CHALMERS
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# Transforming Sales and Operations Planning in a Complex Defence Industry Environment

## A Case Study of Planning Transformation within Saab Surveillance

Master's thesis in Production Engineering

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**Mechanical Engineering**

CHALMERS UNIVERSITY OF TECHNOLOGY
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Cover: Saab Giraffe 1X in inventory - a series-produced product within Saab Surveillance's product portfolio, making it particularly relevant to the S&OP process. Photo: Saab.

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# Abstract

This master's thesis investigates how Sales and Operations Planning (S&OP) can be further developed within a complex defence industry environment characterised by rapid growth and high product complexity. The empirical context is further characterised by hybrid production strategies, increasing geopolitical demand, long lead times, and engineering-intensive products.

The purpose of the study was to analyse the current S&OP process, identify key weaknesses and maturity gaps, and evaluate how process development and digitalisation can improve decision support, cross-functional coordination, and business performance.

The results show that Saab Surveillance has established an initial BA-level S&OP structure that has improved transparency and created a first framework for balancing demand and capacity. However, the process remains highly manual, fragmented, and dependent on extensive data aggregation. Twelve structural weaknesses were identified, including unclear governance structures, varying data quality, limited integration between organisational levels, insufficient performance measurement, and weak alignment between strategic, tactical, and operational planning.

Based on the findings, a future-state S&OP framework was developed focusing on six central dimensions: strategic alignment, organisation, process, tools and data, performance management, and culture and leadership. The study also identifies several potential business values associated with a more mature S&OP process, including improved delivery precision, better resource utilisation, reduced operational instability, and enhanced decision support.

The thesis contributes to the existing S&OP literature by examining planning transformation within a relatively underexplored defence industry context characterised by rapid growth, hybrid production strategies, and high organisational complexity.

Keywords: Sales and Operations Planning (S&OP), Integrated Business Planning (IBP), planning maturity, digitalisation, engineer-to-order (ETO), multi-level planning, cross-functional coordination, bottleneck management, complex industrial environments

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Erik Punt & Jennifer Stevrell, Gothenburg, June 2026

# List of Acronyms

Below is the list of acronyms that have been used throughout this thesis listed in alphabetical order:

| | |
|---|---|
| APS | Advanced Planning and Scheduling |
| BA | Business Area |
| BO | Business Owner |
| BOR | Business Operations Review |
| BU | Business Unit |
| ETO | Engineer-to-Order |
| FTE | Full-Time Equivalent |
| IBP | Integrated Business Planning |
| KPI | Key Performance Indicator |
| MTO | Manufacture-to-Order |
| MTS | Manufacture-to-Stock |
| PU | Product Unit |
| R&D | Research and Development |
| S&OE | Sales and Operations Execution |
| S&OP | Sales and Operations Planning |
| SO | Supply Owner |

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# 1
# Introduction

The following chapter provides a background to the thesis, explains the defence industry problematization, case study and research questions.

## 1.1 Background

The recent increase in geopolitical tensions has fundamentally changed demand in the defence industry, and there are strong indications that this demand will persist well into the 2030s, supported, among other things, by NATO's new five percent target [1].

This increase in demand is driven by heightened geopolitical tensions, where Russia's war of aggression against Ukraine, combined with the ongoing military build-up of the Russian armed forces, plays a central role. Sweden's Military Intelligence and Security Service [2] states that Russia is prioritising, in the long term, the strengthening of its warfighting capability in order to be able to confront NATO in a large-scale military conflict in the future, and that the military threat is expected to increase gradually as Russia gains new resources and implements reforms [3].

After the end of the Cold War, Europe realised a "peace dividend" that restrained defence spending from the early 1990s onward [4]. EU defence expenditure reached a low point in 2014 (1.1% of GDP) after years of budget cuts, the same year that Russia annexed Crimea [5]. Thus, 2014/2015 marks a turning point, with both EU-level data and NATO's Defence Investment Pledge indicating a renewed increase in defence spending [6], [7].

2024 also marked a new record year for the tenth consecutive year, according to SIPRI's report on global defence and military expenditure, indicating strong continued demand in the coming years, particularly given the high risk of further increases in global geopolitical tensions [8], [9].

However, it is evident that the underlying surge in demand accelerated after Russia's full-scale invasion of Ukraine in 2022 and was further highlighted at the Munich Security Conference in February 2025, where U.S. messaging again emphasised the need for a stronger and more capable Europe [10], [11].

Statements by President Trump have also influenced allied procurement decisions. Canada's, Spain's and Portugal's acquisitions of the Lockheed Martin F-35, as well as Denmark's choice of the European SAMP/T system instead of the American Patriot system, illustrate how procurement strategies are increasingly shaped by broader geopolitical considerations [12], [13], [14], [15]. In other words, the playing field for European defence suppliers is shifting toward a stronger focus on sovereignty and increased demand from European customers and other countries seeking to reduce dependence on the United States.

In this environment, several European defence companies operate, often with close ties to their respective home governments, either as their largest customer or through direct state ownership, such as Thales and Leonardo, which are partially owned by France and Italy [16], [17]. This structure has contributed to a fragmented market in which even the largest companies, during the late 1990s and effectively the first two decades of the 2000s, struggled to fill their order books [18], [19]. As demand now increases, all actors must scale up production to meet growing requirements [20]. This creates significant pressure on capacity management and supply chain coordination [21], [22].

### 1.1.1 The European Defence Industry

For many years, the defence industry has been characterised by a high degree of predictability in what companies are required to deliver. Long-term projects with highly complex requirements demanding significant customer-specific specialisation have been the norm, rather than rapid deliveries and standardised products.

In addition, the European defence industry is highly fragmented, as described by Wolff et al. [23], due to strong national interests in both ownership and procurement, and further shaped by the United States' gradual retreat from its traditional role as Europe's security guarantor.

Several initiatives at the European level are already underway, including the European Defence Fund, the Act in Support of Ammunition Production, the European Defence Industry Reinforcement through Common Procurement Act, and ReArm Europe [24], [25], [26], [27].

### 1.1.2 Problematisation and Research Focus

Much of the traditional S&OP literature is based on contexts characterised by relatively stable demand, repetitive production, medium- to high levels of standardisation, clear historical data for forecasting, and primarily make-to-stock (MTS) or mass-production environments. However, the environment in which Saab Surveillance operates is fundamentally different. The business is largely characterised by engineer-to-order (ETO) logic with elements of make-to-order (MTO), combined with significant variation and interdependencies across different product families within the BA. In addition, the company operates in the highly complex aerospace

and defence sector, with long lead times, low-volume production, relatively high demand uncertainty until contracts are formally signed, rapid capacity-scaling requirements, and a dependence on advanced competencies that are either scarce or require substantial time to develop. The entire context is also heavily influenced by geopolitical developments. This difference is also reflected in the academic literature. While S&OP has been extensively studied in relatively stable and standardised environments, several authors argue that existing frameworks do not fully address the planning requirements of engineer-to-order (ETO) contexts. Bhalla et al. [28] specifically note that established S&OP frameworks do not adequately capture the engineering planning and cross-functional coordination challenges characteristic of ETO environments. Similarly, Kalla et al. [29] argue that traditional S&OP approaches become less effective in dynamic and highly complex supply chains, as they are largely based on assumptions of stability and predictability. Consequently, there is still a need to better understand how S&OP can be designed and governed in organisations that are characterised by engineering-intensive products, high uncertainty, long lead times and rapidly changing conditions.

Saab Surveillance represents a particularly interesting case due to both its size and growth trajectory. The company reported revenues of approximately SEK 42 billion in 2022 and has since experienced an average annual growth rate (CAGR) exceeding 23 percent, which is highly unusual for an industrial company of that scale. An additional layer of complexity stems from the fact that the defence industry as a whole remained relatively stagnant for decades following the Cold War before experiencing its recent rapid expansion. Internally, Saab is also attempting to adapt and apply an established planning process to address challenges emerging from what has effectively become a new operational context during the past three years.

Many organisations are currently striving to become more data-driven, implement IBP principles, digitalise planning activities, establish integrated planning capabilities, and improve cross-functional coordination. In practice, however, companies often struggle with manual processes, fragmented data structures, unclear ownership, parallel planning activities, and low levels of standardisation across organisational levels. Understanding how such challenges can be addressed is therefore highly relevant, particularly in the context of Saab, where many of these issues are amplified due to the scale and pace of transformation.

At present, Saab has primarily formalised and implemented S&OP at the BA level. Although the S&OP literature extensively discusses governance, coordination mechanisms and organisational maturity, limited attention is given to how S&OP structures should be designed across multiple hierarchical planning levels. This creates opportunities to explore questions related to the establishment of multi-level S&OP structures, the balance between centralisation and decentralisation, how information is aggregated across organisational layers, and the role digitalisation can play in enabling these processes.

Therefore, there is a need to examine how S&OP processes can be developed, governed, and digitally enabled within complex defence-industrial environments characterised by multi-level planning structures, rapid organisational growth, and a combination of ETO, MTO and MTS production logics. By studying Saab Surveillance, this thesis contributes to research on S&OP in high-complexity environments while providing insights for organisations undergoing similar planning transformations.

## 1.2 Aim and Research Questions

The objective of this study is to analyse the current S&OP process at Saab Surveillance, identify key development areas, and propose a target-state S&OP process adapted to the planning requirements of a rapidly growing defence-industrial organisation. The study further examines how digitalisation can support a more integrated planning and improved support. To support this objective, research questions (RQ) have been formulated:

**RQ1:** What are the key challenges of the current S&OP process?

**RQ2:** What requirements should a target state S&OP process fulfil at SAAB Surveillance?

## 1.3 The Case Company

Sweden's largest defence company is Saab, and it has been one of the companies most significantly impacted by the ongoing rearmament. Demand for its products is at record levels, and its order backlog amounted to SEK 274.5 billion at the end of 2025 [30]. Saab operates across four business areas: Aeronautics, Dynamics, Surveillance, and Naval, as well as the additional operating segment Combitech [30]. This thesis focuses on the Surveillance business area, which comprises five business units: Airborne Early Warning, Digital Battlespace Solutions, Fighter Core Capabilities, Safety and Security Solutions, and Surface Sensor Solutions [31]. The organisational structure of Saab Surveillance is hierarchical (see Figure 1.1), with the Business Area (BA) level at the top, under which several Business Units (BUs) are organised, each responsible for specific product portfolios and customer segments. Within each BU, operations are further structured into Product Units (PUs), such as Giraffe 1X, which represent more specific product families or programs.

This results in a partially matrixed organisational structure, where responsibilities for product development, production and resource allocation are distributed across both hierarchical and functional dimensions. Such structures increase the need for cross-functional coordination, governance clarity and alignment mechanisms, which are central concerns within the S&OP literature [32, 33, 34].
Saab Surveillance develops and integrates advanced radar, electronic warfare, and C2 solutions to provide air and sea surveillance, early warning, and decision support for defence and civil security customers. The business area is also characterised by a

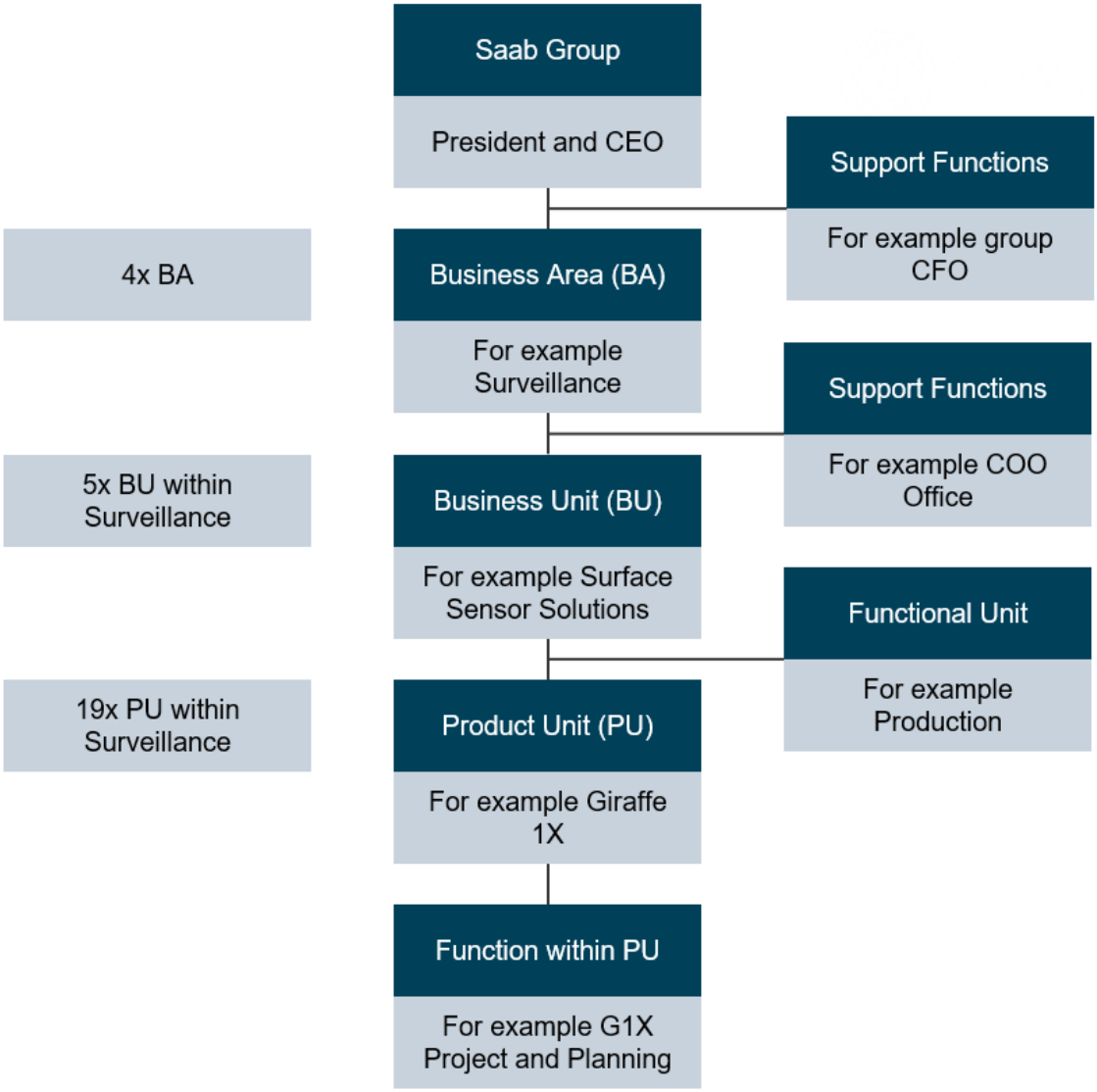


**Figure 1.1:** Overview of the organisational structure within Saab, from Group level to functional level, including the relationship between line organisation and support functions.

broad product portfolio, ranging from large system and integration projects to more scalable offerings with a stronger focus on time to delivery and volume scalability [35]. More concretely, this means that the product range spans from GlobalEye at one end to products such as Sirius Compact and Trackfire at the other [35]. The ability to combine and manage this breadth of products efficiently is critical to Surveillance's long-term success.

Despite a doubling of revenue over the past five years, Saab Surveillance has not achieved corresponding improvements in gross margin, indicating limited operational leverage in a period of unprecedented demand growth. This suggests that increasing demand does not automatically translate into improved financial performance, but instead risks amplifying inefficiencies in planning, capacity allocation and cross-functional coordination.

This creates a structural challenge for Saab Surveillance: how to scale operations and increase output while simultaneously improving efficiency, predictability and financial performance. Without improvements in how demand, supply and resources are coordinated, increased volumes risk translating into operational strain rather than improved profitability.

Achieving operational leverage under conditions of sustained demand growth requires coordinated decision-making across sales, engineering, procurement, and production in order to balance capacity constraints, lead times, and resource allocation.

The ability to successfully scale up production and achieve operational leverage becomes particularly critical given that gross margin has remained more or less unchanged for the past five years, although revenue has doubled (see Figure 1.2). During the same period, the stock price has increased significantly [36]. Meeting market expectations on parameters such as free cash flow and margins is therefore of utmost importance in order to create shareholder value, which should be regarded as the overarching objective to maximise [37].

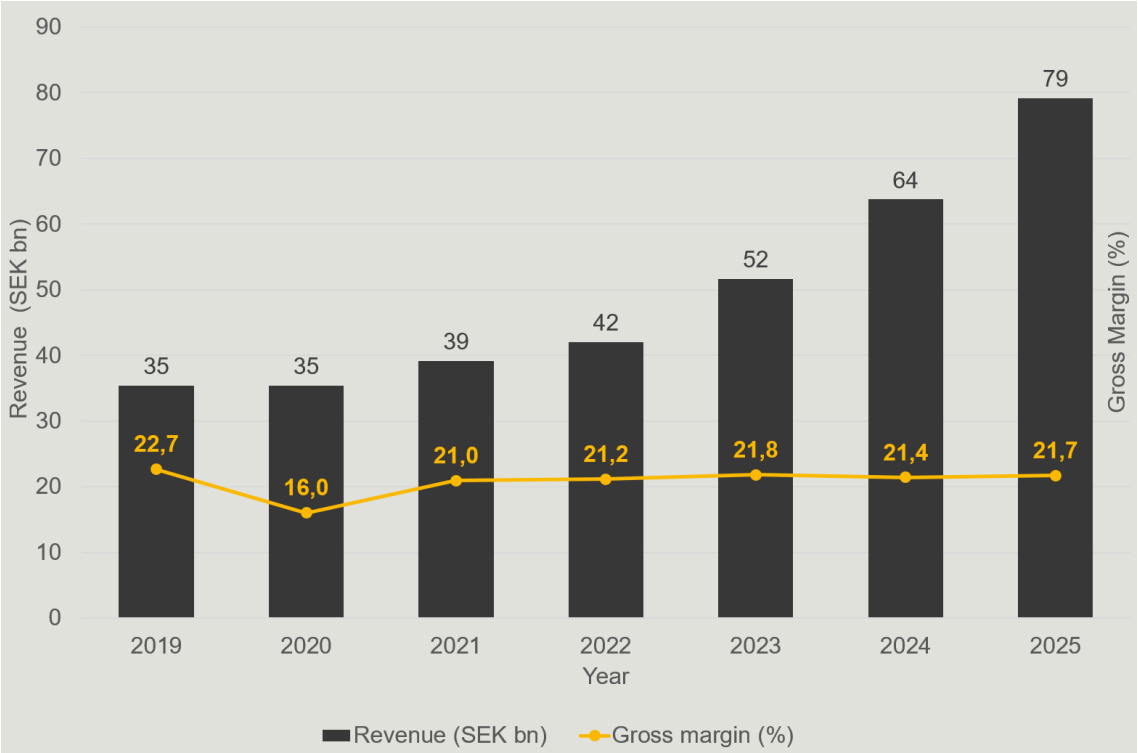


**Figure 1.2:** Stagnant gross margin despite doubled revenue for Saab Group [31].

In the environment in which Saab Surveillance operates, characterised by rapidly increasing demand and a complex product portfolio, it is evident that the project-oriented planning approach that has historically dominated within Saab Surveillance may face increasing challenges. However, the revenue distribution in 2025, with 70 percent derived from long-term contracts, 16 percent from products, and 14 percent from services, indicates the need for a combined approach that enables multiple ways of delivering value to the customers [31]. One of the most established ways to manage this type of challenge in a company such as Saab is through Sales and Operations Planning (S&OP) [38].

The operation at Surveillance has historically been dominated by technically complex prototype manufacturing and project-specific adaptations (Engineer-to-Order), in which flexibility and engineering-driven planning have been key success factors. As Surveillance grows and several product families move from Engineer-to-Order towards more standardised and recurring Make-to-Order and partly Make-to-Stock production, the need for a more robust, data-driven and cross-functionally anchored S&OP process increases.

In recent years, an initial S&OP structure has been established within the COO organisation and has been in active use since Q1 2025. The process has created a first framework for coordinating sales forecasts, capacity requirements and material flows. In the Saab Surveillance context, the S&OP process also includes planning and coordination of customer-specific engineering capacity, reflecting the engineer-intensive nature of the products.

Despite this, the S&OP process at Saab Surveillance is at a relatively early stage of maturity, where much of the analysis, decision support and data collection is still carried out manually or via Excel-based tools. This way of working limits the ability to create consistent data quality, up-to-date capacity views and real-time information, particularly as several product lines with different order logics (projects, customer orders and stock replenishment) grow and compete for the same resources.

Saab Surveillance operates in an environment characterised by rapidly increasing demand, a complex and heterogeneous product portfolio, and rising expectations on financial performance. At the same time, the organisation is managing increasing volumes, more parallel customer programmes and higher demands for predictability. However, the current planning processes remain highly manual, Excel-dependent and insufficiently integrated to effectively manage this complexity. As a result, the COO organisation is facing an important transformation journey aimed at further developing, standardising and digitalising the S&OP process into a more automated, synchronised and system-supported flow capable of providing improved decision support, transparency and operational stability.

## 1.4 Delimitations

This master's thesis focuses on the analysis and further development of the existing Sales and Operations Planning (S&OP) process within Saab Surveillance. The study is conducted within the COO organisation of the Surveillance business area and primarily addresses tactical planning over the medium- to long-term horizon, including the integration of demand, capacity, and material planning, but excludes detailed operational scheduling and execution-level control. The research is limited to analysing the current S&OP structure, identifying maturity gaps, and proposing a future target state supported by digital tools, standardised processes, and improved decision-making structures.

Interfaces to enterprise systems such as ERP, APS, and BI are considered; however, the thesis does not include system design, nor does it involve software development or system configuration. The analysis is primarily based on the current organisational structure, product portfolio, and production context within Saab Surveillance. As the organisation comprises multiple product families and order fulfilment logics (e.g. project-based, make-to-order, and make-to-stock), the proposed recommendations have been developed for Saab Surveillance and may also be relevant for other parts of the Saab Group. However, the proposed target state and roadmap are not validated through full-scale implementation within the scope of this thesis.

Quantification of business value is included in the study, with a focus on indicative effects on delivery precision, working capital, capacity utilisation, and total cost. However, the analysis relies on available data, expert assessments, and scenario-based estimates rather than detailed before-and-after measurements or fully validated financial business cases.

# 2

# Theoretical Background

This chapter presents the theoretical foundation of the study. First, the planning context of complex engineer-to-order environments is examined to give an understanding of the characteristics and challenges faced by organisations such as Saab Surveillance. Thereafter, the chapter introduces the core concepts, objectives and structures of Sales and Operations Planning (S&OP), followed by literature on governance, financial integration, digital support and maturity development. Together, these perspectives give the foundation that is used to assess the current S&OP process and develop a target state.

## 2.1 Production and Planning Context in Complex Industrial Environments

This section examines the characteristics of engineer-to-order and project-based environments and discusses the planning challenges in high-complexity industries.

### 2.1.1 Engineer-to-Order and Project-Based Planning

Compared with traditional mass-production environments, complex industrial environments operate under fundamentally different conditions. Hobday [39] describes these contexts as Complex Products and systems (CoPS), characterised by high-cost, engineering-intensive products produced in low volumes and with a high degree of customisation. Instead of being organised around repetitive workflows, work is typically organised through projects. Companies often coordinate several suppliers, partners and internal functions throughout the project lifecycle. As a result, planning relies heavily on cross-functional coordination and managing uncertainty across long lead times and complex product structures.

Such environments provide a natural setting for ETO supply chains. Gosling and Naim [40] describe ETO as a supply chain structure in which the customer order penetrates the design stage. As a consequence, the customer order decoupling point (CODP) is located at design rather than at fabrication, assembly or finished goods. This means that production is driven by actual customer orders rather than forecasts. As a result, products and projects are often highly customised and characterised by significant uncertainty.

According to Hicks et al. [41], planning in ETO environments goes beyond production and must also account for marketing and tendering activities. Delivery dates and resource requirements are often estimated before contracts are awarded, while several tenders may compete for the same engineering resources. Since only a portion of submitted tenders result in actual customer orders, companies have to balance future opportunities against available capacity under uncertainty. As a consequence, medium- and long-term planning is typically performed using aggregated measures such as labour content or project value rather than detailed production plans.

Wikner and Rudberg [42] argue that customer order decoupling should not only be viewed from a production perspective but also from an engineering perspective. Their framework distinguishes between the engineering dimension, ranging from ETO to engineer-to-stock (ETS), and the production dimension, ranging from MTO to MTS. This shows that engineering and production activities do not necessarily follow the same logic and may overlap in time.

As a result, organisations can simultaneously operate with different order fulfilment strategies across product families. For example, a product may follow an ETO logic from an engineering perspective while being produced using an MTO or assemble-to-order strategy. This perspective is particularly relevant in environments where companies combine ETO, MTO and MTS product families, since it creates additional planning complexity and increases the need for integrated planning processes.

### 2.1.2 Planning Challenges in High-Complexity Industries

The characteristics of high-complexity ETO environments create significant challenges for traditional planning approaches. Gosling and Naim [40] note that standard production control systems, such as MRP, were developed for relatively stable production environments and rely on assumptions that are less applicable in ETO environments. This is because high uncertainty and continuously evolving customer specifications mean that plans cannot be fixed in advance.

In addition to product and project complexity, many industrial supply chains also display dynamic and unpredictable behaviour. Kalla et al. [29] argue that such environments cannot be treated as stable systems where cause and effect relationships are predictable. Instead, they behave as Complex Adaptive Systems (CAS), where changes in one part of the system can create unintended consequences in other places. This means that planning approaches built on historical data and stable assumptions become less effective in highly dynamic environments. Kalla et al. [29] therefore argue that traditional S&OP processes require adaptation when they are applied in complex and rapidly changing supply chains.

Kalla et al. [29] identify two distinct coordination challenges that arise in dynamic and complex supply chains. The first concerns the link between tactical S&OP and the firm's broader strategic planning, which requires active executive involve-

ment. The second concerns the link between tactical S&OP and operational execution, where the pace and detail in S&OP often are insufficient to handle unexpected events. Their findings show that organisations address this challenge by complementing S&OP with a separate operational planning process characterised by shorter planning horizons, higher planning frequency and a greater level of detail, while keeping S&OP focused on the tactical level.

Kalla et al. [43] emphasise that not all planning and coordination activities need to be embedded within the S&OP process itself. Their findings suggest that organisations operating in complex environments often rely on complementary planning processes alongside S&OP, as long as information is effectively shared between them. This highlights the importance of clear process interfaces and coordination mechanisms, rather than trying to incorporate all planning activities in a single planning process.

## 2.2 Sales and Operations Planning

This section introduces the concept of S&OP, its objectives, key principles and the theoretical models used in this study.

### 2.2.1 Definitions and Core Principles

Thomé et al. [38] define S&OP as a cross-functional planning process that integrates plans from different business functions into a single set of aligned plans. The primary purpose of S&OP is to balance supply and demand while linking strategic objectives with operational execution. Successful implementation requires structured planning routines and cross-functional collaboration [44, 45].

S&OP is typically positioned between strategic and operational planning. While strategic planning focuses on long-term business objectives and operational planning on day-to-day execution, S&OP provides the tactical planning layer that bridges strategic objectives and operational execution. [46]. The focus of this study is on this tactical planning level.

S&OP is often described as a recurring five-step process consisting of:

1. Product Review
2. Demand Review
3. Supply Review
4. Pre-S&OP Meeting
5. Executive-S&OP Meeting

The process is typically conducted on a monthly basis, with product, demand and supply reviews feeding into a pre-S&OP meeting and then an executive S&OP meeting. During these meetings, supply and demand are reconciled, operational issues are addressed by middle management, and senior management resolves strategic issues and approves the final plan for execution [46].

### 2.2.2 Objectives

The overall objective of S&OP is to balance customer demand with supply capabilities in the medium term [32]. Thomé et al. [38] describe this purpose as twofold: balancing supply and demand while linking strategic objectives with operational plans. In this role, S&OP acts as a coordination mechanism that supports both vertical alignment between strategic and operational planning and horizontal alignment across organisational functions [32].

To achieve this, S&OP aims to create a unified set of plans to which the entire organisation commits [33, 38, 44]. Cross-functional integration is frequently highlighted as the primary outcome of the process, aligning demand, supply and financial plans into a single coherent plan [38, 47]. The literature argues that organisations get the greatest planning benefits when functions are integrated instead of managed independently. This way of working reduces the risk of functions working in silos, priorities being misaligned and imbalances between supply and demand [47, 48].

Looking beyond plan integration, S&OP is also associated with improved organisational performance. Improved alignment between supply and demand has been linked to benefits such as lower inventory levels, higher utilisation, lower costs and improved customer service, although empirical evidence directly linking S&OP to firm performance remains limited [33, 38, 47].

From a performance measurement perspective, Hulthén et al. [49], building on the process performance framework proposed by Neely [50], distinguish between S&OP process effectiveness and S&OP process efficiency. Effectiveness refers to the extent to which the process contributes to organisational goals, such as meeting customer requirements and allocating resources effectively, whereas efficiency concerns how well the S&OP process itself is managed in terms of procedures, organisation and resource utilisation. Based on this distinction, they propose a framework that measures both the execution and outcomes of the S&OP process, highlighting the importance of cross-functional performance measures [49].

Finally, as S&OP maturity increases, the objectives of the process extend beyond operational balancing towards strategic alignment and business performance. At higher maturity levels, organisations shift from functional targets towards cross-functional profit optimisation, supported by executive involvement and broader participation across the value chain [48]. Jonsson and Holmström [51] similarly observe that lower maturity levels focus primarily on forecasting and demand-supply balancing, whereas Tuomikangas and Kaipia [32] position S&OP as a powerful instrument for achieving broader business objectives.

### 2.2.3 Process Structure

The S&OP process is commonly described as a recurring five-step cycle consisting of a product review, demand review, supply review, pre-S&OP meeting and executive S&OP meeting [33, 46, 48]. In the first step, historical performance is

reviewed, and key performance indicators are updated to evaluate previous business performance [47]. In the demand review, sales and marketing personnel develop a consensus-based demand forecast, while the supply review translates this forecast into a supply plan considering inventory policies and capacity constraints [47, 48]. Afterwards, representatives from demand, supply, finance and product development reconcile the plans and prepare recommendations for senior management in the pre-S&OP meeting [47]. Finally, in the executive S&OP meeting, senior management reviews the proposed plans, resolves issues with significant strategic or financial implications and approves the final plan for execution [47].

Thomé et al. [38] describe S&OP as an aggregate planning process, where decisions are typically made at the product family level rather than for individual stock-keeping units. Accordingly, Stahl and Wallace [33] characterise S&OP as a tactical decision-making process focused on balancing demand and supply in aggregate volumes rather than individual products or customer orders, thereby providing a basis for more detailed operational planning. Planning horizons typically range from six to eighteen months, though they vary with industry characteristics such as production lead times and seasonality, with more complex environments generally requiring longer planning horizons [48]. Regardless of the specific horizon, it should be sufficiently long to support resource planning and the business planning process [38].

Kristensen and Jonsson [46] find that S&OP design depends on factors such as industry characteristics, complexity and organisational context, and conclude that these variables influence both process design and performance outcomes. In engineer-to-order environments, Bhalla et al. [28] argue that traditional S&OP frameworks do not fully address the unique planning requirements of these settings. They therefore propose an adapted framework that explicitly incorporates engineering capacity planning and the cross-functional coordination requirements characteristic of ETO manufacturing.

### 2.2.4 Cross-Functional Integration and Governance

A central premise of S&OP is that balancing demand and supply in the medium term requires coordination across multiple organisational functions. Tuomikangas and Kaipia [32] synthesise the S&OP literature into a coordination framework consisting of six mechanisms: S&OP organisation, which defines the formal structure, decision-making authorities, and roles and responsibilities of all actors involved; S&OP process, which defines how sub-plans are created, communicated and decided upon; S&OP tools and data, covering the IT systems and data quality requirements needed to support decision making; performance management, encompassing financial, operations and process performance measures; strategic alignment, referring to the role of S&OP as a vertical link between short-term operational plans and the firm's long-term strategic targets; and the S&OP culture and leadership, including aligned objectives, top management ownership, a collaborative manner of working, and empowerment of participants. In their framework, strategic alignment and performance management are positioned as overarching mechanisms that frame

the four central mechanisms of the S&OP process, S&OP organisation, S&OP tools and data, and S&OP culture and leadership.

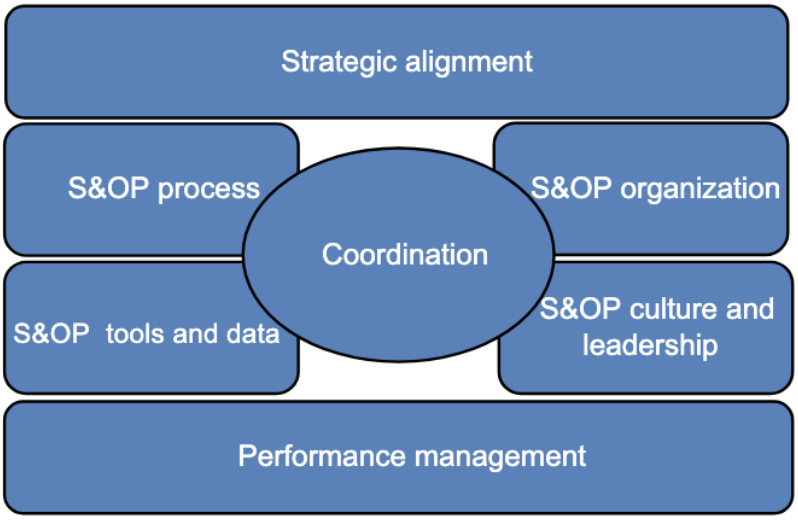


**Figure 2.1:** Coordination framework for S&OP. Reproduced from Tuomikangas and Kaipia [32].

Through a case study, Oliva and Watson [34] show that cross-functional integration can be achieved even when functional incentives are misaligned. They identify three attributes required for effective planning processes: information quality, procedural quality and alignment quality, which together make sure that decisions are based on the right information, sound procedures and aligned organisational goals. Furthermore, they highlight the importance of constructive engagement, defined as the active involvement of participants in collecting, validating and interpreting information. Their findings suggest that achieving alignment and commitment across functions can be more important than reaching perfect information or procedural quality alone [34].

Empirical evidence further supports the importance of strategic alignment in S&OP. Based on a global survey of experienced S&OP practitioners, Goh and Eldridge [52] find that strategic alignment has the strongest positive effect on supply chain performance among the coordination mechanisms studied, followed by information acquisition and processing, S&OP organisation and S&OP culture.

Executive cross-functional integration in S&OP also depends on clear governance structures and organisational accountability. Stahl and Wallace [33] emphasise that Executive S&OP requires the hands-on participation of executive management, up to and including the leader of the business. They further note that S&OP is cross-functional and collaborative by nature, involving at minimum sales and marketing, operations and supply chain, product development, finance, and general management. Stahl and Wallace [33] also observe that S&OP, by its nature, triggers disagreement between various parts of the business, and that organisations must learn to openly welcome and resolve these differences. Finally, they note that the S&OP

in Executive S&OP represent commitments by the participating functions, which places accountability for execution at the functional level.

As organisations try to extend S&OP beyond operational demand and supply balancing, Integrated Business Planning (IBP) has emerged as a more strategic form of the process. Although the distinction between S&OP and IBP remains fragmented, IBP is generally characterised by stronger integration of financial decisions and a bigger emphasis on strategy implementation [53]. In comparison with S&OP, which focuses mainly on balancing demand and supply, IBP gives a structure for resource allocation and the execution of strategic objectives. This broader view also requires ownership by top management instead of only the supply chain function. Furthermore, IBP helps address the misalignment that can come up between static budgets and rolling operational plans by linking resource allocation decisions to strategic priorities [53].

### 2.2.5 Financial Integration and Decision Support

A recurring observation in the S&OP literature is that the finance department plays an important role in strengthening the focus on profitability, yet its integration remains absent or informal in many organisations [53, 54]. Nyman et al. [53] note that integrating financial aspects into S&OP is typically considered a high-maturity process. Seeling et al. [54] describes this as the first empirical study to explore finance's role in S&OP and finds that finance's presence is desirable across all S&OP process steps, with clear gains for the entire process, positioning finance as a key stakeholder alongside sales, marketing, and operations. Their findings further reveal a two-way communication role: while finance participation supports successful S&OP implementations, the S&OP process simultaneously provides valuable inputs to finance.
Stahl and Wallace [33] note that S&OP must support the information requirements of multiple functions, requiring plans to be expressed in different units of measure. To ensure alignment between operational and financial plans, operational volumes and capacities must ultimately be translated into financial terms. Wagner et al. [47] describes how, in the executive meeting, senior management reconciles the dollarised version of the new set of plans with the business plan, and collectively decides which plans and strategies to adjust in case of deviations. The degree of financial integration is further reflected in S&OP maturity. Wagner et al. [47] observe that at lower maturity levels there is no alignment with financial plans, whereas at higher maturity levels demand- and supply-side organisations generate together with finance an aligned S&OP plan, with the most advanced stage characterised by cross-company profit maximising decision making. Wagner et al. [47] also argues that the finance function needs to be represented in S&OP meetings to facilitate the joint determination of budgets and other financial targets, since the objective of S&OP is to maximise profits.

Seeling et al. [54] examines the role of finance across each step of the S&OP process through a multiple case study of five subsidiaries. Their cross-case analysis finds

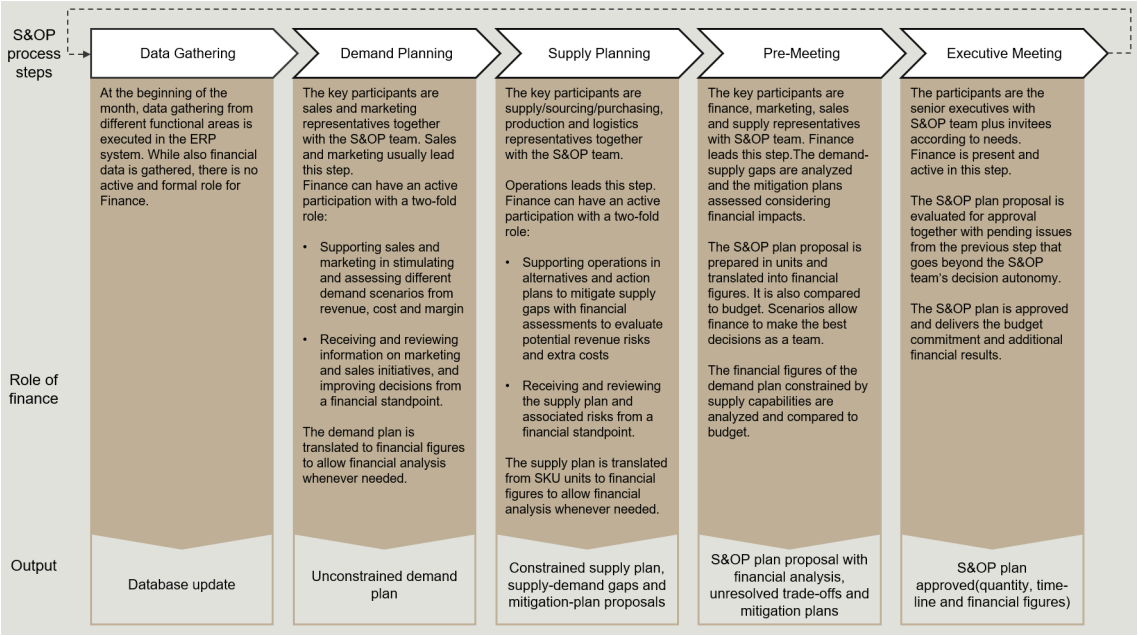


**Figure 2.2:** Role of Finance in S&OP. Reproduced from Seeling et al. [54].

that finance's role varies considerably across process steps and organisations. In the early stages of data gathering, demand planning and supply planning, finance's participation is typically limited or informal, yet its absence is consistently identified as a source of delays, as decisions requiring financial assessment are deferred to later stages. In the pre-meeting, finance takes a more active role in most of the studied organisations, leading the step, generating financial projections and comparing plans to the budget. In the executive meeting, finance is formally present and active in all studied organisations, where the S&OP-plan is compared to the budget, KPIs are reviewed, and the official plan is approved [54].

### 2.2.6 Information Systems and Digital Support in S&OP

The role of information technology in S&OP has been explored across multiple dimensions, but the relationship between IT and S&OP is not straightforward. Nicolas et al. [55] finds in a systematic literature review that IT integration in S&OP cannot be evaluated independently of process maturity. Instead, the level of technical integration needs to match the overall maturity of the S&OP process to support data-driven decision making and improve performance.

Among the information systems studied in the S&OP context, Advanced Planning and Scheduling (APS) systems have been associated with benefits related to decision support, planning efficiency and organisational learning [56]. Ivert and Jonsson [57] find that successful APS implementation depends not only on technological factors, but also on organisational and individual dimensions, including planning capabilities, data quality, system integration and executive involvement. Their findings further suggest that APS systems are particularly beneficial in complex planning environments, where organisations with limited capabilities or immature structures

are unlikely to get the intended benefits [57].

Nicolas et al. [55] further find that analytics applications in S&OP are primarily concentrated around traditional planning tasks and rely mainly on internal organisational data. Their review highlights limited integration of upstream and downstream supply chain partners and identifies advanced analytics as an area with significant development potential.

### 2.2.7 S&OP Maturity Models

Maturity models have been developed in the S&OP literature to provide structured frameworks for assessing the current state of an organisation's S&OP process and guiding its development. One of the most influential frameworks was proposed by Grimson and Pyke [48], who developed a maturity model intended to help managers evaluate their current S&OP process while providing a vision of future development. According to Nicolas et al. [55], the framework remains one of the most widely adopted in the literature and has served as the foundation for subsequent models, including those proposed by Wagner et al. [47] and Danese et al. [58].

#### 2.2.7.1 Framework for Assessing S&OP Maturity

Grimson and Pyke [48] propose a framework that uses a one-to-five ranking across five dimensions: Meetings and Collaboration, Organisation, Measurements, Information Technology and S&OP Plan Integration. The first three dimensions are characterised as primarily business processes, while Information Technology and S&OP Plan Integration are characterised as information processes. At Stage 1, no S&OP practices exist, sales and operations function in silos with no collaboration, and operations attempt to meet incoming orders without any formal planning structure. Stage 2 (Reactive) is characterised by top-level management discussions with a focus on financial goals, top-down processes, and some consolidation of information, predominantly through spreadsheets handled manually. At Stage 3 (Standard), organisations introduce Staff Pre-Meetings and Executive S&OP, centralise information through revenue or operations planning software, and begin integrating plans sequentially, with some bottom-up input tempered by business goals. Stage 4 (Advanced) is marked by the establishment of a formal S&OP team with executive participation, measurement of S&OP effectiveness and new product introductions, highly integrated and concurrent plans, and a collaborative process in which constraints are applied in both directions. Stage 5 (Proactive) represents the highest level of maturity, in which the entire organisation understands S&OP as a tool for profit optimisation, company profitability is measured, and integrated S&OP optimisation software with full interface to ERP, accounting, and forecast systems is in place. The authors Grimson and Pyke [48] stress that the overarching goal of the framework is profit optimisation through S&OP plan integration, and that meetings, organisational changes and information systems are means to that end rather than ends in themselves.

#### 2.2.7.2 Framework for Managing S&OP Maturity Transitions

While Grimson and Pyke [48] describe what characterises different maturity levels, Danese et al. [58] address how organisations evolve between them. Through a comparative case study of three companies at different maturity stages, they organise S&OP maturity across four dimensions: People and organisation, Process and methodologies, Information technology and Performance measurement. Their findings show that at lower maturity levels, organisations can develop these dimensions one at a time, typically beginning with people and organisation. As maturity increases, however, seriality is progressively broken, and dimensions become so interdependent that they must be addressed in parallel. Particularly people and organisation together with process and methodologies at more advanced stages. Danese et al. [58] also find that the people and organisation dimension becomes increasingly more important at higher maturity levels. Changes to process, IT systems and performance measures can be implemented relatively quickly. However, developing the organisational and people side of S&OP demands continuous effort to build engagement and allow personnel to genuinely adapt to new ways of working.

The importance of the people and organisational dimension in S&OP is reinforced across the literature. Tuomikangas and Kaipia [32] identify S&OP culture and leadership as a central coordination mechanism that embraces the organisational mindset and practices needed for S&OP to function in an effective way. Key elements include aligned business objectives, top management commitment, trust between functions, empowerment and the ability to handle conflict constructively. The capabilities required to build this culture are developed through training, staff development and both formal and informal communication. Interestingly, Tuomikangas and Kaipia [32] observe that while top management ownership is widely emphasised in practitioner literature, it receives comparatively little attention in academic research. From a governance perspective, Stahl and Wallace [33] similarly emphasise the active involvement of executive management and argue that disagreement between functions is a natural consequence of S&OP that organisations must learn to address constructively. Oliva and Watson [34] further finds that when all participants actively engage in the planning process, the quality of decision making and ultimately support cross-functional data increases. They further find that securing genuine commitment to the plan across functions can matter more than achieving high levels of data quality or procedural exactness alone.

### 2.2.8 Business Value of S&OP

The main purpose of S&OP is to create value by improving the balance between demand and supply. According to Wagner et al. [47], better alignment between supply and demand can lead to lower inventory levels, higher capacity utilisation, lower costs and improved customer service. Stahl and Wallace [33] similarly argue that inventory performance and customer service are not independent variables, but outcomes of how well demand and supply are managed together. At higher levels of maturity, Grimson and Pyke [48] view profit optimisation as the ultimate objective of S&OP, while Tuomikangas and Kaipia [32] argue that S&OP has the potential

to support broader business objectives.

Despite these expected benefits, there is still limited empirical evidence directly linking S&OP to firm performance. In a review of 271 papers, Thomé et al. [38] find that common frameworks for measuring S&OP performance are mostly absent and that only a small number of studies have investigated the direct effect of S&OP on firm performance. The available evidence suggests that more integrated planning approaches outperform decoupled ones financially and that S&OP can help organisations cope with market uncertainty [38]. Similarly, Oliva and Watson [34] show that a well-designed S&OP process can improve overall performance by coordinating functions with conflicting incentives.

One explanation for the limited empirical evidence is the challenge of measuring the performance of S&OP itself. To address this issue, Hulthén et al. [49] distinguish between S&OP effectiveness and S&OP efficiency. Effectiveness refers to whether the process generates desirable outcomes, such as meeting customer requirements and supporting good resource allocation, whereas efficiency concerns how well the process itself is organised and managed. Their framework highlights the importance of measuring both how the process is executed and the outcomes it generates.

# 3
# Methodology

This section will include the research approach and work process of the project. The work process will contain research methods for data collection, and also how the data will be analysed and processed.

## 3.1 Research Design

This thesis adopted an abductive research approach based on the principles of systematic combining [59]. This means that theory, empirical fieldwork, and case analysis evolved continuously and in parallel throughout the study, rather than being treated as separate and sequential phases. This approach was considered particularly suitable for the study, since the S&OP process and its digitalisation were evolving throughout the project in a highly complex and interdependent organisation.

In line with systematic combining, insights from the empirical data continuously influenced the theoretical focus of the study. Likewise, the theoretical framework guided data collection and analysis. This allowed both the theoretical framework and the empirical focus to be refined throughout the project rather than being fixed from the start [59].

The study was designed as a single-case study of Saab Surveillance, which was considered appropriate when the objective was to develop an in-depth understanding of a contemporary phenomenon within its real-life context [60]. Given the complexity of the planning activities and the close interaction between organisational structures, processes, and systems, the study prioritised depth over breadth. This is also consistent with the principles of systematic combining, where empirical observations and theoretical development evolve iteratively throughout the research process [59].

The study adopted a qualitative approach, which was considered appropriate as the objective was to develop an in-depth understanding of planning processes, organisational interactions, and decision-making within their real-life context. Qualitative methods are particularly suitable when seeking a holistic understanding of complex organisational phenomena [60].

## 3.2 Literature review

This section outlines the literature review conducted to establish the theoretical foundation of the study. The review focuses on literature related to S&OP, planning maturity, cross-functional coordination and planning in complex industrial settings, and explains how relevant sources were identified and selected.

In the early stages of the study, established theories and frameworks related to S&OP, planning maturity, supply chain and demand planning, and cross-functional coordination provided an initial theoretical foundation that guided the research [60]. These theories influenced the selection of analytical frameworks, the development of interview guides, and the overall focus of the empirical investigation.

To identify relevant literature, iterative literature searches were conducted throughout the project. Keywords covered topics related to S&OP, planning maturity, digitalisation, and engineer-to-order (ETO) environments. Examples of search string combinations included Sales and Operations Planning AND maturity model, Integrated Business Planning AND digitalisation, and Engineer-to-Order AND planning. Boolean operators and variations in terminology were used to broaden or narrow the searches depending on the specific topic and availability of literature. As the study progressed, additional searches were conducted to explore themes that emerged from the empirical findings. AI-assisted search functionalities available within academic databases, such as Scopus AI, were also used as complementary tools to identify potentially relevant literature. All identified sources were manually reviewed and assessed before being included in the study.

The searches were primarily conducted using academic databases, mainly Google Scholar and Scopus. Both peer-reviewed scientific articles and more practice-oriented literature were included in order to capture both academic perspectives and industrial best practices. In addition, AI-based search tools such as Perplexity was used as a complementary exploratory tool to identify potentially relevant sources, concepts, and research directions. All sources identified through Perplexity were manually reviewed and verified against the original publications before being included in the study.

Initially, the focus was on understanding S&OP as a concept and exploring research related to ETO environments. From there, efforts were made to identify literature specifically addressing S&OP within ETO settings, although the availability of such research was found to be limited. Insights gained from the interviews gradually highlighted the importance of organisational aspects and change management in relation to the implementation and use of S&OP within Saab Surveillance. However, literature explicitly combining change management and S&OP was found to be limited. Therefore, aspects related to people, organisation and culture within the S&OP literature were used to analyse the change management dimension of the study.

In addition to database searches, references from particularly relevant articles were reviewed to identify additional sources. More recent studies citing foundational S&OP literature were also examined to capture newer contributions to the field. Particular emphasis was placed on identifying well-cited studies and frequently referenced frameworks within the S&OP literature, including both foundational and more recent contributions.

## 3.3 Empirical Data Collection

Empirical data was collected through interviews, workshops, observations, process mapping, internal documents and performance data.

### 3.3.1 Interviews

The qualitative part of the study was designed to explore how the S&OP process was experienced, interpreted and validated by different actors throughout the organisation, while also trying to uncover underlying structures and challenges that were not fully captured through numerical data [60]. The qualitative data collection included semi-structured interviews with key stakeholders from sales, operations, supply chain, planning and finance. Semi-structured interviews were chosen to allow comparability between respondents while also allowing flexibility to go deeper into issues [60]. The interviews aimed to discover current ways of working in S&OP, perceived bottlenecks and coordination challenges, decision-making structures and governance mechanisms and lastly expectations regarding digitalisation and future planning capabilities.

The selection of interviewees followed a purposive sampling strategy [60]. This was a strategic way of sampling, which meant that individuals were selected based on their relevance, knowledge and participation in the S&OP process, but also to ensure that there was adequate variety in the resulting sample. This study included people from different levels of hierarchy and functional areas to get as diverse perspectives as possible and reduce the risk of role-bias. All interviews lasted between 30 and 70 minutes, with the majority lasting approximately 60 minutes. The interviews were conducted either physically or through Microsoft Teams and were recorded using either Microsoft Teams' recording functionality or a local sound recording application on the computer.

To facilitate transcription, Saab's internal AI-based chatbot Saga was used, where different language models could be selected manually. Several models were evaluated throughout the study, with GPT-OSS-120B showing the best performance for MP3 audio files, while Qwen3-Coder performed best for MP4 files generated through Teams recordings. To ensure transcription accuracy, all interviews were subsequently reviewed manually by listening through the recordings while simultaneously correcting inaccuracies in the AI-generated transcripts. Each interview was therefore stored in three formats: the original audio recording (MP3 or MP4), a transcribed document file, and a structured PowerPoint summary where findings

were categorised into three themes: Key Insights, Implications/Pain Points, and Future Needs.

All interviews followed a semi-structured format based on the interview guide. However, follow-up questions were frequently introduced to deepen the understanding of specific topics or organisational challenges raised by the interviewee. The interview guide served as the backbone of the interview-based data collection. It was principally structured according to the research questions (RQs): initially focusing on questions related to the current situation, followed by more specific questions concerning challenges, and finally concluding with a forward-looking perspective. In addition, an introductory section was included before the interview questions began, briefly describing the project in order to provide the interviewee with sufficient context and an understanding of the study's purpose. This overall structure remained consistent throughout all interviews.

What did evolve, however, was the type of questions being asked. This naturally varied since the interviewees worked in different departments within Saab Surveillance and, within those departments, held different responsibilities and roles, making them relevant to S&OP in different ways. In the section focusing on the current state, inspiration was drawn from established S&OP frameworks such as Grimson and Pyke [48], as well as Danese et al. [58], in order to cover the areas identified in the literature as most critical for achieving a well-functioning and value-creating S&OP process. Although all interviews followed the same overall structure, follow-up questions and role-specific adaptations were introduced to explore issues relevant to each interviewee and their connection to the S&OP process.

The selection of interview participants followed a purposive sampling strategy [61]. Individuals were selected based on their involvement in the S&OP process and to ensure representation from several functional areas and organisational levels. Since S&OP is cross-functional, the study included stakeholders from areas such as the COO Office, supply chain, production, finance, procurement, HR, digital transformation, and BU-related management roles, as illustrated in 3.1. Additional interviewees were identified throughout the study through recommendations from previous participants, resulting in elements of snowball sampling [61]. This provided a mix of both strategic and operational roles, enabling the study to capture differences in how the process is perceived and enacted throughout the organisation. Particular emphasis was placed on including individuals with direct involvement in planning activities, decision-making processes, digital initiatives, or governance structures related to S&OP.

The study primarily prioritised functions with direct involvement in balancing demand, supply, capacity, and operational execution within the S&OP process. Consequently, supporting functions such as IT, security, and export control were less represented in the empirical material. Although these functions remain important they were assessed to have a more indirect influence on the tactical and strategical planning dynamics that was the primary focus of the thesis.

**Table 3.1:** Overview of Key Stakeholders Interviewed

| Date | Role | Format | Thesis Title | Code |
|---|---|---|---|---|
| 23/3-2026 | Deputy Head of BU | Teams | Business Owner | BO1 |
| 25/3-2026 | Project Manager Base Program | Physical | Business Owner | BO2 |
| 26/3-2026 | Head of Project & Planning Office | Teams | Business Owner | BO3 |
| 26/3-2026 | Continuous Improvement - SARA Data Warehouse | Physical | COO Office | COO1 |
| 9/4-2026 | Category Management Manager COO Office Surveillance | Teams | Procurement | P1 |
| 9/4-2026 | Governance Officer within COO Office Surveillance | Teams | COO Office | COO2 |
| 9/4-2026 | Deputy Head of Production BU | Teams | Manufacturing | M1 |
| 9/4-2026 | Strategic Planning & Development Director | Teams | Business Owner | BO4 |
| 10/4-2026 | Production Manager | Physical | Manufacturing | M2 |
| 14/4-2026 | Governance Officer within COO Office Surveillance | Physical | COO Office | COO3 |
| 15/4-2026 | Financial Planning & Control Manager | Physical | Finance | F1 |
| 16/4-2026 | Head of Digital Tranformation Office | Teams | COO Office | COO4 |
| 17/4-2026 | Head of Site Management | Teams | COO Office | COO5 |
| 17/4-2026 | Business Analyst COO Office | Teams | COO Office | COO6 |
| 17/4-2026 | PM&T Driver COO Office | Teams | COO Office | COO7 |
| 17/4-2026 | Operations Planning & Supply Chain Director | Physical | COO Office | COO8 |
| 21/4-2026 | HR Manager | Physical | Human Resources | HR1 |
| 23/4-2026 | Deputy Head of Design | Physical | R&D | R&D1 |
| 27/4-2026 | Deputy Head of BU | Physical | Business Owner | BO5 |
| 5/5-2026 | Head of Procurement - BU | Physical | Supply Owner | P2 |

### 3.3.2 Observations and S&OP meetings

During Q1 2026, one full S&OP cycle was observed within Saab Surveillance. The first cycle of the year included participation in S&OP1, S&OP2, S&OP3 but not the executive meeting that is called Business Operations Review (BOR) at Surveillance. As described in 4.1, the organisation later decided to replace S&OP2 with an alternative activity during the second cycle of the year.

Participation in the S&OP activities enabled direct observations of coordination structures, meeting dynamics, decision-making processes, and cross-functional interactions. Notes were continuously documented during the meetings, which typically lasted approximately 1.5 hours.

Due to governance restrictions, participation in certain meetings (especially BOR) was limited to senior management roles, such as Heads of Business Units and members of the Surveillance management team. Neither the researchers nor the global driver responsible for S&OP on BA level and Integrated Business Planning (IBP) were permitted to participate in the BOR-meeting which was organised by one of the two Governance Officers within COO Office. This limitation influenced the level of observational access available during specific parts of the process.

### 3.3.3 Internal documentation

In addition to interviews, the study utilised internal documentation provided by Saab Surveillance. The material included governance presentations, S&OP playbooks, roadmap material, policy documents, process descriptions, internal dashboards, and presentation material related to the ongoing S&OP transformation. An overview of the most central internal documentation utilised throughout the study is presented in the table below, Table 3.2.

| Internal document | Description |
|---|---|
| **GMS Organisation** | Application used to navigate Saab's organisational structure and identify the responsibilities of different organisational units. |
| **Surveillance Governance model_revB** | Presentation describing Saab Surveillance's overall product-centric governance model and strategic direction for integrated business and operations planning. |
| **Multilevel S&OP Framework A** | Framework describing how S&OP should be conducted across PU-, BU-, and BA-levels. |
| **S&OP Playbook v2.1** | Overall instruction document describing the structure, governance, and execution of the BA-level S&OP process. |
| **S&OP Demand Tool Dashboard** | Internal demand dashboard used to monitor and visualise demand plans within the S&OP process. |
| **S&OP Bottleneck Tool** | Digital tool used to identify, monitor, and manage bottlenecks and related actions. |
| **S&OP How To rev K** | Detailed guide describing how to use the digital S&OP tools and supporting systems. |
| **S&OP Introduction C** | Introductory presentation explaining the purpose, structure, and intended role of S&OP within Saab Surveillance. |
| **Final Directive SOP 2026 Q2 A** | Comprehensive directive document describing the S&OP process, governance structure, responsibilities, and operational expectations in detail. |

**Table 3.2:** Overview of central internal documentation utilised throughout the study

The documentation was primarily used to understand the formally intended structure of the S&OP process, the governance model, as well as the technical support systems and the operational environment in which the process is conducted. Furthermore, the material was used to complement and triangulate interview findings by comparing formally described processes with how stakeholders described operational practices during the interviews.

The internal documents were collected continuously throughout the study in collaboration with stakeholders within COO Office and other involved functions. Since the documentation was produced for internal operational purposes rather than research purposes, the material was critically evaluated in relation to the perspectives and intentions reflected in the documents.

## 3.4 Data analysis

This study adopted a qualitative research approach to provide a comprehensive and relevant analysis of the S&OP process. The choice of a qualitative approach was grounded in the need to understand how the process was experienced, interpreted and enacted by different organisational stakeholders, particularly in a complex organisational setting where planning processes were closely connected to digital tools, cross-functional coordination and human decision-making [60].

The study was designed as a single-case study where multiple qualitative data sources from Saab Surveillance were analysed together. These sources included interviews, workshop materials, observations and internal documents. Analysing these sources together enabled a deeper understanding of the S&OP process and supported triangulation across different perspectives and types of empirical material [62].

The qualitative material was analysed using thematic analysis. This method was selected because it enabled a systematic identification of patterns in interview transcripts, workshop materials, observations and internal documents, while still remaining flexible to capture specific insights related to S&OP practices, organisational coordination and digital tools [60].

The thematic analysis followed an iterative process involving familiarisation of data where all qualitative data was reviewed in depth to develop an overall understanding of how the S&OP process was enacted across different functions [60]. In line with the abductive research approach and principles of systematic combining, the analysis continuously moved between empirical observations and theoretical concepts. Initial themes were formed by the theoretical framework, while new themes and patterns emerging from the empirical material were incorporated throughout the analysis.

Related codes were clustered into overall themes that reflected recurring patterns in the data, such as specific challenges related to manual input in Excel or variations in planning maturity across different functions. These themes were continuously refined through comparison across different stakeholders and data sources, in line with best practices in qualitative analysis [62]. Alternative interpretations of the data were actively considered and not dismissed directly, even when they did not fit dominant patterns. This involved systematically searching for disconfirming evidence and critically reflecting on emerging themes. Patton [62] argued that this process can reduce the risk of selective interpretation or confirmation bias. Similarly, divergences between data sources were treated as opportunities for deeper analysis rather than weaknesses.

## 3.5 Ethics

The study followed established ethical guidelines for social and organisational research, including principles of informed consent, confidentiality, and voluntary participation, in line with the Social Research Association's ethical guidelines and Swedish national research ethics principles [63], [64]. Below are some ethical considerations relevant to the project displayed.

Since the S&OP process was used in a company manufacturing defence-critical products, there was a societal risk that incorrect assumptions or overly simplified models could lead to planning decisions that negatively affected the delivery reliability of systems critical to society. Furthermore, the study was based on organisational knowledge and insights that might not be transferable beyond their intended context, as specific constraints characterised the defence industry.

From an ethical perspective, there was a risk of inadvertent exposure of sensitive planning, capacity, or operational data. This risk was managed through strict limitations on data granularity, anonymisation, and compliance with internal guidelines. An additional ethical risk was bias in interviews and assessments, particularly in an organisation with low to medium maturity and person-dependent ways of working. This was addressed through triangulation of data sources and the use of established frameworks. Furthermore, all interview participants were offered the option of anonymity, and individual statements were reported in a way that prevented identification. Participants were informed about the purpose of the study, how the material would be used, and their right to withdraw or opt out before participation.

From an environmental perspective, the study did not address these effects, risking overlooking the environmental consequences of altered planning processes. Any potential environmental effects of changed planning principles were therefore not analysed and were considered outside the scope of the project.

## 3.6 Use of AI

In this study, artificial intelligence (AI) was used as a supporting tool throughout the research process. Its primary applications included assistance with text structuring and language refinement, such as identifying linguistic inaccuracies and ensuring an appropriate academic tone (OpenAI's ChatGPT (GPT-5.5) and Grammarly). Furthermore, AI was used for exploratory purposes to help identify prior research considered relevant to the study's aim and to improve analytical precision (Perplexity). All AI-generated suggestions and references were critically reviewed to ensure relevance, quality, and accuracy. AI was also used to support practical tasks, such as converting written text into LaTeX code.

The use of AI functioned as a complementary aid during the research process and did not replace independent academic work, such as analysis, interpretation of empirical material, or the development of conclusions. Rather, AI contributed to increased efficiency throughout the research process, in accordance with the guidelines for AI use provided by Chalmers University of Technology. No empirical analysis, interpretation, or conclusions were generated solely by AI tools.

# 4
# Results

## 4.1 Current S&OP

This section aims to describe the current S&OP process at Saab Surveillance, challenges they are facing and maturity assessment based on Danese et al. [58].

### 4.1.1 Current Process at Saab

The following section describes the current S&OP process at Saab Surveillance and its surrounding context. The findings are based on interviews with employees in various roles across the organisation, as well as internal documents. Initially, an overview is provided of the strategic direction established through the governance model. Thereafter, the BA-level S&OP process is described in greater detail, and the section concludes with a description of the roadmap established for the remainder of the year.

#### 4.1.1.1 Product Centric Governance Model

A central component explaining why S&OP has been deployed is the product-centric governance model (the key components are presented in Figure 4.1) introduced by Saab Surveillance, which is described in "Surveillance Governance Model_revB". Although the organisation continues to operate in a project-executing environment, the governance model describes a strategic shift from traditional project-driven planning towards increased steering from a product portfolio perspective. The intention is to strengthen the alignment between business and operations by concentrating capacity, productivity, and decision-making around strategically prioritised product areas. At the centre of the governance model is the concept of consolidated demand-supply planning, which is materialised through the S&OP process and aims to provide a holistic overview of internal demand and supply across business units, products, projects, and global Surveillance sites. Through this structure, the governance model seeks to improve cross-functional coordination, increase strategic transparency, and enable more integrated planning across the organisation.


**Figure 4.1:** The key components of the product-centric governance model at Saab Surveillance (adapted from "Surveillance Governance Model_revB").

At Saab Surveillance, S&OP is described as a cross-functional process intended to align supply and sales strategies through a single integrated operational plan across business and operations. The process aims to support proactive and data-driven decision-making, improve resource utilisation, and enable coordinated decision-making between key stakeholders across the organisation.

#### 4.1.1.2 The COO Office at Surveillance

The COO Office for BA Surveillance aims to monitor and lead global operations to ensure sufficient capacity and efficiency, enabling delivery performance and profitability in the business. This includes ensuring an effective governance system across the business area, including demand consolidation, functional coordination (not limited to functions organised within the COO office), and business planning and control. The COO is also responsible for safeguarding the balance between demand and supply within the business area by implementing sufficient measures to ensure effective consolidation of business needs and functional delivery and support response. The COO is also responsible for establishing and continuously developing a toolbox for operational business improvement and for identifying and addressing bottlenecks in collaboration with business and delivery owners.

It is clear that S&OP is one of the most important initiatives, and a senior decision-maker, COO8, within the COO Office expresses that he sees S&OP as the engine of the work that the COO Office does within this area. However, no overall BA-level strategy has been presented that shows how the different initiatives interact.

Within the COO Office, there are both the Growth Transformation Office and the Digital Transformation Office, which run separate initiatives. It is clear that these have a direct connection to the S&OP process, but there is no initiative architecture linked to the operational model being pursued. It is therefore unclear whether such an architecture exists within the COO Office and to what extent it is present in the broader Operations activities within BA Surveillance.

#### 4.1.1.3 Global Management System (GMS)

There is a Global Management System (GMS) that aims to serve as a standardised framework for processes, governance, and performance measures, thereby ensuring a uniform and coordinated implementation of activities across Saab's global organisation. GMS is currently under review, and consideration is being given to decentralising it to the BA level. As the investigation is still ongoing, the role and integration of S&OP within GMS has not yet been fully established.

The version of GMS under development indicates that S&OP will be incorporated into Manage Resources and Capability (RCM), a process area within "Governance and Support". At present, there is no clear indication of which other processes connect to S&OP or how S&OP can control them. The structure of GMS also appears to reflect a historically project-driven logic within Saab, characterised by a strong emphasis on securing customer deals before subsequently adapting R&D and operational capabilities around them.

#### 4.1.1.4 The Process

The S&OP process (see Figure 4.2) within Surveillance is based on theory and industry best practices, but has been adjusted to fit existing processes and ways of working. The process largely follows a standardised quarterly planning cycle. This section describes how the process is implemented today.

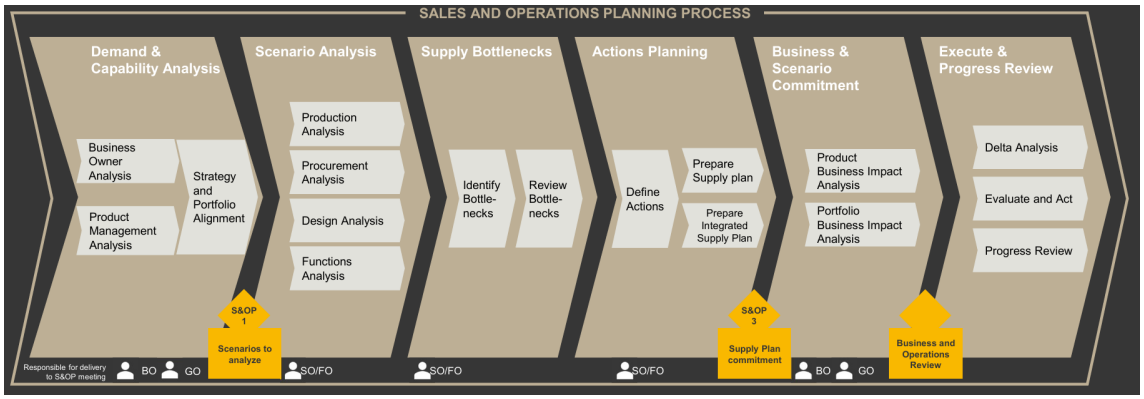


**Figure 4.2:** Semi-detailed overview of the BA-level S&OP process as presented in the "S&OP Playbook v2.1".

Currently, S&OP is carried out continuously, and twice a year, a full S&OP cycle is conducted to update the current state of the product portfolio. In addition, a progress review is conducted twice per year. The result of each S&OP cycle serves as a baseline for the next cycle. The timing of the current S&OP process is aligned with the RCM process. In the latest revision of the BA-level S&OP playbook, the S&OP 2 meeting has been removed and replaced by the "Bottleneck Review" activity. The process currently consists of the S&OP 1 and S&OP 3 meetings, as well as the final Business and Operations Review.

The activities and meetings are categorised into six process steps: Demand & Capability Analysis, Scenario Analysis, Supply Bottlenecks, Actions Planning, Business & Scenario Commitment, and Execute & Progress Review. The six process steps are centred around three main meetings, although individual activities may also involve additional meetings. Each meeting and its content are described below.

**S&OP 1**
The purpose of the meeting is to present the demand plan and the scenarios to be analysed. The plans are presented for selected products within each BU. The output is an agreed Demand Plan, including scenarios. The Supply Owner (SO) acknowledges that the demand plans are sufficient. The main presenter is the Deputy Head of BU.

**S&OP 3**
The purpose of the meeting is to present the final supply plans, including identified actions to bridge supply gaps, and to commit to the final Supply Plans (including capacity, productivity, and lead time). The output is a committed Supply Plan. The main presenter is the SO Coordinator.

**Business Operations Review (BOR)**
The purpose of the meeting is to make decisions on the S&OP baseline and the selected scenario. It also monitors the progress of the S&OP plan, evaluates the target state, and acts on deviations from the plan. The main presenter is the Head of BU.

#### 4.1.1.5 Roles

The S&OP process within Surveillance relies on cross-functional collaboration across business, supply, and support functions. Each role contributes planning inputs and supports coordination throughout the organisation. The main roles and responsibilities are summarised in Table 4.1.

**Table 4.1:** Main roles and responsibilities within the S&OP process at Saab Surveillance

| Role | Main responsibilities within S&OP |
|---|---|
| Executive Management | Decides on the S&OP baseline, sets priorities, and approves investment plans. |
| Chief Operating Officer (COO) | Acts as process owner for S&OP, manages the balance between demand and supply, and decides on planning scenarios at BA level. |
| Governance Officer (GO) | Supports strategy and portfolio alignment, conducts portfolio-level business impact analysis, and maintains overview of bottlenecks and investment needs. |
| Business Owner (BO) | Drives planning within the business unit, develops demand plans, manages product deliveries and development demands, and conducts business impact analyses. |
| Supply Owner (SO) | Drives planning within the supply function, develops supply plans, identifies bottlenecks and supply gaps, and presents mitigation actions in S&OP 3. |
| Function Owner (FO) | Maintains functional plans and contributes analyses and actions related to supply bottlenecks and operational support needs. |
| Supply Owner Coordinator (SOO) | Coordinates Supply Owners, consolidates the overall supply response, and aligns planning processes and ways of working across the supply organisation. |

#### 4.1.1.6 Digital Support

Currently, the digital environment supporting the S&OP process at the BA level is structured around three main components: a bottleneck management tool and a dashboard with data related to the specific bottlenecks, a demand planning tool, and a SharePoint site. This section describes how these systems function and support the process, the roles they play within it, and the current state of their integration.

**Bottleneck tool**
The bottleneck tool, similar to the demand planning tool, is developed in ServiceNow and relies on manual data entry within the application. For each bottleneck, a number of attributes are recorded, including a general description, the S&OP plan it is linked to, the relevant scenario (e.g. S1, S2), the type of bottleneck, its priority, category, associated function, related product, and site. The visualisation of this data, related to "Bottlenecks" and "Actions", is carried out through two systems: a demand dashboard and an interface that generates a bottleneck heatmap.

**Demand tool**
The demand tool is also based on manual data entry within a ServiceNow-designed application, but it requires fewer data points than the bottleneck/action tool. In this tool, the Business Owner has some flexibility in how the product is structured. The data entered forms the basis of a demand dashboard, where users with access can filter the data using parameters such as "S&OP Demand Plan", "Product Family", "Product", "Demand Type", "Product Type" and "Year". The tool supports aggregation and visualisation of demand data across products and demand categories.

**Teams site**
On the Surveillance Sales and Operations Planning Teams site, a structured folder system is used to store documents relevant to the process, such as Excel files and PowerPoint presentations, which are accessible to authorised users. The Teams site is generally updated with the latest process-related documents to help users follow ongoing developments.

**Digital Integration**
At present, there is no digital integration beyond the fact that data entered for "Bottlenecks," "Actions," and "Demand" is transferred to the SARA data warehouse. This implies that the data required to carry out the S&OP process currently relies on manual inputs, which are aggregated across the organisation, for example, from the PU level to the BU level, and subsequently entered manually into the demand application.

There is no formalised, mandated, or recommended process for how the organisation should generate and structure data to support the S&OP process. Instead, data preparation varies across different PUs and BUs. One key reason cited for the lack of digital integration is that data is structured differently across products, leading to inconsistent data that hinders seamless integration.

#### 4.1.1.7 Existing S&OP roadmap

There is a roadmap for the S&OP process, with an initial version developed in mid-February 2026 that defines "what good looks like," as well as an initial swimlane-structured roadmap extending through the remainder of the year. Beyond this, there is no defined structure for how the process should continue to evolve, except for a column named "backlog" with some actions. Furthermore, there is no overarching strategy within the COO Office outlining how different initiatives interact or integrate with one another.

According to Saab Surveillance's internal definition of "what good looks like," can be summarised as follows:

- Alignment between demand and capacity
- Clear governance and balanced central–local responsibilities
- A transparent, shared S&OP baseline
- Data-driven and automated processes
- Scenario-based and continuously monitored

The roadmap is an internal document within the COO Office and has not been shared with participants; rather, it outlines the initiatives currently underway to develop the process. The current roadmap is divided into two parts: one focused on the process, and one focused on the digital solution for S&OP. The S&OP roadmap is structured around a set of defined streams, each representing a key area of development within the process. In addition, the roadmap covers the development of multi-level S&OP, improvements in ways of working, and the establishment of product-centric governance. Together, these streams outline the main focus areas currently driving the evolution of the S&OP process. The digital S&OP roadmap consists of 24 active initiatives, with an additional three in the backlog, all contributing in different ways to strengthening the digital environment. Similar to the overall roadmap, these initiatives are fragmented in both scope and interdependencies.

### 4.1.2 Challenges

This section brings up the twelve most visible challenges structured around Tuomikangas and Kaipia [32] framework.

#### 4.1.2.1 S&OP Process

**Product S&OP**
There is an existing template and way of working related to Product S&OP published on the Teams site, referred to as the "Multilevel S&OP Framework." This represents an initial attempt to guide the PUs in how S&OP can be deployed at the product level. However, the empirical findings indicate that this way of working has not yet been broadly established across the approximately 19 PUs within Surveillance. Instead, only one PU appears to have implemented a more structured product-level S&OP process and generated tangible value from it. This suggests

that Product S&OP can function as a more operational and decision-oriented planning process, in line with how S&OP is described in the literature [48].

The findings further indicate that the BA-level S&OP process depends on structured planning processes at lower organisational levels. Without more standardised product-level planning practices, it becomes difficult to aggregate demand, capacity, and bottleneck information effectively to higher organisational levels. This is particularly important as Surveillance is moving towards a more product-oriented organisational structure, where products are increasingly linked to specific PUs.

At the same time, the findings show that Product S&OP is not only a process design issue, but also a question of ownership and perceived value. While some respondents request clearer structure and support for local S&OP deployment, others emphasise that new processes should only be introduced where they create tangible value.

### C1: Absence of established Product S&OP capabilities across PUs

#### Parallel Processes

The empirical findings indicate that the current S&OP implementation largely operates in parallel with existing planning, forecasting, financial, and governance structures, rather than functioning as an integrated replacement or consolidation mechanism. As a result, several stakeholders perceive the process as adding duplicated reporting, overlapping planning activities, and increased administrative burden across the organisation.

Although S&OP has contributed to making previously unclear needs, dependencies, and bottlenecks more visible, the findings suggest that much of the actual planning and decision-making still takes place in fragmented forums outside the formal S&OP process. This creates uncertainty regarding how S&OP should interact with existing BU, PU, financial, and governance processes. In particular, the relationship between S&OP and financial planning appears insufficiently defined, which risks creating parallel "versions of reality" rather than one shared planning foundation.

Overall, the findings show that S&OP is currently perceived more as an additional information aggregation layer than as a fully integrated governance and decision-making process. Since it is not yet clear which existing forums, processes, or reporting structures S&OP is intended to replace, consolidate, or connect to, the process risks increasing complexity rather than reducing it.

### C2: Parallel planning structures and unclear process integration

#### Blend of ETO, MTO and MTS

The empirical findings indicate that Saab Surveillance operates within a complex mix of engineer-to-order (ETO), make-to-order (MTO), and make-to-stock (MTS)

characteristics. However, few stakeholders explicitly describe how these different planning and production logics should be managed within the S&OP process. Instead, the implications of this hybrid environment are mainly reflected through operational challenges related to procurement timing, forecasting, engineering revisions, and planning stability.

The findings suggest that many products combine standardised components that can be planned and procured in advance with customer-specific elements that require engineering adaptation. This creates a hybrid planning environment where different parts of the same product structure may require different planning principles, inventory strategies, and procurement approaches. Although the organisation is moving towards reduced reliance on pure ETO logic, several products remain highly complex and customer-specific. Hybrid ETO, MTO, and MTS conditions are therefore likely to remain a long-term operational reality.

**C3 Limited explicit planning logic for hybrid ETO, MTO, and MTS operations**

#### 4.1.2.2 S&OP Tools and Data

**Data Aggregation**
As a partial consequence of the absence of a deployed and standardised Product S&OP process, there is no consistent way for Business Owners, Supply Owners, or Function Owners to aggregate data from their respective operations. As a result, the preparation of material for BA-level S&OP meetings is described as time-consuming, manual, and dependent on individual interpretation. Rather than being continuously updated and aggregated from structured product-level planning processes, the current process often requires extensive manual consolidation before each cycle.

The findings indicate that this challenge is reinforced by fragmented data structures, limited system integration, and a lack of standardised data definitions across functions. Operational, financial, product, and capacity-related information is often collected from several systems and then manually restructured before it can be used in the S&OP process. In contrast, the example of an established Product S&OP process shows that when analytical and structuring work is performed closer to the product level, aggregation to higher organisational levels becomes significantly easier.

Overall, the current planning environment depends heavily on manual data collection, interpretation, and consolidation. This increases administrative workload, reduces transparency, and introduces potential sources of error in the planning process, especially when capacity simulations and future assumptions are based on temporary structures or incomplete system support.

**C4: Extensive manual work in data consolidation and planning activities**

**Data Landscape & Data Strategy**
The empirical findings indicate that Saab's fragmented system landscape and limited data quality represent a central barrier to developing a more integrated and data-driven S&OP process. A key challenge is the absence of clear "digital threads" connecting product, project, procurement, design, financial, and operational data. As a result, data is not structured in a coherent or standardised way across the organisation.

The organisation relies on several different systems across functions, including Phoenix, CRM, IFS, Workday, Antura, Agresso, Mercur, and SARA. However, the lack of integration between these systems makes cross-functional planning and analysis difficult. Product-based follow-up often requires manual tagging, reverse mapping, and extensive validation before meaningful analysis can be performed. This reduces data reliability and increases the amount of operational problem-solving required before data can support decision-making.

Overall, the findings suggest that the absence of a coherent data strategy limits the organisation's ability to automate planning, analyse capacity requirements holistically, and connect project-level information to product-level planning. This creates a major barrier to developing S&OP into a more fact-based, integrated, and scalable management process.

**C5: Fragmented systems landscape and absence of a coherent data strategy**

**Supply chain data visibility**
A recurring challenge identified in the empirical findings concerns limited visibility and integration across the external supply chain. The absence of integrated supplier data and limited access to reliable information regarding supplier capacity, demand changes, and supply constraints means that planning activities often depend on manual coordination and reactive information sharing rather than continuously updated planning data.

This challenge is further reinforced by security-related restrictions on data sharing. While such restrictions are necessary in a defence-industrial context, they also limit the organisation's ability to share demand plans with suppliers and develop more data-driven ways of working across the supply chain. As a result, supplier capacity is not systematically updated and linked to the S&OP cycle.

Overall, the current planning environment relies heavily on periodically consolidated snapshots rather than real-time or continuously updated planning information. In a complex and uncertain supply chain environment, external disruptions can quickly make aggregated planning data outdated, reducing the organisation's ability to respond proactively to changing supply chain conditions.

**C6: Limited external supply chain integration and absence of real-time planning data**

#### 4.1.2.3 S&OP Organization

**Bottleneck Ownership and Escalation Structure**
The empirical findings indicate that bottleneck management is a central purpose of the BA-level S&OP process. However, the current escalation structure appears unclear, as bottlenecks from PU, BU, and BA levels are not always clearly separated. As a result, too many operational-level bottlenecks risk being escalated to the BA level, creating noise and reducing clarity regarding which issues should be prioritised in the overarching S&OP process.

The findings further suggest that there is limited transparency regarding ownership, follow-up, and resolution of identified bottlenecks. While the BA-level process is expected to support proactive capacity and resource management, it currently contains too much summarising discussion and too little fact-based status information on bottlenecks, required actions, and responsible owners.

Overall, the challenge concerns finding the right division of responsibility between organisational levels. Operational delivery-related bottlenecks may need to be managed close to the PUs, while the BA-level S&OP process should focus on cross-BU dependencies, shared constraints, and prioritisation issues requiring management attention.

**C7: Unclear prioritisation and ownership of bottlenecks across organisational levels**

#### 4.1.2.4 Performance Management

**Communication from the executive S&OP (BOR)**
The empirical findings indicate that substantial amounts of information are fed into the BA-level S&OP process, but that the outcomes from the executive-level Business Operations Review (BOR) are not clearly communicated back to the organisation. Several stakeholders describe uncertainty regarding what decisions are actually made, how they are followed up, and how they should influence planning and execution at PU and BU levels.

As a result, the S&OP process risks being perceived primarily as an information collection and reporting exercise rather than as a decision-making and governance process. The findings suggest that visible outputs, decision feedback, and structured follow-up mechanisms are currently insufficient. This reduces the perceived value of the process and limits its ability to create organisational impact.

Overall, the challenge concerns the lack of a clear feedback loop from BOR to the rest of the organisation. Without clearer communication of decisions, priorities, and required actions, the BA-level S&OP process becomes difficult to connect to opera-

tional planning, bottleneck resolution, and long-term resource decisions.

**C8: Unclear Outcome from the Executive S&OP Process (BOR)**

#### 4.1.2.5 Strategic Alignment

**Workforce Planning**
The empirical findings indicate that the ability to meet future demand is not only constrained by material availability and manufacturing capacity, but also by the availability, development, and retention of critical competencies. This is particularly important in an organisation dependent on niche knowledge, where new employees may require significant time before they become fully productive.

The findings further suggest that workforce planning is not yet sufficiently integrated into the S&OP process. Growth is largely managed through increased headcount rather than through a structured tactical workforce planning process linked to future demand, competence requirements, and capacity scenarios. As a result, the organisation lacks a long-term and data-driven view of how workforce constraints may affect the feasibility of demand and supply plans.

Overall, the absence of integrated workforce planning limits the organisation's ability to assess whether future demand can realistically be met from a competence and resource perspective, especially when critical capabilities require long onboarding and development times.

**C9: Absence of Integrated Workforce Planning**

**Financial Integration**
There is currently no clearly established way for the S&OP process to integrate with the financial planning processes managed by the finance organisation. The empirical findings indicate that both processes rely on assumptions about future order intake, but that they are currently developed through partly separate logics. As a result, S&OP risks becoming a parallel operational planning track rather than the operational foundation for financial forecasting, budgeting, and follow-up.

The findings further suggest that the lack of integration between operational and financial planning limits the organisation's ability to establish one shared planning view. Demand and capacity are primarily expressed in operational volumes within S&OP, while financial planning translates future assumptions into revenue, cost, margin, and budget implications. However, there is currently no fully integrated data model that connects operational, commercial, and financial planning dimensions.

Overall, the limited integration between financial planning and S&OP reduces the ability to evaluate the financial consequences of operational plans, capacity constraints, and commercial priorities. For S&OP to create stronger organisational impact, the process needs to be more clearly linked to financial outcomes and be-

come part of a shared planning and governance structure.

**C10: Limited integration between financial planning and the S&OP Process**

**BA-level Operations Strategy**
The COO Office has introduced a governance model with a clear ambition to move Surveillance towards a more product-centric way of working. This includes establishing a consolidated demand and supply planning process that provides a holistic view across business units, products, projects, and global sites. The intended direction is therefore to strengthen strategic steering from a product portfolio perspective, with greater focus on capacity, productivity, and long-term operational planning.

However, the empirical findings indicate that this strategic direction is not yet fully embedded in day-to-day practices across the organisation. While the product-centric governance model appears to have a formal mandate, several stakeholders describe uncertainty regarding how it should be translated into practical planning routines, decision forums, and cross-functional collaboration. In particular, project-driven governance still appears to create unstable planning conditions and limits the ability to plan from a clear product portfolio perspective.

Overall, the challenge concerns the gap between the intended product-centric governance model and its operational implementation. For S&OP to support the broader transformation of Surveillance, the process needs to be more clearly connected to decision-making, financial planning, and the practical steering of products, capacity, and resources.

**C11: Unclear operationalisation of the product-centric governance model**

#### 4.1.2.6 S&OP Culture and Leadership

**People and Culture**
The empirical findings indicate that the current S&OP process risks becoming difficult to sustain over time due to its high dependence on manual work, administrative effort, and stakeholder engagement. Several stakeholders perceive the process as valuable in principle, but also highlight that the quality of input data and decision support depends heavily on whether different functions continue to provide accurate and timely information.

This challenge is reinforced by the current reliance on Excel-based processes, individual knowledge, and informal ways of working to compensate for gaps in the formal process. Without clearer ownership, feedback mechanisms, and visible outcomes, there is a risk that engagement, legitimacy, and trust in the process will decrease over time. The process may then be perceived as an additional reporting burden rather than as a value-creating planning and decision-making mechanism.

Overall, the findings suggest that the long-term sustainability of the S&OP process depends on reducing manual workload, clarifying the purpose and use of reported data, and ensuring that stakeholders can see how their input contributes to decisions and organisational value.

**C12: Limited Organisational Commitment for BA-level S&OP**

An overview of the identified challenges is presented in Table 4.2. Several of the challenges are interconnected, which influences how they should be mitigated, as there are clear synergies both between the challenges themselves and in terms of how they may be addressed.

**Table 4.2:** Overview of Identified S&OP Challenges

| **Coordination Mechanism** | **Identified Challenge** |
|---|---|
| S&OP Process | C1: Absence of established product S&OP capabilities across PUs<br>C2: Parallel planning structures and unclear process integration<br>C3: Limited explicit planning logic for hybrid ETO, MTO, and MTS operations |
| S&OP Tools & Data | C4: Extensive manual work in data consolidation and planning activities<br>C5: Fragmented systems landscape and absence of a coherent data strategy<br>C6: Limited external supply chain integration and absence of real-time planning data |
| S&OP Organization | C7: Unclear prioritisation and ownership of bottlenecks across organisational levels |
| Performance Management | C8: Unclear outcome from the executive S&OP process (BOR) |
| Strategic Alignment | C9: Absence of integrated workforce planning<br>C10: Limited integration between financial planning and the S&OP process<br>C11: Unclear operationalisation of the product-centric governance model |
| S&OP Culture and Leadership | C12: Limited organisational commitment for BA-level S&OP |

### 4.1.3 Maturity Assesment

The assessment, seen in Table 4.3, is visualised using a "frontier" approach rather than assuming that all characteristics of the lower maturity levels are automatically fulfilled. This is because the maturity matrix includes stage descriptions that represent mutually exclusive organisational conditions. For example, characteristics such as "lack of sponsorship from business executives" are indicative of Stage 1 but would no longer apply at higher maturity levels. This means that earlier stages cannot be marked as fully satisfied once an organisation progresses. Instead, the frontier highlights the set of practices that best characterise the current state while acknowledging that the matrix is not strictly cumulative.

The assessment indicates that the People and Organisation dimension spans multiple maturity levels. While some characteristics correspond to Stage 3 (Standard), such as the emergence of a new planning culture and clearer roles and responsibilities, other elements are closer to Stage 4 (Advanced), particularly the presence of executive participation and collaboration with key stakeholders. At the same time, several criteria associated with Stage 3 remain unfulfilled, indicating that the dimension does not clearly correspond to that level.

**People and Organisation** Within the COO Office, which owns the S&OP process, there is a clear perception that the initiative is strongly supported at the highest management level within Surveillance, with the COO and the Head of Surveillance acting as key sponsors. However, interviews indicate that this support is less consistently anchored at the Business Unit level, where the key actors responsible for operationalising and implementing the process are located. This suggests that, while executive sponsorship is present, it is not yet fully aligned across the organisation. Instead, S&OP is in some cases perceived as a separate reporting function, indicating that the dimension exhibits elements of higher maturity levels, while certain foundational conditions for achieving a higher level of maturity remain unmet.

Significant efforts have been made to define both the process and the organisational structure, resulting in a clearly articulated governance framework and defined decision-making forums. This has contributed to increased clarity regarding roles and responsibilities, although some ambiguity remains. At the same time, the organisation is characterised by a legacy culture shaped by a context where capacity constraints were less critical than market demand. As a result, the value of a fully integrated S&OP process has not yet been consistently established across the organisation. Formal S&OP teams are not uniformly present, even though S&OP meetings bring together a recurring group of participants. Consequently, the level of commitment to participate in and further develop the process varies across the organisation. Nevertheless, a strong BA-level structure has been established, with consistent executive participation in S&OP 1, S&OP 3, and the Business Operations Review (BOR).

| | Stage 1<br>No S&OP | Stage 2<br>Reactive | Stage 3<br>Standard | Stage 4<br>Advanced | Stage 5<br>Proactive |
|---|---|---|---|---|---|
| **People and organisation** | • Lack of sponsorship from business executives<br>• No team of S&OP<br>• Silo culture domination | • Some collaboration between demand and operations<br>• No definition of responsibilities | • New planning culture with non-dedicated S&OP team<br>• Clear roles and responsibilities<br>• Excellent commitment | • Formal S&OP team with executive participation<br>• Collaboration with main customers and/or suppliers<br>• Development of new skills and personnel training | • The S&OP process owner becomes coordinator of the entire network<br>• Participation of top management of all partnering companies |
| **Process and methodologies** | • No formal S&OP process<br>• Frequent re-planning and revenue focus | • Emerging but still inconsistent process<br>• No financial integration | • Formalised and structured process<br>• Regular meetings<br>• Financial integration | • Process balanced with the external network partners<br>• Demand and supply plans jointly aligned | • Dynamic process<br>• Event-driven meetings |
| **Information technology** | • Individual managers keep own spreadsheets<br>• No consolidation of information | • Many spreadsheets or functional solutions<br>• Some consolidation but done manually | • Integrated demand and supply planning software<br>• Improved data rationalisation and integration capability | • Technology to access external partner data and share information with them | • Innovative technology to support decision-making (risk management, scenarios) |
| **Performance measurement** | • Basic measurements | • Functionally specific metrics<br>• Measure of how well Operations meets sales plan | • Integrated internal supply chain metrics | • External supply chain metrics<br>• New product introduction metrics<br>• S&OP effectiveness | • Assessment of company profitability<br>• Impact on ecosystem (social, environmental) |

**Table 4.3:** The proposed maturity model (adapted from Danese et al. [58]). Note: Colour coding indicates the maturity assessment of Saab's S&OP process based on empirical findings. Green = criterion fulfilled; Yellow = criterion partially fulfilled; Red = criterion not fulfilled. Colour coding added by the authors.

**Process and Methodologies** This dimension is closely related to "People and Organisation," and it is evident that the structure at the BA level enables a relatively high positioning on the maturity scale. At the BA level, a "formalised and structured process" can be identified; however, as there is not yet a clearly defined structure in place or a binding mandate for lower levels in the organisation, the assessment is considered partial.

The structure for aggregating data from the PU and BU levels to the BA level is currently not standardised. Instead, it is left to each participant in the process to determine how this is carried out. Meetings are held regularly on a quarterly cycle, with Q1 and Q3 more comprehensive and Q2 and Q4 more focused on updates.

At present, there is no financial integration within the process. The view expressed by the finance function is that the S&OP process is primarily seen as a means of challenging or revising plans already established within the business planning framework.

**Information Technology** In practice, the process currently relies on PowerPoint templates that are populated with comments and figures collected from the organisation (i.e. stakeholders in the process), as well as data from the demand and bottleneck tools. In this way, ServiceNow serves as a source of truth for demand-related data within the process. However, there is no integration with other systems (for example, CRM systems where sales teams update information on prospects, quotations, etc.), so the data presented is entirely based on manual entry.

Ahead of meetings, screenshots from these tools are used to visually support the data and information being presented. Separate PowerPoint templates exist for Business Owners (BO) and Supply Owners (SO), while an Excel template is used for Design-related activities. Overall, the process remains highly dependent on PowerPoint, Excel, and certain function-specific solutions developed in ServiceNow.

**Performance Measurement** When it comes to performance measurement, there are currently no mechanisms embedded as an integrated part of the S&OP process. While prioritised KPIs exist at the BA level (e.g., sales growth, order intake, margin, OTD, FTE growth, and capital employed), they are not actively used in the S&OP process or in connection with its meetings and activities.

Furthermore, there is no systematic measurement of the S&OP process itself. Metrics such as forecast accuracy, forecast bias, and plan adherence are not tracked, and there is no established way to evaluate the quality of demand and supply plans or the outcomes of S&OP decisions.

To provide an indicative overall maturity level, a simple average across the four dimensions can be calculated. The framework itself does not specify any weighting among the dimensions; therefore, an equal-weighting assumption is applied for this approximation. Based on the assessment, People and Organisation is posi-

tioned between Stage 3 and Stage 4, Process and Methodologies between Stage 2 and Stage 3, Information Technology at approximately Stage 2, and Performance Measurement close to Stage 0. This results in an approximate overall maturity level of 2.0, suggesting that the organisation overall is positioned around Stage 2 (Reactive). This calculation should be interpreted as an indicative summary rather than a precise measurement, as the maturity model is primarily intended as a qualitative diagnostic tool.

## 4.2 Design of the Target State S&OP Process

This section presents the proposed target state S&OP process for Saab Surveillance. The target state was developed based on the findings from the current state analysis, maturity assessment, identified challenges, and insights from the literature. To ensure a structured design, the target state is organised according to the six dimensions proposed by Tuomikangas and Kaipia [32]: strategic alignment, organisation, process, tools and data, performance management, and culture and leadership. Within each dimension, a target state is described together with concrete actions required to move from the current state towards the proposed future state.

### 4.2.1 Strategic Alignment

**Integrated Strategic, Operational and Financial Planning**

*Primarily addressing the following challenges: C2, C9 and C10*
*Secondarily addressing the following challenges: C8, C11 and C12*

In a target state, S&OP at Saab Surveillance functions as a central steering mechanism connecting strategic priorities, operational execution and financial outcomes across BA-, BU- and PU-levels. Currently, strategic decisions, capacity commitments and financial planning operate largely in parallel without a shared process linking them. The target state closes this gap by making S&OP the primary forum where growth plans, engineering capacity, workforce requirements and financial consequences are evaluated together. This is consistent with Tuomikangas and Kaipia [32]'s positioning of strategic alignment as the overarching coordination mechanism in S&OP, and with Nyman et al. [53]'s finding that at higher maturity levels the process extends beyond demand and supply balancing to encompass integrated resource allocation and strategy implementation under top management ownership.

**Concrete actions:**

- S&OP outputs are integrated into the quarterly financial forecasting process to improve forecast accuracy and financial visibility.
- Workforce planning and engineering capacity planning are integrated into the S&OP process to evaluate future supply capacity constraints.
- Changes in the business plan automatically trigger updates to the S&OP baseline, and major S&OP deviations trigger re-evaluation of the business plan.

- Strategic investment decisions at BA-, BU- and PU-level are evaluated against S&OP scenarios and identified capacity constraints at the corresponding organisational level.

**PU-level Operational S&OP with BA-level Strategic Coordination**

*Primarily addressing the following challenges: C1, C7 and C11*
*Secondarily addressing the following challenges: C2, C8 and C12*

In a target state, planning ownership is distributed to PU-level where knowledge of products, capacity constraints and operational dependencies is strongest, while strategic coordination, cross-functional governance and aggregation are retained centrally at BA-level. Currently, planning decisions are often escalated upward or handled informally across levels without clear ownership. The target state addresses this by establishing distinct planning mandates at each level, combining local responsiveness with enterprise-wide visibility of shared resources and bottlenecks. This reflects Kristensen and Jonsson [46]'s finding that S&OP design must be adapted to organisational complexity and context, and is consistent with Tuomikangas and Kaipia [32]'s identification of organisational structure and decision-making authority as central S&OP coordination mechanisms. Goh and Eldridge [52] further find that empowering planning teams with clear mandates and enabling event-driven responses contributes positively to planning performance, rather than relying on rigid centralised procedures.

**Concrete actions:**

- Establish formally defined S&OP responsibilities and decision mandates for BA-, BU- and PU-levels
- Deploy standardised Product S&OP processes across all PUs while allowing limited local adaptation based on operational context and product characteristics.
- Define clear criteria for which bottlenecks, investment decisions and prioritisation conflicts should be escalated from PU-level to BA-level.
- Shift BA-level S&OP away from detailed aggregation and consolidation work, and focus it on managing cross-BU dependencies, shared capacity constraints and long-term prioritisation decisions.
- Introduce common planning structures, terminology and reporting logic across PUs to improve comparability and enable aggregation without extensive manual interpretation.
- Define standardised interfaces between PU-, BU- and BA-level S&OP processes, including planning horizons, update frequencies and required inputs/outputs between levels.

**Scenario-Based Strategic Steering**

*Primarily addressing the following challenges: C7, C8 and C10*
*Secondarily addressing the following challenges: C3, C9 and C11*

In a target state, S&OP at Saab Surveillance supports proactive scenario-based decision-making, enabling management to evaluate trade-offs related to product mix, engineering capacity, supplier constraints and investments under different future conditions before major limitations emerge. Currently, planning is mostly retrospective and reactive. The target state changes this by embedding forward-looking analysis and portfolio steering into the recurring planning cycle. This aligns with Nyman et al. [53]'s description of IBP as a dynamic resource allocation process that connects strategic choices to operational and financial consequences, and with Ivert and Jonsson [57]'s finding that advanced planning support is particularly valuable in high-complexity environments with demanding planning objectives.

**Concrete actions:**

- Executive S&OP (BOR) decisions are based on quantified scenario comparisons including operational, financial and workforce-related consequences.
- Demand scenarios and supply capacity constraints are continuously evaluated through recurring scenario analyses within the S&OP cycle.
- A limited set of predefined strategic scenarios (for example demand surge, supplier disruption and engineering capacity shortage) are maintained and continuously updated at BA-level.
- A formal escalation mechanism is established for scenarios where identified bottlenecks cannot be resolved within existing capacity or investment constraints.

**Shared Vision and Organisational Alignment**

*Primarily addressing the following challenges: C2, C11 and C12*
*Secondarily addressing the following challenges: C1, C7 and C8*

In a target state, a shared understanding of the purpose, scope and value of S&OP is established across BA-, BU- and PU-levels, supported by aligned planning principles, common definitions and a shared direction that all functions work toward. Currently, different parts of the organisation operate under different planning logics and horizons. The target state creates a common planning foundation that enables consistent coordination across functions and organisational levels. This is consistent with Tuomikangas and Kaipia [32]'s positioning of aligned objectives and shared ways of working as prerequisites for effective S&OP coordination, and with Goh and Eldridge [52]'s finding that strategic alignment has the strongest positive effect on planning performance among all coordination mechanisms studied.

**Concrete actions:**

- Develop and communicate a formally agreed S&OP target state describing the intended role, purpose and expected outcomes of the process across PU-, BU- and BA-levels.
- Conduct recurring post-cycle evaluations after major S&OP cycles.
- Introduce mandatory onboarding and training sessions for employees partici-

pating in the S&OP process to strengthen understanding and commitment.
- Establish a shared governance forum responsible for maintaining S&OP standards.

### 4.2.2 Organisation

**Clear Roles, Ownership and Decision Mandates**

*Primarily addressing the following challenges: C7 and C11*
*Secondarily addressing the following challenges: C2, C8 and C12*

In a target state, roles, responsibilities and decision mandates are clearly defined across BA-, BU- and PU-levels, with transparent ownership of planning activities, defined escalation paths and clear accountability for capacity decisions and cross-functional prioritisation. Currently, planning responsibilities are distributed informally across functions without clear mandates, leading to fragmented decision-making and unclear escalation paths. The target state addresses this by establishing structured accountability at each organisational level. This is consistent with Stahl and Wallace [33]'s emphasis that S&OP plans represent commitments from involved functions rather than informal discussion points, and requires active executive participation. Danese et al. [58] further find that organisational ownership and cross-functional integration become increasingly critical as S&OP maturity advances.

**Concrete actions:**
- Introduce formal decision documentation within Executive S&OP (BOR), including agreed actions, accountable owners and required follow-up activities.
- Assign formally designated process owners for each major S&OP activity at BA-, BU- and PU-level.

**Dedicated Planning and Transformation Support**

*Primarily addressing the following challenges: C1, C7 and C12*
*Secondarily addressing the following challenges: C2, C8 and C11*

In a target state, dedicated S&OP roles are established at both BU- and PU-level, where BU-level S&OP roles consolidate planning information across PUs to support portfolio-level decision-making and aggregation toward BA-level planning forums, while local S&OP-responsible roles drive operational planning and adoption closer to the business. Sufficient planning competence and transformation resources are established, particularly at PU-level, to support capability development and continuous process improvement over time. Dedicated S&OP roles are embedded closer to the business to ensure operational relevance and stronger planning ownership across the organisation, for example, by having dedicated PU-level S&OP coordinators. Danese et al. [58] find that people and organisational dimensions require continuous effort rather than one-time implementation, and that this dimension becomes

progressively more critical at higher maturity levels. This is further supported by Tuomikangas and Kaipia [32]'s identification of staff development and organisational capability building as prerequisites for long-term S&OP effectiveness.

**Concrete actions:**

- Establish dedicated S&OP coordinator roles at PU-level with explicitly allocated time and responsibility for driving the process.
- Create a cross-functional S&OP transformation team responsible for process development, implementation support and continuous capability improvement across BA-, BU- and PU-levels.
- Develop standardised role descriptions and competence requirements for key S&OP-related positions to reduce dependency on individual knowledge.

#### Cross-Functional Planning and Coordination Structures

*Primarily addressing the following challenges: C2, C7, C9 and C10*

In a target state, planning and decision-making are supported through recurring cross-functional forums integrating design, operations, procurement, finance and HR, replacing the fragmented and parallel coordination structures that currently exist . This creates a transparent and shared planning process where dependencies, constraints and priorities are visible across functions rather than managed in silos. Stahl and Wallace [33] describe S&OP as inherently cross-functional, requiring active participation from multiple business functions to coordinate supply, demand and operational decisions. In the ETO context specifically, Bhalla et al. [28] argue that integrated coordination between engineering, procurement and production planning is essential due to the strong interdependencies between these activities, something that makes cross-functional structures particularly critical at Saab.

### 4.2.3 Process

#### Standardised but Adaptive Planning Process

*Primarily addressing the following challenges: C1, C2 and C3*
*Secondarily addressing the following challenges: C11 and C12*

In a target state, planning processes follow a shared and structured logic with clearly defined inputs, outputs and planning horizons across the organisation, while remaining adaptable to differences in product characteristics, operational contexts and planning needs across PUs . Currently, planning processes vary significantly across the organisation without a common structure. The target state establishes a shared planning structure that is consistent enough to enable coordination but flexible enough to accommodate Saab's diverse product portfolio and ETO complexity. This is consistent with Kristensen and Jonsson [46]'s finding that S&OP design must be adapted to organisational context and complexity, and with Goh and Eldridge [52]'s finding that overly rigid planning procedures can inhibit rather than enhance

performance.

**Concrete actions:**

- Develop formal planning segmentation models defining how different product families should be planned depending on their ETO, MTO or MTS characteristics.
- Establish standardised planning assumptions and data definitions across all PUs to reduce inconsistent interpretations of demand and capacity.

**Integrated End-to-End Planning**

*Primarily addressing the following challenges: C2, C10 and C6*
*Secondarily addressing the following challenges: C5, C7, C9 and C11*

In a target state, planning processes are connected across the full value chain through structured process interfaces linking demand, engineering, procurement, production, suppliers and financial planning. Rather than operating through fragmented parallel processes, planning activities share inputs and outputs, creating visibility of dependencies, bottlenecks and downstream consequences across the organisation. Currently, demand, capacity and financial planning operate largely in isolation. The target state closes this gap through connected planning flows. Tuomikangas and Kaipia [32] describe the S&OP process as a coordination mechanism defining how sub-plans are created, communicated and integrated across functions, while Bhalla et al. [28] specifically argue that ETO environments require integrated coordination between engineering, procurement, production and sales planning due to their strong interdependencies.

**Concrete actions:**

- Introduce shared planning objects and product structures across functions to ensure that engineering, sourcing and production planning are based on the same product definitions and planning assumptions.
- Implement integrated supplier collaboration processes where critical suppliers continuously provide updated capacity, lead-time and delivery risk information into the S&OP process.

**Structured Feedback Loops and Escalation Mechanism**

*Primarily addressing the following challenges: C7 and C8*
*Secondarily addressing the following challenges: C2, C11 and C12*

In a target state, the planning process includes structured feedback loops and escalation mechanisms ensuring that identified risks, constraints and prioritisation issues are continuously followed up and translated into actions across organisational levels. Rather than functioning as isolated reporting cycles, planning outputs, decisions and identified gaps are systematically communicated and reassessed over time. Cur-

rently, issues identified in planning meetings are often not systematically followed up on. The target state creates a closed-loop process with stronger organisational accountability. This aligns with Oliva and Watson [34]'s finding that active and continuous validation of information across functions is essential for coordinated decision-making, and with Hulthén et al. [49]'s emphasis that effective S&OP requires structured measurement of both process execution and planning outcomes.

**Concrete actions:**

- Define formal escalation time thresholds specifying when unresolved bottlenecks, capacity gaps or decision conflicts must automatically be escalated to higher organisational levels.
- Implement standardised post-S&OP follow-up processes and KPI dashboards across BA-, BU- and PU-levels, including formal tracking of action completion, unresolved bottlenecks, escalation lead-times, overdue mitigation activities and adherence to agreed planning and prioritisation decisions.

**Event-Driven and Continuous Planning**

*Primarily addressing the following challenges: C2, C6 and C7*
*Secondarily addressing the following challenges: C4, C5 and C8*

In a target state, planning processes are increasingly driven by changes in business conditions, risks and operational events rather than relying solely on fixed planning cadences. This enables faster replanning, earlier visibility of emerging constraints and more continuous decision support in an environment characterised by uncertainty, long lead times and rapidly changing priorities. Currently, planning is primarily calendar-driven with limited ability to respond between cycles. The target state introduces event-driven triggers alongside the structured planning cadence. This is consistent with Goh and Eldridge [52]'s finding that adaptive and self-governing coordination mechanisms outperform rigid procedural structures, and with Kalla et al. [29]'s finding that firms in dynamic supply chain environments establish higher-frequency operational planning processes alongside S&OP to handle unexpected short-term events.

**Concrete actions:**

- Introduce event-triggered replanning rules defining which operational or external changes (for example, geopolitical developments, major order changes, supplier disruptions, engineering deviations or capacity losses) automatically initiate partial replanning activities or extraordinary S&OP meetings outside the normal planning cycle.
- Implement automated deviation monitoring where significant changes in demand, lead-times, inventory levels or capacity utilisation generate alerts directly to responsible planning functions.

#### Planning Horizon and Frequency

*Primarily addressing the following challenges: C3 and C9*
*Secondarily addressing the following challenges: C1, C2 and C8*

In a target state, S&OP at Saab Surveillance operates across a clearly defined planning horizon sufficient to cover key capacity commitments, engineering lead times and strategic resource allocation decisions, while the planning frequency is adapted to the pace of change in different parts of the business. Currently, planning horizons vary informally across functions and product units without a shared view. The target state establishes a common horizon at BA-level while allowing PU-level processes to operate at a higher frequency where operational dynamics require it. This is consistent with Grimson and Pyke [48]'s finding that planning horizons vary by industry and product lead time characteristics, and with Kalla et al. [29]'s finding that firms in dynamic and complex supply chains complement their tactical S&OP cycle with higher-frequency operational planning processes to handle short-term events that cannot wait for the next monthly cycle.

**Concrete actions:**

- Implement synchronised planning calendars across BA-, BU- and PU-levels to ensure that updates, escalations and decision points occur in a coordinated sequence rather than through disconnected planning cycles.
- Establish a mandatory recurring monthly Product S&OP cycle at PU-level to ensure continuous visibility.

### 4.2.4 Tools and Data

#### Integrated and Automated Data Flows

*Primarily addressing the following challenges: C4 and C5*
*Secondarily addressing the following challenges: C2, C6, C8, C9, C10 and C11*

In a target state, planning data is automatically collected, updated and aggregated from relevant source systems, eliminating the manual data handling, spreadsheet dependencies and parallel reporting structures that currently dominate Saab's planning process. This creates a consistent, scalable and reliable data foundation that reduces administrative workload and improves the availability of timely planning information across organisational levels. Tuomikangas and Kaipia [32] identify tools and data as a central S&OP coordination mechanism, emphasising IT systems and data quality as prerequisites for effective decision-making, while Nicolas et al. [55] find that technical integration must match the broader maturity of the planning process to enable effective data-driven planning.

**Concrete actions:**

- Establish master-data governance processes ensuring that changes to product

structures, lead-times, routing data and capacity parameters are validated and synchronised across all planning systems.
- Implement formal data ownership structures where each critical planning data object has an explicitly accountable owner responsible for data quality and update frequency.
- Establish bi-directional system integration between transactional systems (for example, IFS, CRM and Mercur), the central data warehouse and S&OP applications, ensuring that operational master data and transactional data automatically feed into the planning environment while approved demand plans, supply plans and planning assumptions continuously feed back into the underlying systems.

**Shared Data Structures and Common Semantics**

*Primarily addressing the following challenges: C5 and C11*
*Secondarily addressing the following challenges: C2, C3, C4, C7, C10 and C12*

In a target state, core planning objects such as products, customers, capacities, resources and forecasts are consistently defined and connected across systems and organisational functions through shared data structures and aligned semantics. Currently, parallel definitions and inconsistent planning assumptions across PUs and functions undermine trust in planning data and create fragmented decision-making. The target state eliminates this through a unified data foundation. This aligns with Oliva and Watson [34]'s finding that information quality, meaning data that is appropriate in both content and form for the decision maker, is a critical enabler of cross-functional planning, and with Nicolas et al. [55]'s identification of data integration and technical consistency as prerequisites for advanced planning environments.

**Concrete actions:**
- Introduce cross-functional data stewardship forums where operations, engineering, procurement, finance and digital functions jointly review critical planning-data quality issues.
- Create one common product and capacity structure that all PUs, functions and systems must use when reporting demand, capacity, lead-times and bottlenecks.
- Automatically block or flag planning data that contains missing values, outdated lead-times, duplicated products or conflicting capacity numbers.
- Align data semantics and naming conventions across systems such as IFS, CRM, Mercur and S&OP applications to reduce conflicting interpretations.

**End-to-End Digital Thread and System Integration**

*Primarily addressing the following challenges: C5, C6 and C10*

In a target state, planning systems are connected through an end-to-end digital thread linking commercial, operational and financial information across CRM, ERP,

project planning and financial systems, creating consistent visibility of dependencies, bottlenecks and downstream impacts across the value chain. Currently, planning data is fragmented across isolated system views without structured integration. The target state replaces this with connected and continuously updated planning information. Ivert and Jonsson [57] identify system integration as an important enabler for achieving the intended benefits of advanced planning support in complex organisational settings, while Nicolas et al. [55] describe technical integration as a prerequisite for enabling more mature and data-driven planning environments.

**Data Governance and Data Ownership**

*Primarily addressing the following challenges: C2, C4 and C5*
*Secondarily addressing the following challenges: C1, C6, C7, C10 and C11*

In a target state, data ownership, governance structures and validation responsibilities are clearly defined across organisational functions and planning systems, with shared governance principles and structured quality assurance processes replacing the fragmented and inconsistent data management practices that currently exist. This creates a more reliable foundation for integrated planning and improves trust in planning data across the organisation. Tuomikangas and Kaipia [32] describe coordinated information management and data quality as central enablers of effective S&OP coordination, while Nicolas et al. [55] find that advanced planning capabilities depend not only on technical systems but also on the organisational ability to maintain reliable and integrated planning data.

**Concrete actions:**

- Introduce formal data-quality KPIs (for example, completeness, accuracy, update frequency and consistency).
- Create standardised approval workflows for changes to critical planning assumptions, ensuring that major updates to lead-times, capacity parameters or demand logic are formally reviewed before implementation.
- Introduce periodic cross-system reconciliation processes where demand, inventory, capacity and bottleneck data are automatically compared across systems.

**Advanced Analytics and Simulation Capability**

*Primarily addressing the following challenges: C4, C5, C7*
*Secondarily addressing the following challenges: C2, C6, C8, C10*

In a target state, planning processes are supported by analytical and simulation capabilities enabling evaluation of capacity constraints, supplier dependencies, product mix decisions and operational trade-offs under different future scenarios. Currently, decision support relies primarily on static reporting and manual analysis. The target state introduces more predictive and scenario-oriented capabilities that enable earlier and better-informed decisions. Ivert and Jonsson [57] find that advanced planning support is particularly valuable in complex environments with demanding

planning objectives and high interdependencies, while Nicolas et al. [55] identify simulation and analytical methods as important components of advanced planning environments, noting however, that their integration into S&OP remains limited in the current literature.

**Concrete actions:**

- Select and standardise a common simulation and advanced planning platform across BA-, BU- and PU-levels to enable consistent scenario modelling, capacity simulations and what-if analyses across the organisation.
- Introduce scenario libraries connected to historical S&OP outcomes, enabling planners to reuse and benchmark previous mitigation actions, bottleneck responses and capacity decisions in similar situations.

### Real-Time Data and Planning Visibility

*Primarily addressing the following challenges: C4, C5, C6 Secondarily addressing the following challenges: C2, C7, C8*

In a target state, planning processes are supported by real-time or near-real-time data availability, enabling up-to-date visibility of capacity utilisation, order status, engineering progress and supplier constraints across the organisation. Currently, planning views are based on manually updated snapshots that quickly become outdated. The target state replaces this with continuously refreshed planning information that reflects the actual state of the business at any given point. This is consistent with Grimson and Pyke [48]'s identification of real-time integrated solutions as the highest level of IT maturity in S&OP, and with Kalla et al. [29]'s finding that firms in dynamic and complex supply chains require more analytical IT systems capable of gathering and processing real-time data to support effective decision-making.

**Concrete actions:**

- Define maximum allowed data latency thresholds for critical planning information, including automatic escalation when data is not updated within the required time window.
- Implement automated data pipelines that continuously extract and update operational planning data from transactional systems into the S&OP environment.
- Establish real-time (or appropriate) visibility requirements for critical suppliers, requiring selected suppliers to provide continuous updates on delivery status, available capacity, material shortages and lead-time deviations through integrated digital interfaces.

### 4.2.5 Performance Management

#### Cross-functional Performance Metrics

*Primarily addressing the following challenges: C8, C10, C12*
*Secondarily addressing the following challenges: C2, C7, C11*

In a target state, planning performance is measured through integrated cross-functional metrics connecting operational, financial and strategic perspectives across the organisation, replacing the isolated functional KPIs that currently dominate. This enables stronger alignment between functions and improves the organisation's ability to evaluate planning outcomes from an end-to-end business perspective rather than within functional silos. Hulthén et al. [49] distinguish between S&OP process effectiveness - whether the process generates outcomes that meet customer requirements and support sound resource allocation - and process efficiency - how well the process itself is managed - emphasising that both dimensions must be measured. Tuomikangas and Kaipia [32] position performance management as an overarching coordination mechanism in S&OP, while Wagner et al. [47] find that higher maturity levels are characterised by cross-functional and financially aligned planning objectives rather than isolated functional targets.

**Concrete actions:**

- Introduce a balanced cross-functional KPI structure where operational, financial, engineering and supply-chain metrics are measured jointly.
- Define a limited set of enterprise-wide S&OP performance metrics that all BA-, BU- and PU-levels must report consistently.

#### Forecast Accuracy and Planning Quality

*Primarily addressing the following challenges: C1, C8*
*Secondarily addressing the following challenges: C2, C10, C12*

In a target state, planning quality is continuously evaluated through structured measurement of forecast accuracy, planning assumptions and decision reliability across the planning process, creating transparency around planning uncertainty and supporting continuous improvement. Currently, forecast deviations and planning assumptions are not systematically tracked. The target state introduces structured monitoring of forecast bias, deviations between planned and actual outcomes and quality of planning inputs over time. Grimson and Pyke [48] identify measurement of S&OP effectiveness as an important maturity dimension, with more advanced stages characterised by systematic evaluation of how well planning processes support organisational objectives, while Wagner et al. [47] similarly describe performance evaluation and plan-to-actual alignment as increasingly important at higher maturity levels.

**Concrete actions:**

- Introduce formal forecast accuracy and bias measurement at multiple aggrega-

tion levels (for example, product, product family, PU and BA-level) to identify where planning deviations originate.
- Establish recurring root-cause analysis processes for major forecast deviations, capacity mismatches and planning failures to systematically identify underlying drivers.

#### Decision-Oriented Performance Visibility

*Primarily addressing the following challenges: C7 and C8*

In a target state, planning performance is visualised and communicated in a way that directly supports operational and strategic decision-making rather than retrospective reporting, with transparent visibility of bottlenecks, capacity constraints, supplier dependencies and operational risks across the value chain. Currently, performance reporting is primarily backwards-looking and disconnected from active decision forums - the target state makes performance visibility an integral part of the planning cycle rather than a separate reporting activity. This aligns with Stahl and Wallace [33]'s description of S&OP as a decision-making process intended to support balancing and prioritisation across the business, and with Hulthén et al. [49]'s emphasis that effective performance management must support both planning execution and organisational decision-making outcomes.

### 4.2.6 Culture and Leadership

#### Continuous Learning, Trust and Organisational Adoption

*Primarily addressing the following challenges: C7, C8, C12*
*Secondarily addressing the following challenges: C2, C11*

In a target state, the planning process is supported by a collaborative and improvement-oriented planning culture characterised by transparency, organisational trust and openness to change across BA-, BU- and PU-levels. Planning is treated as a shared organisational capability rather than a reporting exercise, with functions actively contributing to planning activities and working toward shared objectives across functional boundaries. Currently, Saab Surveillance exhibits several deeply rooted cultural characteristics that work against this target state. A strong engineering and R&D identity means that many employees have worked in the organisation for extended periods under established ways of working, creating significant inertia toward process change. A historically sales-driven culture where customer commitments are rarely declined, and commercial priorities consistently dominate operational considerations means that operations and production functions have learned to distrust demand plans, often making independent capacity calls based on the assumption that sales forecasts are systematically overstated. This trust deficit between functions represents one of the most significant barriers to effective S&OP at Saab, since a planning process that lacks cross-functional credibility cannot function as an effective coordination mechanism regardless of its structural design. Tuomikangas

and Kaipia [32] identify aligned objectives, top management commitment and trust between functions as central elements of S&OP culture, noting that the capabilities required to build this culture are developed through training, staff development and both formal and informal communication. Oliva and Watson [34] find that constructive engagement and genuine cross-functional commitment to the plan can matter more than achieving high levels of data quality or procedural rigour alone. This suggests that rebuilding trust between functions is a prerequisite for S&OP effectiveness at Saab, not a consequence of it.

**Concrete actions:**

- Establish a formal "single agreed plan" principle where all functions are required to operate according to the latest approved S&OP baseline.
- Demonstrate early "quick wins" from Product S&OP (for example, G1X) where S&OP visibly improves delivery performance, reduces bottlenecks or enables faster prioritisation decisions, since organisational trust is often built through concrete operational results rather than presentations or training alone.
- Visualise how decisions flow through the organisation by explicitly linking Product S&OP at PU-level to BU- and BA-level governance, showing employees how local product decisions influence higher-level prioritisation, investment and resource allocation decisions.
- Reduce process complexity and unnecessary reporting requirements during the initial rollout phase so that employees experience S&OP as a decision-support process rather than an administrative burden.

**Executive Ownership and Top Management Commitment**

*Primarily addressing the following challenges: C8, C11, C12*
*Secondarily addressing the following challenges: C2, C7, C10*

In a target state, S&OP at Saab Surveillance is actively owned and driven by executive leadership, with the BA-level executive team taking direct responsibility for the planning process as a strategic steering tool rather than delegating it to operational functions. Currently, executive involvement in S&OP is limited, and the process is primarily seen as an operational coordination mechanism rather than a strategic governance tool. The dominance of commercially oriented executives with a sales-driven mindset creates a structural imbalance where the primary organisational reflex is to accept demand and commit to delivery rather than to balance operational capability against commercial ambition. A particular challenge is the gap between formal commitment to S&OP and actual executive behaviour. Strategic planning principles, S&OP ambitions and process guidelines are documented and communicated through internal governance structures, yet interviews conducted as part of this thesis consistently reveal that these principles are not actively driven or enforced at the executive level in practice. Not all members of executive management treat S&OP as a priority, and the process lacks the consistent top-down reinforcement needed for it to function as a genuine steering mechanism across the

organisation. This gap between stated intent and actual behaviour is itself a cultural challenge that cannot be resolved through process design or system investment alone. The target state, therefore, requires not only formal executive ownership but genuine behavioural change at the leadership level. Stahl and Wallace [33] are explicit that Executive S&OP requires hands-on participation up to and including the leader of the business, and that plans represent commitments rather than discussion points — noting that the process by its nature triggers disagreement between functions and that organisations must learn to openly welcome and resolve these differences, a capability that requires active and consistent executive modelling rather than formal endorsement alone. Nyman et al. [53] similarly find that IBP must be owned by top management since the supply chain function alone is not responsible for growth, profitability and strategic product choices — a finding directly relevant to Saab's situation where commercial priorities currently dominate planning decisions without sufficient operational counterweight.

**Concrete actions:**

- Create recurring executive-led communication forums where senior management continuously explains why S&OP decisions were made, how trade-offs were evaluated and how different functions are expected to contribute to shared business objectives.
- Establish executive sponsorship where senior leadership consistently communicates that S&OP is not an additional reporting layer, but the primary mechanism for balancing demand, supply, engineering capacity and strategic priorities within the product-centric governance model.
- Require executive management to explicitly reject, postpone or de-prioritise selected customer demands when operational constraints make full delivery unrealistic, in order to establish organisational acceptance that S&OP is fundamentally about prioritisation and trade-off management rather than unconditional demand acceptance.
- Establish a principle that major operational escalations and cross-functional prioritisation conflicts must be resolved within the S&OP governance structure rather than through informal side discussions, parallel management channels or direct executive intervention outside the process.

### Managing Cultural Transition and Resistance to Change

*Primarily addressing the following challenges: C11, C12*
*Secondarily addressing the following challenges: C2, C7, C8*

In a target state, the transition toward a more structured and data-driven S&OP process is actively managed as an organisational change process, with dedicated attention to building engagement, addressing resistance and creating conditions for new planning behaviours to take hold across the organisation. At Saab Surveillance, this transition faces several compounding challenges beyond typical process change. A security-conscious organisational culture — rooted in the sensitive nature of defence products and data — creates significant reluctance to share planning in-

formation across functions and with supply chain partners, even when such sharing is necessary for integrated planning. The habit of information compartmentalisation is deeply embedded and will require deliberate governance decisions about what data can and must be shared internally to enable effective S&OP, without compromising legitimate security requirements. Combined with long organisational tenure and established functional routines, these factors mean that cultural change at Saab will require sustained leadership commitment, clear communication of the purpose and value of S&OP and a gradual approach that allows functions to adapt over time. Danese et al. [58] find that the people and organisation dimension of S&OP development requires sustained effort to build engagement, secure commitment and allow personnel to genuinely adapt, and that unlike changes to processes, IT systems and performance measures — which can be implemented relatively quickly — the organisational and human dimension demands time and cannot be compressed. Tuomikangas and Kaipia [32] further note that the ability to handle conflict constructively and work collaboratively across functions is a prerequisite for effective S&OP coordination, not an outcome that emerges automatically from process design.

**Concrete actions:**

- Establish cross-functional temporary rotation or shadowing programs where employees from engineering, operations, procurement and planning participate in each other's planning activities.
- Publicly communicate concrete examples where the absence of coordinated planning created operational problems, delivery disruptions or resource conflicts, while simultaneously highlighting cases where S&OP improved decision quality, delivery precision or prioritisation speed.
- Integrate S&OP outputs directly into operational steering activities such as production prioritisation, engineering allocation, supplier coordination and staffing decisions, ensuring that employees experience S&OP as the mechanism that actually governs the business rather than as a parallel reporting exercise.

## 4.3 Business Value of S&OP Development at Saab Surveillance

The thesis mission explicitly calls for quantifying the business value of a developed and digitalised S&OP process at Saab Surveillance, expressed through improvements in delivery precision, capital tied up, capacity utilisation and total cost. However, as the analysis of the current state reveals, Saab Surveillance currently lacks a systematic KPI baseline against which such improvements could be measured. Forecast accuracy, delivery performance and capacity utilisation are not consistently tracked across the organisation, and financial outcomes are not connected to planning process performance.

This also becomes evident when analysing how the interviewed stakeholders re-

sponded. Each stakeholder was asked whether they could identify any concrete business value from developing S&O into a real-time, end-to-end integrated process with scenario-driven decision-making capabilities. They were also asked whether such value could be quantified in any way.

The majority of respondents were uncertain about how S&O could be directly linked to concrete business value, for example in relation to the five prioritised KPIs. Particularly noteworthy was that COO2 did not perceive a clear connection between S&O and tangible business value in the form of, for example, reduced capital employed.

However, COO2 highlighted several qualitative arguments. He described the ideal outcome of S&O as improved transparency regarding existing bottlenecks, required capacity per product, and the investments needed to enable future growth. Furthermore, a stronger integration between S&O and finance was described as a way to clarify the financial consequences of capacity and prioritisation decisions. Integrating financial capacity more explicitly into the S&O process was also seen as important in order to better assess how quickly the organisation can realistically grow and to provide greater visibility into existing financial constraints.

BO5 is one example of a stakeholder who expressed direct scepticism regarding the value of making S&O more comprehensive and detailed than necessary, emphasising that additional complexity must be justified through clear value creation. At present, the interviewee could not clearly identify such value.

HR1 assessed that the work linking S&O and workforce planning was still at too early a stage to make quantitative statements, but nevertheless viewed it as completely necessary for the organisation to move towards more data-driven ways of working in line with what S&O attempts to achieve.

COO7, who is not directly involved in the process, could see that the processes for which she acts as PM&T Process Driver could be positively affected through improved long-term planning visibility, enabling earlier initiation of activities such as industrialisation projects.

COO5, who, among other things, works with site ramp-up activities, similarly considers it too early to establish quantitative relationships but identifies several qualitative benefits. According to the interviewee, capacity-related needs are currently identified systematically too late, creating a continuous planning gap, while the organisation simultaneously underestimates the lead times required for facility and capacity changes. With a well-functioning planning process, where S&O plays a key role, the organisation could improve OTD, secure capacity in time, and enable better procurement decisions instead of being forced to accept the first available alternative.

R&D1 paints a picture in which the current situation is unsustainable in several ways, resulting in both technical debt and poor decision-making. According to the

interviewee, market-driven planning leads to unrealistic commitments and destructive organisational overload, since the organisation lacks the ability to govern based on actual capacity and prioritise which business opportunities create the highest value. R&D1 believes that S&O could contribute to maximising value through more optimal resource allocation within the BA-central R&D organisation. However, the benefits are described as potentially very large while also being extremely difficult to quantify.

COO6 identifies several major potential benefits. The interviewee explains that S&O could become a mechanism for transforming the company's historical logic as a partly state-funded organisation operating with a dominant customer and cost-coverage business model. According to COO6, this could increase incentives for efficiency improvements and more data-driven development, generating substantial value across the organisation. Given the company's growth and increasing complexity, an integrated planning process is described as necessary in order for the organisation to succeed in fulfilling its commitments. In that sense, the value of S&O can partly be understood as enabling the organisation to successfully deliver on its obligations.

P1 and P2 are two stakeholders who identify more concrete operational benefits, arguing that a more mature S&O process is expected to enable increased proactivity, improved volume securing, and greater transparency towards suppliers. According to the interviewees, this should contribute both to reduced capital employed and improved OTD.

M1 similarly describes that a more reliable planning process is expected to reduce capital employed through improved decision-making regarding what should actually be initiated in production, thereby avoiding unnecessary material accumulation and work-in-progress (WIP).

Overall, the interviews paint a picture in which there is currently no broadly established awareness of S&O as a process capable of generating substantial financial improvements for the organisation. At least from the perspective of the individual stakeholders, there is limited ability to produce qualified estimations of the potential financial impact.

This combination of missing quantitative data makes a fully quantified business case impossible to construct at this stage.

This situation is not unique to Saab. Thomé et al. [38] find in a systematic review of 271 S&OP papers that there is a lack of unifying frameworks for measuring S&OP and its relationship to firm performance, and that among 55 papers specifically reviewed for performance outcomes, only six analyse the direct impact of S&OP on firm performance - with performance measured differently in each case, making cumulative conclusions difficult to draw. The academic literature therefore does not offer a reliable quantified benchmark for S&OP business value that could be directly

applied to Saab's context.

What the literature does consistently support is the direction of improvement. Wagner et al. [47] argue that a better balance of supply and demand yields tangible operational gains including reduced inventory levels, better capacity utilisation, lower costs and improved customer outcomes. Tuomikangas and Kaipia [32] position S&OP as a powerful instrument for reaching business targets, while Grimson and Pyke [48] frame profit optimisation as the overarching goal of a mature S&OP process. These findings suggest that the business value of S&OP development is real and meaningful, but that it manifests through a combination of operational and financial improvements that are difficult to isolate and quantify without a measurement baseline.

To unlock the ability to quantify business value going forward, Saab Surveillance should establish a structured KPI framework as a foundational step in the S&OP development journey. Hulthén et al. [49] provide a relevant starting point, distinguishing between S&OP process effectiveness - whether the process generates outcomes that meet customer requirements and support reasonable resource allocation - and S&OP process efficiency - how well the process itself is managed. Their framework provides measures for every step of the S&OP process as well as for overall outcomes, offering a structure that Saab can adapt to its own context and use to build the measurement baseline needed for future business case quantification.

# 5
# Discussion

This chapter discusses the findings of the study in relation to the research questions and existing literature. First, the findings are synthesised to answer RQ1 and RQ2. The discussion then compares the findings with previous S&OP research and industrial practice, followed by implications for theory and practice. Finally, the limitations of the study, recommendations for Saab Surveillance, and suggestions for future research are presented.

## 5.1 Answering the RQs

The following section aims to answer RQ 1 and RQ 2.

### 5.1.1 RQ 1 - Structural Weaknesses of the Current S&OP Process

The current state analysis and challenge mapping reveal a pattern across Saab Surveillance's S&OP process: while a structural foundation for S&OP exists at BA-level and some cross-functional coordination has been established, there are significant gaps in data infrastructure, performance measurement and organisational commitment. These together limit the effectiveness of S&OP as a strategic planning and decision-making tool.

The maturity assessment conducted using the framework of Danese et al. [58] places Saab approximately at an overall maturity of Stage 2 (Reactive), with considerable variations across dimensions. The people and organisation dimension is positioned between Stage 3 and Stage 4, reflecting that there is a formalised governance structure, clear roles and responsibilities at BA-level, but there is no standardised aggregation from lower organisational levels and no financial integration. The information technology dimension is assessed to be at approximately Stage 2, characterised by heavy dependence on PowerPoint, Excel and other function-specific solutions with no system integration and only manual data entry. The performance measurement dimension is assessed close to Stage 0, with no KPIs integrated in the S&OP process and no systematic measure of forecast accuracy, plan adherence or S&OP effectiveness. This large imbalance across dimensions is significant and Danese et al. [58] find that as S&OP maturity advances, dimensions become increasingly interdependent and must be developed simultaneously instead of sequentially. This means that the near-complete lack of performance measurement an the Stage 2 IT infrastructure

act as a ceiling on what Saab can achieve in the better developed dimensions.

The twelve challenges identified in the current state analysis cluster around four underlying root causes. Fist, data infrastructure and external integration gaps (C4, C5, C6) mean that planning activities are heavily manual, data quality is inconsistent, planning information is not reliably available across function and organisational levels, and supplier and external data are not integrated into the planning process. This is a situation Nicolas et al. [55] identify as a fundamental barrier to effective S&OP, since IT integration must match process maturity to generate performance benefits. Second, the fragmentation of the process and unclear planning logic (C1, C2, C3) mean that parallel planning structures exist without a shared mandate across organisational levels, and that the planning process lacks a defined way for handling Saab´s hybrid ETO, MTO and MTS operations. Bhalla et al. [28] specifically argue that ETO environments require integrated coordination between engineering, procurement and production planning as distinct subprocesses, a requirement that Saab has not met yet. Third, governance, ownership and performance measure gaps (C7, C8, C11) mean that decisions made in S&OP lack clear mandates and accountability, the outcome of the executive S&OP process is unclear, and the product-centric governance model has not been operationalised. This is consistent with Tuomikangas and Kaipia [32]'s finding that organisational structure, decision-making authority and performance management are central coordination mechanisms that explicitly have to be designed. Fourth, strategic and cultural gaps (C9, C10, C12) mean that workforce planning and financial planning are not integrated into S&OP, the product-centric governance model is not clearly translated to practice, and the organisational commitment to BA-level S&OP is limit. What has been revealed in the case study is also that there is a lack of executive sponsorship at BU-level, even if it exists in COO office, this creates a gap between formal commitment and actual organisational behaviour that Stahl and Wallace [33] identify as a prerequisite failure condition for S&OP effectiveness.

Taking all this together, these weaknesses suggest that Saab has established the foundational structures for S&OP but has not developed the data infrastructure, performance measurement capability or consistent organisational commitment that is required to progress beyond Stage 2 maturity. Even if the organisation's People and Organisation dimension is the most developed, it is being held back by the absence of performance measurements and the manual IT infrastructure, a finding Danese et al. [58] confirms that the dimension of S&OP maturity are so interdependent at higher levels that they must be addressed together instead of in isolation.

### 5.1.2 RQ 2 - Organisational Conditions for S&OP Transformation

Possible risks hindering Saab achieving the suggested target-states:

#### 5.1.2.1 Organisational challenges in achieving the proposed target state

**Historical success and Resistance to Behavioural Change**
One of the largest barriers to achieving the proposed target state is not technical limitations, but the organisation's ability and willingness to change established behaviours. Saab Surveillance has historically operated successfully through strong engineering competence, decentralised decision-making and commercially driven execution, something that has created a strong attachment to existing ways of working. While these characteristics have enabled the company to grow and be responsive to its customers, they may simultaneously have created resistance toward more integrated and standardised planning structures.

We see a tendency in the organisation to search for technical or structural improvements without fundamentally changing underlying behaviours, decision-making logic or accountability between functions. This creates a risk that S&OP becomes implemented formally through new forums, governance structures and system support, while operational decisions continue to be made through informal channels and local judgment of what is best. Danese et al. [58] argue that the people and organisational dimensions of S&OP development require sustained effort and cannot be implemented as quickly as processes or IT systems. Similarly, Tuomikangas and Kaipia [32] emphasise that aligned objectives, trust and collaborative behaviours are prerequisites for effective S&OP coordination rather than outcomes that emerge automatically from process implementation.

**Competing Organisational Priorities**
The findings further indicate that there is an underlying tension between between commercial growth objectives and operational capability. Saab has for a long time been characterised by a strong sales-driven culture where customer commitments and market opportunities are prioritised highly, something that has created pressure to accept demand regardless of operational constraints. While this commercial orientation likely has contributed positively to business growth, it may at the same time reduce organisational focus on scaling operations and balancing resources long-term.

A potential challenge in this context is the risk of misalignment between commercial forecasts and operational trust in planning assumptions. If operational functions perceive demand forecasts as overly optimistic, there is a risk that local planning adjustments and more informal decision-making structures occur outside the formal S&OP process, which can reduce or hinder the ability to establish coordinated planning across functions. Oliva and Watson [34] emphasise that coordinated planning depends on continuous validation and shared understanding of planning information across functions, and Tuomikangas and Kaipia [32] push for aligned objectives and

cross-functional coordination as central aspects for S&OP to function effectively. Nyman et al. [53] further argue that integrated business planning must be owned by top management and not delegated to supply functions alone, and by being aware of this, Saab can mitigate these risks.

Interviews also revealed a gap between formally communicated S&OP ambitions and actual executive behaviour in practice. Although strategic principles and governance structures are documented and pushed for internally, executive commitment appears to be inconsistent across functions. This creates a risk that S&OP remains as an more operational coordination initiative instead of a organisational wide strategic steering mechanism that integrates sales, engineering, operations, procurement and fiance.

**Transparency, Trust and the Limitations of Data-Driven Planning**
The proposed target state relies heavily on integrated data flows, assumptions of shared planning structures and increased transparency across the organisation. However, several interviewees described continued reliance on local spreadsheets, informal information channels and individual judgement due to low trust in shared planning data. This suggest that achieving a more data-driven planning environment at Saab Surveillance is not primarily a technical challenge, but rather an organisational and behavioural one.

The challenge is further amplified by Saab's security-sensitive organisational context. Strict control of sensitive information is a natural requirement within the defence industry, however this security-focused culture may reinforce silo behaviour and limit information sharing across functions and to suppliers beyond what is necessary. Security concerns therefore risk becoming an justification for maintaining a fragmented planing structure and limited transparency.

Technical integration alone is therefore unlikely to create the behaviour needed for effective integrated planning. Oliva and Watson [34] argue that constructive engagement and trust between functions may matter more for planning effectiveness than formal processes alone. Nicolas et al. [55] also emphasises that advanced planning environments depend not only on technical integration, but the ability of the organisation to maintain reliable and trusted planning data.

**Balancing Integration, Governance and Operational Flexibility**
While the proposed target-state aims to improve coordination, transparency and strategic alignment across Saab Surveillance, increased integration and governance may at the same time introduce new tensions in the organisation. The target-state includes more structured cross-functional forums, shared planning, integrated governance mechanisms and standardised planning principles across BA-, BU- and PU-levels. Although these capabilities are intended to reduce fragmentation, they may also increase coordination complexity and slow down decision-making if implemented too rigidly.

This tension is highly relevant especially in hybrid ETO/MTO/MTS environments where operational conditions, product characteristics an planning requirements are significantly different across product units. If the company standardised too much they may reduce the flexibility and responsiveness required in engineering-intensive operations. Kristensen and Jonsson [46] argue that the S&OP design must be adapted to organisational context and complexity, while Goh and Eldridge [52] similarly find that overly rigid coordination structures may inhibit the planning performance instead of improving it.

Distributing planning ownership closer to PU-level can improve operational responsiveness, but also risks reinforcing the local optimisation behaviours if incentives and priorities still are misaligned across the different levels in the organisational. Similarly, increased cross-functional governance may improve visibility in the company, but can at the same time risk creating longer decision paths and bigger administrative burden.

#### 5.1.2.2 Critical success factors for transformation

**Executive Commitment and a Shared Organisational Direction**
A critical success factor for achieving the proposed target state is clear and consistent executive commitment across BA-, BU- and PU-levels. Currently, S&OP risks being perceived as an additional coordination or reporting activity instead of the primary mechanism for steering the business. For the transformation to become legitimate in the organisation, executive management collectively have to define the strategic role, direction and long-term purpose of S&OP, while consistently reinforcing the same priorities across the organisation.

This requires alignment not only around the existence of S&OP, but around what role the process actually should play within Saab Surveillance. If different executives continue to operate according to competing priorities or planning horizons, functions will likely continue optimising locally rather than following the shared direction. The process therefore needs to be positioned as the primary cross-functional steering mechanism that connects commercial priorities, operational capability and financial consequences, not an additional reporting layer placed on top of existing governance structures.

We further find that the organisational adoption will depend on whether S&OP is experienced as replacing current fragmented coordination structures rather than increasing administrative workload. If the process mostly is associated with additional meetings, requirements of reporting and parallel planning activities, there is a high risk that functions continue to rely on existing structures instead of adopting the integrated planning logic proposed in the target state.

**Saab-adapted rather than standardised S&OP design**
Another critical success factor is Saab Surveillance's ability to adapt the S&OP process to its own operational context rather than implementing a standardised "textbook" S&OP model. Traditional S&OP processes are often designed around

relatively stable and repetitive MTS environments with predictable flows, shorter lead times and lower engineering uncertainty. Saab Surveillance instead operates in a highly complex hybrid environment characterised by ETO, MTO and increasingly product-oriented operations. This creates significantly different planning conditions.

Long lead times, engineering dependencies, shifting priorities and a high degree of R&D-driven uncertainty make planning much more complex than in traditional manufacturing environments. In several parts of the organisation, operational conditions also differ significantly between product units, meaning that a highly rigid and standardised planning structure risks creating additional complexity rather than improving coordination. It is therefore suggest that Saab Surveillance should focus less on replicating generic S&OP structures and more on designing coordination mechanisms and governance principles that are adapted to its own reality.

At the same time, the findings indicate that Saab's historically high degree of flexibility and customer adaptation creates challenges related to scalability, repeatability and long-term capacity planning. While this ability to rapidly adapt to customer requirements appears to be highly valued commercially, it creates difficulties in establishing stable planning assumptions and standardised planning across the organisation. The challenge is therefore not whether Saab Surveillance should become more standardised, but rather how the organisation can balance operational flexibility with the level of structure and coordination that is required to scale the business in a more effective way.

**Process and Behaviour Before Advanced Digitalisation**
Another critical success factor is making sure that process maturity, governance structures and organisational behaviours are established before pursuing more advanced digitalisation initiatives. Digitalisation will likely play a central role in enabling integrated planning, improved visibility and more scalable decision-making across Saab Surveillance. However, the findings suggest that digitalisation should be viewed as an enabler of a mature planning process rather than the starting point of the transformation itself.

There is a tendency to view digital tools, dashboards and integrated planning systems as solutions to the organisation's planning challenges. However, if planning processes, decision-making responsibilities and planning assumptions remain unclear, there is a risk that digital solutions become technical overlays on top of already fragmented ways of working. Similarly, poor data quality, inconsistent planning definitions and inadequate adaptability across different products may reduce the practical usefulness of advanced planning tools, even if they appear strong in theory.

**PU-level ownership supported by COO office**
A final critical success factor is Saab Surveillance's ability to combine decentralised planning ownership with strong central transformation support. The findings indicate that Product S&OP is most likely to create operational value when driven close to PU-level, where understanding of products, constraints and operations is

strongest. This may increase both the quality of the planning input and the likelihood that the process is perceived as a practical decision-support mechanism instead of an additional reporting activity.

However, the effectiveness of a decentralised structure will likely depend heavily on the organisation's ability to establish shared planning principles, governance structures and ways of working across the PUs. Several interviewees expressed uncertainty regarding how Product S&OP actually should be structured and driven in practice. This suggests that it is unrealistic to expect each PU to independently develop mature S&OP capabilities without hands-on organisational support. It is therefore suggested that the COO Office plays a critical role both as a governance function and as an active transformation and capability-building function that is responsible for supporting implementation, educating the organisation and making sure that Product S&OP develops consistently across Saab Surveillance.

## 5.2 Comparison with S&OP Literature and Industrial Practice

It is evident that Saab operates within a highly unique context that is rarely encountered in other case studies and academic research. Three aspects in particular stand out: the hybrid production logic (ETO, MTS and MTO), the rapid growth rate (>20% CAGR during the last three years), and the complexity that permeates everything from product design to security requirements related to, for example, IT infrastructure due to the military application context. This finding aligns with the literature on complex products and systems, where Hobday [39] describe engineering-intensive, low-volume and highly customised environments as fundamentally different from repetitive manufacturing contexts. Saab Surveillance can therefore be understood as an empirical example of a complex products and systems environment in which the assumptions underlying traditional S&OP models are only partly applicable.

Much of the existing S&OP literature focuses on companies operating in environments characterised by FMCG, automotive mass production or repetitive manufacturing in one form or another. Saab, however, is characterised by relatively low production volumes (although with significant variation across product families), high product complexity, project- and programme-oriented logic, long lead times, security-classified environments and a high degree of engineering dependency, among other factors. This contrasts with the generic S&OP process descriptions presented by Thomé et al. [38], Stahl and Wallace [33] and Kristensen and Jonsson [46], where S&OP is typically described as a recurring tactical process for balancing demand and supply at an aggregate product-family level. While this logic is relevant for Saab, the empirical findings show that the process must also account for engineering capacity, tender uncertainty and project-specific dependencies, which are more strongly emphasised in ETO-related literature [28, 40, 41].

The empirical findings also support the argument by Wikner and Rudberg [42] that engineering and production logics should be separated analytically. Saab does not operate according to one single order fulfilment logic. Instead, different product families and components may simultaneously follow ETO, MTO and MTS principles. This confirms that the customer order decoupling point is not only a production issue, but also an engineering and planning issue. The Saab case therefore extends the relevance of the customer order decoupling point discussion by showing how hybrid order fulfilment logics create practical challenges for S&OP design, especially when standardised components, customer-specific engineering and long-term capacity commitments must be planned together.

Furthermore, Saab initiated its S&OP deployment at BA-level, which represents a very high hierarchical level within the organisation. The underlying organisational units have largely been responsible for aggregating and structuring data according to their own approaches. Although guidelines regarding Product S&OP have existed, they have not been broadly adopted across the organisation. This type of top-down deployment approach is relatively uncommon in the S&OP literature and industrial practice, where S&OP is more frequently implemented at lower organisational levels before being aggregated upwards. This differs from much of the maturity literature, where S&OP development is commonly described as a gradual progression from functional planning towards increasingly integrated and cross-functional planning [47, 48, 58]. In Saab's case, however, the BA-level process has been introduced before Product S&OP capabilities are fully established at PU-level. This creates a mismatch between the hierarchical level at which S&OP decisions are expected to be made and the organisational level where much of the relevant planning data is generated.

In many documented S&OP cases, governance structures and planning responsibilities are already relatively established prior to broader S&OP deployment. At Saab, however, the BA-level S&OP initiative attempts to create a unified governance structure while the organisation itself remains highly decentralised, and Product S&OP capabilities at PU-level are still immature and unevenly deployed. In this sense, Saab's S&OP transformation can largely be viewed as being in an early and exploratory phase. This finding is consistent with Tuomikangas and Kaipia [32], who argue that effective S&OP depends on several coordination mechanisms, including S&OP organisation, process, tools and data, performance management, strategic alignment, and culture and leadership. The empirical findings indicate that Saab has started to establish a formal S&OP process, but that several of the supporting coordination mechanisms are still under development. In particular, unclear roles, uneven data structures and limited process adoption at PU-level indicate that the organisational and process-related coordination mechanisms remain immature.

In addition, the BA-level S&OP process has, to a large extent, been deployed primarily as a bottleneck management tool, which is also how several stakeholders perceive it. However, the S&OP literature generally describes the process as having a significantly broader purpose, where the overall objective is often framed around

"profit optimisation" and integrated business alignment. For example, Grimson and Pyke [48] describe higher S&OP maturity as a state where the organisation uses S&OP for profit optimisation, while Wagner et al. [47] emphasise plan integration and financial alignment as central elements of mature S&OP. Similarly, Tuomikangas and Kaipia [32] position S&OP as a mechanism for both horizontal alignment across functions and vertical alignment between strategic objectives and operational execution. Compared with these theoretical descriptions, Saab's current process appears narrower in scope, since much of the attention is directed towards identifying and escalating bottlenecks rather than systematically evaluating alternative scenarios, financial trade-offs and long-term strategic implications.

The literature frequently describes S&OP as decision-oriented, proactive and scenario-driven. In contrast, several interviews conducted at Saab instead describe a process heavily focused on information consolidation, reporting activities and bottleneck tracking, highlighting a clear contrast between the intended role of S&OP in the literature and the current operational reality within Saab Surveillance. This contrast is particularly visible when comparing the findings with Stahl and Wallace [33], who emphasise executive decision-making, cross-functional commitment and the resolution of disagreements as central features of S&OP. It also relates to Oliva and Watson [34], who show that effective S&OP requires not only information quality, but also procedural quality, alignment quality and constructive engagement between functions. The Saab case indicates that information is increasingly being consolidated, but that the process has not yet fully developed into a forum where cross-functional trade-offs are consistently prepared, evaluated and decided upon.

The findings also align with the literature on financial integration in S&OP. Seeling et al. [54] and Nyman et al. [53] argue that finance should play an active role in translating operational plans into financial consequences and supporting decision-making across the S&OP process. At Saab, however, financial integration is currently absent, as finance is not involved in the S&OP process. This supports the interpretation that the current process remains closer to demand-supply and bottleneck coordination than to a mature IBP-like process where operational, financial and strategic planning are continuously integrated.

Unlike many S&OP implementations described in the literature, Saab Surveillance is not only implementing a planning process, but simultaneously undergoing broader organisational, governance and digital transformation initiatives. This makes it significantly more complex to understand how different transformation initiatives are interconnected with one another. This observation is consistent with Kalla et al. [29], who argue that complex and rapidly changing supply chains cannot be treated as stable systems with predictable cause-and-effect relationships. Instead, Saab's transformation resembles a complex adaptive system in which changes to governance, data structures, digital tools and planning routines influence one another. The findings therefore support the view that S&OP in complex environments may need to be complemented by clearer interfaces to other planning processes, rather than attempting to absorb all coordination needs into one single process [43].

The Saab case contributes to the S&OP literature by illustrating the difficulty of applying established S&OP frameworks in a defence-industrial ETO/MTO/MTS environment undergoing rapid growth. The empirical findings broadly confirm the importance of the coordination mechanisms, maturity dimensions and financial integration principles emphasised in prior research [32, 48, 54, 58]. However, the findings also show that these frameworks require contextual adaptation when applied in an organisation characterised by engineering dependency, long lead times, decentralised governance, security restrictions and simultaneous transformation initiatives. Thus, the main theoretical implication is not that existing S&OP theory is invalid, but its practical application in complex defence-industrial environment.

## 5.3 Implications for Theory and Practice

The Saab case highlights several important implications for both theory and industrial practice, particularly for companies operating in complex ETO-oriented environments undergoing rapid transformation.

In the Saab case, it becomes evident that deploying S&OP through a primarily top-down approach creates several challenges. Organisational adoption becomes highly dependent on whether the executives who commit to S&OP and the product-centric governance model not only support the initiative during formal meetings, but also actively demonstrate this commitment within their respective organisations. Within Surveillance, this commitment has varied across functions and organisational units. The findings therefore suggest that a combination of bottom-up and top-down implementation approaches may provide stronger organisational anchoring and broader acceptance throughout the organisation.

Another important implication concerns the management of multiple simultaneous transformation initiatives. When several large-scale transformations are conducted in parallel, it becomes increasingly difficult for employees and managers to understand how the initiatives relate to one another unless a clearly articulated overall strategy exists. Although organisational agility and rapid adaptation are important capabilities, this should not come at the expense of maintaining a long-term perspective and a coherent strategic direction. This represents an important lesson for other companies: an overarching strategy should act as the "glue" connecting different transformation programmes, ensuring that initiatives reinforce rather than compete with each other.

The study also demonstrates that even when the S&OP process itself is perceived as clear and logical by the individuals working closely with it on a daily basis, it still takes considerable time to establish organisational understanding regarding how the process should be conducted, as well as its purpose and value. From a change management perspective, this becomes highly important. If employees and stakeholders cannot clearly perceive the value generated by the process, it becomes significantly more difficult to gain acceptance for a process that requires both effort and cross-

functional engagement in order to function effectively.

At the same time, the findings also indicate important advantages of deploying S&OP rapidly once a clear organisational need has been identified. A rapid deployment approach helps surface important discussions, perspectives and organisational tensions that otherwise might have remained hidden. It also increases organisational awareness regarding deficiencies in areas such as data quality, digital support systems, planning capabilities and cross-functional coordination. Consequently, an important practical implication for other companies is that S&OP should be implemented when a clear need emerges, even if the initial implementation phase may become somewhat turbulent.

However, the findings simultaneously indicate that an overly extensive and complex S&OP process introduced at an early stage, particularly when the organisation still struggles to demonstrate tangible value creation, may risk undermining the long-term establishment of S&OP as the primary governance and decision-making process. If stakeholders perceive the process primarily as additional reporting and administrative workload without visible operational benefits, organisational engagement may gradually decline, potentially reducing both the quality and long-term relevance of the process itself.

The findings also indicate that many established S&OP frameworks and best practices have primarily been developed for repetitive manufacturing environments characterised by relatively stable demand patterns and standardised product structures. In complex hybrid environments such as Saab Surveillance, S&OP instead becomes significantly more dependent on parameters beyond those traditionally considered within conventional S&OP approaches, highlighting that traditional S&OP models may need to be adapted in order to remain effective in such contexts, even though substantial value can still be achieved through their implementation.

Another important implication is that digital tools alone do not appear to be sufficient for creating organisational alignment or planning maturity. Although digital support systems can improve transparency and data accessibility, the findings indicate that organisational behaviours, governance structures and attitudes toward, for example, data-driven ways of working remain significantly more critical for a successful S&OP implementation.

## 5.4 Limitations

Several limitations should be acknowledged in relation to this study.

Although the study included a broad range of stakeholders across different functions and hierarchical levels, certain perspectives remained less represented in the empirical material. The study primarily focused on stakeholders involved in the current BA-level S&OP process. Consequently, perspectives from commercial sales functions, frontline operational planners, and external supply chain actors were more

limited, since these groups are generally not direct participants in the BA-level S&OP process but are instead represented indirectly through roles such as Business Owners (BO) and Supply Owners (SO). While this aligned with the defined scope and boundaries of the thesis, additional value could likely have been gained from capturing the vertical planning perspective more extensively, particularly considering the importance of lower-level product and operational S&OP processes within a multi-level S&OP system.

A second limitation of the study is the limited use of direct interview quotations in the results. While respondents are referenced through respondent codes, the reader is not always able to directly connect the interpretations to specific statements from the interviews. This may reduce the transparency of some findings and limit the reader's ability to independently assess how conclusions were derived from the empirical material. However, due to confidentiality considerations and the nature of the information discussed, direct quotations were deliberately restricted. To strengthen the findings, conclusions were instead supported through multiple data sources, including interviews, observations, workshops, and internal documents.

Third, the study has not been able to quantitatively evaluate the financial and operational value of the proposed target state, nor estimate the implementation costs associated with reaching it. Although several potential benefits were identified throughout the interviews and literature review, the scope and maturity level of the current S&OP process limited the possibility of constructing reliable business case estimations. The existing process is currently conducted primarily at BA-level with a high degree of manual work, while organisational understanding of S&OP beyond the currently deployed Saab-specific process also varies significantly across functions and organisational levels.

In addition, a significant portion of the analysis is based on qualitative interviews and stakeholder perceptions rather than extensive objective operational data and quantitatively verified performance measurements. As a result, some conclusions may reflect organisational experiences, interpretations and perceived challenges rather than fully validated causal relationships.

Fourth, the study has not been able to perform detailed process modelling of how S&OP should interact with adjacent management and operational processes. This limitation is partly connected to the fact that GMS and the future governance structure surrounding product-centric ways of working are still under development, meaning that several organisational interfaces and decision structures remain undefined at the time of writing.

Fifth, the IT and systems perspective has only been covered at a high level. Saab Surveillance currently operates within a complex system landscape consisting of several partially connected systems and data environments. Due to the scope and time limitations of the thesis, the study has not been able to model the detailed technical architecture required to support the proposed target state, including semantic

standardisation, integration structures, data ownership models and system interoperability requirements.

Furthermore, the study has not evaluated specific simulation, APS or IBP software solutions that could support future S&OP development. While several interviewees highlighted the importance of improved simulation and scenario analysis capabilities, evaluating and comparing potential software platforms was considered outside the scope of the thesis.

Moreover, the study does not represent a fully comprehensive organisational assessment across all Business Units (BUs) and Product Units (PUs) within Saab Surveillance. Due to time limitations, interviews were conducted with a selected set of stakeholders rather than systematically covering every BU and PU. The findings therefore, represent a consolidated but not necessarily exhaustive view of current challenges, perceptions and future needs related to S&OP within Surveillance.

Finally, the S&OP process within Saab Surveillance is currently undergoing a highly transformative phase, meaning that several organisational structures, governance principles and ways of working are continuously evolving. Consequently, certain findings, observations, and recommendations presented in this report may change over time and may not necessarily remain fully representative as the transformation progresses after the publication of the study.

## 5.5 Final Recommendations

Building on the current-state assessment of the S&OP process, the identified challenges, and the proposed target state, a roadmap has been developed to outline the main initiatives required to guide the organisation toward the desired future state. Since the exact implementation timeline cannot be determined within the scope of this thesis, the roadmap should be understood as an indicative sequencing of initiatives rather than a fixed implementation plan.

Figure 5.1 presents the proposed S&OP roadmap, structured according to the six coordination mechanisms used in the assessment: strategic alignment, organisation, process, tools and data, performance management, and culture and leadership. The roadmap outlines a transformation path from 2026 to 2030, where foundational elements such as a common S&OP vision, BU-management commitment, clarified roles, data governance, and core performance metrics are established early. These are followed by initiatives aimed at standardising Product S&OP, strengthening planning capabilities, integrating data and systems, and embedding performance management. In the later stages, the roadmap emphasises more advanced capabilities, including IBP integration, advanced analytics, scenario simulation, and event-driven planning.

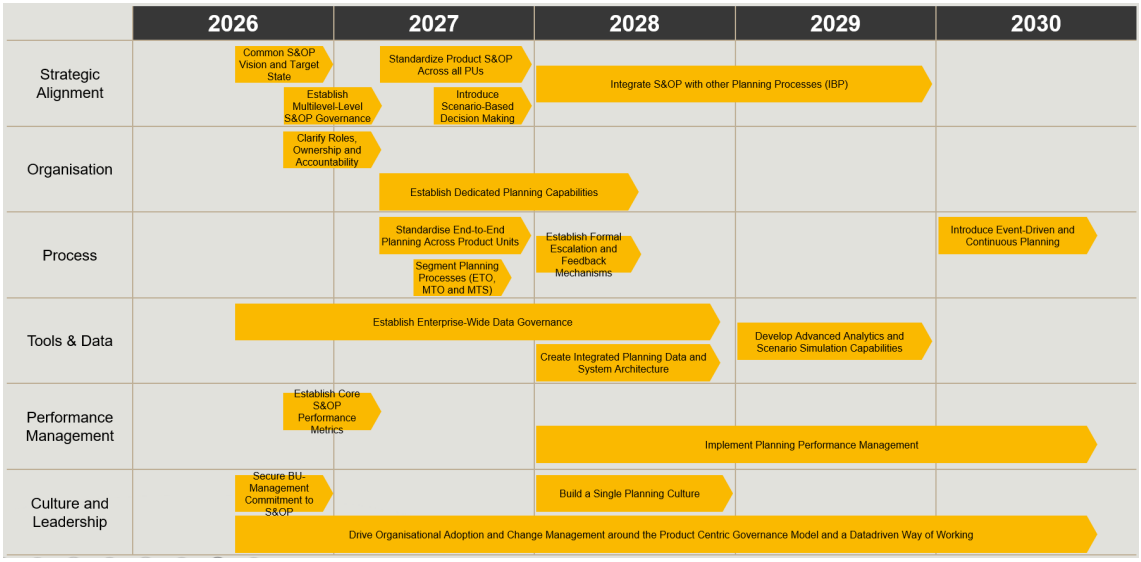


**Figure 5.1:** Proposed S&OP roadmap illustrating the indicative sequencing of initiatives across the six coordination mechanisms, supporting the transition from the current state toward the proposed target state.

Based on this roadmap, four key initiatives are further detailed below to concretise the main recommendations and clarify how the proposed target state can be operationalised.

**Establish a shared organisational commitment to what S&OP should be**
A first recommendation is to establish a shared organisational commitment to what S&OP should be, what the process should achieve, and how it should be used across the BA, BU, PU and support-function levels. In the current state, the S&OP process risks being interpreted differently across the organisation. Some stakeholders primarily view it as a reporting or consolidation exercise, while others recognise its potential as a management process for decision-making, prioritisation and cross-functional coordination. Without a shared understanding of the role and ambition of S&OP, the process is unlikely to generate the ownership, behavioural change and management attention required for it to become embedded in day-to-day governance.

To address this, Saab Surveillance should define and communicate a common S&OP target state that clarifies the purpose, scope and expected outputs of the process. This includes specifying which decisions S&OP should support, how the process connects to Product-Centric Governance, and how it should interact with existing planning, financial and operational processes. Importantly, this commitment should not be owned by the COO Office alone. BU management, PU management, BA representatives and central support functions such as finance, manufacturing, supply chain and engineering need to actively align on the role S&OP should play and how each function is expected to contribute.

This initiative is foundational to the other recommendations. If the organisation does not first align on what S&OP is intended to achieve, later initiatives related

to Product S&OP, data governance, differentiated planning logic or financial integration risk becoming fragmented improvements rather than parts of a coherent transformation. An important aspect of this initiative is therefore to position S&OP as a management steering process, rather than as an additional reporting layer.

**Establish Product S&OP as the basis for PU-level planning**
A second recommendation is to establish Product S&OP as the foundation for planning at PU level. Since product knowledge, demand assumptions, delivery risks, engineering constraints and capacity limitations are best understood close to the products, planning should be anchored where the most relevant operational information exists. This means that Product S&OP should become the primary forum for developing and validating demand and supply plans at product level, identifying bottlenecks, evaluating scenarios and preparing decisions that affect product execution.

The purpose is to create the right balance between decentralisation and centralisation. The recommendation is to establish a structured planning logic in which PUs are responsible for developing high-quality product-level plans, while the BU and BA levels are used for aggregation, cross-product coordination and escalation of unresolved trade-offs. In this structure, S&OP at BU level should consolidate outputs from Product S&OP, identify dependencies between products and PUs, and prioritise issues that require broader resource allocation or management attention. Governance at BA level should focus on strategic trade-offs, investment needs and capacity constraints at business-area level.

The COO Office can play an important enabling role by providing standardised ways of working, templates, digital tool support and facilitation of aggregation across governance levels. This allows the PUs to remain focused on product-level planning, while information can be compared, consolidated and escalated in a consistent way. Establishing Product S&OP as the foundation for planning at PU level would therefore improve both decision quality and planning ownership.

**Differentiate planning logic across ETO, MTO and MTS operations**
The third recommendation is to differentiate the planning logic between engineer-to-order, make-to-order and make-to-stock operations. Saab Surveillance operates in a hybrid environment where different products, product families and components require fundamentally different planning approaches. If these differences are not made explicit in the S&OP process, planning risks becoming too generic. The same planning assumptions, time horizons, decision rules and follow-up mechanisms may then be applied to products with very different levels of engineering uncertainty, standardisation and demand predictability.

This recommendation is particularly important because several operational challenges are linked to the tension between engineering uncertainty and long procure-

ment or production lead times. By making the planning logic explicit, S&OP can help distinguish between components that can be planned based on forecasts and components that should remain order- or engineering-driven. This would reduce ambiguity in planning and support more informed trade-offs between responsiveness, risk and efficiency.

To address this, each Product S&OP cycle should explicitly visualise the current ETO, MTO and MTS mix for each product. This should include identifying which parts of the product structure are customer-specific and engineering-driven, which parts are order-based but configurable, and which parts are sufficiently standardised to be forecasted, stocked or buffered. Based on this segmentation, S&OP should define differentiated planning principles for each logic. For ETO-heavy areas, the process should focus on engineering gates, design-freeze points, procurement release rules and customer-specific capacity needs. For MTO areas, the focus should be on order-based planning assumptions, lead-time logic and configurable product structures. For MTS areas, the focus should be on forecasting logic, safety-stock levels, buffers for standard components and replenishment rules.

**Integrate S&OP with financial planning and performance management**
A final recommendation is to integrate S&OP with financial planning and performance management. For S&OP to become a true management process, operational plans need to be translated into financial consequences. Without this link, it becomes difficult for management to assess the implications of different scenarios, bottlenecks, capacity constraints or prioritisation decisions. As a result, S&OP risks producing operational plans that are not clearly connected to the budget, forecast, business plan targets or the overall financial ambition.

The role of finance should therefore be integrated throughout the S&OP process, rather than being added only at the end. To operationalise this integration, finance should be involved as an active participant in several key steps of the S&OP process, rather than only contributing with financial validation at the end of the cycle. As illustrated in Figure 5.2, finance can contribute by translating operational plans, scenarios, bottlenecks and proposed actions into financial consequences. This creates a clearer basis for decision-making, where trade-offs are assessed not only in terms of operational feasibility, but also in relation to their impact on revenue, margin, cash flow, investment needs and the business plan. In this way, finance becomes an integrated part of the decision logic of S&OP, while the link between operational planning, forecasting, budgeting and long-term business planning is strengthened.

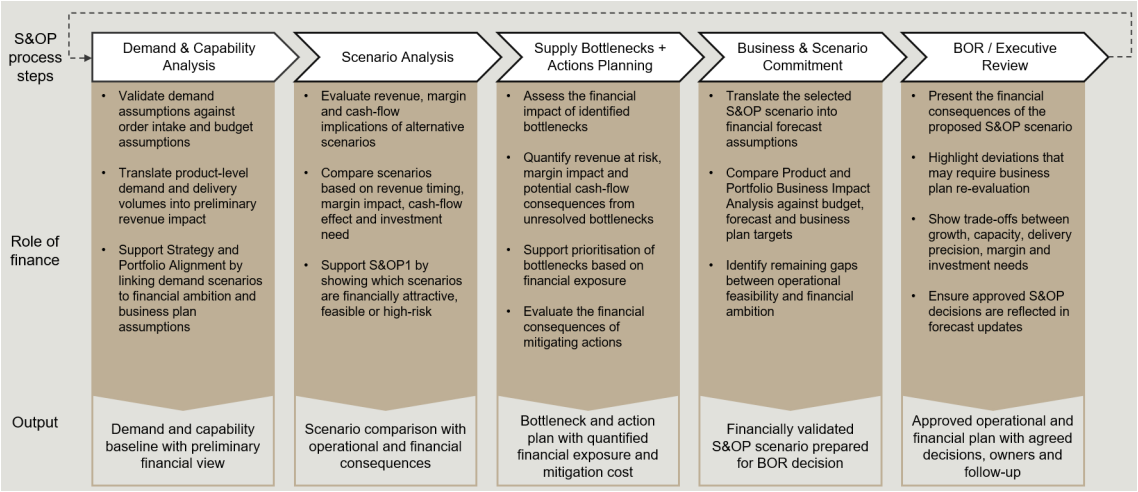


**Figure 5.2:** Proposed finance integration across the S&OP process, adapted from Seeling et al. [54].

In addition, S&OP outputs should be linked to performance management. This means defining a limited number of core S&OP metrics that follow up on planning quality, decision follow-up, forecast reliability, bottleneck resolution and adherence to agreed plans. These metrics should not only measure reporting accuracy, but also whether S&OP decisions lead to action. Integrating S&OP with financial planning and performance management would strengthen management decision-making by making trade-offs more transparent and ensuring that approved S&OP decisions are reflected in financial forecasts, operational priorities and follow-up routines.

## 5.6 Future Research

First, the ongoing transformation within Saab Surveillance creates opportunities for longitudinal research following how the S&OP process, governance structures and organisational adoption evolve over time. Future master theses and research projects could continuously evaluate how identified challenges, capabilities and organisational behaviours develop throughout the transformation journey, potentially enabling a more comprehensive understanding of long-term S&OP implementation within complex defence industry environments. Such research could also evaluate whether the proposed target state and recommendations presented in this study generate the intended organisational and operational effects over time.

Future research could also further investigate organisational and behavioural aspects of S&OP transformation, including change management, cross-functional trust, executive sponsorship and cultural adaptation required to establish S&OP as an integrated decision-making process within engineering-intensive organisations.

Second, future research could conduct comparative studies between Saab Surveillance and other companies operating within defence industry environments or similarly complex industrial contexts characterised by hybrid production structures,

high product complexity, engineering-intensive operations and rapid growth. This could contribute to a broader understanding of how S&OP should be designed and governed in environments that differ significantly from traditional high-volume manufacturing settings commonly described in existing S&OP literature.

Furthermore, future research could focus more specifically on quantitative evaluation methods, including financial modelling, business case estimation, and performance impact measurement related to S&OP implementation. Such studies could help quantify the operational and financial effects of, for example, improved planning capabilities, workforce planning integration, bottleneck reduction, and scenario-based decision-making.

Finally, future research could investigate the technical and digital aspects of S&OP implementation in greater detail, including data architecture, semantic standardisation, simulation capabilities, APS/IBP platform evaluation and integration strategies between operational systems, data warehouses and planning environments.

# 6
# Conclusion

This study set out to analyse the current S&OP process within Saab Surveillance, identify key areas for development, and propose how a future target state for S&OP could be designed. The study was guided by two research questions: what the main challenges are in the current S&OP process, and what requirements a future S&OP target state should fulfil in order to better support Saab Surveillance.

The findings show that Saab Surveillance has already established an important foundation for S&OP at Business Area level. The current process has increased transparency, created an initial structure for balancing demand and capacity, and established a shared forum in which several key functions can align their perspectives. At the same time, the study shows that the process is still at a relatively early stage of maturity when Saab's S&OP is assessed using the maturity framework developed by Danese et al. Danese et al. [58]. Several structural limitations prevent S&OP from fully functioning as an integrated management process.

The first research question is answered through the identification of several key challenges in the current process. These primarily relate to insufficient data quality, a high degree of manual work, limited system support, unclear mandates, weak linkage between organisational levels, limited performance management, and insufficient integration with financial planning. In addition, there is no clearly defined planning logic for how different parts of the product portfolio should be managed based on their ETO, MTO, and MTS characteristics.

A central conclusion is therefore that the main challenge is not only to improve individual steps in the S&OP process, but to establish S&OP as a coherent governance and decision-making process. At present, S&OP risks becoming a forum for information sharing rather than a forum where priorities, trade-offs, bottlenecks, and resource decisions are actually owned and driven forward. For the process to create greater value, a clearer link is needed between plans, decisions, and accountability. Decisions made within S&OP must be connected to clear owners, trackable actions, and a shared understanding of how different scenarios affect delivery capability, capacity, cost, margin, and cash flow.

The second research question is answered through the proposed target state for a future S&OP process. Building on Tuomikangas and Kaipia [32], the study argues that a target state for Saab Surveillance should be based on six central dimensions: strategic alignment, organisation, process, tools and data, performance manage-

ment, and culture and leadership.

An important part of the target state is to establish Product S&OP as the basis for planning close to the Product Units. By anchoring planning closer to the products, Saab can create more relevant and detailed input regarding demand, capacity, material availability, engineering resources, and product-related bottlenecks. At the same time, this product-level planning needs to be aggregated in a standardised way to BU and BA level, so that management receives a coherent view of shared dependencies, capacity constraints, and prioritisation needs.

The study also shows that Saab should differentiate its planning logic across the ETO, MTO, and MTS characteristics within the product portfolio. Not all products, components, and delivery flows should be planned in the same way. A clearer classification of product and component logic would support better decisions regarding material supply, capacity planning, procurement, risk management, and delivery strategy.

Another central conclusion is that financial integration needs to be introduced earlier and more systematically in the S&OP process. For S&OP to function as a true management process, operational plans must be translated into financial consequences. This means that alternative scenarios, capacity constraints, investments, and mitigation actions should be analysed based on their impact on revenue, margin, cash flow, and financial risk. A stronger integration between S&OP, forecast, budget, and business plan would therefore improve the decision basis and strengthen the relevance of S&OP in the overall governance of the business.

At the same time, the findings should be understood in light of the study's limitations. The study is primarily based on qualitative interviews, internal documents, and observations of the existing process. The proposed target state and roadmap have not been validated through full-scale implementation, and the exact business value has not been quantified through before-and-after measurements.

Future research could therefore study how the proposed target state works in practice after implementation, for example by following up effects on delivery precision, capacity utilisation, data quality, and financial governance over time. Finally, future studies could quantify the business value created by a more mature S&OP process.

In summary, the study shows that S&OP can play a central role in Saab Surveillance's continued transformation. However, for the process to reach its full potential, it must evolve from a BA-level planning structure into a more integrated, product-oriented, data-driven, and financially anchored management process. Further development should therefore focus on creating a shared organisational understanding of what S&OP should be, establishing Product S&OP as the basis for planning, clarifying planning logic for different product and order types, and integrating S&OP with financial planning and performance management.

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