DoD for inadequate protection and describing experiences of being exploited when sharing innovative ideas (Cox et al., 2014).

Cox et al. (2014) state that the specific requirements of DoD purchases often limit commercial opportunities for companies, as many of the products sought by the DoD have limited or no commercial market potential. Furthermore, the Department of State's regulations on the international distribution of emerging technologies limit earning potential and could potentially prevent firms from seeking global markets for their military products. Cox et al. (2014) explain that the uncertainty in federal budgeting and defense demands, including potential project cancellations, can severely restrict the financial returns companies might expect from DoD investments. According to Cox et al. (2014) some suppliers expressed that they had observed that some RFPs appeared tailored for particular contractors. Cox et al. (2014) highlight that lack of experience with the DoD presents itself as a barrier since the perception of some suppliers was that previous successful experience with DoD projects often informally influenced bidding outcomes, favoring those with a track record, especially with the same DoD office. This

background effectively lowered perceived risks for customers, positioning incumbents with strong performance track records to secure repeat contracts.

2.3.7 General Barriers in B2G Sales

When considering B2G sales in software products, the primary barriers to creating value include political decision-making, insufficient commitment from involved parties, limited direct engagement with the defining client, and inadequate communication among the areas involved in software development (Lopes & Cortés, 2018). When considering software products and the data that can be collected through them, data sharing between businesses and the government can yield significant societal benefits and lead to cost savings for government entities (Martens & Duch-Brown, 2020). Yet, Martens and Duch-Brown (2020) identify elevated transaction costs and perceived risks associated with data sharing, along with a lack of motivation for private companies to contribute to the creation of public benefits as barriers for these kinds of cooperations. Additionally, Kamel (2007) highlights that one major barrier to B2G sales is the fact that firms that participate are sometimes forced to disclose sensitive data to their business associates, which can become troublesome for defense procurement and government organizations.

2.3.8 Procurement Effects on Innovation

Public procurements are viewed as having focus points on short-term project focus and the lowest prices, which results in slower developments for innovations and novel products (Malmgren, 2020). Public procurements pose a barrier to innovation, however there are methodologies and tools to mitigate these barriers, but these are not used to a sufficient extent (Malmgren, 2020). Some of the reasons for procurement being a barrier for innovative solutions are the resources and capabilities of the procurer, lack of incentive for taking risks, organizational structures and short-term thinking. In addition to risk aversion in procurements, Edler et al., (2011) identify the focus on price being valued higher than quality as one of the main reasons for procurements presenting barriers for innovations. Additionally, the lack of sufficient technological and market knowledge in combination with overly precise specifications and disregard for variance presents a barrier for innovation in procurement environments (Edler et al., 2011). Also, suppliers' lack of interactions with the procurement organization further complicates the introduction of innovation, where receiving communication of the organization’s needs and cooperation with the procurement organization are key for successful innovation (Edler et al., 2011; Malmgren, 2020). The lack of organizational structure, resources and capabilities of the procurement organization result in short-term thinking and risk-aversion, leading to novel products not being demanded (Malmgren, 2020).

To overcome or mitigate the barriers for innovation in procurement settings, the procurement patterns need to transform to incorporate a longer perspective that is suitable for untested innovative solutions to mitigate the aforementioned short-term thinking (Malmgren, 2020). Additionally, the current procurement patterns are designed for efficiency to minimize resource usage of time and cost, where most suppliers therefore use established ways of working (Löwnertz, 2020;

Malmgren 2020). Utilizing pilot projects can provide an opportunity for innovations to overcome the initial barriers that the procurement landscape poses, where these types of projects also provide insights into the procurement organization needs (Malmgren 2020). Additionally, cooperation and communication with the procurement organization is another way for suppliers to mitigate the barriers for innovations (Malmgren, 2020). Similarly, cooperation with other suppliers is seen as a way to introduce innovations, by utilizing their combined capabilities to solve the clients' needs (Malmgren, 2020). Innovation procurements require that the procurement organization has time for needs assessment, which includes communication with the industry, drafting requirements and specifications as well as creating a model for evaluating bids (Söderholm et al., 2021).

Innovation procurement regards the intention that a procuring organization has, through its procurement process, to promote innovation by requesting or allowing new solutions (Upphandlingsmyndigheten, 2021). Innovation procurement helps innovative companies to find the first customer since these companies often find this aspect challenging (Edler et al., 2011). It also enables them to overcome their shortcomings regarding credibility (Edler et al., 2011). A procurement organization can become a first customer through an innovation procurement which helps showcase the benefits of innovation and the adoption of cutting-edge technology can encourage further market development (Edler & Georghiou, 2007). Innovation procurement can also enhance the efficiency of effectiveness to public services by having implemented leading technologies and solutions (Edler & Georghiou, 2007). Innovation procurement can also be a way to encourage companies to invest in R&D since there are less risks in attempting to introduce new technologies to the market (Edler & Georghiou, 2007). It can also be a way to set market adoption and trust towards new technologies and establish new technology standards (Edler & Georghiou, 2007).

2.4 Procurement Definitions

A Request for Information (RFI) is typically used for significant purchases to assess the interest and capabilities of potential suppliers and to gather preliminary pricing data. It is a non-binding process, meaning that it does not result in any contract or award. However, information gathered through an RFI might be used to inform a subsequent Request for Proposal (RFP) (University of Manitoba, 2009).

A Request for Quotation (RFQ) is a competitive bid strategy predominantly used when the price is the principal factor influencing the purchasing decision (University of Manitoba, 2009). It specifies either standard specifications or particular brands or their direct equivalents, and the award usually goes to the lowest price proposal that satisfies the specified technical conditions.

The RFP is a competitive bidding strategy used primarily for high-stake or complex deals where the purchase decision involves factors beyond price, such as a bidder's qualifications and assessing technical specifications (Engelbrecht-Wiggans et al., 2007; University of Manitoba, 2009). It sets out the necessary and optional parameters for the products, services, or research objectives needed, and may link back to an earlier RFI

(University of Manitoba, 2009). Typically, the contract is awarded based on a comprehensive assessment of various criteria, with pricing being a component.

However, in Sweden the term RFQ encompasses both the aforementioned RFP and RFQ since RFP is not defined in the procurement legislation (Upphandlingsmyndigheten, 2023). Therefore this report will use RFQ to describe both terms.

3. Methodology

The methodology section clarifies which methods were used in the thesis. A qualitative study was conducted to gather empirical data through semi-structured interviews with industry actors which were synthesized with theoretical data.

3.1 Study Design

The following section describes why the thesis employed qualitative research.

3.1.1 Qualitative Research

Qualitative research can be abductive, where the gap in existing literature can not explain the empirical phenomenon (Bell et al., 2019). Researchers employing an abductive approach will try to make sense of an empirical phenomenon by providing explanations for it (Bell et al., 2019). The abductive approach suits the aim of the thesis, which is to understand what barriers and challenges there are for suppliers. Further, a common preference is that researchers see things from the perspective of the people being studied (Bell et al., 2019). This entails an approach that minimizes preconceived biases or influence on the social world beforehand (Bell et al., 2019). As a result, keeping a minimum structure is believed to improve the chances of revealing the perspectives of the people in your study (Bell et al., 2019). Therefore, asking more general questions is preferable since this does not limit the area of research. Qualitative research was fitting for the thesis because of the identified gap in existing literature on the Swedish defense industry. By leveraging empirical data, the thesis could effectively address this gap. Therefore, the perspectives gathered from interviews with suppliers were crucial.

A key reason as to why the qualitative research method was chosen was because of its flexibility, supported by (Bell et al., (2019) who states that it is possible to change direction during investigation, in comparison to a quantitative research method. This gave the research scope the possibility to be narrowed down if needed. It also allows for interviews to result in conversations or topics that were not considered prior to the interview, thus giving insightful and valuable data. Furthermore, abductive reasoning was employed during the thesis since it involves the researchers forming an explanation to varying interpretations of the data (Bell et al., 2019). Due to the lack of theoretical data about the Swedish defense industry, this was a suitable approach. The fact that the interviewees provided varying answers regarding the research questions also made the abductive approach suitable.

Despite common criticisms of qualitative research being too subjective (Bell et al., 2019), it was deemed to allow for deeper exploration of the topic. Although the method often starts in an open-ended way and narrows down questions or problems without clear explanations (Bell et al., 2019), it was opted for because of its aforementioned flexibility.. Another criticism of qualitative research is the problem of generalization, however, since interviewees are not meant to represent a population, the findings are intended to lead to theoretical generalization (Bell et al., 2019). Finally, a lack of

transparency and replicability can also be an issue with qualitative research (Bell et al., 2019), since it is sometimes difficult to establish how conclusions of a study were formed or how interviewees were selected. The thesis sought to address this issue by detailing the characteristics of the interviewees and referring to the specific interviewee in the empirical data.

3.2 Case Description

This thesis is conducted in partnership with a startup at the intersection of technology and life-saving skills, that seeks to address a critical gap in emergency medical training for military, medical, police personnel and civilians. With a focus on providing realistic training scenarios for treating heavy wounds, the case company aims to improve the survival rates of individuals in high-stakes situations such as combat, accidents, and natural disasters. The case company believes it can do so by providing simulations tools for Tactical Combat Casualty Care (TCCC) in VR and an app that mimics real-life hazardous and stressful situations. Both their app and VR solution, which are currently in the developmental phase, seek to gamify the learning process, in order to promote learning and attract more users.

The case company is a small and new supplier which fits the thesis since it provided insights about perceived barriers and challenges. Additionally, the case company develops technology that is novel in its application in the defense industry, which has provided further insights for the thesis. Since the case company is still in its startup phase, the business model is still evolving which gives them the opportunity to modify their business model components to mitigate potential barriers analyzed in the thesis. The case company's most urgent priority is to generate revenue, more specifically through their application since it is closest to being released out of their two solutions. The initial strategy for the case company involves launching a free-to-use app with freemium features, targeting the National Guard equivalent in Sweden (Hemvärnet). This deliberate approach allows the case company to establish a foothold in the market, refine its offerings based on user feedback, and generate revenue to support the ongoing development of the VR TCCC simulator. The expansion plan includes gradual penetration into nearby countries and extending the product offering to various governmental organizations within Sweden. In summary, the case company is a suitable representation for smaller and new suppliers in the Swedish defense industry, which assisted the thesis in analyzing the research questions.

3.3 Data Collection

The following section will present how the interviews were selected, conducted and analyzed.

3.3.1 Prestudy

Prior to and parallel with the literature review and qualitative interview study, an exploratory and guiding prestudy was done in order to get insights into the case company's industry and adjacent industries. Additionally, the prestudy provided an

understanding of the military structure and stakeholders of the Nordic countries, with a focus on the Swedish defense force (FMV/FM). Furthermore, insights into the adjacent areas of Swedish police and medical organizations were also a result of the prestudy. The prestudy consisted of unstructured interviews with different types of actors and news articles from past and present. Additionally the prestudy included reviewing members of the Swedish Security & Defence Industry Association (SOFF) and reviewing articles. However, Bell et al. (2019) point out the duality of documentary data, while it is widely accessible, the data requires significant research work in determining what to include and how to analyze it. Therefore, the data was only used to provide the authors with nuanced perspectives and guidance for the literature review, interview questions, and search for relevant interview subjects which assisted in forming the study into its final form. Throughout the pre-study, the quality criteria of meaning, representativeness, credibility, and authenticity for documentary data sources proposed by Bell et al. (2019) were considered.

3.3.2 Purposive Sampling in the Interviewee Selection Process

Purposive sampling was chosen to select interviewees. The approach means that the sampling was done with the research question in mind (Bell et al., 2019). This enables a strategic selection of interviewees. In order for the research questions to be answered through the interviews, the selected interviewees all worked for companies with previous experience of selling or attempted to sell products to FMV/FM. The selection of companies was done by going through the member companies of Säkerhets- och försvarsföretagen (SOFF). A sequential approach was used to the sampling, which is to add to your initial sample in accordance with the research questions (Bell et al., 2019). In the case of the study, this was done by adding an interviewee from FMV to get another perspective in regard to our research question. Eleven interviews were conducted and the sample size was deemed to be sufficient, as theoretical saturation was achieved according to the definition of Bell et al. (2019), where no new insight or dimensions were discovered during later interviews. The following Table 1 categorizes suppliers using the size definitions from The National Agency for Public Procurement (2021), where smaller suppliers generate less than 10 million euros annually, medium-sized suppliers earn less than 50 million euros, and large suppliers exceed 50 million euros in yearly revenue.

Table 1. List of conducted interviews.

Company	Role	Length	Date
Medium-sized supplier	Head of sales in a specific product department	1h	2024/02/20
Small-sized supplier owned by medium-sized supplier	Head of sales and manager	1h	2024/02/22
Small-sized supplier	Deputy CEO	1h	2024/02/22
International Large-sized supplier	Head of sales	1h	2024/02/23

International Medium-sized supplier	Head of sales, Sweden	1h	2024/02/26
Small-sized supplier	CEO	1h	2024/02/27
Small-sized supplier owned by large-sized supplier	CEO, head of business development	1h	2024/02/28
International large-sized supplier	Sales in Nordics	1h	2024/02/29
Small-sized supplier	CEO, head of business development	1h	2024/02/29
Small-sized supplier owned by large-sized supplier	COO	1h	2024/03/11
FMV	Procurement Manager	1h	2024/03/22

3.3.3 The Interviews

The semi-structured interviews were divided into three themes. The first theme concerned barriers to market access, followed by business models and lastly challenges of applying VR and applications into defense contexts. The order was strictly followed since the intention was for the interviewee to identify barriers for market access, explain how these can be mitigated and then apply it to the context of VR and applications in simulation for military use. The majority of the interviews were conducted in Swedish. While the interview guide provided good guidance for suitable topics, answers to the follow-up questions provided the thesis with useful insights.
Although the existing literature partially influenced the questions, they were mainly driven by the literature gaps related to barriers within the Swedish defense industry. The aim was to enable the thesis to uncover insights into previously unexplored topics.

The interviews were conducted by both authors. One author asked questions to the interviewee, following the predetermined interview guide. The other author took notes. As both authors were present during all of the interviews, it increased the chances of interpreting the interviewee's answers correctly while also being able to ask better follow-up questions. Bell et al. (2019) highlight the advantage of having several interviewers because it enables the interviewers to be critical of each other's transgressions when using inappropriate probes or questions. Interviewees were also asked if they would agree to the interview being recorded for transcript purposes, with the assurance that the audio would be deleted after the transcript was complete. The audio recording provided the authors a second opportunity to review what was said, especially when discussing intricate topics, which Bell et al. (2019) highlight as being

important for the ability to conduct a detailed analysis while also not losing the language used by the interviewee. When both authors felt that the interview was adequately represented in the interview notes, the audio recordings were subsequently deleted in order to protect the interviewees. Some interviewees asked to be anonymous in the thesis and this was agreed upon beforehand. All interviews were conducted via Skype, Teams or Zoom. The decision to make use of online interviews was made in order to accommodate the diverse geographical locations of the interviewees while at the same time being more convenient for them.

The thesis utilized semi-structured interviews to effectively explore specific themes by getting detailed responses and to accommodate the diverse backgrounds of interviewees, whether differentiated by their professional roles or organizational affiliations. This technique allowed for both guided questions based on the research objectives and the flexibility to pursue unexpected topics through follow-up questions. In accordance with Bell et al. (2019) stating that questions in semi-structured interviews have a more general character with the flexibility of asking follow-up questions, it was possible to adapt to the different perspectives of each interviewee and thereby enhancing the data collection process with valuable insights. Furthermore, the general nature of the questions gave the interviewee an opportunity to interpret and decide what is most important to answer in such a question, which showed differences in the answers depending on the character of the company.

3.3.4 Literature Study

The thesis was initiated with a literature review to help the authors understand the topic and guide the following interviews, as a literature study can highlight existing knowledge, common theories and concepts, and areas of contention in the research (Bell et al., 2019). However, Bell et al. (2019) point out the difficulties of conducting an exhaustive literature review due to the vast amount of research. The thesis therefore made use of the literature review to gain an understanding of general business models, entry- and user barriers common to the B2G markets but especially the defense industry. Additionally an extensive literature review was done on the theoretical concept of the business model and its components. The literature review did not extensively cover the specific research area of simulation providers' business models and barriers in the defense industry, due to the limited availability of existing research in the topic. According to Bell et al. (2019), the aforementioned utilization of a literature review is similar to a narrative review, in which a broader scope than a systematic review is used. Further, Bell et al. (2019) consider that having a rigid structure when doing inductive research is very problematic since unanticipated areas of research can become important as the thesis progresses, which a systematic review is not designed for. Therefore, a narrative review approach to the literature review is more suitable for qualitative inductive research (Bell et al., 2019).

Furthermore, Bell et al. (2019) highlight that a literature review includes judgment from the authors regarding what to include in the thesis. The thesis has taken an iterative approach, utilizing the interviews to guide what literature to include in the thesis, while utilizing the initial literature review to guide the interviews. Bell et al. (2019) explain how the literature review enables the authors to locate a specific research area within the broader research context. The thesis did this by identifying relevant keywords such as: Entry Barriers, User Barriers, Challenges, Business Models, B2G, Defense Industry,

Partnerships, Key Resources, Channels, Customer Relationships, Procurement. The collection of literature for the thesis was mainly retrieved through Google Scholar, Scopus, and with AI tools such as SciSpace and the Consensus Search plugin for Chat GPT 4. According to Bramer et al. (2017), the usage of several databases is desirable and will provide more results but the authors should be aware of losing precision in the search results.

3.4 Data Analysis

The following section will present the thematic analysis, reliability and validity of the thesis.

3.4.1 Thematic Analysis

Thematic analysis was chosen due to its sequential process of transcribing, coding, and grouping, enabling the researcher to reduce data while making sense of it in relation to the literature and research question (Bell et al., 2019). The thesis followed the thematic analysis methods to develop the structured empirical in the result section. Bell et al. (2019) highlight that repetition is common for identifying patterns but states that repetition alone does not warrant a theme. Instead it is the relevance of the data for the research question that determines whether or not it qualifies as a theme. Since both authors were present during the interviews, there was an understanding of some themes that would arise before the coding started. However, the remaining themes arose during coding. Due to its flexibility, thematic analysis can be used to analyze a broad range of qualitative data (Bell et al., 2019).

3.4.2 Reliability

Bell et al. (2019) describe external reliability as to the extent a study can be replicated. However, Bell et al. (2019) point out that it is not feasible to 'fix' a social context and the conditions of a preliminary study in a way that would allow for replication in the traditional sense of the term. The thesis aims to mitigate the issue of creating a replicable study by providing clear accounts of how it was conducted along with providing the characteristics of the interviewees. Furthermore, the issue of internal reliability arises when there are more than one interviewer and refers to the consistency regarding what the different interviewers hear and note (Bell et al., 2019). This issue was solved by both authors being present in the interviews. After each interview, any doubts regarding the interviewees answers were discussed to ensure consistency. To further increase the trustworthiness of the thesis, the alternative qualitative criterion of dependability was considered (Bell et al., 2019). Dependability was also considered when creating the planning report for the thesis and a journal was filled out during the thesis process.

3.4.3 Validity

External validity, or transferability, is to which degree the research findings can be generalized (Bell et al., 2019). Since there is commonly a tendency to use small sample sizes and case studies, external validity represents a problem (Bell et al., 2019). This often results in depth rather than breadth among the interviewees' characteristics. Bell

et al. (2019) therefore state that it is important for qualitative researchers to produce an extensive description, meaning that researchers provide details about the context of a study. This is so that other researchers can decide if the findings of a study can be generalized to other contexts or not (Bell et al., 2019). This has been attempted throughout the study by providing information about the characteristics of the interviewees and about the case company.

Internal validity, or credibility, refers to the way in which trustworthiness is determined (Bell et al., 2019). If multiple interpretations of a social aspect are possible, the credibility of what the researcher has interpreted will decide if it is accepted by others or not. To establish credibility, it is important to both carry the research out in good practice (Bell et al., 2019). To further establish credibility, one possibility is to use the triangulation technique. This entails cross-checking findings from your qualitative research. Throughout the study, the findings have been checked using public available data when possible.

3.5 Ethical Considerations

Researchers face challenges regarding ethics during several stages of a study (Sanjari et al., 2014). Two common issues are informed consent and anonymity (Sanjari et al., 2014).
This chapter concerns these two ethical aspects that the authors have been challenged with during the study and thus been taken into consideration. For the integrity of the study, researchers must be aware of and prepared to address these issues (Bell et al., 2019).

3.5.1 Informed Consent

Informed consent ensures that participants receive sufficient information about the study, enabling them to make an informed decision about whether or not to participate (Bell et al., 2019). Sanjari et al. (2014) states that this includes informing them on the nature of the study, their role in the study, the identity of the researcher, the objective of the study and how results will be used and published. Further, participants should also be notified if any recording equipment is to be used (Bell et al., 2019). However, Bell et al. (2019) state that it is difficult to present participants with exactly all the information that can be useful for them to make an informed decision about their participation.

3.5.2 Anonymity

Anonymity must be honored if this is a request from participants that has been agreed upon (Bell et al., 2019). It is therefore of importance that these issues are taken care of by the researchers (Bell et al., 2019). This means ensuring that participants and their organizations are not identifiable when findings are published. Protecting personal information or hiding identifiable characteristics are ways to ensure anonymity (Sanjari et al., 2014). When sample sizes are small, the risk of inadvertently exposing participants or organizations is greater, Bell et al., 2019), meaning that researchers must be aware of this.

4. Empirical Findings

This section will present the empirical findings from the interviews listed in table 2, addressing the following research questions below.

Research Question 1:
What barriers and challenges do smaller suppliers face when aiming to participate in the Swedish defense industry?

Research Question 2:
How do these barriers influence the business model components of key resources, partnerships, customer relationships, and channels for suppliers in the Swedish defense industry and how can these components be modified to mitigate the barriers and challenges, particularly for smaller and newer suppliers?

Table 2. List of conducted interviews with interviewee abbreviations.

Company	Role	Interviewee abbreviation
Medium-sized supplier	Head of sales in a specific product department	IA
Small-sized supplier owned by medium-sized supplier	Head of sales and manager	IB
Small-sized supplier	Deputy CEO	IC
International Large-sized supplier	Head of sales	ID
International Medium-sized supplier	Head of sales, Sweden	IE
Small-sized supplier	CEO	IF
Small-sized supplier owned by large-sized supplier	CEO, head of business development	IG
International large-sized supplier	Sales in Nordics	IH
Small-sized supplier	CEO, head of business development	II
Small-sized supplier owned by large-sized supplier	COO	IJ
FMV	Procurement Manager	PM

4.1 Procurement Conditions and Their Effects

The following section describes the empirical findings regarding procurement conditions and their effects.

4.1.1 Revenue Requirement Barrier

According to IA, IB, IE, and IF, many small suppliers face difficulties when trying to qualify for procurements as a result of the revenue requirements set by FMV. IA also mentions that revenue requirements differ depending on which type of product is being procured. Additionally, despite offering quality products, suppliers can still face difficulties with revenue requirements. Similarly, IC states that it is impossible for small-sized suppliers to meet all necessary requirements, and specifically mentions revenue requirements as one of them. Finally, both IH and II can see that revenue requirement is a barrier. In contradiction, the supplier that ID represents does not face any difficulties meeting the revenue requirements since they invoke financial capacity from their parent company. IJ mentions that new or smaller suppliers might find it difficult to qualify for procurements as a result of not fulfilling requirements for revenue or possessing ISO certificates.

PM states that both economic and technical requirements towards suppliers are in place to ensure that they are able to supply products or services as desired. Examples of economic-related requirements that are used are, apart from revenue requirements, solvency and cash flow requirements. PM further states that reference cases along with ISO certificates can also be on the list of requirements.

4.1.2 Difficulties Facing Specifications and Other Requirements

IA and IE suggest that procurement specifications frequently indicate which supplier FMV/FM desires to secure the contract, making it difficult for other suppliers to meet the specifications. IA and II perceive that contracting authorities exploit current procurement regulations in order for certain suppliers to secure procurement contracts, which according to II creates a lock-in effect to some products since the rest of the market is not scanned properly. IE's perception is that smaller suppliers' chance of winning a procurement contract is to get the product's specifications to fit their product, and states that chances are otherwise minimal.

PM's experience with procurement from both private and public sectors is that those who are not awarded contracts in a procurement may perceive that the customer has a certain preference for a particular supplier. PM says that FMV are actively working to lower barriers and to avoid discriminatory specifications. However, PM states that FMV procures advanced systems and therefore believes that it can be challenging for a smaller supplier to submit adequate bids in such procurements. Further, PM also says that there are also less advanced systems being procured but that military requirements are often somewhat higher than goods and services that are procured in commercial applications. ID elaborates on the stringent technical specifications for products, and states that a supplier can be far superior in a majority of them, but failing to fulfill all of them will result in exclusion. IF states that procurement specifications are often badly written and explains that there are far too many specifications that are irrelevant to the

products, making them hard to fulfill. IF believes that the reason for this is that there is a lack of competence in the project leaders at FMV responsible for drafting the specifications. II believes that interpreting procurement specifications is often challenging and that certain specifications can be contradicting.

IH also addresses the level of requirements that needs to be fulfilled for the supplier and its products. IB, IH and IJ state ISO certificate and environmental requirements as examples of requirements. IC's states that FMV prioritizes non critical requirements such as geographical presence which can only be fulfilled by bigger suppliers. II states that sometimes reference cases are needed to qualify as a supplier, and believes that this is a real barrier when products are new and no prior reference cases are obtained. II believes that the multiple requirements suppliers need to fulfill can be seen as barriers and conditions to enter the market.

4.1.3 Extensive Administration Work

Proof that qualification criteria are fulfilled, according to IE, entails extensive formalities and administration work and without a sufficiently large organization to handle this, IE fears a great challenge for smaller suppliers. IE exemplifies this by explaining that certain procurement contracts require certain certifications from FMV, and such certifications are time-consuming and costly to acquire. IH also states that public procurement processes are complex and, similar to IE, both IH and II asserts that extensive administration work is needed without knowing which supplier will win the contract. IJ points out that one big barrier for the Swedish defense industry is the amount of administrative work required by the supplier to stay up to date with all the published procurements and its contents. PM states that FMV is aware that smaller suppliers who are not accustomed to FMV's procurement process may find the structure and content of documents demanding. Furthermore, IA believes that responding to an RFQ can take a team consisting of two to three people up to several months on occasion. This is due to the significant amount of documents that have to be examined. IE, IF, IG, II and IH also believe that FMV's process of securing suppliers, through examining RFI and RFQs, is considerably time consuming which negatively affects suppliers. IH also states that there is a law which enables suppliers to file a complaint that the procurement process was not done correctly, which adds even more time lag.

4.2 The Communication of FMV/FM

The following section discusses the empirical findings regarding the communication with FMV/FM.

4.2.1 The Effects of Having Contacts Within FMV/FM

IB mentions that there are many ways into FMV and FM, but almost all of them require that you know the right contacts on the inside. According to PM, FMV and FM have two separate procurement entities where FMV are responsible for procuring new products and systems, while the responsibility to perpetuate and maintain those products lie with FM. IB states that the key is to directly approach the stakeholders who potentially have a demand for the product. IA elaborates on the same sentiment, for

them to have a strong prognosis of a successful business deal, the key element outside of offering a world-class product is knowing the decision maker at FMV/FM. IH states that by having an established contact with the decision maker, they are able to present the product and influence the decision-making before the public procurement is posted. This can have an impact on the RFI/RFQ being formed advantageously towards their product specification, which IH calls a shaping operation. IH highlights contacts among the end-users as key, because these people will share the requirements they are looking for in the product early in the procurement process. IH points out that these end-users can help shape the procurement process to align with the supplier's product characteristics before the requirement list is handed over to FMV for procurement. However, IA, IC, IE, IF, IH, and II highlight the dangers of having too much communication and influence with FMV/FM before the publication of the procurement, since it can lead to exclusion from the procurement because of the LOU law subsection regarding influencing the authority conducting the procurement.

IE states that newer suppliers with no contacts within FMV/FM that attempt to enter the procurement process after the RFI or RFQ are published will find it hard to compete. This is because suppliers with contacts can potentially acquire critical information and indirectly or directly influence the specification within the RFI and RFQ to align with their product portfolio. Moreover, IA, IF, IH, II and IJ highlight that hiring active or non-active military personnel is key to circumventing communication barriers presented by FMV/FM, especially for new and smaller suppliers. IF attributes this partly to the fact that military personnel have relevant contacts to reach the decision-makers, which is shown by the use of consultants who provide this service. II also highlights that military personnel can provide insights into potential demands of new products. IC identifies the lack of relevant industry contacts within FMV/FM as one of the key reasons why their company has failed to enter the defense market in Sweden. IA and IJ think that without military experience the contact with FMV/FM is harder, because of a lack of tacit knowledge such as knowing how and who to contact in order to reach decision makers. However, IA points out that there is great profitability when contacts are established. Further, maintaining the industry contact relationships is equally as hard as acquiring them. IC, IH, IF and IJ point out the advantage of knowing which contacts are responsible for relevant developments and capabilities within FMV/FM since the public contact information is very limited. II also points out the gray area regarding whom FMV/FM can communicate with regarding products and procurements. II points out that when FMV/FM deals with active or non-active military personnel employed by the suppliers, the discourse is more natural, resulting in FMV/FMV feeling like they are not engaging with the industry. IJ's 20 year experience within FM has helped IJ's company with getting in contact with relevant stakeholders within FM. However, IJ highlights that is not the case with FMV, where discourse regarding product concepts is hard, especially with those procuring products and drafting agreements.

IC explains that suppliers that are not exposed to FMV/FM but are part of a value chain that has FMV/FM as the end customers, still need industry contacts within FM in order to activate the end users in order to stimulate demand for their product. Furthermore, IE, IG and II highlight how industry contacts within FM provide a way of testing products and adapting them to the feedback received before the RFI and RFQ are released from FMV/FM. II highlights this as especially valuable for companies that rely on developing new products, where the feedback enables quick development cycles,

resulting in aligning products with internal demand at FM. IA highlights that FMV/FM and the defense industry are not proficient at making user-friendly products, since focus lies with meeting all procurement specifications rather than creating a great product for the end-users. IB further points out that user-friendliness is reliant on the end-users having experience with similar technology and that products need to be adapted to align with this experience.

Similarly, it is common for IH's company to market themselves and present products without a prompt from an RFI. This is thought to be more efficient and described by IH as "planting a seed" in the end user's organization at FM, which then can grow to a real demand that is communicated to FMV, resulting in procurement contracts with similar specifications.
II and IJ point out that it is the end user at FM that communicates their requirements to FMV and that those requirements will to some degree be reflected in the procurement specifications. It is therefore important to focus on convincing FM rather than FMV, since end users will declare an interest in a product to FMV. IJ additionally points out the importance of initiating demand at FM is because of the lack of possibilities to showcase products to FMV. However, IJ states that the communication between FMV and the industry is substandard and that it needs to improve.

IA highlights that it is a balancing act to know how close a supplier should be to FMV/FM before the publication of the procurement, because of the potential downsides of being excluded from a procurement. IC, IE, IF, IH, and II state that the proximity dangers to FMV/FM are not felt nearly in the same magnitude by bigger suppliers with framework agreements and longstanding relationships. IC says that the dangers of proximity to FMV/FM are increased when there are fewer suppliers for that specific procurement. IE shares that opinion, by saying that there is a tradition at FMV where threats of exclusion to new and smaller suppliers are used when they feel that they are too courted by these suppliers who want to show their product or make their presence known. IH and IC elaborate by saying that the more technologically advanced the product offered by the supplier is, the more pushback due to close proximity to FMV/FM could be felt. II and IJ believes that there is a cautiousness within FMV in being too close to suppliers. This stems from the potential consequence of having to redo a procurement if any influencing of the procurement is discovered, which is costly and time-consuming. IH thinks one of the reasons for less pushback for bigger suppliers is that they are often involved in larger procurement contracts and therefore get more contact points with relevant industry contacts within FMV/FM. According to PM, in the event that there are unfair competitive advantages to suppliers, contracting authorities should take action in the procurement process to counteract such unfair competitive advantages. PM further explains that absolute confidentiality prevails in a procurement process, so that a supplier never obtains information about the content, scope or scheduling of an upcoming procurement.

4.2.2 FMV's Communication with the Industry

IC, IE and IH think the demand and feedback communication between FMV and the industry could be improved. PM's perception is that FMV mostly maintains a good degree of communication with the industry and that the collaboration between FMV and suppliers is effective. However, providing accurate forecasts to a supplier is not always straightforward.. ID states that communication with FMV without an RFI or

RFQ is rare and states that presenting products that are not requested happens very seldom. ID points out that the industry has competitive dialogues with FMV, where FMV presents a problem and the industry presents solutions to that problem that are rated on price and quality. IG and II problematizes FMV's insufficient market knowledge, which IG thinks stems from the lack of information the individual employee at FMV gets and the lack of time for the individual employee to research what the industry offers. II states that several direct awards were given to international suppliers, where II's company could have provided a better product but was overlooked since FMV had deficient knowledge about II's product portfolio. However, IE points out that end-users at FM and procurers at FMV have become considerably more knowledgeable within new technologies which has resulted in more acceptance towards products with novel technologies.

IH points out that smaller suppliers potentially need to market themselves in order for FMV to know that they exist as a supplier. IG and II highlights that FMV's reluctance to communicate with suppliers limits access to information about FMV's demand in the industry but also hampers FMV's ability to recognize what is available on the market. II points out that FMV reluctance to communicate with the industry results in FMV losing the opportunity to get feedback on procurements. PM's response is that procurements with negotiating elements provide the industry with an opportunity to communicate with FMV. IF, IG, IH and IJ exemplifies deficiencies in FMV's understanding of the market offering by stating that FMV sometimes publishes procurements for products that do not exist or are substandard to current market offerings. IG thinks that communication between FM and FMV would be better if the end-users at FM were given a more influential role in the creation of specifications for the procurements. IJ and IH highlight that some procurements are misaligned with end-users' demand due to not involving the end-user. IG's company finds some procurements challenging to win due to them creating products that are demanded by the end-users at FM which may not align with what is specified by FMV. IH thinks procurements that are misaligned with end-users demand is a consequence of FMV's lack of knowledge in those specific areas, where more end-user involvement could have assisted the knowledge base. However, IA and IH also mention that the procurement process becomes very lengthy when FMV needs to involve other stakeholders in the process.

IA explains the demand communication as FM having Material Area Managers that communicate with their counterpart at FMV. Despite this, IG proposes that there is a communication chasm between FM and FMV, where FM communicates that they want the highest quality while the individual procurer at FMV mainly focuses on the lowest price when awarding procurement contracts. PM points out that procurement laws can hinder FMV by allowing a supplier who initially offers a low product price to subsequently secure substantial sales through additional services. This situation can result in higher overall costs compared to other suppliers whose initial product pricing might be higher but offer lower long-term costs. PM further points out the uncertainty regarding future sales of additional services complicates the comparison of procurement bids from suppliers. IG highlights the number of new employees within FMV/FM as one factor for this communication chasm since their background is usually not military and therefore can not critically tell the difference in quality and function and the characteristics of the supplier. II highlights that the cooperation and communication between FMV and FM can be subpar. Furthermore, II points out the

difficulty for FMV to interpret and translate FM's product requirements into procurement specifications, where incorrect interpretation results in procurements for products that are not aligned with the demand of FM.

PM agrees that the interpretation of FM's demand can be challenging and states that the extensive specifications sometimes do not match the exact requirements of FM. PM's believes that FMV is keen to involve FM in the procurement process since they are the end user. This involves providing input into FMV's model for evaluating products, and how they deem certain requirements should be weighted based on level of importance. PM states that meetings with suppliers, FMV and FM occur, where FM puts together a user group to provide subjective assessments of the product. Additionally, there are continued dialogues between FMV and FM regarding the procurements carried out by FMV.

4.3 Market conditions

The following sections presents the empirical findings regarding the market conditions in the Swedish defense industry.

4.3.1 The Effects of Existing Framework Agreements

IH and II states that one of the bigger barriers for newer suppliers trying to enter the market is the existing framework- and purchasing agreements between FMV/FM and established suppliers. IB proposes that suppliers with novel products can not enter the market standalone, therefore requiring them to utilize a partner with existing FMV/FM framework agreements. Moreover, IG points out that communication becomes substantially better when the supplier has framework agreements with FMV. PM believes that existing suppliers have a competitive advantage compared to suppliers that have not yet been supplying FMV/FM. IH mentions that even though their company is an established supplier, they also make use of other suppliers with existing framework agreements in place to facilitate market access. Furthermore, IF highlights that the established suppliers get access to lucrative service and maintenance contracts which sometimes are connected to framework agreements.

IE points out that if FMV/FM acquire products or services outside framework agreements, the process is lengthy and all the administrative work is resource intensive. IE also mentions that FMV/FM can utilize existing framework agreements as a way to avoid the time consuming process of security classification for suppliers. IB highlights that FMV does prefer to not hand out direct awards to suppliers. IJ mentions that FMV can make use of direct awards, but only for smaller sums which are insufficient for a supplier to be successful, but it could be a good stepping stone for securing reference cases according to IF and IJ. IE points out that recently FMV/FM has increasingly used urgent operational requirements (UOR) in procurements to speed up and ease the process by giving out direct awards without the traditional cost limitation associated with direct awards. Usage of UOR is still rare according to IE due to it requiring framework agreements and the exact product being demanded. IE highlights the UOR contracts are often large in volume, which indirectly limits them to larger suppliers. However, IE mentions that larger suppliers often invoke smaller suppliers capacity to

fill UOR or ordinary framework agreement, where they do not have competencies or capacity.

IE and IH also mention that FMV can utilize an existing framework agreement to procure products or services even though these are not in the scope of the original framework agreement. IH states that in those cases the supplier with the framework agreement could act as a middleman and use products from other suppliers to fulfill requests from the framework agreement. A supplier with a broad product portfolio might have several products within its portfolio that are viable to the existing framework agreement. FMV/FM sometimes prefer to use the existing framework agreement in order to not having to do a lengthy procurement process, which according to IH punishes smaller suppliers that only focus on one product. PM states that FMV does not utilize parallel contracts that stem from existing framework agreements. However, exceptions exist where it is clear that framework agreements are non-exclusive.

PM points out that procurement laws can hinder FMV by allowing a supplier who initially offers a low product price to subsequently secure substantial sales through additional services. This situation can result in higher overall costs compared to other suppliers whose initial product pricing might be higher but offer lower long-term costs. PM further points out the uncertainty regarding future sales which complicates the comparison of procurement bids from suppliers.

4.3.2 Difference Between Established and New Suppliers

IB highlights that there is a substantial difference between established, large suppliers and new suppliers in the defense industry which II also believes, stating that there is an advantage of being an established supplier. IB further states that the primary challenge for small suppliers is the threshold to be qualified due to the many requirements. IB points out that large suppliers can quickly target new business areas with hundreds of employees if it shows potential to be lucrative. Additionally, IH mentions that the larger suppliers have an advantage because they have greater resources for dissecting RFQs and RFIs. II further states that new suppliers might lack the tacit knowledge of interpreting implicit information in procurement specifications. PM states that on occasions, certain elements that are expected to be included in the delivery of a product or a system to FM may pose challenges, especially for a new supplier that is not familiarized with complex regulations. According to PM, a solution for a new supplier can be to engage with specialized consulting firms to help with such challenges.

IF and IH points out the lack of contacts for new or smaller suppliers within FMV/FM as a barrier for knowing where to enter the market. According to IF and II smaller suppliers do not have the same resources as larger suppliers for using consulting firms that specialize in contact with FMV/FM. IG points out that the lack of communication between FMV/FM
and smaller suppliers results in less information for them compared to established suppliers that have contacts within FMV/FM. IH mentions that smaller and newer suppliers are impacted more when not awarded a procurement since they have spent scarce resources and time on preparing for the award, which IH thinks is the reason for why the industry is dominated by large suppliers. IH and II also highlights that the lack

of access to framework agreements disfavours smaller suppliers. IF and II points out that the lack of incentive for FMV to take risk and procure innovative products instead of established ones presents a barrier for new suppliers.

4.3.3 Resources Required to Participate in the Defense Industry

Interviewees have stated an existing dilemma regarding the challenges that both winning and losing a procurement contract incurs, especially for small suppliers that have spent scarce resources. IH and II exemplifies this by stating that winning a procurement contract incurs costs, such as setting up production and II mentions that production capacity needs to be in place fast, whether it is in house or outsourced. IH thinks that the reason for why bigger suppliers dominate the industry is the rapid acceleration of business activities when awarded procurements which requires resources, such as production and financial resources to be in place in a timely manner. II and IJ point out that the volume FMV/FM's procurements are higher than other governmental entities in Sweden, increasing requirements on suppliers' production capacity. IF explains that suppliers can lack the capacity to produce internally, thus necessitating outsourced production. IF also notes that smaller suppliers would find it difficult to endure the loss of procurement contracts while simultaneously possessing internal production capacity, due to resulting overcapacity.

IB likewise highlights the financial resources needed before and after a procurement contract is secured. IF and II state that suppliers might have to endure a period, up to a year, before the first delivery of a product is invoiced, which requires financial resources. II explains that this is a well-known issue for suppliers. II also states that FMV refuses to pay in advance, even if a supplier has secured a contract, and that payments only happen at the time of delivery. PM explanation is that FMV has a policy to not make payments in advance in order to keep the supplier motivated to keep delivering.

4.3.4 New Technology Barriers and Incentives

IB highlights the distinction between "nice to have" and "need to have" when considering barriers to novel technology in the defense industry. Novel products or services that are considered "nice to have" need to be considerably cheaper and/or more effective than existing solutions. Otherwise, it will be difficult to turn a non-"need to have" product into a sale. II continues by pointing out that in order for a new technology to be procured, decision-makers at a high level will need to understand the upside and start a process to replace existing technology. IF and II highlight that there are high entry barriers for novel technologies in the defense industry and mention that there are very few early adopters in FMV/FM. IB and II describes FMV/FM as being conservative towards novel technologies and methodologies. IJ exemplifies this by stating that a recent procurement for VR was canceled after FMV considered themselves having inadequate knowledge. II mentions that even if there is demand for a product with novel technology from the end-users at FM, it takes considerable time before the product is procured. II attributes this to safety precautions, desired effect, and time for procurement where all of these three considerations are more tangible for novel products.

IB, IC and PM also highlight the importance of new products or services being compatible with existing systems and components. IC explains how compatibility with the industry standard set by larger suppliers guided the design of the value proposition of IC's company's value proposition, since competing with the industry standard is not realistic. However, IC points out that the market need and compatibility takes time to form for new products. IC highlights that the cooperation with Totalförsvarets forskningsinstitut (FOI) is an obstacle when trying to sell products and services based on novel technologies to FMV/FM. IC says that FOI often needs to test the technology before it is approved for sale, which can take up to five years. IC adds that some of the largest suppliers are coordinating the FOI tests, which IC thinks is a conflict of interest. This is because the larger suppliers are hesitant to cooperate with smaller suppliers that develop novel technology.

IC proposes that the forums FMV use for communication are more posturing for being open to communication rather than genuinely facilitating or engaging in actual communication and feedback. IC and IF call this approach to novel technology "innovation-washing", which they say symbolizes the signaling of demand for innovative and novel products and services but with the absence of procurements and acquisitions of them. IC states that this signaling is done through workshops, lectures and other forums. IC also problematizes the proximity dangers in being close with FMV by stating that when new technologies are developed, FMV/FM is usually unaware of it and its supplier. There is therefore a need for these suppliers to communicate with FMV/FM in order to get feedback on the new products, but these suppliers are often met with threats of being excluded if the contact intensifies.

IC, IF and II believe one of the reasons for FMV's resistance towards novel technology could be because the incentive structure within the organization does not reward risk-taking, resulting in a risk-averse perspective from FMV's employees. IF and II think FMV is cautious and prioritizes the reliability of established products over potential upsides from novel technologies since the procurers at FMV are scared of making mistakes and have no incentive to do so. IG thinks that FMV is a career oriented organization rather than a military organization. In order to progress in your career, the internal political game needs to be followed which includes risk-averse behavior where not making mistakes is incentivized. IH and II think there exists an incentive challenge for FMV since taking risks on updating current systems or products to a potentially better solution will not reward the procurer but rather the end-user. PM's response is that FMV always strives for products with the best quality, and that aspects such as price is not a defining aspect. Further, if FM are involved in testing products before the procurement decision is made, this will have a big effect on which product is chosen.

II highlights the difference for FMV/FM and an industry exposed to competition, where FMV/FM has no pressure to continually improve and are instead evaluated on other grounds. IJ highlights that the absence of incentives for risk taking at FMV/FM is also reflected in developing new technologies, which they often do with established suppliers. II points out that FMV personnel will not advance in their careers by introducing successful new technologies but they will be criticized if new technologies are unsuccessful. IF thinks that FMV internally has a resistance to change and wants a controlled development. II mentions that resistance to novel technologies can be viewed as a conscious decision to create inertia that prioritizes absolute reliability over novel

technology and methodologies. II also highlights that the large volumes often associated with the defense industry creates additional inertia.

IB mentions that exhibitions of prototype products can stimulate demand for specific segments within FM, however the fast innovation cycles in novel technologies is challenging since a new version of the technology is released before the lengthy procurements are completed. IF highlights that it is of special importance to get the products in the hands of the end-users at FM when dealing with technology in new application areas.IC states that FMV lacks adequate internal technical testing competence for new technologies. II further highlights that if FMV/FM has no experience of the technology, the procurement process gets harder since they will have trouble specifying the procurement.

II clarifies that FM is responsible for expressing their demand in a correct way to FMV, since FM will get exactly what the specification says. II, therefore, thinks that the usage of function-based specification rather than technically based specification is much better and should be used to a greater extent, since it gives FMV more leeway and options to consider when creating procurement for novel technologies. II also mentions that function-based specification gives the responsibility to create novel systems specifications to the industry, who are more competent than FMV. II also points out that procurements that utilize function-based specifications require less work to administer. PM reiterates that a procurement with technical-based specifications containing numerous precisely specified requirements reduces the flexibility for a supplier to submit their bid compared to a procurement being function-based with its specifications. Having function-based specifications means that a product can be designed in various ways as long as it meets the functional requirement.

IJ observes that there is inadequate knowledge transfer concerning new technologies between FM and FMV, leading to a lack of effort in procuring these technologies according to IH. IC highlights that FMV's procurement processes may be limited by a lack of awareness of new technologies, leading to a continued focus on traditional technologies. When new technology is introduced, it is often judged based on existing specifications, which may not be suitable for a fair evaluation due to fundamental differences. IE, IF and IH state that for more technologically advanced products, internal demand at FM is far more effective than having contact with FMV. IF and IH highlight the special forces community within FM as being the main demand driver for technologically advanced products since FMV is not up to date with technological developments in the industry.

In response to the above, PM states that the Swedish government has tasked FMV with increasing its level of innovation and there is ongoing work to expedite processes regarding novel technology. PM says that on occasions, new capabilities are created through the use of new technologies, but the most common occurrence is that the creation of new and modified capabilities are through changes in existing systems. However, according to PM, FMV has different goals to reach which may be conflicting. One goal is to utilize ready-made products that are available on the market and that can quickly be installed into FM to facilitate growth in supplying products. The conflicting goal is to increase the level of procured innovative systems and products, a process that takes longer time. Finally, PM believes that FMV needs to improve in how they take

on products with low technology readiness level, and also be more inclined to finance the development of such products to a greater extent.

4.3.5 Intellectual Property

According to IC, IF, and IH, FMV/FM prefers if its suppliers own the product's IP. This way, the development of the product can continue and diffuse. However, IC states that it is often a case that multiple companies have to agree on the terms of who owns which IP when developing products for FMV/FM. IA explains that the ownership of IP which is included in development contracts remains with the suppliers. IH declare that there is not an incentive at FMV/FM to own the IP, neither for development or profit reasons. IF also states that the alternative to suppliers owning the IP would mean that the development of the product would not happen. IH mentions that private companies owning IP also means that there is a better chance of reducing costs relating to the product, which FMV/FM also prefer. According to IH the only exception to FMV not owning the IP is if the technology is not advanced. IH thinks that the reason for this is that there is not an upside in giving away the IP. II states that normal proceedings are that the IP is owned by their company, but that a right to use agreement exists. This essentially means that when their procurement contract with FMV expires, FMV has the right to use their IP for their RFQ, enabling them to purchase the same product from a different supplier. According to II, the upside for FMV is that they can purchase the product for a cheaper price.

4.4 Market entry

The following section presents the empirical findings regarding market entry in the Swedish defense industry.

4.4.1 Partnerships and Contact with Other Suppliers

IA and IB states that smaller suppliers can form partnerships with other suppliers to fulfill the requirements set by FMV to qualify as a supplier. According to IF, through invoking the partnering supplier's capacity, e.g. financial capacity, smaller suppliers can fulfill the requirements set by FMV. IC claims that it is still challenging to meet the requirement even if smaller suppliers obtain a partnership with a supplier with superior finances. IF and IJ also acknowledges the difficulty in meeting all production requirements and believes that partnering with another company is often necessary to address this. PM states that almost all suppliers to FMV have some form of subcontractors. PM further explains that subcontractors never become contracting parties with FMV, instead FMV's supplier enters into separate agreements with subcontractors. II asserts that not all necessary capabilities and competencies must be internally sourced, having participated in a consortium for overseas procurements. This approach is aimed at meeting criteria related to revenue, production and reference cases.

According to IC, invoking a partnering company's capacity is a similar strategy their company has employed, having established a partner to enable market access for their product. It is pointed out however that finding partners is not straightforward. IC describes meeting end users and customers from the defense industry at fairs,

opportunities they believe would not have arisen otherwise due to the difficulty of finding their contact details. The end customer, which is FMV/FM, expresses their interest in the product of IC's company to a supplier they have established contact with, who subsequently approach IC's company. IJ and IH also believe that smaller and new suppliers should promote their products at fairs or similar to get in contact with partners and integrators. Further, IC points out that despite having a partner for market access, IC's company still communicates with end users and customers to stimulate demand. IC exemplifies this by explaining that communication with end users has impacted the development of their product so that it fits with an existing configuration developed by other suppliers, ensuring compatibility with their potential end users. IB further mentions the importance of having contact with the companies within your product's ecosystem.

IJ highlights that smaller suppliers often develop a product that is one of many products in a more encompassing procurement. IJ therefore believes the smaller supplier needs to cooperate with established suppliers in order to be able to encompass all the products in the procurement. IJ points out that smaller suppliers need to ensure that their established partner also prioritizes their product. IA believes that small suppliers should partner with established suppliers that possess existing framework agreements and is an established supplier to FMV/FM. However, it's critical to ensure that the partner's motivations extend beyond merely leveraging the smaller supplier to expand their product range and increase their procurement opportunities. IJ therefore believes that the largest suppliers are not suitable partners since they are not incentivized to introduce new products that are not under their ownership and that could replace their existing offerings.

IG states that it is common for their company to be part of agreements where they partner with other companies and responsible for communicating with potential customers, primarily within FMV/FM. Similarly, IC's company uses a partner to distribute their technology. II suggests that smaller suppliers should consider targeting established suppliers as their main customers, who would then distribute products to FMV/FM. For this strategy to be effective, it is important that the established suppliers have a similar product range and established relationships within FMV/FM. IH and IJ's view is that the industry is dominated by a few large suppliers and suggests that entering the market without collaborating with these suppliers could pose challenge, since procurements encompass a large volume and variety of products Furthermore, IJ points out that FMV does not have the time to procure small orders for niche new technology and that FMV rather wants to procure larger orders that encompasses several products with a broader scope. IJ thinks this caters to larger suppliers who can fulfill these procurements which have larger volumes and are broader in scope, which leads to a differentiation between smaller and larger suppliers in order to promote order volumes. Finally, established suppliers may act as system integrators and utilize smaller suppliers' product portfolio, providing a potential pathway for smaller suppliers to enter the market in this manner. According to IC, it is not uncommon that a supplier's biggest competitor can turn out to be their biggest customer. However, suppliers with new technologies often need customers who are seeking to be at the forefront of development in their industry.

4.4.2 Development Contracts

IB describes development contracts regarding developing new products as difficult to acquire, and that it is better to have development contracts focusing on existing products. IA states that their company has never had development contracts that lead to any new products being sold to FMV. Instead most development contracts regard products that are already being sold to FMV. IA's company has existing development contracts with FMV, however these regard developing certain components in existing products. According to II, to participate in development projects, suppliers require the ability to develop products quickly and create prototypes swiftly, as well as having insight into what is demanded. IC believes that development contracts are not profitable. Development contracts are especially risky for smaller suppliers because they are often more dependent on earning revenue after such a contract, since they have fewer revenue streams. IH further states that large development contracts often are funded by the suppliers themselves, however sometimes suppliers receive funding for the development. However, IA clarifies that if FMV/FM funds the development contract it is organized around milestones, with payments issued upon completion of each milestone.

PM states that development projects with products of low technology readiness level have funding that is never intended to cover the entire project but only what is later being procured. Further, PM says that some development projects may start from an existing system and that it is common that these require adaptation to better match the requirements of FM. Finally, PM states that the risk is always higher in development projects and that not all development projects succeed.

5. Discussion

This section will present the analysis drawn from the literature study combined with the empirical findings.

5.1 Barriers and Challenges in the Swedish Defense Industry

The following section will provide analysis on the barriers and challenges for the Swedish defense industry.

Table 3. Summary of barriers and challenges and their effects.

Headline	Barriers and Challenges	Their Effects
Market Access	Smaller suppliers are unable to meet stringent direct market entry requirements on their own.	Necessity for smaller suppliers to form partnerships with larger suppliers or act as subcontractors to facilitate market access. Resulting in a dependence on larger suppliers which limits autonomy and market entry options for smaller firms.
Difference Between Established and Smaller Suppliers	Smaller suppliers lack access to crucial framework agreements and face challenges in mobilizing resources quickly and navigating the procurement landscape, unlike their established counterparts.	Creates a competitive disadvantage, reducing chances of success in procurements.
Procurement Conditions and Specifications	Procurement processes involve stringent specifications that can sometimes favor specific suppliers and are difficult for smaller suppliers to fulfill. Procurement process creates an administrative burden, especially for smaller suppliers with limited resources. The process necessitates financial resources to deal with the administrative burden and the eventuality of needing production setup.	Smaller suppliers struggle to meet stringent specifications and requirements of resources, leading to not being able to participate or win procurements. Additionally, this drains smaller suppliers' resources, diverting focus from core activities
Direct Engagement and Communication Barriers	Successful procurement often requires direct contacts within FMV/FM, a challenge for smaller suppliers who also receive inadequate feedback on failed bids.	Impedes effective refinement of procurement strategies and alignment of product offerings with FMV's requirements and FM's demand, lowering the success rates of suppliers without established direct contacts.
Communication Between End-Users, FMV and the Industry	Misalignment of priorities between FM's desire for high quality and FMV's focus on low price, which complicates the identification of actual customer needs. Knowledge gaps in FMV's understanding of supplier offerings.	Creates ambiguity in supplier strategies, as products tailored for FM's needs may not align with FMV's procurement specifications, potentially leading to mismatches in product offerings by the suppliers and what FMV procures.
Incentive Structures in the Defense Industry	FMV's conservative nature and risk-averse culture discourage the procurement of novel technologies. Intellectual property issues and self-funded development contracts further complicate innovation.	Discourages innovation among smaller suppliers, limiting opportunities for introducing novel technologies.
Development Contracts	Contracts focusing on upgrading established products require self-funding, making them unsuitable for suppliers developing novel technologies.	Unprofitability of development contracts for novel products due to high investment with uncertain returns, deterring innovation-focused suppliers.

5.1.1 Market Access

It is evident that a critical strategy for smaller suppliers to qualify as suppliers and gain access to the market is to engage in partnerships with larger, established suppliers. This belief is supported by insights from IA, IB, IC, IE, IF, IJ and IH who state the importance of partnerships with larger suppliers that possess capacities, such as financial capacity, which fulfill the requirements set by FMV/FM. The importance for smaller suppliers to form partnerships with larger suppliers and invoke their capacity can be seen to essentially serve as a gateway for market entry, enabling smaller suppliers to navigate complex and stringent procurement processes. Without forming partnerships, smaller suppliers would likely find it difficult to fulfill requirements, such as revenue requirements. This would prevent any chance of direct market entry. The

necessity for smaller suppliers to gain market access by forming partnerships is supported by Glas's (2017) description of the defense industry as being dominated by large suppliers utilizing specialized SMEs as subcontractors.
Direct awards may be seen as a way to gain market access, but they have been shown to be rare and constrained to smaller contract values, effectively erasing them as a pathway to market access. Despite direct awards being rare, they have reportedly been awarded to established suppliers with existing framework agreements in an attempt to circumvent the time-consuming procurement process. This is a further indication to why market access opportunities are slim, thus necessitating the need for smaller suppliers to engage in partnerships, especially with suppliers with existing framework agreements.

However as IE pointed out, smaller suppliers can gain indirect market access through the channels of larger suppliers by acting as a subcontractor, which can potentially act as a stepping stone to new markets. Smaller suppliers acting as subcontractors could also benefit from the established relationships that larger suppliers have in place. The usage of existing framework agreements and even UOR points to FMV/FM signaling that the current procurement process is time-consuming and therefore potentially prevents access to all the necessary products and suppliers. It is also stated that the Western European defense market is dominated by enormous suppliers with specialized subcontractors (Mantin & Tishler, 2004; Dunne, 1995; Golde and Tishler, 2004). Therefore smaller suppliers need to consider specializing to fit in the value chain when acting as a subcontractor. Acting as a subcontractor is also a way to gain economic size and credibility in order to qualify for the strict requirements of FMV, further enabling market access. This is corroborated by Glas (2017), who highlighted the significant capital investment and intensive R&D efforts required, resources that most smaller suppliers lack independently, therefore necessitating partnerships to enable market access.

In order for smaller suppliers to adopt the strategy of being subcontractors, they need to identify a fitting partnering company to work with. Since PM stated that almost all suppliers to FMV have subcontractors, there is a further indication that smaller suppliers rely on bigger suppliers for market access. However, larger suppliers can also act as subcontractors for smaller suppliers. Since IF revealed that smaller suppliers face challenges in meeting all production requirements independently, it means that there is a necessity to partner with other suppliers in order to address these shortcomings. Such partnership can therefore mean invoking the production capacity of a bigger supplier. Moreover, II alluded that not all requisite capabilities need to be internally sourced, with participation in consortiums representing a strategic approach to fulfilling requirements related to production, among others. A challenge lies with invoking capacity where smaller suppliers may become overly reliant on larger suppliers and the dependence potentially undermines their autonomy.

Larger suppliers may also face challenges if they use a smaller supplier as a subcontractor or system integrators, which IH mentioned as a possible partnership. Such a challenge can cause reputational damage if their smaller partner fails to meet product quality standards or deliver on commitments. The power balance in partnerships between larger and smaller suppliers gains heightened importance when developing new technologies since Glas (2017) emphasizes that it requires the manufacturing abilities of the entire value chain. Therefore, by offering unique

technical products essential to the value chain's overall value proposition, smaller suppliers can shift the power dynamic, making larger suppliers dependent on them and potentially increasing their margins. While Glas (2017) proposes that defense suppliers may turn to civilian markets under less favorable defense market conditions, Cox et al. (2014) highlight that the specialized procurement requirements in the defense sector restrict alternative commercial applications for these products. The more specialized these products are, the more challenging it becomes to adapt them for use in other commercial sectors. Therefore, suppliers concentrating on innovative or specialized products may find their business models locked into the defense industry, presenting a challenge in balancing specialized value propositions with the flexibility to enter other markets.

5.1.2 Difference Between Established Suppliers and Smaller Suppliers

The interviewees point to a clear difference between established large suppliers and new, smaller suppliers in the defense industry, with the industry having overwhelming barriers and being dominated by a few suppliers (Lorell & Levaux, 1998). The interviewees pointed to established suppliers having advantages in being able to swiftly mobilize resources for new business areas and efficiently navigating the complex regulatory and procurement. The interviewees additionally pointed to the lack of access to framework agreements as one of the biggest barriers and losses of competitive advantage for smaller suppliers. Larger suppliers can also utilize framework agreements to offer a broader value proposition, even utilizing framework agreements for obtaining procurements for products outside its scope. These resources and capabilities are difficult for smaller suppliers to obtain internally, making it difficult to gain competitiveness. Although a smaller supplier might offer a superior product, the broader competitive environment shaped by previously mentioned factors, is more significant for procurement success.

The fact that larger suppliers use wide product portfolios could indicate that they see more benefit in bidding on numerous procurements with adequate products rather than aiming for perfection in a single procurement, which could reflect a strategic approach to maximize the amount procurement wins. An additional reason why larger suppliers adopt the strategy of offering a broad portfolio of adequate products could be because of the frequent use of framework agreements that award procurement wins without competition from other suppliers with higher-quality products. Smaller suppliers could therefore be vulnerable if they are too dependent on one product being successful since the factors outside product specifications play a large role in procurement wins.

The procurement process is identified to be challenging for smaller suppliers due to its demands on resources and time. Therefore, the aforementioned approach of larger suppliers bidding on numerous procurements may not be viable for smaller suppliers since they have scarce resources. The observations by IF, IH, and II illustrate a market dynamic where larger suppliers face less pushback and have better access to FMV/FM, which would create an advantageous position compared to smaller suppliers. As Cox et al. (2014) also pointed out, nontraditional suppliers faced difficulties when asking questions regarding the technical requirements of RFPs and bidding procedures which further strengthens the argument that large, established suppliers might have an advantageous position. The defense industry's characteristic volatile spending and

prolonged project periods, as described by Glas (2017), gives an advantage to established firms that can sustain variations in order volumes and bridge the cash flow gaps between contracts. The lack of resources for smaller suppliers could potentially result in positioning themselves as a subcontractor in the value chain, since the cash flows are more predictable in that position.

5.1.3 Procurement Conditions to Consider

One major implication highlighted by the interviews is the difficulty companies face in meeting the product specifications set by FMV/FM, where the interviewees and Cox et al. (2014) state that procurement specifications often favor certain suppliers. This is another reason why the disfavoured smaller suppliers potentially need to seek partnerships or position themselves as subcontractors in the value chain, in this case with a supplier that has the specifications tailored to them. With Glas (2017) stating that the defense industry is dominated by a few large suppliers could influence procurement behaviors and specifications to favor these suppliers, further strengthening that procurement specifications present a barrier for smaller suppliers. Similar to IE's view, a potential way for smaller suppliers to mitigate this is attempting to get the specifications outlined by FMV/FM to fit their product. However, potential challenges with this strategy may arise since the interviewees stated that there is a possibility of being disqualified if too close contact is initiated with FMV/FM. Due to the risks involved in influencing procurements and the restricted access to FMV/FM, it is difficult for smaller suppliers to secure tailored specifications, thus diminishing their chances of accessing the market. Even if a smaller supplier was to obtain tailored specifications, the stringent specifications stemming from products within the defense industry having to be at a high standard makes it challenging for smaller suppliers to fulfill.

Moreover, it can also be questioned if there exists a general problem with specification requirements and how they are written and evaluated. As ID stated, a supplier can be superior in a majority of the specifications except one, with the exception leading to the supplier being unconsidered from the procurement. Cox et al. (2014) noted that suppliers often struggle with vague communication from defense procurement agencies, complicating their ability to accurately interpret procurement specifications. Further, II, IF, and IH have elaborated on negative experiences because of confusion regarding what specifications FMV were after. This, together with PM stating that FMV sometimes has difficulties in meeting the expectations of FM due to the difficulties in establishing specifications, underpins a more general problem. Given the broad array of resources and capabilities necessary to satisfy all specifications, larger suppliers often have the upper hand, as Hartley (2007) notes, potentially partly due to their unique capacity to undertake the resource-intensive R&D efforts required. The usage of function-based specifications, as discussed by II, can represent a shift in procurement mindset from the technical specifications. This enables the industry to propose innovative technologies that meet FM's operational needs without being constrained by overly technical specifications that are mostly formulated in favor of established products that are offered by larger suppliers. Function-based specifications can provide newer suppliers with reduced entry barriers in the procurement process and a wider range of product possibilities.

Furthermore, it is evident from the interviews that there is an administrative burden associated with the procurement process, particularly for smaller suppliers with limited resources, aligning with the findings of Cox et al. (2014). IA, IF, IG, II and PM expressed that it is considerably time-consuming and demanding, also paralleling Cox et al. (2014) findings which stated the necessity of having the knowledge to understand contracting procedures and acquisitions regulations. If such knowledge is not obtained, it is clear to see why the procurement process is demanding and time-consuming. The challenge of knowing the procedure can also drain the limited resources of smaller companies and hinder their ability to focus on core business activities such as product development. This is supported by Cox et al. (2014) who state that developing the necessary knowledge is costly and time-consuming. The alternative of having dedicated business units or specialized staff, mentioned by Cox et al. (2014), may not be an alternative for smaller suppliers due to its limited resources. If possible, suppliers should evaluate whether it is beneficial to have dedicated staff to handle these procedures. Participating in a procurement process and submitting a bid does not guarantee being awarded the contract, making the investment in dedicated staff less justifiable, particularly for smaller suppliers.

Some interviewees highlighted that financial constraints pose significant obstacles for suppliers. Suppliers lacking financial and production resources may find themselves disadvantaged when bidding on procurements. The particular issue referred to is due to costs resulting from activities such as the aforementioned administrative burden of preparing a procurement bid and from the production needed if a procurement contract is secured. The common issue of managing cash flow when a contract is secured, due to the payment structure associated with procurement contracts, makes it clear why larger suppliers with sufficient financial resources would not struggle as much. This challenge aligns with Cox et al. (2014), who identified a similar issue in the delay between submitting a bid and receiving the initial payment. Cox et al. (2014) further pointed out that the fluctuations in defense demands and project cancellations negatively influence the expected returns from investments in the defense industry. This might lead to smaller suppliers finding it hard to attract capital in order to gain the necessary scale for qualifying for certain procurements.

5.1.4 Direct Engagement and Communication Barrier

Even though access to FMV and FM might seem to be open, the interviews underscore the critical role of establishing the right contacts within FMV and FM to be successful in the defense industry. Similarly, Shelton and McNaughton (2007) highlighted how relationships with relevant stakeholders and decision-makers play an important role in the defense industry if the goal is to influence a procurement process. Further, Cox et al. (2014) stated that nontraditional suppliers in the defense industry struggled with contacting, gaining access and receiving prompt responses from the defense procurement agency. This struggle indicates an even further need for suppliers to have contacts within the defense industry due to the stated difficulties. Cox et al. (2014) emphasized the problem that smaller suppliers face in receiving inadequate feedback on failed bids, a situation that complicates their ability to refine future submissions without established contacts within the procurement agency. Aligning suppliers' product offerings with FMV's specifications and requirements is critical for being successful in the defense industry and requires that they have access to FMV for

feedback and communication. To address the barriers in communication, it is crucial to have established contacts within FMV/FM.

The usage of consultants indicated by IF to reach FMV/FM decision-makers demonstrates the critical barrier of not having direct contacts and is reinforced by Lopes and Cortés (2018), who identified the lack of direct engagement with decision-makers as a major obstacle in B2G sales. The defense industry with its specialized requirements and specifications, highlights the need for suppliers to possess industry know-how and establish communication channels. IA, IF, IH, II and IJ pointed out the suppliers' employment of active or non-active military personnel which could be seen as a strategic move to overcome communication barriers presented by FMV/FM. Cox et al. (2014) further pointed out the difficulties for nontraditional suppliers in interpreting non-explicitly stated technical requirements, where the tacit knowledge of military personnel play a crucial role. The suppliers can utilize the aforementioned personnel's access to contact networks to enable direct decision-maker engagement as well as utilize their understanding of the procurement process and end-user demand at FM, which helps them overcome the challenges posed by the communication barriers in the defense industry described by Cox et al. (2014). The suppliers' reliance on personal contacts within FMV/FM is further supported by the deep dependence between suppliers and the national defense force described by Glas (2017).

Moreover, IC, IE, IF, IG, IH, and II pointed to an unfair treatment of suppliers without framework agreements which indicates a preference for suppliers with existing relations to FMV. The interviews indicate a procurement strategy at FMV that is heavily influenced by political decision-making and a fear of making mistakes, resembling the impact of political decision-making on B2G sales identified by Lopes and Cortés (2018). The hesitance to engage with newer and smaller suppliers combined with a preference for established suppliers with existing contracts indicates a cautious and risk-averse approach that potentially limits the introduction of novel technologies into the defense sector. Suppliers that aim to offer non-established products may need to establish access to FMV/FM in order to enable early influence that can steer the procurements in a desirable direction, such as through the "shaping operations" mentioned by IH. However, suppliers need to consider the trade-off between access and compliance because of the potential exclusion from procurements mentioned by several interviewees.

5.1.5 Communication Between End-Users, FMV and the Industry

Despite communication between FMV and FM being instrumental for the successful interpretation of FM's needs into procurement specifications for FMV there exists a "communication chasm" between FM's desire for the highest quality and FMV's procurement focus on the lowest price. The fact that price is prioritized over other factors by procurement organizations is supported by both Malmgren (2020) and Edler et al. (2011), who think that is one of the bigger barriers for innovation in procurement environments. The misalignment and conflicting priorities between FM and FMV may adversely affect suppliers. Suppliers shaping their product based on what is demanded by FM may not be the same as what is procured by FMV. This creates an ambiguity about whether to align with FM's demands or predict future procurement specifications that will be included by FMV. This complicates suppliers' ability to identify their actual customer. The end-user, FM in this case, is crucial as they are the

direct users of the product. It would be sensible for suppliers to focus on these end-users since their acceptance of the product should be crucial for its success. Shelton and McNaughton (2007) acknowledges the difficulty in choosing the right stakeholder to target and that they may change depending on where the product is in its life cycle. The interview findings reveal that FM's product desires often get altered when translated into procurement specifications by FMV. Therefore a supplier basing their strategy on matching their product offering with the needs of the end-users at FM's might still find themselves unsuccessful due to FMV's conflicting priorities, which is strengthened by IJ's statements about the end-user not always being involved in procurement specifications. According to Shelton and McNaughton (2007) and corroborated by interviewees, the slowness of the procurement process risks altering specifications and customer priorities. This presents itself as a significant issue for suppliers of new technologies as emerging competitors can undermine their early market lead.

Despite the above several interviewees stated that it is still crucial to directly engage with end-users to ensure that products can meet FM's actual needs. IH also pointed out that the best way to market a product is by stimulating demand at the end-user level at FM instead of marketing it to the purchasing organization at FMV, since FMV translates FM's demands into procurement specifications. IH further points out that end-users at FM therefore become crucial since they act as an information source that shares requirements early on in the procurement process and can guide the procurement specifications to better match the supplier's product features. Furthermore, IB, IC and IF stressed that giving hands-on experience to end-users is crucial in order to get exposure and reference cases, especially when dealing with innovative technologies. Smaller suppliers aiming to generate demand for non-established products must establish direct communication with end-users at FM. Although this approach does not guarantee success, its emphasis by multiple interviewees shows its significance. Given the inherent disadvantages smaller suppliers face, exploring every strategy that could indirectly influence procurement specifications is crucial to consider.

IG, II and IJ's statements suggest knowledge gaps in FMV's understanding of supplier offerings, including procurements for non-existent or outdated products. This gap indicates a potential disconnect between FMV's procurements and what is being developed by the defense suppliers. According to IG and II, the gap is a result of FMV not efficiently communicating with the industry which results in FMV losing insights on market offerings and novel technologies. Additionally, IG pointed out that the addition of new FMV employees with limited military backgrounds complicates the conflicting priorities. The lack of military experience among some FMV employees complicates matters for suppliers that design products aimed at satisfying the specific requirements of FM's end-users, as these employees may fail to appreciate the necessary quality and functionality distinctions. Suppliers developing novel technologies might find themselves being discouraged as a result of procurements not reflecting the latest market offerings.

5.1.6 Incentive Structures in the Defense Industry

The defense industry is characterized by IB, IF, and II to have substantial entry barriers for novel technologies. Novel technologies need to not only offer substantial advantages over existing solutions but may require them to be seen as essential to be considered for procurement. The barriers are enhanced by FMV's conservative nature

which is highlighted by IB's and II's description of FMV's cautious procedures. Furthermore, IJ's statement about the canceled VR procurement because of inadequate knowledge at FMV exemplifies the defense sector's aversion to adopting novel and unproven technologies. This conservatism points to a preference for reliability and demonstrated effectiveness over the potential benefits and risks of innovation. Furthermore, IF and II highlighted that there are very few early adopters within FMV/FM and PM acknowledges FMV's lackluster adoption and financing for novel technologies. This further strengthens the above mentioned notion that suppliers developing novel technologies might find themselves discouraged. Additionally, suppliers are forced to stimulate enough end-user demand as a way to convince FMV to overcome risk-aversion towards technologies and therefore provide market access. In alignment with Malmgren (2020), a way for FMV to overcome their current procurement patterns and work towards encouraging suppliers with innovative technologies is to incorporate a longer perspective when procuring these technologies, preferably initiating more innovation procurements. This would meet challenges since, according to Söderholm et. al (2021), requires that the procurement organization has time for needs assessment, which involves communication with the industry, something that FMV evidently does not prefer. The limited number of experienced and available employees at FMV further complicates the implementation of innovation procurements. This often results in a preference for established products prioritized by price, with little emphasis on long-term considerations, aligning with the findings of Malmgren (2020).

IC and IF's discussion on "innovation-washing" indicates a gap between FMV's outward communication of seeking innovation and the actual procurement of novel technologies. This gap where demand for innovation is more signaled than executed is an indicator of a risk-averse incentive structure within FMV/FM that discourages the adoption of unproven and novel technologies. Additionally, the aforementioned difficulties regarding communication with FMV and FM, result in further difficulties for introducing innovation in procurement environments as communication and cooperation are described to be crucial for novel products by Edler et al. (2011) and Malmgren (2020). IG described FMV as a career-oriented organization with a risk-averse culture which indicates a significant barrier to innovation. The barrier stems from that innovative products tend to be riskier and unproven, where conventional products offer the procurer a safer option. The fact that procurers at FMV only face the associated risks and do not experience the potential upside of new technologies that are apparent to end-users at FM creates another conflict of interest between FM and FMV. This aligns with Cox et al. (2014) findings regarding military procurement organizations preference for established suppliers with a history of delivering successful contracts. Furthermore, the observations by Cox et al. (2014) regarding inadequate assistance for advancing new technologies in the defense industry point to risk aversion and lack of incentives for improving the status quo of existing products. Additionally, as mentioned by Malmgren (2020), procurement organizations that lack resources and capabilities often turn to risk-aversion and short-term thinking. According to some interviewees, this is the case for FMV regarding novel technologies, which as Malmgren (2020) suggested, might result in novel products not being procured. These factors may result in suppliers having to adjust their value proposition and resources to provide products that impose less risk to FMV, potentially diminishing their initial differentiation compared to established products. Smaller suppliers may therefore instead find increased value in partnerships or subcontracting, given that the involvement of a larger supplier as the primary contact

with FMV conveys a lower risk profile. Moreover, Cox et al. (2014) point out that suppliers are not encouraged to innovate in the defense industry, as procurers often prefer bids that are economical and meet the required technical requirements, rather than those offering superior performance at a higher cost.

The importance of compatibility with existing systems mentioned by interviewees combined with the lengthy testing and approval process by FOI, presents a barrier for suppliers developing novel technologies. A further barrier is time-consuming approval times for novel technologies which suggests a rigidity in the Swedish defense industry's approach to innovation, indicating a lack of incentive for FMV/FM to introduce new technologies. The fact that the coordination of FOI tests are performed by large established suppliers results in a conflict of interest and a further difficulty for smaller suppliers to penetrate the market. Conforming to existing systems diminishes the chances of introducing innovative solutions that break from traditional approaches, which may limit the chances of new suppliers and their products being successful.

In the Swedish defense industry, after a procurement contract ends, the rights to use the IP regarding certain products revert back to FMV/FM, as II points out. While intellectual property protection is essential for incentivizing innovation due to the substantial risks and costs involved (Newfarmer et al., 2002), the Swedish defense industry operates differently which diminishes the incentives for innovation for suppliers. Similarly, Cox et al. (2014) describe how suppliers in the American defense industry have expressed concerns about intellectual property and feeling exploited when sharing innovative ideas. Suppliers developing technologies heavily reliant on intellectual property should consider if direct market access to FMV justifies the potential loss of control over their IP. Alternatively, they might consider gaining indirect market access by repositioning themselves within the value chain, making other suppliers their end customers, and therefore having greater control of their IP.

PM mentioned that FMV wants to improve their procedure and acceptance regarding novel technologies, where innovation procurement might act as a gateway for enabling this. First of all, a supplier can find their first customer with the help of the procurement organization awarding them procurement wins (Edler et al., 2011). As discussed previously, one of the main issues for smaller suppliers in the Swedish defense industry is the difficulties in identifying the right customer and stakeholders. As several interviewees stated that it was perceived that FMV does not signal that they demand novel technologies, innovation procurements could however assist FMV with signaling to the industry that they encourage for innovative solutions (Edler & Georghiou, 2007), if that is their intent. Additionally, innovation procurement could provide smaller suppliers with getting credibility that could be vital for future procurements as well as for the growth of the supplier towards establishing themselves in the defense industry.

5.1.7 Development Contracts

Statements made by interviewees indicate that development contracts are not a good pathway if the end goal is to sell novel products to FMV/FM and are also unattractive because they require self-funding. They are also unsuitable for suppliers developing novel products since the contracts often regard development for upgrading established products. The self-funding aspect indicates an unprofitableness since it may not lead to

a procurement of the developed product. Additionally, development of novel products can be assumed to be over a long period of time, increasing the needed funds and increasing the potential drawbacks if products are not procured. The above concludes the importance of products being procured at the end of a contract but at the same time unattractive for suppliers attempting to enter the market. The fact that the contracts regard development for upgrading established products means that they are only potentially attractive for established suppliers that are already selling products to FMV/FM.

5.2 Business Model Component Implications

This section will analyze how modifications to the business model components of partnerships, resources, customer relationships and channels can be done to mitigate the barriers and challenges faced by smaller suppliers in the Swedish defense industry.

Table 4. Summary of business model implications.

Headline	Implication on Business Model Component
Key Partnerships	Forming partnerships with established suppliers is crucial for smaller suppliers to access markets and meet stringent procurement requirements. These partnerships allow smaller firms to leverage the resources, expertise, and network of larger partners, facilitating market entry and compliance with procurement processes. Strategic partnerships should aim to fill capability gaps without duplicating efforts, thereby optimizing resource utilization and cost efficiency.
Key Resources	Smaller suppliers must navigate significant resource barriers, including financial limitations, lack of certifications, and insufficient production capacity. Partnerships with established suppliers can provide access to these necessary assets, enabling smaller suppliers to gain market access and enhanced capacity. Further contact networks, tacit knowledge and framework agreements are identified to be key resources. Further, novel technology might be the only non-replicable resource smaller suppliers can offer the value chain.
Customer Relationships	Maintaining strong relationships with FMV/FM is essential due FM potentially expressing demand for products that FMV procures. Suppliers need to develop and maintain these relationships to gain insight into procurement processes and align their offerings accordingly. The ambiguous identification of the actual customers and stakeholders might complicate the supplier's decision on who to have a relationship with. Furthermore, personnel with military experience are seen as key since they provide the supplier with existing relationships.
Channels	Traditional direct sales channels are often ineffective for smaller suppliers due to the stringent and complex nature of defense procurements. A more viable approach for smaller suppliers is utilizing indirect channels through partnerships with established firms that already have existing business relations with FMV/FM such as framework agreements. The business model should therefore include a balanced channel strategy that leverages both internal and partner channels that can provide broader market access without compromising too much on autonomy or profit margins. Furthermore, employees with military experience and consultants can provide a way of reaching the channel of decision-makers at FMV/FM.

5.2.1 Key Partnerships

A mentioned gateway to market access can be to form partnerships with other suppliers that enable the sales of products to FMV/FM. This can serve as a means to reach customers, which is one of the primary motivations for smaller suppliers entering into partnerships (Freytag, 2019). The partnership may also be a way to easier validate the product according to Fretyag (2019), and partnerships with established suppliers with existing contacts at FMV/FM may offer such opportunities. A supplier seeking to maximize the value from a partnership should find a partner that has the required resources or capability that the supplier is missing, ensuring that the partnership fills the gaps and does not overlap with existing resources and capabilities, since partnerships come with costs and challenges. To optimize the benefits of a partnership, a supplier should collaborate with a partner who possesses the required resources or capabilities that are absent within their own organization, thereby complementing rather than duplicating their existing assets, considering the costs and challenges involved in forming partnerships. For instance, partnerships can facilitate outsourcing of production for smaller suppliers, mitigating the risks associated with inadequate production capacity in case of securing a procurement or the risk of overcapacity when failing to secure a procurement contract. The procurement process is evidently challenging for small suppliers to deal with, and often requires know-how of how the process works, along with requiring resources to deal with the administrative burden of the process. At the same time, requirements, for example in terms of revenue, can be

hard or even impossible to fulfill for smaller suppliers on their own. It can be seen that the ideal partners are those suppliers with experience in selling products to FMV/FM and a solid understanding of procurement processes and resources and capabilities sufficient enough to meet the requirements and deal with the challenges of a procurement. Such partnerships would presumably enable a supplier to invoke the capacity of the partner and benefit from their know-how of dealing with procurements. Established companies with strong market presence are seen by Freytag (2019) as potential suitable partners, strengthening the argument that established suppliers with experience and in selling products to FMV/FM are preferable. Osterwalder and Pigneur (2010) strengthens the argument of why partnerships are beneficial, stating that a company can expand their resources and activities by engaging in partnerships. Freytag (2019) further states that partnering with established companies can provide access to knowledge and licenses, which would mitigate the barriers and challenges presented by the procurement process and its stringent requirements.

Suppliers aiming for even faster market entry may be inclined to partner up with a supplier that not only is established and has the know-how, but has existing framework agreements with FMV, since this can mean skipping lengthy procurement processes. The fact that established suppliers with framework agreements sometimes offer products in many categories might indicate that such suppliers are not afraid to test new business ideas and enhance their product portfolio by potentially partnering up with a smaller supplier. Such a factor is worth considering for a small supplier searching for a partner since Freytag (2019) mentions that a benefit of partnerships for established companies is to test new business ideas. Potential partners with a limited product portfolio or even a single product in its portfolio may indicate that there is a reluctance to new business ideas. It may also indicate that the risk to invest in a small company is too big, since this would mean that the new business is a big portion of their overall business. In such a case, the partner might be determined to control the strategic decision-making which would mean that the smaller supplier would lose some of its autonomy.

It can be seen that the strategic benefits of getting market access to FMV/FM via a partnership should be greater than the strategic costs a smaller supplier potentially has to deal with. As Freytag (2019) states, there is a risk of losing autonomy to the partnering company, a strategic cost that might harm a smaller company’s ability to make strategic decisions in the future. The dependence on existing relationships with FMV/FM may force smaller suppliers to form partnerships with larger suppliers. This may force the smaller supplier to adjust its value proposition to fit into the value chain, where the larger supplier is the dominant partner and therefore can set the conditions. A strategy to minimize such a situation may be to take the strategy as a subcontractor, where the bigger supplier also is dependent on the smaller supplier for their core business. This might mean that the supplier gives up on selling products directly to FMV/FM, but keeps their autonomy for future strategic decisions. A strategy to reduce overdependence on a partner involves smaller suppliers positioning themselves as indispensable within the value chain by supplying unique, essential products that impact the entire chain's offerings. To maintain autonomy and strengthen their position in the value chain, small suppliers should consider offering complementary products that bolster the entire value chain offering, as this can be a strategic reason for larger suppliers to enter partnerships, according to Varadarajan and Cunningham (1995).

An aspect to consider is also how fitting the partner is to the smaller supplier's product and what activities the partner is going to perform. Suppliers may for instance seek a strategic alliance where the partner's sole responsibility is to use its sales channels to reach FMV/FM which enables the smaller supplier to sell its product. As Freytag (2019) stated, such an activity may require a product that is easy for the partner to sell, meaning that the development of the product is complete by the time the partnership is agreed upon. If the partnership instead is intended to facilitate R&D, then instead of having good sales channels, other aspects of the partnering company should be deemed important. Depending on what activities the partner is going to perform affects the search for a partner. Using R&D efforts from the partner as an example, should yield a product that gives the partnership a competitive edge on the market. It is therefore critical that the supplier evaluates the partner's potential in helping to fulfill the supplier's intended goal in doing so. As Freytag (2019) stated, there is a crucialness of addressing interests and priorities of all stakeholders prior to a partnership negotiation. Without addressing these, the partnership might not align with the long-term objectives of both parties, leading to misaligned goals or underperformance. An important consideration which IC pointed out is also that a competitor could unexpectedly be a suppliers' potential partner in a subcontracting relationship. In such a coopetition situation, the suppliers can leverage their shared capabilities to mitigate barriers in the defense industry and compete against established suppliers by enhancing their competitiveness through aligning their diverse interests (Chin et al., 2008). Therefore smaller suppliers should broaden their scope when searching for potential partners, since according to Cygler et al. (2018) coopetition's mitigation of barriers can provide market access.

5.2.2 Key Resources

Smaller suppliers face significant barriers in accessing the market in the Swedish defense industry which they are unable to overcome on their own, mainly due to stringent requirements set by FMV/FM. As Osterwalder and Pigneur (2010) point out, key resources can be owned or obtained by partners, therefore smaller suppliers are potentially required to engage in partnerships with suppliers who do have the necessary resources to gain market access. These resources are crucial for fulfilling procurement requirements and include financial strength, certifications, and production capacity. Additionally, financial strength also allows suppliers to be more adaptable and withstand fluctuations in order volumes and subsequent cash-flows fluctuations. Smaller suppliers must decide strategically between acquiring these resources independently to achieve direct market access or partnering with others to access these resources and gain indirect market access by acting as a subcontractor. Sometimes, direct market access can also be achieved for smaller suppliers by invoking the capacity of a larger supplier. In order for larger suppliers to allow for their capacity to be invoked they must ensure that the smaller supplier can fulfill the procurement. The smaller supplier must therefore have quality products and credibility, making these capacities a key resource for smaller suppliers. The credibility established through a proven track record is an essential resource given the preference for established suppliers. However, acquiring such credibility is particularly challenging for smaller and especially newer suppliers without the support of partnerships, since they often do not have a track record of successful procurements.

DaSilva and Trkman (2014) argue that it is the transactions made possible by key resources that deliver value. Therefore, the framework agreements with FMV/FM should be recognized as key resources since they allow for transactions without extensive resource expenditure on the procurement process. Suppliers who lack access to this resource will potentially need to reposition themselves in the value chain by modifying their business model and value proposition to enable partnerships with suppliers who have access to this resource. Cox et al. (2014) underscore the lack of alternative commercial routes for defense suppliers, which could diminish the value of key resources predominantly used in the defense sector in other industries. Additionally, new industry entrants might discover that resources deemed essential in their previous sectors are less valuable in the defense industry. As a previously mentioned example, intellectual property's role as a key resource is determined by the suppliers' position in the value chain. FMV's right to use agreements for certain products can reduce intellectual property's relevance, especially when many suppliers rely solely on FMV/FM as a customer, which contradicts Osterwalder and Pigneur (2010) statements regarding intellectual property's value as a key resource. Suppliers focused on technology can therefore not rely on intellectual property to capitalize on their research and development efforts to the same extent as in other industries, which impacts the effectiveness of their business models.

The complicated but crucial market access is often controlled by larger established suppliers, leading to a potential dependency relationship for smaller and newer suppliers. However, if a smaller supplier offers a unique and desirable resource, this dynamic can change, emphasizing the point made by Osterwalder and Pigneur (2010) about the importance of resource replicability in determining key resources. Given the challenges smaller suppliers face in acquiring unique resources that are more readily available to larger competitors, their ability to understand and supply novel technology may be their only unique resource they can contribute that is hard to replicate. As Johnson et al. (2008) assert, to achieve a lasting competitive advantage, key resources and processes must be integrated to effectively meet the needs of a specific customer group, highlighting the importance of strategic positioning. The approach of stimulating demand for novel technologies among a specific customer group of end-users at FM can secure a competitive advantage for suppliers, especially when they are the exclusive source of this technology. Since the industry is evidently slow in procuring novel technology due to the risk aversion, the threshold for new products being deemed as novel possibly will not be high. This way, a competitive advantage through offering novel technologies is more likely for smaller suppliers to achieve, since current market offerings do not include a wide use of novel technologies.

Resources necessary for the procurement process are considered key, as smaller and newer suppliers often face challenges meeting the process' resource and competency demands. This limitation can narrow the procurement strategies available to smaller suppliers, as also mentioned by Metallo et al. (2018), thereby providing larger suppliers with a comparative advantage. Smaller suppliers are therefore faced with a dilemma, needing to decide whether to invest their resources in enhancing their value proposition or in strengthening their procurement abilities. Given its importance in gaining market access, possessing tacit knowledge that allows one to grasp and modify procurement bids according to contracting procedures and regulations should be recognized as a key resource. Access to contacts within FMV/FM therefore becomes one of the most important resources. For smaller or newer suppliers, the feedback on failed bids and

insight into implicitly stated procurement requirements are crucial in order to compete with the experienced larger suppliers. Smaller or newer suppliers can access this resource by hiring active or former military personnel, who bring valuable contact networks and tacit knowledge about end-user demand and procurement processes, thereby making these employees a key resource. Another alternative for smaller suppliers is to form partnerships with larger suppliers, who already have access to the resources of connections and tacit knowledge.

Employees with military experience also enable access to end-users and communication with FMV/FM due to their existing relationships. These relationships result in a lower risk of being accused of influencing the procurement process which can lead to exclusion. Suppliers engaged in the development of novel technologies and products can greatly benefit from access to end-users, as this feedback is important for aligning their products with FM's specific needs and the specifications from FMV. Osterwalder and Pigneur (2010) reinforce the value of contact networks by emphasizing that human resources are especially crucial in business models dependent on creativity and knowledge, such as those of smaller suppliers who are innovating new products.

5.2.3 Customer Relationships

In the defense industry, the characteristics of customer relationships can significantly differ based on the supplier's position in the value chain and the nature of the business deals they prioritize. Suppliers who have FMV/FM as their end-customer typically need to maintain highly personalized relationships, possibly even dedicated personal assistance as mentioned by Osterwalder and Pigneur (2010), given the large scale and high stakes involved with only having two large customers. However, identifying and sustaining these relationships can be challenging, as Shelton and McNaughton (2007) point out the difficulties in maintaining customer focus due to stringent regulations and ambiguous identification of the actual customer. Moreover, the danger of being excluded for trying to influence FMV/FM poses a challenge for suppliers in assessing how close their relationships should be since too much proximity could result in exclusion from the procurement process. For smaller suppliers, building relationships with end-users can be beneficial as it offers a method to stimulate demand and influence future procurement decisions without the risk of exclusion.

However, building and maintaining close relationships with FMV/FM could be demanding for smaller suppliers with limited resources. Additionally, smaller suppliers will potentially find themselves only able to provide limited value to customers due to their smaller range of products. The smaller product range may not meet the demands of FMV/FM, resulting in a relationship that primarily benefits the supplier which makes it harder to maintain. As aforementioned, tacit knowledge and industry contacts have been identified as key resources. Close customer relationships are beneficial to maintaining these resources, which could be further aided by employing personnel with military experience. Glas (2017) found that the vast majority of suppliers' employees interacting with potential customers in the defense industry had military backgrounds. An exception for the need of close customer relationships exists for suppliers providing standardized products to FMV's procurements of basic items, where the straightforward procurement specifications reduce the need for tacit knowledge and industry contacts.

These suppliers will however still need to employ personnel for the inbound customer contact involving the resource-intensive procurement process.

Suppliers engaged in development contracts are required to keep close contact with FMV/FM, which may take the form of co-creation or dedicated personal assistance, as described by Osterwalder and Pigneur (2010). Given the interviewees' feedback that development contracts are not profitable and require significant resources for customer relations, these contracts may be impractical for smaller suppliers seeking profit. Suppliers not having FMV/FM as their end-customer in the value chain benefit from broader options for tailoring their customer interactions. Smaller suppliers might choose to engage in co-creation with larger suppliers to gain market access, accessing a crucial resource while sacrificing some degree of ownership. Smaller suppliers face the challenge of allocating their scarce resources effectively between building customer relationships and improving their value proposition. This resource allocation challenge may prevent these suppliers from dedicating enough resources to overcome the preference barriers for established suppliers and their products, since they may not be able to enhance their value offerings enough to outcompete them. Smaller suppliers may find that their only path to market access is by becoming subcontractors, making their relationships with suppliers who directly interact with FMV/FM critical. Maintaining and developing these crucial relationships necessitates a customer relationship similar to dedicated personal assistance described by Osterwalder and Pigneur (2010), as losing such connections could result in a loss of crucial market access. Subcontractors who maintain a wide range of customer relationships can leverage these connections to adapt their position in the value chain as market conditions change. Hartley (2007) notes that having a flexible value chain positioning allows subcontractors to use their comparative advantage by economizing on transaction costs and exploiting possible economies of scope.

5.2.4 Channels

As stated above, one of the best channels for a smaller supplier to reach FMV/FM is through a partnership with a larger supplier. As Osterwalder and Pigneur (2010) state, one of the stages for channels is raising awareness of the suppliers' products. However, given the characteristics of procurement processes, a direct channel, i.e. by bidding on procurements, has shown to be challenging and thus not an efficient way for a smaller supplier to raise awareness of their product. Agapos (1971) further highlights that the only direct channel for defense procurement is direct sales to the defense procurement agency. However, Osterwalder and Pigneur (2010) state that channels can be indirect, where the direct channel is controlled by the partners, which is the case with subcontracting. If partnership is used as a channel, it has been concluded that partnering with companies that have existing framework agreements with FMV is the most efficient way. Osterwalder and Pigneur (2010) highlight that suppliers need to consider the trade-off between reduced margins and the increased market coverage and strength offered by partner channels. As discussed, using partner channels could lead to reduced autonomy and a dependency that may enable partners to negotiate terms more favorable to them, including lower margins. The alternative internal channels are described by Osterwalder and Pigneur (2010) as having higher margins but being costly to operate. Smaller suppliers may not have the resources to solely support internal channels and will need to decide on a suitable configuration of internal and partner channels. The difficulty in determining channel configuration is exacerbated by the ambiguous

identification of customers and stakeholders, as discussed in relation to Shelton and McNaughton (2007). Over time, channels invested in by suppliers might become obsolete if the relevant stakeholders or customers become inaccessible through these channels, a concern particularly relevant for smaller suppliers with limited resources.

Creating a channel through a partner includes identifying a fitting partnering company to work with. Participating in fairs have been stated as a viable option to reach partners that can potentially enable access to FMV/FM or create opportunities for subcontracting. According to Osterwalder and Pigneur (2010), channels play a marketing role, and the fairs provide an opportunity to showcase products to FMV/FM and network with potential partners. Fairs were also shown to be important due influential end-users being present, who otherwise were very difficult to reach. Since the end-users could express interest in a product and then contact their existing partners, who subsequently approaches the smaller supplier, shows end-users' potential influence in stimulating demand for a product and strengthens the fact that attending fairs is important. While forming partnerships is seen as an effective strategy for smaller suppliers to access the market, identifying pathways to establish these partnerships with suitable suppliers has been difficult to identify, with fairs being one of the few identifiable options. Furthermore, smaller suppliers must find alternative methods to reach FMV/FM, as they often lack the resources to participate in procurements. Consequently, determining the most efficient channel to reach FMV/FM can be challenging for them.

A channel to reach customers is often to know the right employees at FMV/FM, who enable a pathway to sell products. However, the important factor is how this channel is created. It has been shown that a possible strategy for suppliers is to employ non-active military personnel with contacts that enable a channel to reach customers. The use of consultants may be seen as a more expensive channel to reach the right decision-makers at FMV/FM, and may not be possible for smaller suppliers to use due to its probable cost. It could be argued whether establishing this channel is truly worthwhile. The cost of creating this channel might impact the development of the suppliers' value proposition since hiring consultants might remove monetary resources, which could be considered a strategic cost. However, despite the potential cost of consultants, it was evident that identifying partners intended to create a channel to FMV/FM was challenging. Therefore, using the strategy of hiring consultants instead of finding partners might be the most effective channel to reach relevant stakeholders since it opens a pathway to the customer, which could prove to be highly valuable. Creating necessary channels, whether it be forming a partnership, employing non-active military staff or hiring consultants presumably has associated costs. As stated in the section regarding key partnerships, the benefits should outweigh the strategic costs (Freytag, 2019).

6. Conclusion

The purpose of the thesis was to identify and analyze the barriers and challenges that suppliers in the Swedish defense industry face, understand their effects on particular aspects of the business model, and explore possible modifications to the business model components that could mitigate these barriers. This was accomplished by addressing the two research questions: "*What barriers and challenges do smaller suppliers face when aiming to participate in the Swedish defense industry?"* and "*How do these barriers influence the business model components of key resources, partnerships, customer relationships, and channels for suppliers in the Swedish defense industry and how can these components be modified to mitigate the barriers, particularly for smaller and newer suppliers?*.

Smaller suppliers often face significant barriers when attempting to meet the stringent procurement requirements set by FMV/FM on their own. These requirements often favor established suppliers with sufficient resources, extensive contact networks and existing framework agreements. Consequently, smaller suppliers are compelled to form partnerships with these established suppliers to enable market access through accessing these resources. Partnerships not only help them circumvent the direct challenges of procurement requirements but also leverage the established relationships and framework agreements that larger suppliers can access. The importance of these partnerships is further highlighted by the resource-demanding procurement process, which is tailored to favor larger established suppliers. Based on this, a key business model implication is the necessity for smaller suppliers to invest in building partnerships with larger and established suppliers. Such partnerships provide the smaller suppliers with essential resources and capacities, including financial strength and certifications, which they might lack independently. Engaging in partnerships enables smaller suppliers to participate actively in the value chain, contributing specialized services or products that established suppliers may integrate into their offerings to FMV/FM. However, smaller suppliers could develop the capability to handle the procurement process internally by employing dedicated procurement staff. This approach, however, would divert resources from enhancing their value offering and thus requires careful consideration. Smaller suppliers should consider to position themselves as a subcontractor which can be a way to steady cash flows and more importantly to gain credibility towards FMV/FM. Lastly, development contracts should not be pursued by smaller suppliers, since the contracts are focused on developing established products and require self-funding.

However, this dependency on larger suppliers is associated with its own set of risks, including the potential loss of autonomy and the possibility of becoming overly reliant on the suppliers for market access. Therefore, smaller suppliers must carefully manage these relationships and strive for a balance where they can maintain some degree of independence and leverage their capabilities to offer unique and essential products to influence the partnership dynamics favorably. Additionally, smaller suppliers should consider diversifying their channels to include direct engagement with FMV/FM where possible. This involves developing capabilities to effectively engage with FMV/FM and gaining a comprehensive understanding of the detailed requirements and the tacit knowledge of procurement processes. Smaller suppliers can utilize direct engagement with end-users at FM to shape demand that translates to future

procurements from FMV. However, smaller suppliers need to consider both the demands of end-users at FM and the decision-makers at FMV when developing their products. Smaller suppliers have to tailor their product to meet requirements of both stakeholders and should be aware that tailoring their products to meet end users' needs might not align with what is ultimately procured, underscoring the need to consider FMV's translation of needs into specifications when developing products.

Engagement at industry fairs and similar networking events is crucial as they provide opportunities to gain insights into market offerings but most importantly make the necessary contacts within the industry that can potentially facilitate partnerships. Further, the employment of individuals with military experience has been identified as a key resource for enabling direct engagement with FMV/FM and also possessing tacit knowledge of the procurement process. Employing ex-military personnel should therefore be a priority for smaller suppliers. If smaller suppliers can not obtain direct engagement with FMV/FM through partnerships or internal channels, they should consider spending scarce resources on consultants that can enable this access, since establishing direct engagement is crucial for aligning the product offering with the demand of FMV and FM.

6.1 Contributions to Theory

The research gap regarding barriers in the Swedish defense industry has previously not been thoroughly explored and this thesis has contributed to cover this research gap. This thesis contributes to theoretical knowledge by exploring how smaller suppliers in the defense industry can leverage partnerships with larger firms to mitigate stringent market access requirements. Additionally, the thesis advances understanding of how dynamics in the industry disadvantages smaller suppliers. The research also highlights the conservative nature of defense procurement and its effect on the adoption of novel technologies.

6.2 Contributions to Practice

Practically, this study offers guidelines for smaller suppliers on forming partnerships to enable market access, emphasizing the importance of selecting partners that can provide complementary resources and capabilities. The thesis provides practical recommendations for aligning product offerings with FMV stringent procurement specifications and stimulating end-user demand at FM to improve chances of success. Additionally, the thesis underscores the strategic importance of establishing direct communication channels with procurement decision-makers through the employment of active or non-active military personnel, enabling an influence on future procurement processes.

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