



# Improved Competitiveness through Implementation of Sales & Operations Planning

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of Sales & Operations Planning

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# Summary

This report is the result of a two-year research project funded by The Danish Industry Foundation. The project focused on improving competitiveness through sales and operations planning (S&OP). The project offered two innovations: (1) implementing S&OP among small and medium enterprises (SMEs) and (2) studying human behavior in the S&OP process.

The project began with case studies of ten Danish production companies, eight of which had successfully implemented S&OP; from the S&OP project results, a five-phase model emerged. The model was developed to help Danish companies implement S&OP. The model begins with a need clarification and situation analysis. After this initial activity, an S&OP pilot process is developed, which the company subsequently implements. This systematic approach is thus based on the concrete experiences and results achieved by the companies that participated in this project. Both large companies and SMEs participated in the S&OP research project to facilitate comparisons between the two firm sizes. Eight company cases appear in Appendix A. Further, 25 tools were developed, which can be used as inspiration for the individual phases. The list of tools is not exhaustive. In practice, other tools might exist for specific work. Likewise, users can modify the tools presented here and apply them in varying degrees to specific situations. The 25 tools and the eight cases can be accessed in electronic form on the project website: [www.salesandoperationsplanning.dk](http://www.salesandoperationsplanning.dk).

The research project was based on an overall hypothesis that implementation of S&OP is 10% about technology and 90% about people. In the project, a new concept—key behavioral indicators—was developed for focusing on the behavioral side of S&OP processes, given that this concept is relevant to all aspects of human activity in organizations. These Key Behavioral Indicators (KBIs) focus on the specific behavioral measures that should be considered to strengthen both the individual participants in the S&OP process and the overall S&OP team. The KBIs should be seen as a complement to the tradi-

tional Key Performance Indicators (KPIs). The message is that “it takes two to tango”. In other words, a focus on the KBIs can enhance the fulfillment of KPIs. The central learning point in the project affirmed the premise that S&OP is 10% about technique and 90% about people, which makes sense from a qualitative assessment point of view. However, an important lesson here was that companies must first have the 10% in place before they can focus on the 90%. The participating companies had established KBIs; however, these companies generally found it challenging to align KBI practices with KPIs. Nevertheless, although time-consuming, increasing awareness about desirable distinctive behaviors is valuable.

The project has demonstrated that S&OP is relevant for SMEs, although these companies typically confront different resource challenges than do large companies. Implementation of S&OP in SMEs must be compatible with employees’ busy workdays, during which participants often have several tasks to handle at once. Compared with large enterprises, SMEs have the advantage of being faster in decision-making processes and are often not as political and bureaucratic as are large enterprises. For all the participating case-study companies, the S&OP implementation provided a business language, showed a common picture of the whole, and revealed the dilemmas that can affect the balance between demand and supply. Implementing S&OP does not mean that the need to balance demand and supply is eliminated. Challenges will continue to emerge. However, the process helps companies handle imbalances far more intelligently in a more controlled process.

Some of the participating companies decided to hire extra assistance from external consultants to help manage both the technical and behavioral aspects of S&OP. The companies that hired external help were those that from a qualitative perspective were most advanced in their S&OP processes. This observation indicates that companies might find an advantage in hiring external consultants who can bring experience in planning, prioritization, and action. Thus, the S&OP project can more quickly begin to function as a new operating process producing the promised benefits.

In addition to the case studies, two national surveys were conducted of Danish manufacturing practices with S&OP. One survey study of companies working with S&OP is ongoing; therefore, the present report does not include data for this study. The second study focuses on reasons why companies do not work with S&OP. The five highest-scoring reasons reported were as follows: (1) an S&OP implementation had been attempted one or more times before but without success, (2) there was generally too little knowledge about S&OP, (3) the company lacked human resources to implement S&OP, (4) there was low awareness of S&OP among top managers, and (5) companies considered themselves too immature to work with S&OP. There were no significant differences in responses between large companies and SMEs. The study findings support the relevance of this project and this report. Therefore, we hope this material will inspire companies that today do not work with S&OP to explore the possibilities of S&OP. In addition, we hope this material will motivate companies that today have implemented S&OP to improve their S&OP with some of the approaches and tools presented in this report.



# Preface

This final report on “Improved Competitiveness through Implementation of Sales and Operations Planning” is the result of a research project conducted from January 2017 to February 2019. Through applied research, the project was used to develop a comprehensive approach to analyzing concrete situations, defining new S&OP processes, and implementing S&OP in a number of Danish production companies. The goal was to apply practical relevance and application-oriented research to address the need for increased cross-functional understanding of customer needs, from sales forecasts and actual orders to production planning, purchasing, production, and delivery of finished products. Sales and operations planning (S&OP) is a cross-functional process that can help minimize silo thinking, which can lead to suboptimizations instead of a focus on the whole.

The project has both practical and theoretical relevance. The project contributes new knowledge in two particular areas. First, it focuses on S&OP in SMEs. Second, the project has a special focus on participants’ behavior related to a new concept, Key Behavioral Indicators (KBIs), to supplement use of traditional Key Performance Indicators (KPIs).

Many individuals and companies contributed to the process and thus deserve to be acknowledged. First, we would like to thank The Danish Industry Foundation for making it possible to realize the project. Next, we thank CEO Søren Vammen, Danish Purchasing and Logistics Forum, and industry director Michael Svane, DI, for support letters in the application process. A thank you also goes to the employees from Pandora, Lantmännen Unibake, TOMS Group, Arla Foods, and JBS for investing time in interviews during the project’s best-practice phase. Next, a big thank you goes to the employees of Mac Baren Tobacco Company, Bryggeriet Vestfyen, Nissens Automotive, Bramming Plast-Industry, VIKING Life-Saving Equipment, Qubiqa, SPORT 24 BUSINESS, SGM Light, Jyden Bur, and Dinex for their willingness to be followed and for their contributions in developing the material in this report.



Their openness, willingness, and above all their straight-out-of-the-gate honest approach to sharing their lessons were valuable and much appreciated. We also thank the senior management consultants Einar Scholte from IMPLEMENT Consulting Group and the senior consultants Thomas Brams, Jens Arvad Johansen, and Ernst Kildegaard from 4IMPROVE Consulting Group (now PwC) for their help with specific S&OP implementations as well as for their comments, guidance, and reflection on the overall process. We address a big thank you to Group Director Søren Eckhardt, Mercuri Urval Washington DC, Chief Consultant Lars Sørensen, Group Director Lone Bryder, and Delivery Lead Anne Fredberg at Mercuri Urval in Aarhus for their valuable efforts to focus on human behavior. Thanks for some instructive and humorous days. Working with behavior in S&OP processes was both new to the field as well as for us as researchers; at certain times, we felt as if the tracks were laid as the train was driving. Finally, we thank our colleague Christopher Rajkumar, who took the first big step in translating the whole manuscript from Danish to English before the final external proofreading.

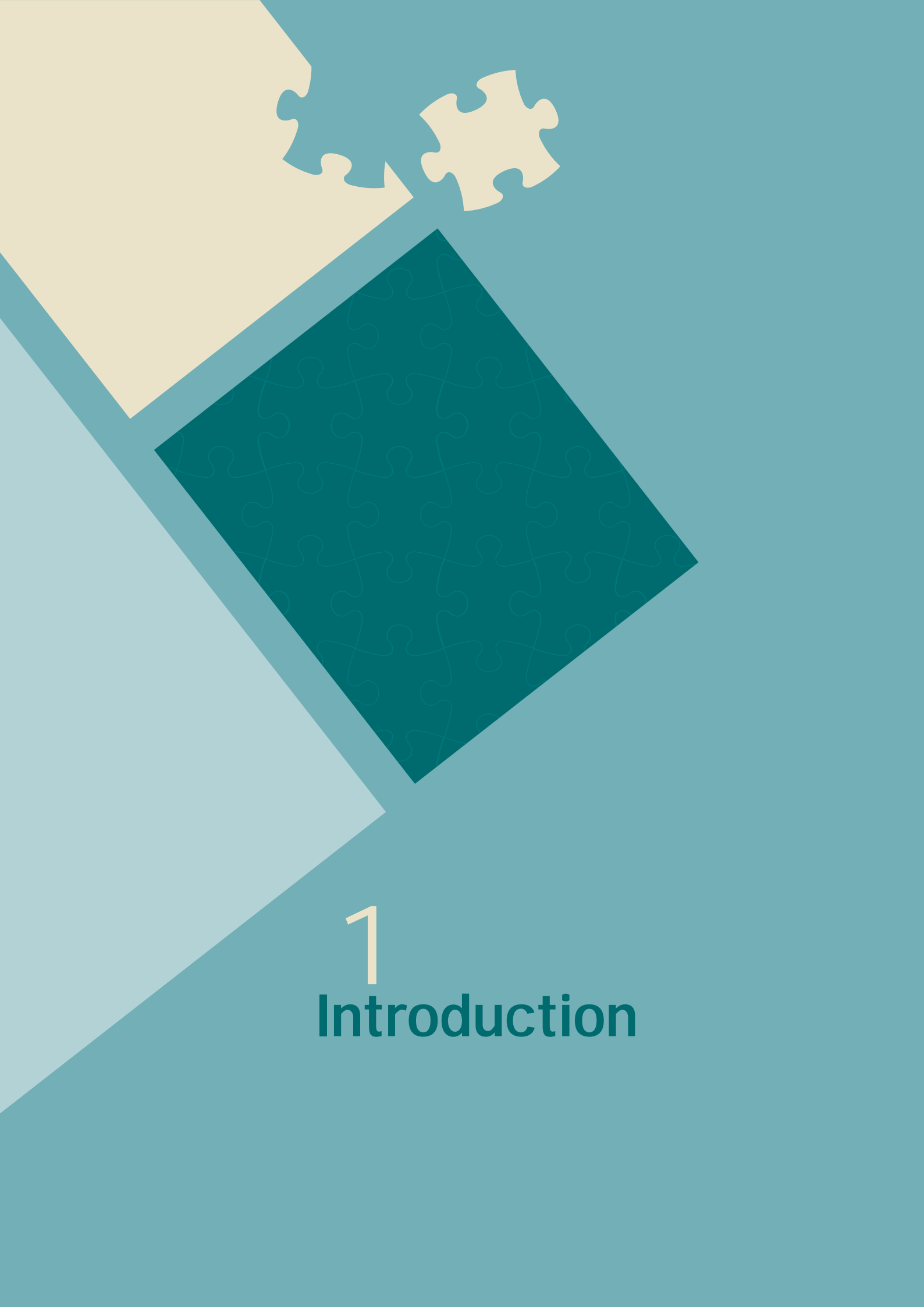
*Kolding, March 2019*

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# 1 Introduction

The first main section describes the background of sales and operations planning (S&OP) and then clarifies the overall purpose of the project, “Improved Competitiveness through Implementation of Sales and Operations Planning”.

## 1.1 BACKGROUND

Today’s business environment is changing at an ever-faster pace. Managers constantly encounter challenges that may have vital consequences if not addressed on time. Customers demand new solutions; in addition, digital development has fostered creation of new business models and intensified competition from companies in low-wage countries. These are just some of the concerns that continuously appear on top managers’ agendas. The challenges are driven not only by leaders’ need to respond but also by opportunities in which business leaders proactively seek to create new solutions and business models. However, such needs and opportunities are not always aligned in companies, as these examples show:

- Sales wants to operate with maximum flexibility toward customers, keeping options open as long as possible. Salespeople want to be able to offer solutions that are not necessarily within the company’s standards.
- Product Development needs as wide a portfolio of suppliers and materials as possible to maximize the solution space for design and development of new products.
- Supply chain managers want to create productivity through stability and process automation and optimization of product and customer portfolios.
- Finance wants to create transparency in processes in order to identify true earnings on products and customers, while bringing down cost of new working capital.

An important competitive parameter is time-to-market (T2M), which refers to the time it takes to recognize a need for a new product or service and develop, manufacture, and prepare it for sale in the market. Through an effective T2M process, competitiveness can be improved, allowing companies to bring products and services faster to markets, thus achieving a faster breakeven on the investment. In addition, an effective T2M process may lead to lower financial risk, thus achieving a greater total profit and return on investment (Stentoft, 2017a, p. 209). T2M is a cross-organizational process that requires project management skills and clearly defined roles and responsibilities along the workflow. If these elements are missing, decision-making processes may become paralyzed, which can lead to poorly defined specifications, delivery delays, and errors and return flows in the subprocesses. To achieve an effective T2M process, managers should avoid excessive suboptimizations in various functions—for example, operating with “political” customer forecasts that can drive production levels to unrealistic heights, leading to obsolescence; procuring large batches to achieve a lower unit cost, leading to excessive capital tied up in inventory; and producing



*In an age with rapid growth in new digital technologies, it is especially important to focus on processes and behavior through human interaction.*



large batches to minimize changeovers, leading to too many stock-keeping units. S&OP is an important management tool intended to create structure and balance in supply and demand of goods and services.

The S&OP concept is not new; however, this research project's novelty lies in its focus on S&OP in relation to small and medium enterprises (SMEs), which constitute the majority of Danish industrial companies. Compared to large companies, SMEs often have fewer resources to dedicate to specific disciplines such as S&OP. On the other hand, SMEs might have an easier time implementing S&OP because they are smaller and therefore more transparent, less bureaucratic, and more effective in decision making. Thus, S&OP is not only for large companies but also for SMEs. Nevertheless, the SME perspective on S&OP still seems to be under-researched in the academic literature (Kristensen & Jonsson, 2018; Stentoft et al., 2018a), which is a challenge especially in a Danish industry context, in which the majority of Danish companies are SMEs. Another novelty of this project is its special focus on behavior in S&OP processes. In extant literature, a consensus has emerged that a key S&OP success factor is establishing an S&OP organization that cuts across functions and that has a process owner and sponsor supported by top management. Despite this theoretical knowledge, there is still a lack of cross-functional integration in practice. The issues and challenges many industrial companies are facing are not special in 2019—in fact, these issues

have been around for decades (Shapiro, 1977). Likewise, the literature has shown that S&OP projects often fail because of too much focus on technology and too little on people and process design (Grimson & Pyke, 2007; Wight, 2017; Williams, 2016). In an age of rapid growth in new digital technologies, it is especially important to focus on human processes and behavior in human interaction. Thus, the research project's overall hypothesis is that S&OP is 10% about technique and 90% about people. The project further stands on the premise that few employees go to work every day with a deliberate purpose to create trouble for their colleagues. However, some employees might behave exactly this way. Lack of holistic understanding and transparency of processes means that decisions made in one area may create troubles in other parts of the internal and external value chains. S&OP is a decision-making process aimed at creating transparency.

## 1.2 PURPOSE AND RESEARCH QUESTIONS

The primary aim of the research project was to develop new knowledge regarding how Danish companies can create increased competitiveness through the implementation of cross-functional S&OP processes. S&OP strives toward creating a single, balanced picture of the process of determining the need for products and services and developing the capacity and the skills needed to deliver them. The process concerns knowledge sharing and development in companies to create a united approach between Sales and Operations. In an age of increasing digitalization, the need has increased to master data reliably and formalize management processes aligning demand and supply.

The project leaders sought to provide answers to these main questions:

- To what extent do Danish companies use S&OP?
- What are the best S&OP practices in a Danish context?
- Is S&OP relevant for SMEs?
- What benefits can be achieved by implementing S&OP?
- What managerial challenges are experienced by implementing S&OP?
- How does S&OP affect corporate performance?
- How can an S&OP project be approached?
- How do different personality types affect the development, implementation, and operation of S&OP?

The project focused on manufacturing companies; however, the results can be applied in private and public companies in services, retail, and transportation.





2

## Theoretical Framework of Reference

**S&OP is a tactical planning process involving a planning horizon of typically between three to twenty-four months.**

The purpose of this section is to present the theoretical frame of reference for the overall research project. First, the section covers sales and operations planning (S&OP). Next, the characteristics of SMEs are described, followed by an introduction to the type theory used in the project and the TeamDiamond® tool. Next follows a description of three types of management paradigms—these paradigms coexist in many companies and require different management tasks. The section concludes with a discussion of Key Performance Indicators (KPIs) and Key Behavioral Indicators (KBIs).

## 2.1 SALES & OPERATIONS PLANNING

Sales and operations planning (S&OP) is a tactical planning process involving a planning horizon of typically between three to twenty-four months. In theory, the S&OP process should bring sales, supply chain, and financial experts together to balance supply and demand for goods and services. S&OP is not new. The first book about S&OP was published in the late 1980s (Ling & Goddard, 1988). Since then, both academics and practical consultants have contributed new perspectives on S&OP—for example, outlining the actual steps in an S&OP process, identifying the importance of data in an S&OP process, naming the benefits and success criteria to be achieved through an S&OP process, and proposing various S&OP maturity models. Today, the scientific literature on S&OP is founded on both “gray” and academic literature (Thomé et al., 2012a; Tuomikangas & Kaipia, 2014). Gray literature consists of various books and white papers prepared by consulting firms, typically supporting their own sales and marketing agenda. Solid S&OP contributions can be found in this gray literature, such as operational tools to handle the development, implementation, and operation of S&OP processes. Likewise, the academic interest in S&OP has increased in recent decades. Researchers have studied how S&OP creates and facilitates integration in the company (Thomé et al., 2012a; Tuomikangas & Kaipia, 2014); how S&OP contributes to performance improvement (Thomé et al., 2012b, 2014); how S&OP is implemented in different companies with discrete manufacturing (Noroozi & Wikner, 2017); how S&OP unfolds under different planning environments (Ivert et al., 2015); and how contextual factors affect the design of S&OP (Kristensen & Jonsson, 2018).

A challenge in many companies is that different functions and managers have different priorities. Sale departments often focus on revenue, while operations focuses on volume, and CEOs and CFOs focus on budgets. Often, people assess a company through different approaches and lenses. An S&OP process can





**» A S&OP process can provide a common language between functions, as well as help users find and align the ‘codes’ among sales, volume, budgets, and actual figures.**

provide a common language among functions, as well as help users find and align the “codes” among sales, volume, budgets, and actual figures. S&OP is a process that, if implemented correctly, can help tear down the functional silos (Grimson & Pyke, 2007; Wagner et al., 2014). An important element of the S&OP is to distinguish between volume and mix discussions (Wallace & Stahl, 2008, p. 7). In many companies, employees spend too much time meeting to discuss challenges with individual products. Individual product item numbers are not the focus of S&OP meetings. Instead, the focus is on discussing the volume within product groups over the medium-term horizon. On paper, this change sounds straightforward and banal; in practice, it could require much practice because this simple change in focus requires fundamental changes in habits, routines, and behaviors.

### 2.1.1 Benefits of S&OP

The literature has indicated various advantages to implementing S&OP. The overall benefits are summarized in five categories, as shown in Table 2.1. Again, it is important to remember that S&OP is neither a sales nor an operations project (or later a process) but rather an overall business matter.

**Tabel 2.1: Overview of the benefits of S&OP**

BENEFITS OF S&OP	REFERENCES
Sales growth (“hard” benefits: improved service, reduced out of stocks, improved product launch, fewer backlogs, improved forecast accuracy).	Boyer (2009); Githens (2009); Muzumdar & Fontanella (2006); Prokopets (2012); Thomé et al. (2012a); Tuomikangas & Kaipia (2014); Wallace & Stahl (2008).
Cost reductions (“hard” benefits: material and freight cost reductions, more stable production rates, better resource allocation, increased productivity).	Boyer (2009); Githens (2009); Prokopets (2012); Thomé et al. (2012); Wallace & Stahl (2008).
Working capital improvement (“hard” benefits: lower finished goods, work in progress, and raw material inventory).	Boyer (2009); Githens (2009); Muzumdar & Fontanella (2006); Prokopets (2012); Thomé et al. (2012a); Wallace & Stahl (2008).
Alignment and integration (“soft” benefits: better cooperation, empowerment, socialization, improved visibility, improved organizational behavior).	Ivert & Jonsson (2010); Lapide (2014); Noroozi & Wikner (2017); Thomé et al. (2012a); Tuomikangas & Kaipia (2014); Stahl & Wallace (2012); Wagner et al. (2014); Wong et al. (2012).
End results (“hard” benefits: gross profit return on space, return on net assets, gross profit on return on inventory, company/product profitability, contribution margins).	Thomé et al. (2012a); Thomé et al. (2012b).



**Tabel 2.2: Success criteria for implementing S&OP**

SUCCESS CRITERIA	REFERENCES
<i>Top management anchoring</i> (executive-level sponsorship).	Bower (2005); Lapide (2005); Muzumdar & Fontanella (2006); Pedroso <i>et al.</i> (2016); Slone <i>et al.</i> (2010); Tinker (2017); Tuomikangas & Kaipia (2014); Van Hove (2012); Wagner <i>et al.</i> (2014).
<i>Strategic alignment</i> (aligned business objectives, link S&OP to corporate strategy, clear policies).	Bower (2005); Shapiro (1977); Tuomikangas & Kaipia (2014), Van Hove (2012); Williams (2016).
<i>Organizational alignment</i> (cross-functional participation including sales/teams/silo breakdown/alignment, integration, clearly defined functional roles at the meetings [planning – who is doing what], an unbiased, responsible organization to run a disciplined process, process governance; procedural quality, consensus and accountability).	Ambrose & Rutherford (2016); Githens (2009); Grimson & Pyke (2007); Iyengar & Gupta (2013); Lapide (2014); Muzumdar & Fontanella (2006); Noroozi & Winker (2017); Oliva & Watson (2011); Pedroso <i>et al.</i> (2016); Thome <i>et al.</i> (2012a); Tinker (2017); Tuomikangas & Kaipia (2014); Shapiro (1977); Wagner <i>et al.</i> (2014); Williams (2016); Stahl & Wallace (2012).
<i>Performance management</i> (right metrics and performance measures).	Iyengar & Gupta (2013); Noroozi & Winker (2017); Williams (2016); Slone <i>et al.</i> (2010).
<i>Project planning</i> (start with pilot, information quality [accurate, complete and timely information exchange], data and analytics, avoid too much IT in the beginning; an unbiased baseline forecast to start the process).	Ambrose & Rutherford (2016), Iyengar & Gupta (2013); Grimson & Pyke (2007); Lapide (2014); Oliva & Watson (2011); Slone <i>et al.</i> (2010); Thomé <i>et al.</i> (2012a); Tuomikangas & Kaipia (2014); Wallace & Stahl (2008); Williams (2016).
<i>Common evaluation and reward system</i>	Boyer (2009); Iyengar & Gupta (2013); Lapide (2014); Pedroso <i>et al.</i> (2016); Stahl & Wallace (2012); Swaim <i>et al.</i> , 2016; Thome <i>et al.</i> (2012b); Tinker (2017); Tuomikangas & Kaipia (2014); Van Hove (2012); Williams (2016).
<i>Organizational and behavioral readiness</i> (investing in people, trust and commitment, loyalty, conflict handling, continuous improvement, change management, training and education, coaching for improvement, participants empowered to make decisions).	Ambrose & Rutherford (2016); Bower (2005); Boyer (2009); Githens (2009); Grimson & Pyke (2007); Lapide (2014); Muzumdar & Fontanella (2006); Pedroso <i>et al.</i> (2007); Stahl & Wallace (2012); Thome <i>et al.</i> (2012b); Slone <i>et al.</i> , (2010); Wagner <i>et al.</i> (2014); Williams (2016).

The five categories are (1) sales growth, (2) cost reduction, (3) improving working capital, (4) alignment and integration, and (5) financial benefits.

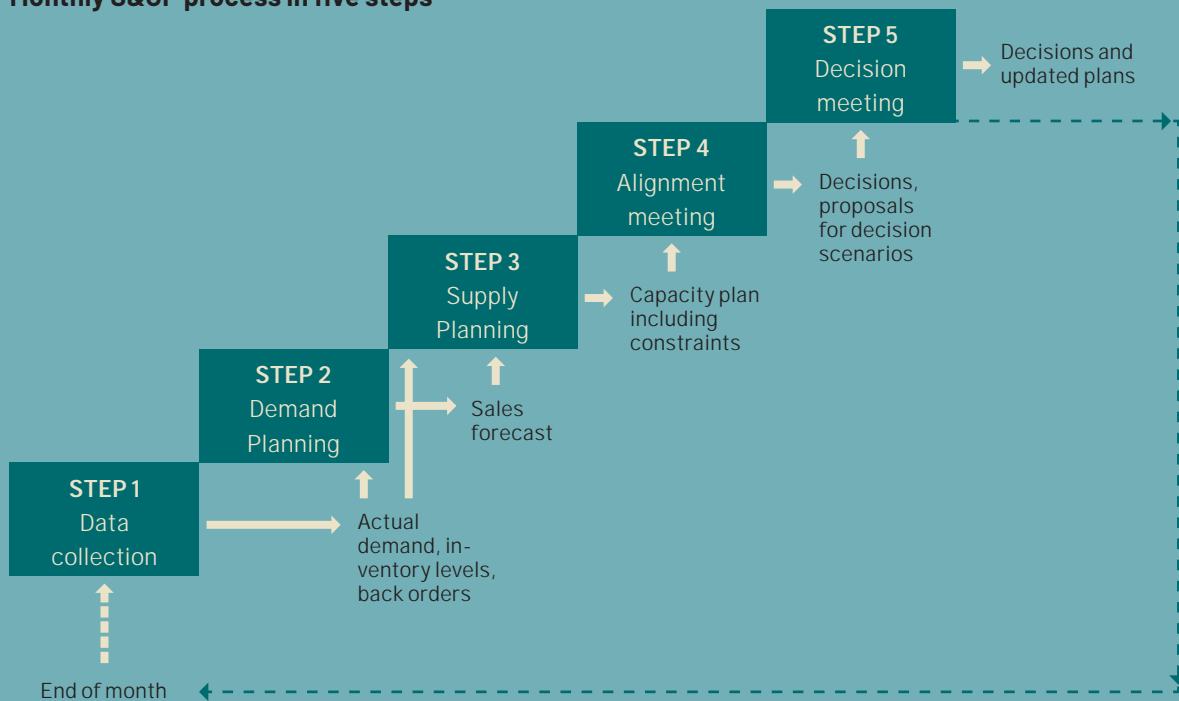
### 2.1.2 Success criteria

S&OP is a cross-functional process that can be difficult to implement. Table 2.2 shows examples of what previous researchers have identified as success criteria in such implementations.

### 2.1.3 Monthly S&OP process in five steps

S&OP processes normally follow a five-step model in a monthly cycle (Grimson & Pyke, 2007). These steps can include (1) data collection, (2) demand planning, (3) supply planning, (4) alignment meeting, and (5) S&OP decision-meeting (Figure 2.1).

**Figure 2.1:**  
**Monthly S&OP process in five steps**



*Source: Based on Wallace & Stahl (2008, p. 54).*

As mentioned earlier, the norm is to work with a monthly S&OP cycle; however, the five steps can be compressed in time—for example, the steps can occur twice in a month or more slowly, circulated with a quarter as the interval. The practical way of organizing the process depends on the need for updated data in the specific situation; however, the most common cycle is monthly. The naming of each stage varies among different literary contributors (Goodfellow, 2012; Grimson & Pyke, 2007; Wallace & Stahl, 2008, p. 53); however, the work processes are typically as follows:

- 1. Data collection:** What are actual sales? Have there been and are there still delivery problems? Has there been a shortage of goods? What is actual production? How much is in inventory? What is the extent of backorders?
- 2. Demand planning:** Sales and marketing function reviews results from step 1 and delivers new sales forecasts for the present planning horizon.
- 3. Supply planning:** Production and procurement is based on the results of step 2 and analyzes now how this forecast can be met given capacity constraints.

**4. Alignment meeting between Sales and Operations:** Demand and supply are matched, and proposals are made for how imbalances can eventually be accommodated. Such decision-making proposals may be to increase capacity through operating multiple shifts in production or using capacity sub-suppliers for a while. Another suggestion may be that Sales needs to sell more to avoid excess capacity; excess capacity can lead to layoffs.

**5. Decision meeting with top managers:** The S&OP process owner/manager presents decision proposals for step 4 to top managers, who then make decisions that are executed.

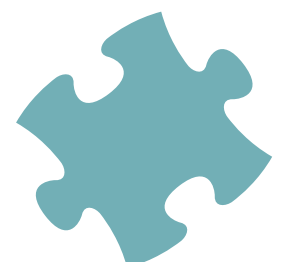
#### 2.1.4 S&OP maturity

In the S&OP literature, researchers have proposed various maturity models to help companies assess their current processes in terms of maturity (the degree of advancement). Maturity models typically contain a number of stages, which proceed in order, becoming more and more advanced. The models can be used for various purposes such as to describe, to guide, and, in particular, to compare a company's practice with the practices of other companies (Danese et al., 2018). The models typically range from four to six stages. A feature usually not well expressed in connection with maturity models is the idea that a company does not necessarily have to aspire to reach the highest maturity level. For example, maturity level 3 may be sufficient for some companies because the costs of climbing further in maturity might exceed the benefits that can be achieved. Well-recognized S&OP maturity models are the models by Grimson & Pyke (2007), Lapide (2005), and Wagner et al. (2014).

#### 2.1.5 Need for focus on behavior in S&OP

Over the past few years, academic researchers have recommended new research on the human aspects of supply chain management (Bendoly et al., 2010; Oosterhuis et al., 2012; Schorsch et al., 2017; Tokar, 2010; Wieland et al., 2016). Some might argue too much focus has been given to the "hard wiring" (technology, systems, and structures) at the expense of the "soft wiring," which focuses on humans (Stentoft et al., 2018a; Sweeney, 2013). This discrepancy in focus has been true in the S&OP universe in which extant literature has focused on maturity models, S&OP performance, and planning and structural elements instead of "on identifying antecedent factors like organizational orientations that may facilitate effective S&OP" (Qi & Ellinger, 2017, p. 1320). Thus, lately, increased attention has been paid to the softer sides of S&OP in the academic literature (see e.g., Ambrose & Rutherford,

**”** *But even if there is some focus on organizational and managerial issues related to S&OP, it is surprising how infrequently S&OP team members' personalities have been the subject of analysis.*



2016; Jonsson & Holmström, 2016; Tuomikangas & Kaipia, 2014; Wagner et al., 2014). Researchers have recommended studying how well S&OP processes are managed (Hulthén et al., 2016), which management skills ought to be in cross-functional S&OP teams (Ambrose & Rutherford, 2016), and behavioral aspects related to S&OP implementations (Jonsson & Holmstrom, 2016; Oliva & Watson, 2011; Qi & Ellinger, 2017). However, even if some attention has been given to organizational and managerial issues related to S&OP, it is surprising how infrequently S&OP team members' personalities have been the subject of analysis. It is important not to neglect the human and organizational dimensions of S&OP (Danese et al., 2018).

Technological development will likely continue at a fast pace; however, despite technological advances, S&OP processes still consist of people and their individual personalities, which interact as teams solve common objectives. This project rests on an overall hypothesis that S&OP is 10% about technique and 90% about people (Stentoft et al., 2016; Williams, 2016). This view is supported by Stahl & Shedlawski (2012): "The hard stuff is easy, but the soft stuff is hard" (p. 39). Stahl & Shedlawski were referring to the "ABCs" of S&OP implementation. A is about change management, B is about process improvements (including data integrity), and C is about technology (computer and software). "It's not B or C that will trip you up, it's A: changing people's behavior at all levels resulted thing in an organizational culture change" (Stahl & Shedlawski, 2012, p. 39).

## 2.2 SMALL AND MEDIUM-SIZED COMPANIES

A large part of the Danish economy depends on small and medium-sized enterprises (SMEs). Within the EU, an SME is defined as a business with fewer than 250 employees and an annual turnover not exceeding 50 million euros. In the EU, SMEs account for 99.8% of all enterprises. In comparison with large enterprises, SMEs generally have fewer resources; in addition, SME management teams are often deeply involved in the daily operation, and their strategy focuses more on operational activities at the expense of development-oriented activities (Haug et al., 2011).

Conversely, SMEs are typically less bureaucratic than are large companies (Nooteboom, 1994), and they typically have greater agility when deciding and implementing initiatives. Other characteristics of SMEs appear in Table 2.3.

## 2.3 THEORY OF PERSONALITY: UNDERSTANDING TYPES

### 2.3.1 Introduction

The thesis in this research project is that personality significantly influences the effectiveness of companies' S&OP processes. Participants in the S&OP process are generally widely represented across functional areas. In addition, they have different personal preferences in terms of how they perceive, think, feel, motivate, and behave. Individual personalities are crucial in terms



**Table 2.3: Characteristics of SMEs**

ORGANIZATIONAL CHARACTERISTICS	ENVIRONMENTAL CHARACTERISTICS	INFORMATION SYSTEMS CHARACTERISTICS
<p><b>Resources</b></p> <ul style="list-style-type: none"> <li>• Modest financial resources</li> <li>• Limited human capital</li> <li>• Limited resources for employees' training</li> </ul> <p><b>Ownership, management, and decision making</b></p> <ul style="list-style-type: none"> <li>• Owner is the CEO</li> <li>• Time constraints of owner-managers</li> <li>• Top management highly visible and active</li> <li>• Few layers of management</li> <li>• Centralized decision making</li> <li>• Short-term decision-making cycle</li> <li>• Intuitive decision process</li> </ul> <p><b>Structure</b></p> <ul style="list-style-type: none"> <li>• Simple, flatter, and less complex structure</li> <li>• Flexible structure and information flows</li> <li>• Single-sited</li> <li>• Organic structure</li> <li>• Limited and unclear division of activities</li> <li>• Low degree of employees' specialization</li> </ul> <p><b>Culture</b></p> <ul style="list-style-type: none"> <li>• Unified culture</li> <li>• Few interest groups</li> <li>• Common corporate mindset</li> <li>• Low resistance to change</li> <li>• Organic and fluid culture</li> <li>• Influenced by owner-managers</li> </ul> <p><b>Processes and procedures</b></p> <ul style="list-style-type: none"> <li>• Smaller and less complicated processes</li> <li>• More flexible and adaptable processes</li> <li>• Informal rules and procedures</li> <li>• Low degree of standardization and formalization</li> </ul>	<p><b>Market, customers</b></p> <ul style="list-style-type: none"> <li>• Mostly local and regional markets</li> <li>• Normally dependent on a small customer base</li> <li>• Affected by powerful partners in their supply chain</li> </ul> <p><b>Uncertainty</b></p> <ul style="list-style-type: none"> <li>• High level of environmental uncertainty</li> <li>• Uncertain and unstable environment</li> </ul>	<p><b>IS knowledge</b></p> <ul style="list-style-type: none"> <li>• Limited knowledge of IS</li> <li>• Modest managerial expertise</li> <li>• Limited management attention to IS</li> <li>• Lack of strategic planning of IS</li> </ul> <p><b>IT technical expertise</b></p> <ul style="list-style-type: none"> <li>• Limited IT in-house technical expertise</li> <li>• Emphasis on packaged applications</li> <li>• Greater reliance on third parties</li> </ul> <p><b>IS function, IS complexity</b></p> <ul style="list-style-type: none"> <li>• IS function in its earlier stages</li> <li>• Subordinated to the accounting function</li> </ul>

Source: Zach et al. (2014).

of how people define themselves and how they perceive others (Haslam et al., 2017, p. 8). Personality can be defined as “an individual’s characteristic patterns of thinking, feelings, and behavior with the psychological mechanisms—hidden or not—is behind these patterns” (Funder, 2013, p. 5). Recently, a growing recognition has emerged in the supply chain management and operations management literature of the importance of focusing on the human factor (Bendoly et al., 2010; Schorsch et al., 2017; Wieland et al., 2016). In fact, experts have recommended avoiding a focus on “the hard-wiring of the supply chain, which in practice primarily is concerned with technology, systems, and structures” (Sweeney, 2013, p. 75).

Understanding personalities is a central theme in the field of psychology and includes, among other things, the various theories that analyze and explain human personality (Haslam et al., 2017, p. 5). According to Furnham et al. (2003), the two most widely used personality measurements are the Myers-Briggs Type Indicator (Myers et al., 1998) and the trait theory Big-Five Model (also known as the Five Factor Model [FFM]) by Costa & McCrae (1992). Type theory and trait theory are two groups of theories that attempt to provide insight into how personalities differ. Type theorists study people’s different personality types, whereas trait theory focuses on human traits (Furnham et al., 2007).

### 2.3.2 Myers-Briggs Type Indicator

This research project applied Myers-Briggs Type Indicators (MBTI; Myers & McCaulley, 1985), a model developed to enhance the understanding and usefulness of Jung’s type psychology (Jung, 1971). Other theories could have been selected, such as FFM, Enneagram, DISC, and Adizes. In this project, we chose to work with the MBTI typology because all participants in S&OP processes are involved in clarifying who they are; in fact, people determine the type that best suits them. Thus, they are in search of their own preferences. This is in contrast with trait theory (e.g., FFM), wherein an external person, for example, a psychologist, categorizes people based on their traits.

**Table 2.4: Personality preferences according to MBTI**

Note: The four dimensions generate eight preferences (each dimension has two preferences).

DIMENSION	SHOWS ...	KEY PROCESS
Extraversion–Introversion	Where people receive and direct their energy	Energy
Sensing–Intuition	Which “channel” people perceive the world through	Perceiving
Thinking–Feeling	How people make decisions	Judging
Judging–Perceiving	People’s attitude toward the external world and how they live their lives from day to day	Life style

Source: Ringstad & Ødegård (2002).

**Figure 2.2: The sixteen personality types in MBTI**

		SENSING TYPES		INTUITIVE TYPES	
		THINKING -ST-	FEELING -SF-	FEELING -NF-	THINKING -NT-
Introvert	I - - J	<b>ISTJ</b>	<b>ISFJ</b>	<b>INFJ</b>	<b>INTJ</b>
	I - - P	<b>ISTP</b>	<b>ISFP</b>	<b>INFP</b>	<b>INTP</b>
Extravert	E - - P	<b>ESTP</b>	<b>ESFP</b>	<b>ENFP</b>	<b>ENTP</b>
	E - - J	<b>ESTJ</b>	<b>ESFJ</b>	<b>ENFJ</b>	<b>ENTJ</b>

Source: Myers (1980, p. 29).

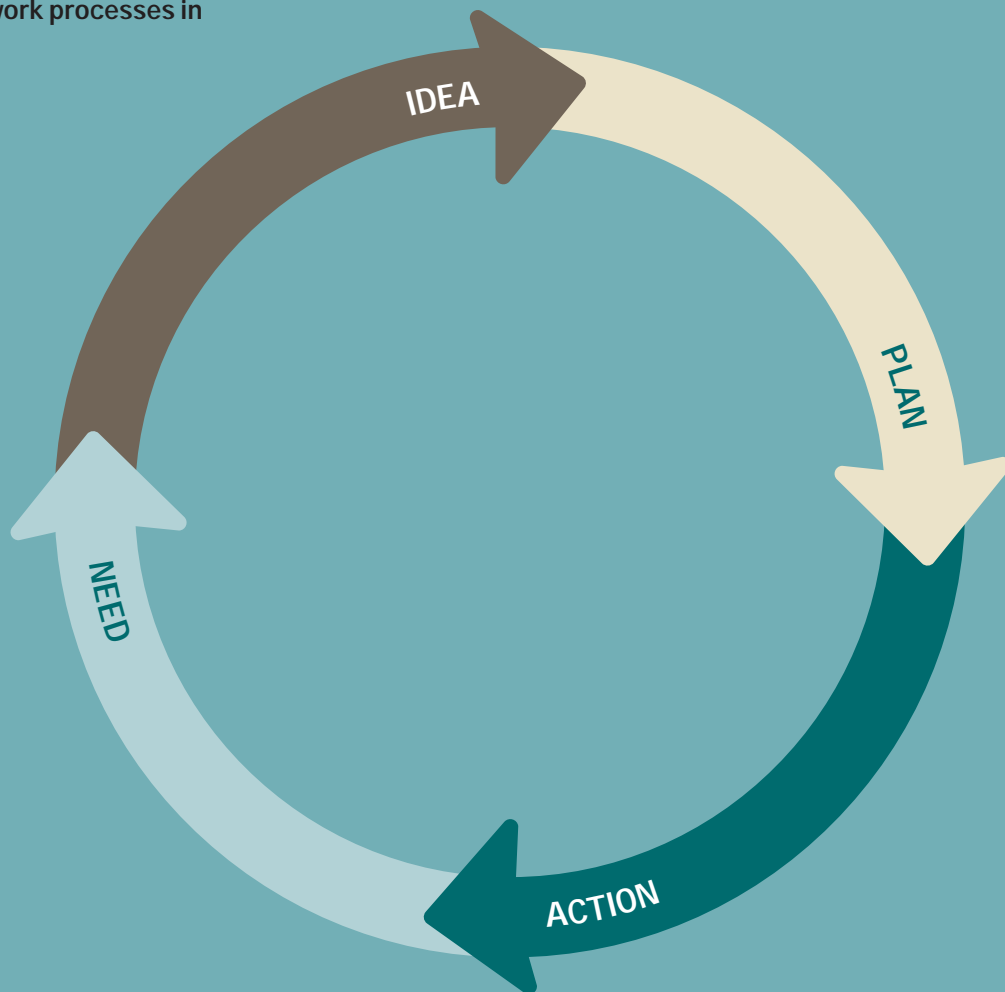
**Figure 2.3: Some characteristics of the sixteen MBTI types**

<p><b>ISTJ</b></p> <p><i>Responsible, follow the rules, analytical, reserved, realistic, systematic</i></p> <p>Hard-working; down to earth</p>	<p><b>ISFJ</b></p> <p><i>Warm, conscientious, kind, responsible, pragmatic, thorough</i></p> <p>Keen, helpful, and service-minded</p>	<p><b>INFJ</b></p> <p><i>Idealistic, organized, insightful, reliable, humane, kind</i></p> <p>Seek harmony and collaboration; enjoy intellectual stimulation</p>	<p><b>INTJ</b></p> <p><i>Visionary, independent, strategic, logical, reserved, insightful</i></p> <p>Driven by own novel ideas to improve things</p>
<p><b>ISTP</b></p> <p><i>Action-oriented, logical, problem solver, spontaneous, calm under pressure</i></p> <p>Acknowledge adventure, skillful to understand technical data</p>	<p><b>ISFP</b></p> <p><i>Kind, sensitive, helpful, aware of social conditions</i></p> <p>Seek to create a healthy and practical environment</p>	<p><b>INFP</b></p> <p><i>Sensitive, creative, idealistic, perceiving, careful, loyal</i></p> <p>Value internal harmony and personal development; dream and see possibilities</p>	<p><b>INTP</b></p> <p><i>Inventive, logical, theoretical, reserved, flexible, precise</i></p> <p>Original thinkers that like complex problem solving</p>
<p><b>ESTP</b></p> <p><i>Extravert, realistic, action-oriented, curious, versatile, spontaneous</i></p> <p>Pragmatic problem-solver and skillful negotiator</p>	<p><b>ISTP</b></p> <p><i>Playful, enthusiastic, kind, spontaneous, tactful, flexible</i></p> <p>Have strong common sense and like to help others in visible ways</p>	<p><b>ENFP</b></p> <p><i>Enthusiastic, creative, spontaneous, optimistic, supportive, playful</i></p> <p>Acknowledge inspiration; like to start new things; see the potential in others</p>	<p><b>ENTP</b></p> <p><i>Inventive, enthusiastic, strategic, enterprising, inquiring, versatile</i></p> <p>Like new ideas and challenges and acknowledge inspiration</p>
<p><b>ESTJ</b></p> <p><i>Effective, extravert, analytical, systematic, reliable, realistic</i></p> <p>Like to manage and lead and get things done in a correct manner</p>	<p><b>ESFJ</b></p> <p><i>Kind, extravert, reliable, conscientious, organized, practical</i></p> <p>Are helpful and seek to please others; like to be active and productive</p>	<p><b>ENFJ</b></p> <p><i>Careful, enthusiastic, idealistic, organized, diplomatic, responsible</i></p> <p>Skillful communicator that acknowledge connections with people</p>	<p><b>ENTJ</b></p> <p><i>Strategic, logical, effective, extravert, ambitious, independent</i></p> <p>Skillful organizer and skilled at conducting longer-term planning</p>

Source: Based on Myers (1980, pp. 56, 63, 68 and 27) and Broegger & Bohnsen (2011, p. 35).

MBTI is considered a valid method for obtaining self-insight, intended to improve communication between people who are part of the S&OP process. The overall thesis in the project is that an increased awareness of human personality types and subsequent management based on insight into these types will improve both the S&OP implementation and the ongoing operation of S&OP. Therefore, the key message of this section is that people work in the processes and this is why managers need an explicit focus on how a group's work can be strengthened through awareness of the group members' different personalities. Type theory can help achieve a better understanding of a person's own personalities, preferences, and behaviors, as well as those of others (Lloyd, 2012).

**Figure 2.4:**  
Four core work processes in teamwork



*Source: Broegger & Bohnsen (2015).*



MBTI is a self-assessment tool in which the person completing the analysis chooses from two alternatives on a number of questions about how they perceive themselves and their perceptions of things, people, and ideas (Myers et al., 1998). MBTI operates with four personality dimensions that contain two preferences each, as shown in Table 2.4. Jung (1971) developed the first three personality preferences. People are born with these. Myers (1962) developed the fourth personality dimension later. Based on these four dimensions, it is possible to categorize people into sixteen different types that may influence their behavior (Figure 2.2). No particular type is best; they all have strengths and weaknesses. Later, MBTI was further developed into MBTI II, which provides additional detail to the four personality preferences by dividing each dimension into five facets. MBTI II provides forty different ways in which personality may be different; thus, two people with an ESTJ profile may actually be different. Characteristics of the sixteen types are included in Figure 2.3. In general, beginning with IS (the top four cells on the left side of Figure 2.2.), the IS types focus primarily on *continuity*. The IN types are primarily focusing on creating *visions*; the EN types focus on making change, and the ES types primarily focus on creating *results*.

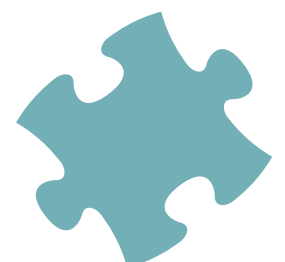
## 2.4 THE TEAMDIAMOND® TOOL

As described previously, S&OP is a cross-functional process in which a number of employees work together in a team with specified roles and responsibilities to achieve specific objectives. To achieve the aim of focusing on team composition, the project used TeamDiamond®, which is a team tool developed by Broegger and Bohnsen (2015). First, managers look at a team's work flow based on four core work processes, as shown in Figure 2.4. The four work processes are (1) needs (2) idea, (3) plan, and (4) action. The TeamDiamond® tool works with the same preferences as described in MBTI. Here, the mental functions are applied, so each person has both a dominant function and a support function.

The key message of Figure 2.4 is that all teams need to clarify issues in all four process areas. The concern involves where teams spend most of their energy.

- ▶ **Need process:** Need process is about identifying the needs relevant for solutions being addressed in the S&OP process team.
- ▶ **Idea process:** The focus is on identifying which ideas can be generated based on the identified needs.
- ▶ **Planning process:** This process involves setting goals and plans to realize the ideas.
- ▶ **Implementation process:** This work process is about implementing the plans.

The four strategic core processes can be further divided into eight tactical work processes (Broegger & Bohnsen, 2015) as shown in the Diamond chain in Figure 2.5.



**”** *By analyzing the S&OP team using the TeamDiamond® tool, team members learn the roles actually covered in the team and which ones are missing.*

A team responsible for an S&OP process will encounter the various work processes in their work. Broegger & Bohnsen (2015) divided the work processes into categories:

#### **NEED PROCESS**

1. Need spotting (identifying both internal and external needs by asking stakeholders questions).
2. Value advocating (solving the right work tasks from a value and ethics point of view).

#### **IDEA GENERATION PROCESS**

3. Visioning (creating an overall vision and derived daily scenarios).
4. Promoting (conveying the vision and creating and developing ideas and opportunities).

#### **PLANNING PROCESS**

5. Analyzing (testing and analyzing ideas and pressure-testing their course in practice).
6. Organizing (organizing needed to bring ideas to life).

#### **IMPLEMENTATION PROCESS**

7. Operating (implementing ideas in accordance with the analysis and plans).
8. Maintaining (controlling outcomes).

Table 2.5 gives examples of the tactical work processes related to S&OP.

According to Broegger & Bohnsen (2015), the team roles in the TeamDiamond® tool can be summarized as follows:

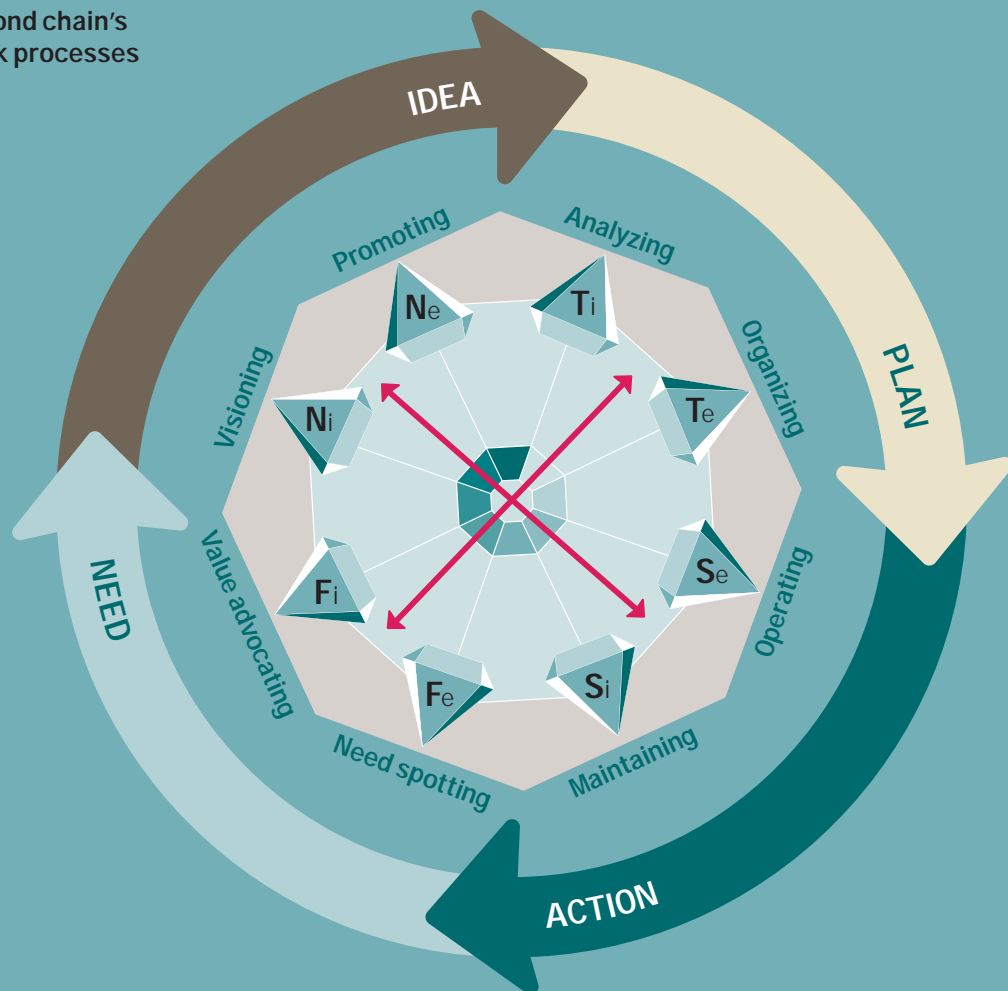
- Responsibility areas reflecting basic and defined tasks.
- Roles with associated responsibilities and specific sets of expectations.

In principle, all personality types can implement all the roles, but certain types will contribute more naturally to certain roles and responsibility areas because of their energy dimensions (extravert versus introvert) and thus have less interest in other roles. Thus, certain types are more naturally connected with certain roles. By analyzing the S&OP team using the TeamDiamond® tool, team members learn the roles actually covered in the team and which ones are missing. It is important to notice that when not all team roles are



fully covered by the team members' dominant functions, attempts should be made to cover as many of the eight work processes as possible using the team members' support functions. For example, a member of the executive board of one of the participating companies said the team analysis revealed that he was the only member of the team with visioning as his dominant function, while the others had functions in operating and maintaining. Among other reasons, this finding was used to explain why the team had difficulty focusing on the medium term of three to four months in meetings, quickly discussing instead solutions for short-term delivery problems. The team is now aware of this issue and has been more conscious about keeping the medium-term focus.

**Figure 2.5:**  
The Diamond chain's eight work processes



Source: Broegger & Bohnsen (2015, p. 16).

**Table 2.5: Examples of S&OP content in the tactical work processes in the TeamDiamond®**

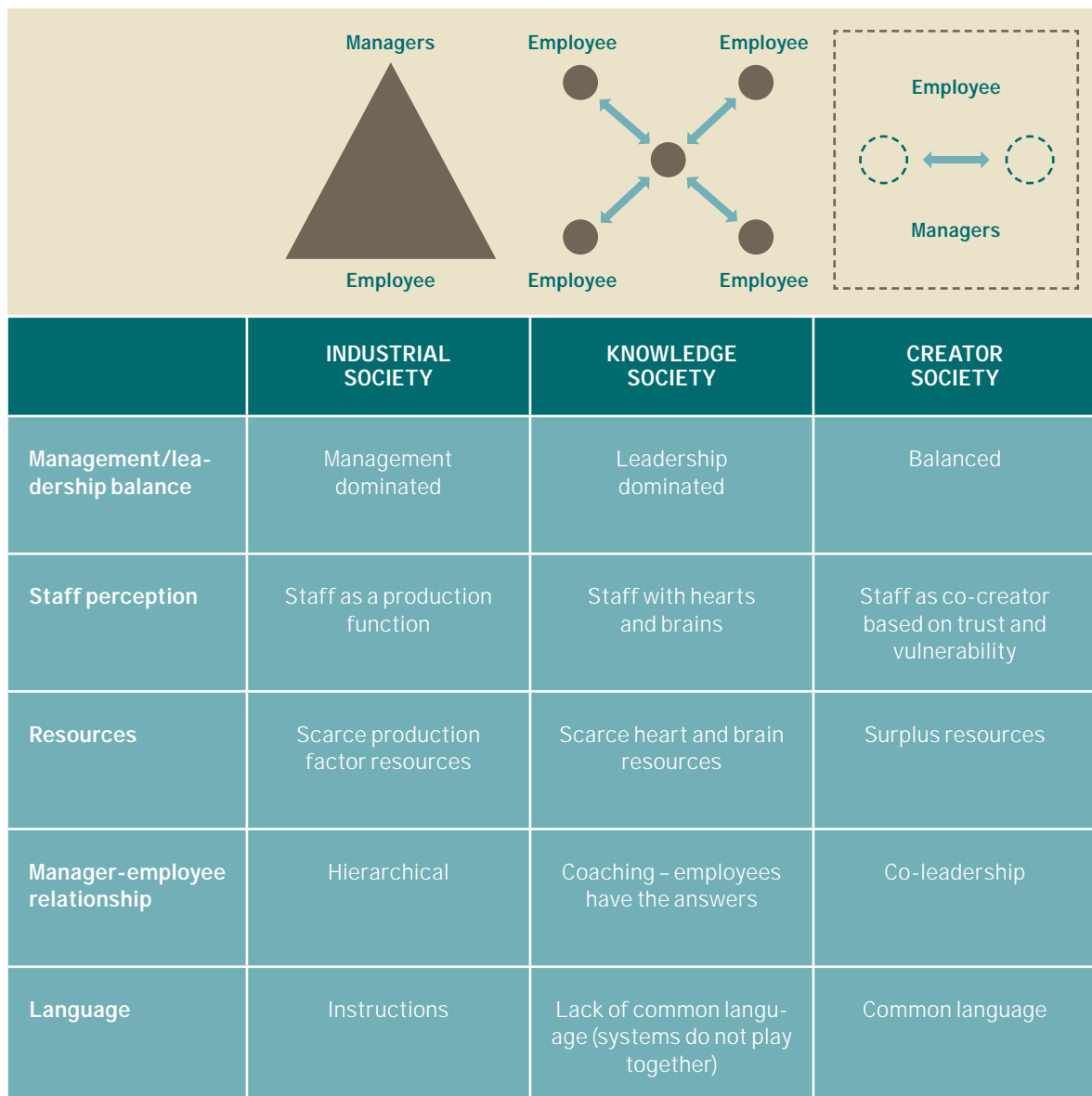
STRATEGIC CORE WORK PROCESS	TACTICAL WORK PROCESSES	FUNCTIONAL ORIENTATION	S&OP CONTENTS
NEED	Need spotting	Fe Extravert feeling	<ul style="list-style-type: none"> <li>• What are the customer's needs?</li> <li>• What does Sales need?</li> <li>• What does Operations need?</li> <li>• What does Product Development need?</li> <li>• What needs do the S&amp;OP team has?</li> </ul>
	Value advocating	Fi Introvert feeling	<ul style="list-style-type: none"> <li>• Do the S&amp;OP comply with the agreed KBIs?</li> <li>• Is the S&amp;OP work being prioritized?</li> <li>• How are conflicts of interested between functional silos and the whole being handled?</li> <li>• Can we vouch for the decisions/work conducted in the S&amp;OP process?</li> </ul>
IDEA	Visioning	Ni Introvert intuition	<ul style="list-style-type: none"> <li>• Does the S&amp;OP process operate with the right horizon?</li> <li>• Which S&amp;OP maturity level do we need to achieve?</li> <li>• How can our S&amp;OP be further developed (to an increased level of maturity?)</li> <li>• Where in the process do we need a special focus?</li> <li>• How do we ensure the S&amp;OP process is continuously adjusted (avoiding a "hamster wheel")?</li> </ul>
	Promoting	Ne Extravert intuition	<ul style="list-style-type: none"> <li>• How do we ensure that all S&amp;OP members can see and agree with the same development areas for the S&amp;OP process?</li> <li>• How do we continuously obtain needs for development of the S&amp;OP process?</li> <li>• How do we ensure that the organization as a whole gets insight into S&amp;OP?</li> </ul>
PLAN	Analyzing	Ti Introvert thinking	<ul style="list-style-type: none"> <li>• What does the development in customer orders/sales forecast means to us?</li> <li>• How can we adjust the capacity?</li> <li>• How can we enter markets faster?</li> <li>• How do we minimize obsolescence?</li> </ul>
	Organizing	Te Extravert thinking	<ul style="list-style-type: none"> <li>• Who is solving which tasks?</li> <li>• Do we need external resources to assist us?</li> <li>• How do we avoid bottlenecks?</li> <li>• How do we ensure clarity of roles and responsibilities in the S&amp;OP process?</li> </ul>
ACTION	Operating	Se Extravert sensing	<ul style="list-style-type: none"> <li>• How do we turn plans into concrete action?</li> <li>• Which deadlines should be met?</li> <li>• Are subprocesses running as planned?</li> <li>• Which data and decisions should be prioritized?</li> </ul>
	Maintaining	Si Introvert sensing	<ul style="list-style-type: none"> <li>• How is the S&amp;OP process performing?</li> <li>• How can the process be improved?</li> <li>• Is the data foundation sufficient?</li> </ul>

Source: Partly based on Broegger & Bohnsen (2015).

## 2.5 MANAGEMENT PARADIGMS

Today, S&OP processes are widely implemented among different companies. S&OP is relevant to all types of companies—for example, publicly and privately owned manufacturers, retailers, and service companies. However, the general management of S&OP may be different depending on which management paradigms companies operate. Management roles need to be tailored to the specific business and to the employees who participate in the process. Stentoft et al. (2019) proposed three management paradigms that may dominate or coexist in companies (Figure 2.6). The term *management paradigms* refer to the management structures prevailing in the company. A distinction is made between three management paradigms: (1) the industrial society, (2) the knowledge society, and (3) the creator society.

**Figure 2.6: Three management paradigms**



Source: Stentoft et al. (2019).

**”In a traditional S&OP project, you typically focus on what you have to do. In this project, there is also a focus on implementing the right behavior and doing what is to be done. It has been shown that the implementation of Key Behavioral Indicators in S&OP both challenges and develops managers. It begins to be concerned about people. People become the center—It’s all about people!**

Søren Eckhardt, Group Director, Mercuri Urval, Washington DC.

The purpose of introducing these three management paradigms is that decision makers involved in the introduction of an S&OP process should be aware that the process can lead to new management and leadership tasks in the wake of this implementation. The new process may increase awareness that different management paradigms require different solutions. In the three management paradigms, various interaction approaches can be applied between managers and subordinates.

In the industrial society, resources are scarce. Employees are perceived as a scarce production factor. The management tasks in the industrial society paradigm are concerned with giving instructions in a hierarchical relationship between managers and subordinates. In the knowledge society, in contrast, employees have deeper insight and leadership becomes more about coaching and setting the scene for the employees’ (the prima donnas) agendas.

Employees have “hearts and brains,” which are in short supply. The manager’s job is to coach employees, who themselves find solutions. In the creator society, there is equality between managers and employees. Resources are abundant. There is an understanding that tasks and resources are co-created. Here, the key challenge is to unleash employees’ potential through mutual trust.

## **2.6 KEY PERFORMANCE INDICATORS AND KEY BEHAVIORAL INDICATORS**

### **2.6.1 Key Performance Indicators**

In any business, managers must follow up on decisions taken. Likewise, managers assess company performance in various areas in order to monitor the direction of the company. In other words, managers require performance management systems that measure key dimensions, such as cost, delivery, customer service, inventory levels, quality, and so forth.

Measuring performance based on accurate, real-time data is essential for managers who must react in time to performance deviations (Bourne et al., 2002). A central element of any performance management system is Performance Indicators (PIs)—in particular, Key Performance Indicators (KPIs).

A company will typically have many PIs for monitoring and direction setting. The KPIs are the PIs considered particularly important in supporting the

achievement of strategic objectives. They have a direct impact on the company's strategic competitiveness. According to Stentoft & Mikkelsen (2019), some of the challenges associated with KPIs include:

- ▶ Lack of IT systems to support the measurements.
- ▶ Not enough time to complete the measurements.
- ▶ Challenges of obtaining data to measure the right things.
- ▶ Lack of allocation of the right resources to carry out the measurements.
- ▶ Challenges of ensuring the right data quality.
- ▶ Not measuring the right things.
- ▶ Not basing goals on real-time data.
- ▶ Challenges with organizational anchoring (disagreement on what to measure).
- ▶ Challenges in making concrete actions based on the measurements.
- ▶ Challenges in communicating the KPIs.
- ▶ Measuring too much.

Hammer (2007) identified “seven deadly sins” in relation to performance management (Table 2.6).

Each KPI should be defined and described to ensure the selected KPIs are both well conceived and well designed; in addition, the challenges associated with the KPIs should be identified and addressed. A tool containing a method for defining measurements appears at [www.salesandoperationsplanning.dk](http://www.salesandoperationsplanning.dk).

**Table 2.6: The “seven deadly sins” in performance management**

SIN	DESCRIPTION
Vanity	Vanity – avoid creating measurements that looks too good.
Provincialism	Short-sightedness – avoid suboptimization; measurements need to be aligned across the organization.
Narcissism	Narcissistic – avoid creating measurements only from one's own perspective.
Laizness	Laziness – avoid superciliousness; an attitude of “we know what's important”.
Pettiness	Pettiness – avoid getting into too much detail; is it relevant?
Inanity	Foolishness – avoid creating measurements that impair other areas.
Frivolity	Frivolity – avoid taking frivolous measures; find causes of problems instead of excuses.

Source: Based on Hammer (2007).







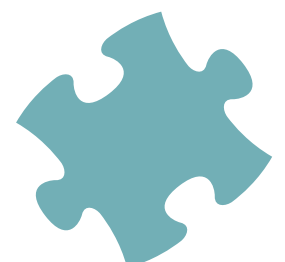
**”** *KBIs can be defined both in the relationship between the manager and a subordinate and among colleagues for stimulating coherence between what people say and what people do.*

### 2.6.2 Key Behavioral Indicators

In the same way managers work with KPIs, managers can work with Key Behavioral Indicators (KBIs) as a means to focus on the specific behaviors needed to advance the S&OP process (Stentoft et al., 2018b). KBIs are not only relevant for the S&OP process but are also valid in all aspects of the businesses in which people interact. Thus, KBIs direct attention toward good and right behaviors, supported by the values upon which the company was built. The KBIs are the ones participants should visualize and work toward, both as individuals and as a team.

KBIs may be more difficult to measure, compared to KPIs, because of the subjectivity connected with KBIs. Again, managers must be careful not to have too many KBIs. KBIs can be defined both in the relationship between the manager and a subordinate as well as among colleagues for stimulating coherence between what people say and what people do. It is essential that KBIs are linked with the MBTI personality assessments and the analysis based on the TeamDiamond® tool to ensure the correct KBIs are defined. If the team, for example, comprises a majority of visionary types who think long-term, it may be necessary to measure behavior indicators focused on structured meetings and specific action points that facilitate follow-up. KBIs must be discussed regularly and changed if a need emerges to focus on other behavioral elements. Examples of KBIs are as follows:

- ▶ People communicate in a proper tone.
- ▶ People attend scheduled meetings.
- ▶ People are prepared for the meetings.
- ▶ People are mentally present during the meetings.
- ▶ People work from what was agreed in the S&OP process (no decisions outside the process).
- ▶ People work with each other well (giving constructive feedback to colleagues in the process).
- ▶ People report unwanted behavior.
- ▶ People listen to colleagues and do not interrupt.





3

The approach  
of the project

This section describes the main phases of the overall project by The Danish Industry Foundation. The projects were divided into three phases: (1) a best practice phase, (2) a phase with S&OP implementations in ten companies, and (3) a quantitative questionnaire-survey analyzing possible reasons why companies have not implemented S&OP.

### 3.1 BEST PRACTICE PHASE

This research project on improving competitiveness through implementation of S&OP began with an examination of S&OP practices in five companies located in Denmark that implemented S&OP. The five companies were TOMS Group, PANDORA, Arla Foods, Lantmännen Unibake, and JBS. Personal interviews were conducted with those responsible for the S&OP process and with representatives of both Sales and Supply Chain/Operations. Based on the interviews, short case studies were developed. The case studies can be found on the project website ([www.salesandoperationsplanning.dk](http://www.salesandoperationsplanning.dk)). In addition, videos of some of the participants are available showing a more practice-oriented form of communication. The key learning points from the five case studies are summarized as follows:

- Top managers' support is crucial.
- Create a clear vision and understanding of S&OP across the organization (common mindset).
- Joint KPIs should be prepared for the S&OP process participants.
- Choose the time horizon for the S&OP process.
- Conduct continuous stakeholder analyses.
- Assign dedicated resources to the S&OP process.
- Remember, it is about people, not systems.
- No two S&OP implementations are alike.
- It is a learning journey; it won't be perfect the first time.
- No cancellations to S&OP meetings are allowed.

### 3.2 ANALYSIS AND IMPLEMENTATION

This phase focused on S&OP implementation in ten Danish companies. The participating companies were Mac Baren Tobacco Company, Bramming Plast-Industry, SPORT 24 BUSINESS, SGM Light, A/S Bryggeriet Vestfyen, Nissens Automotive, VIKING Life-Saving Equipment, Qubiqa, Jyden Bur, and Dinex. The case studies comprised a mix of small and medium enterprises (SMEs) and large enterprises. This mix was chosen to have a basis of comparison between the large enterprises and the SMEs. We received S&OP project reports from eight of the ten companies. Dinex stopped their participation



after the AS-IS-phase because key company resources for the project were withdrawn. At Jyden Bur, managers were not able to allocate the required resources to the final change studies; therefore, the researchers terminated the university involvement in the project. In addition, the S&OP project at Qubiq was stopped after the pilot phase because of a change in the company's top management. However, Qubiq leaders agreed to publish the case study because it provided important learning points. This was very much appreciated. Hence, seven of the original ten companies moved through all the project phases; in fact, all seven have S&OP processes in operation today. The overall S&OP implementation process is divided into five main phases, as illustrated in Figure 3.1. Note that throughout the five phases, managers should be actively involved.

### 3.2.1 Recognition

The first S&OP project phase is about obtaining top managers' support for the project. Failed implementations typically occur because of lack of top management support. In addition, projects fail because of too much focus on operations at the expense of development as well as because of unclear targets. Therefore, this first phase is designed to enable the company's top managers to be sufficiently "dressed" to understand S&OP and to be able to accept or reject an S&OP project on an informed basis. The objective of this phase is to provide clear answers about the nature of S&OP and show why it is relevant for the company. In addition, the phase must ensure both resource and organizational readiness. Does the company have the right people to participate in the project? Do the participants have adequate time resources, undisturbed by daily operations? Does the company have the financial means to invest in the process, for example, hiring external consultants? How many projects are going on now? It might be useful at this point to seek inspiration for a portfolio overview of projects through a continuous transformation framework (see Stentoft et al., 2016). In addition, it is important to conduct a stakeholder analysis and then organize one or more S&OP information meetings of a few hours duration with the stakeholders to create a common language and understanding regarding why the company should start an S&OP project. An interesting approach in this process is to consider key decision makers' personality types according to the MBTI typology. For example, some employees have MBTI profiles with ST mental functions;

**Figure 3.1: The S&OP project in five phases**



**Failed implementations typically occur because of lack of top management support. In addition, projects fail because of too much focus on operations at the expense of development as well as because of unclear targets.**

these employees will typically focus on facts and specific areas in which performance should be improved. Some employees, on the other hand, have profiles with NF mental functions; these employees will be more concerned with the potential of the company. An awareness of personality types can help participants clarify the need for S&OP in a language that decision makers understand and accept. Further, it is important to underline the idea that S&OP is an enterprise project and not a Sales or Operations project. The recognition phase must end with a decision on whether to spend additional resources in the next phase to provide a grounded basis for an S&OP startup. Finally, decision makers could discuss this phase of recognition based on the different types of management paradigms found in the company.

### 3.2.2 Analysis and diagnosis

The second phase of the S&OP project concerns creating a common understanding of how sales and supply chain plans currently function. Some of the companies had operated “lite” versions of S&OP (e.g., Nissens Automotive and Bramming Plast-Industry) without implementing formal S&OP processes. The other companies had not previously worked with S&OP, so their tasks concerned creating an overview of the process flow, from the sales order, initiation of purchasing and production orders, and production of goods to delivery to customers. In this phase, a brown-paper analysis tool was used (see also Arlbjørn, 2011) attended by all relevant people from planning, product development, purchasing, and production. The brown-paper analysis process helps participants identify challenges in the current setup and provides a basis for a broad cross-functional understanding of the need to initiate an S&OP project. Another important part of this phase was to identify a performance baseline. What specific objectives must the project meet? Here managers applied both *outside in* and *inside out* perspectives. The first perspective involves determining what customers and markets perceive about the company’s current performance. This knowledge can especially motivate the sales staff to contribute actively in the S&OP process. The second perspective involves learning through self-awareness how the company acknowledges a need for performance improvements or a need to fulfill unexploited potentials.

Some companies already use the right performance goals (for example, measures regarding delivery services and inventory turnovers), while others do not use such performance measures and thus must first establish them. The purpose of the baseline is to create the basis for being able to discern whether and how S&OP has contributed to performance improvement. In this context, it is important not to initiate too many measurements but to

**”The process should identify challenges in the current setup and provide a basis for a broad cross-functional understanding of the need to initiate an S&OP project.**

concentrate on, for example, the five key measures, while remembering that qualitative measurements such as the climate of cooperation across silos also count. Finally, it is important at this stage to determine the scope of the S&OP project. Managers must decide whether to focus on a pilot project in one part of the company (e.g., a business unit) or implement S&OP all at once (the “big bang” approach). The answer largely depends on the specific situation (size, complexity, business dynamics, diversification, etc.). After this phase was implemented in the case-study companies, a status meeting was held at University of Southern Denmark in Kolding in May 2018, attended by representatives from the participating companies. The main messages of this status meeting are summarized as follows:

- It is important to have the KPI objectives decided before S&OP launch.
- Commitment from top management is paramount.
- Participants may find it challenging to work with the S&OP project simultaneously with their busy daily work lives.
- S&OP is a company project, not a Sales nor a Supply Chain project.
- Quick recognition occurs in the brown-paper sessions, in an “exchange of unknown secrets”.
- It is important to anchor the process organizationally.
- The composition of the team is important for success.
- Loops/backflows may be necessary.
- The KBIs are important but difficult to start.
- After the brown-paper session, an assessment of current practice according an S&OP maturity model could be conducted to help participants set concrete targets.

Based on the status meeting held at the university and follow-up meetings in the companies, an additional recommendation emerged: Leaders should evaluate whether the right foundation is in place for launching an S&OP project. As mentioned earlier, the general thesis is that S&OP is 10% about technique and 90% about people. However, lessons learned from Mac Baren Tobacco Company and SPORT 24 BUSINESS, for example, were that leaders should first ensure that the 10% technique is actually in place before focusing on the other 90%—the people. At SPORT 24 BUSINESS, for example, it became evident that a foundation project was necessary before the S&OP project could be initiated. The foundation project took place in order to ensure that people agreed on how, among other things, the order flow should occur in the company and how the systems should operate. At Mac Baren



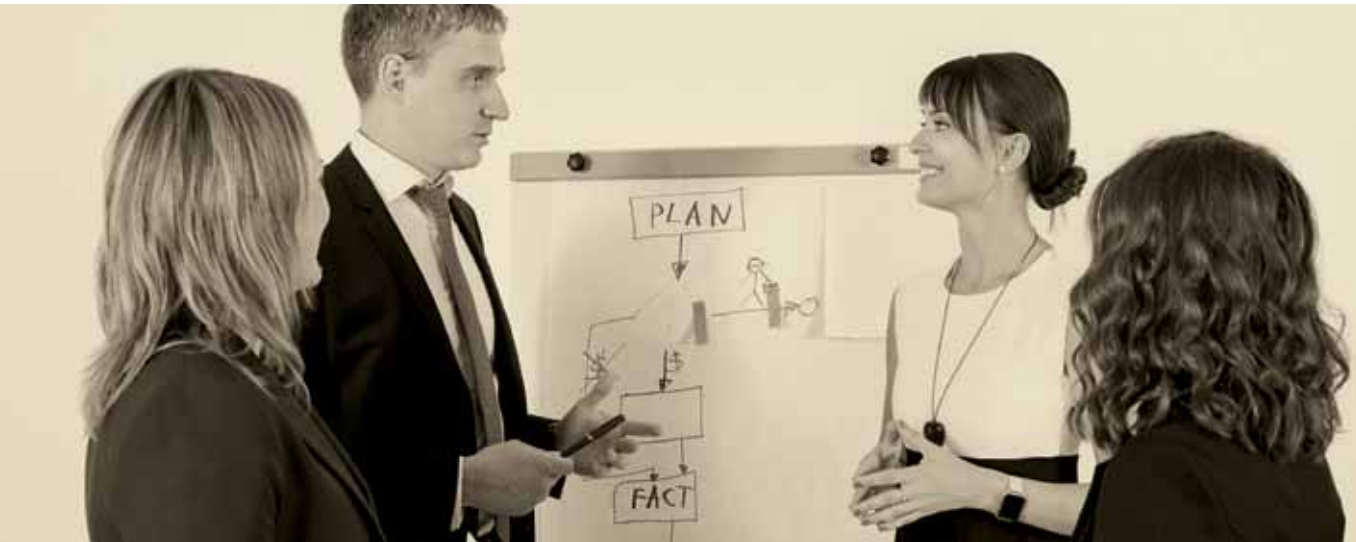
Tobacco Company, it took about half a year to ensure a valid and reliable data foundation for defining trusted KPIs in the organization. At this point, participants can seek inspiration in the “system and report mapping” tools and “the S&OP foundation” associated with this phase. Further, the case studies of the participating companies show the importance at this stage of conducting a competence analysis of the workflow and working with personality profile analyses. This phase should lead to a business case supporting a final decision based on the tools proposed for this phase. The process can lead to a go decision—to start the next phase of defining a new S&OP process, or the decision might be to postpone the decision in order to undertake more work to inform a final decision. Of course, the process can also lead to a no go decision because of, for example, poor timing, lack of resources, or too much internal political instability.



”Lessons learned from, for example, Mac Baren Tobacco Company and SPORT 24 BUSINESS, were that leaders should first ensure that the 10% technique is actually in place before focusing on the other 90%—the people.



” *On reflection, it is interesting that companies often seemed more willing to accept spending DKK 500,000 annually on rush transport stemming from poor planning than they were to spend DKK 100,000 on their most important resources—the employees!*



### 3.2.3 Defining the S&OP process

This phase focuses on the 10% (the technical part) and the 90% (the human part). The technical part is about defining the specific S&OP process consisting of the five-step model described earlier. Managers should avoid implementing a “big bang,” in which projects are launched in all business areas at once. Managers overseeing multiple business areas can benefit from choosing one as a pilot. In this phase, managers should define how the project will be organized. Who is responsible for input and output in each of the five steps? Which people participate in the subprocesses? What data should be used, and how should data be delivered to the next step? At this stage, it is important to clarify the specific work tasks and associated resources. Studies in The Danish Supply Chain Panel showed that one of the major challenges of working with supply chain issues is constraints stemming from participants focusing on operating tasks in their busy work environments rather than focusing on development tasks (Stentoft, 2017a). Therefore, it is important to make the workload visible so that managers can release internal resources, acquire external resources, or both, to elevate the task.

In parallel with a focus on the technical part, it is also important to work with the human part. The overall research project used the MBTI personality assessment as a practical tool to provide participants with a deeper understanding of their own personalities as well as of the composition of the

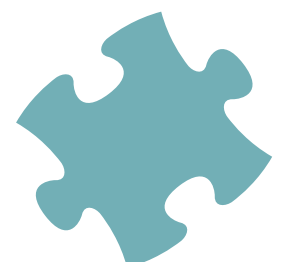


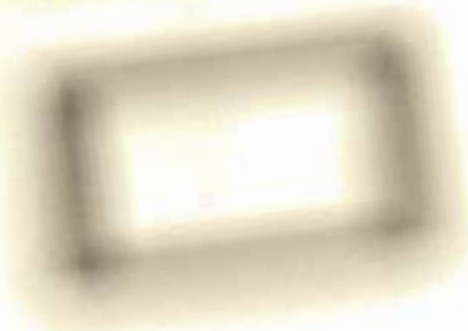
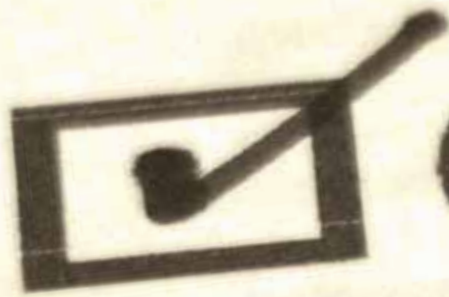
team as a whole. All project participants received an e-mail from Mercuri Urval with a link to an online questionnaire. Depending on how much the companies wanted to invest in their employees, employees received personal feedback from a Mercuri Urval consultant about their results (this was the practice at Mac Baren Tobacco Company) or they received a group reading. Two different personality assessment models were available, one large and one small. Based on observations from the sidelines on this part of the project, the large model seemed to have affected participants most. However, the large model was also more expensive. On reflection, it is interesting that companies often seemed more willing to accept spending DKK 500,000 annually on rush transport stemming from poor planning than they were to spend DKK 100,000 on their most important resources—their employees!


Mercuri Urval consultants conducted personality analyses workshops focusing on participants' behavior in the new S&OP process. Managers sought to learn the personality types in the S&OP team. Compared to the results of the TeamDiamond® tool, what were the imbalances? How should managers compensate for missing roles on the team? Which KBIs should managers emphasize? What should managers begin to do? At the least, what should they stop doing? How can participants work well with others on the S&OP team? Finally, exercises involving practicing different listening levels were eye opening for many. Perhaps there is a reason why humans are equipped with two ears and one mouth—maybe humans should listen twice as much as they speak! These exercises increased awareness of the participants' personalities, which in turn fostered greater understanding of reaction patterns. In particular, participants gained respect for the idea that people are different and thus should be approached differently.

In general, the behavioral focus played an important role in the S&OP implementations. However, this applied research also raises questions about the long-term sustainability of MBTI. If awareness of MBTI factors is not maintained in the form of continuous testing of S&OP participants as they join and leave the team, this practice of personality assessment may slowly ebb away. In other words, MBTI testing must be maintained. The focus must be on determining individuals' profiles and learning the team composition using the Team Diamond® tool. Managers should understand that the personality focus returns more than just a short-term positive effect based on its novelty, such as using games to encourage applying theoretical points in practice (Arnbjørn et al., 2006) or attending a three-day 5S course about learning how to keep order. MBTI testing is a fundamental management task designed to ensure that the S&OP pace is maintained through continuous follow-up and focus on KBIs.

**”** *Perhaps there is a reason why humans are equipped with two ears and one mouth—maybe humans should listen twice as much as they speak!*





 *In several of the case-study companies, low meeting efficiency was problematized.*

#### 3.2.4 Pilot

The fourth phase concerns conducting a pilot implementation of the new S&OP process. S&OP teams usually do not hit the mark on the first attempt. The S&OP is all about *learning by doing*. S&OP researchers have proposed incorporating a three-month pilot implementation (Wallace & Stahl, 2008, p. 72), which could then be scaled to other business areas if managers decide to start on a small scale. At this stage, activities planned in the previous phase might have to be adjusted because in the new process, participants now encounter reality. Data might be incomplete or incorrect. Some data might be too specific and other data too general. In addition, managers may need to adjust the KBIs and adapt to new ways of conducting meetings. In several of the case-study companies, low meeting efficiency was problematized. Therefore, structured meeting agendas are an important tool. During the meetings, different tasks can be assigned to different people (e.g., leading discussions, monitoring time consumption according to the meeting agenda, and taking meeting minutes). An executive from one of the participating companies stated that for the first time after launching the S&OP process, he had attended a company meeting that ended seven minutes early. Further, the focus during the whole meeting had been on discussing the specific and relevant points on the meeting agenda.

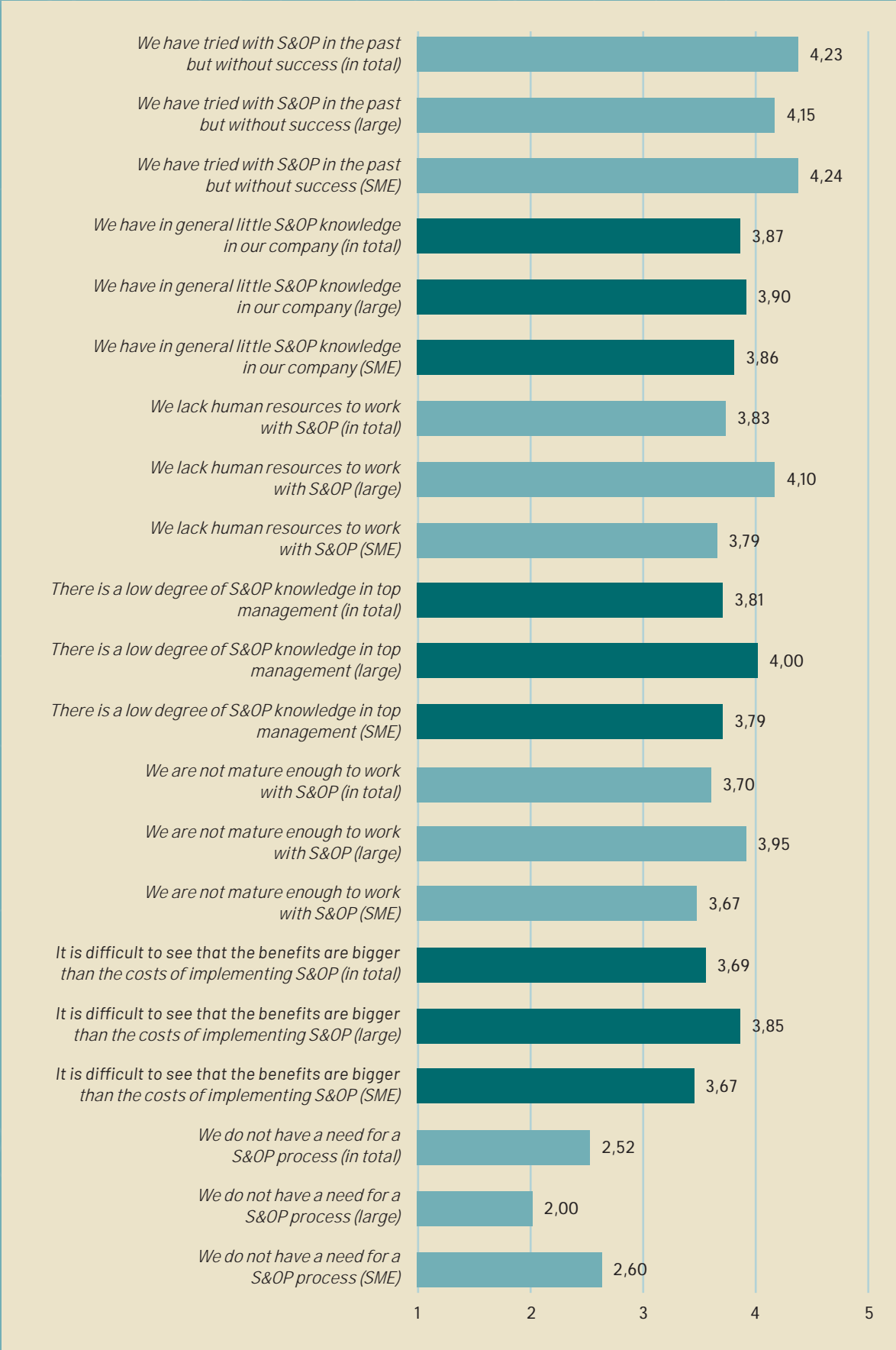
When the project evolves to the pilot phase, managers may benefit from communicating the new process to the remaining organization. As one of the participants in the project said, “It can quickly be perceived as a closed party in the S&OP team”. Finally, managers could implement change studies through the pilot phase in terms of short questionnaires. The data could provide valuable insight into whether some areas need special attention in order to implement the process properly.

#### 3.2.5 Operation

When participants hand off the pilot project for operation, it is important to refer to S&OP as a process and not continue to mention it as a project. At this point, S&OP becomes part of the daily way of working. It is also important to remember that the S&OP process must be optimized continuously. The business environment is dynamic; thus, the process should be adjusted continually to take into account changes, for example, in customer and product mixes. Continuous improvement is vitally important. In addition, after some time in operation, for example, after six months, the effectiveness of both KPIs and KBIs should be measured.



**Figure 3.2: Reasons for not having implemented S&OP**



### 3.3 QUANTITATIVE STUDIES

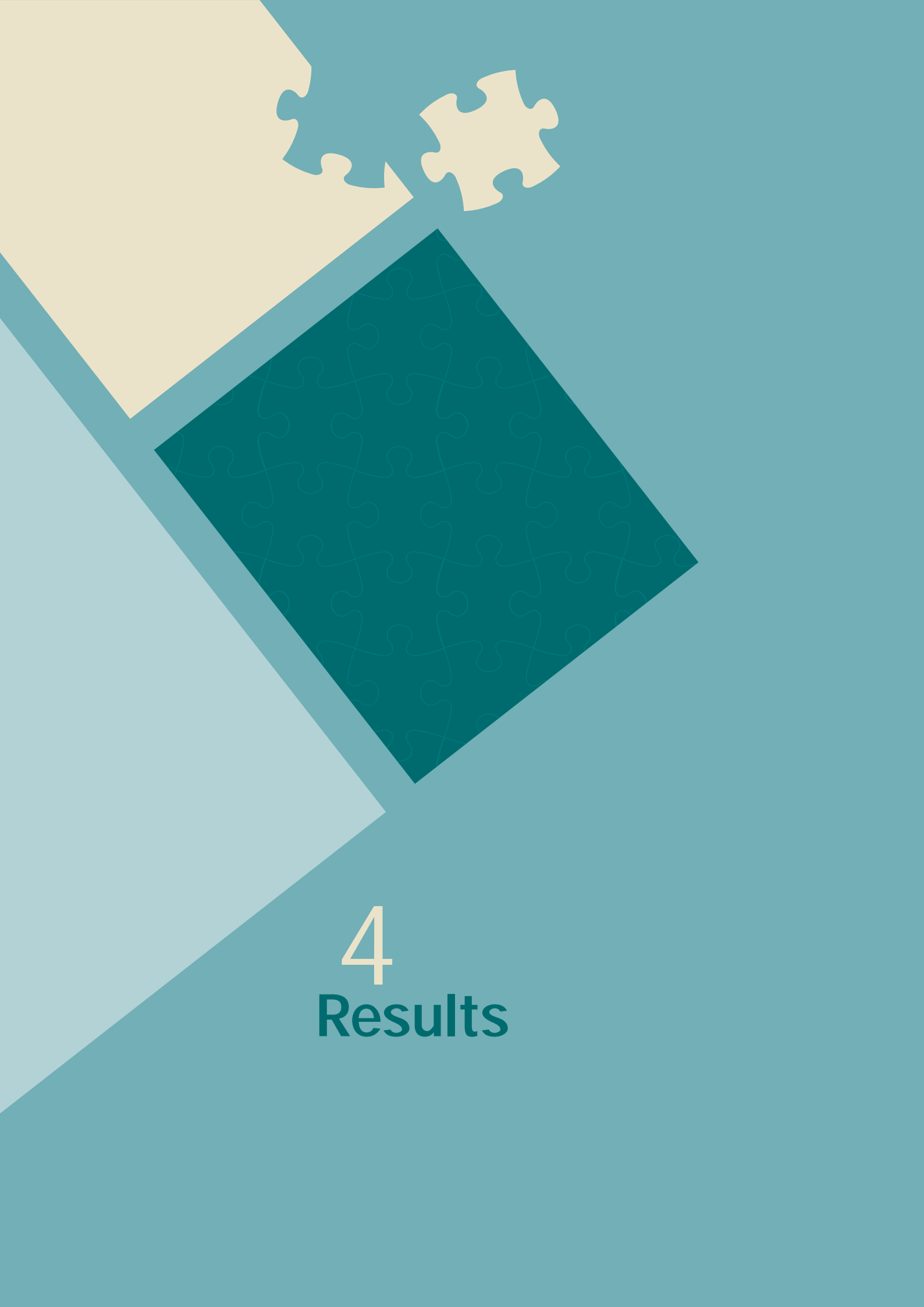
In autumn of 2018, two questionnaire-surveys were conducted among 1,000 Danish manufacturing companies to determine if they had implemented S&OP. Data collection among the companies that have implemented S&OP is still ongoing; thus, the present report contains only survey data from the companies that to date have not applied S&OP.

With regard to companies that have not applied S&OP, 240 companies agreed to participate. From this sample, 166 complete and useful responses were received (146 from SMEs and 20 from large companies). The respondents were asked to respond to several statements about why S&OP had not been implemented in their companies. Each statement was assessed on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (very much agree). As shown in Figure 3.2, the most frequently obtained reason why S&OP had not been implemented was “We have tried with S&OP in the past but without success”. This reason obtained a mean score of 4.24 with a standard deviation of 0.74. No big difference was found between SMEs and large companies. It was surprising that so many respondents indicated that past initiatives to implement S&OP had taken place but failed. Perhaps this outcome supports the relevance of this project and present report. However, major challenges are associated with the implementation of S&OP. The second highest average score was that there was generally too little knowledge about S&OP (total average score, 3.87, standard deviation, 0.65). Some respondents noted their companies lacked human resources (average 3.83, standard deviation, 0.63). It was surprising that the large companies scored especially high, with an average value of 4.10. In general, large companies have more resources than do SMEs in terms of both financial resources and specialized staff. Other reasons with significant averages were that S&OP was not implemented because of a lack of knowledge of S&OP among top managers, a lack of maturity of S&OP, and a lack of recognition of the need for S&OP. Again, it was interesting to see that especially large companies achieved higher average values. An average of 3.10 was achieved on the statement concerning whether respondents considered S&OP relevant to their businesses. In other words, S&OP had some relevance; however, the measure showed a high standard deviation of 1.04. The large companies perceived it more relevant, with an average score of 3.55, compared to 3.04 for the SMEs.

Although the differences in answers between the large companies and the SMEs were not large, it was interesting that to a higher degree, large companies perceived a need for S&OP. This finding may have been because of large companies' inherently complex processes and lack of process overview. However, perhaps the scores came from their greater awareness of lack of insight, lack of support from senior management for an S&OP process, and lack of maturity, as well as their difficulty accepting that the benefits could exceed the costs of driving S&OP into practice.

” *It was surprising that so many respondents indicated that past initiatives to implement S&OP had taken place but failed.*





# 4 Results



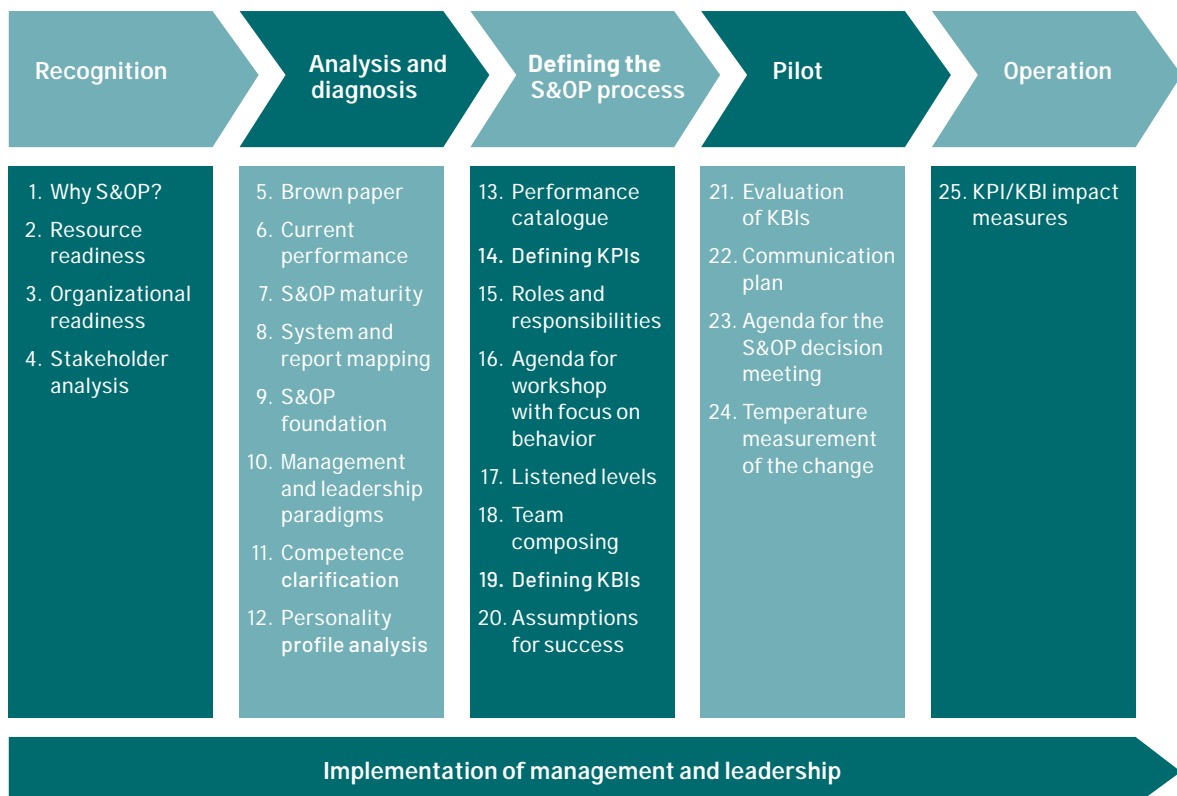
The research project focused on the development and implementation of S&OP in manufacturing companies. The study delivered several results, explained in the following section.

#### 4.1. The development and implementation process of S&OP

In this project, a five-phase development model and implementation process was developed for launching an S&OP project, consisting of (1) recognition, (2) analysis and diagnosis, (3) definition of S&OP process, (4) pilot, and (5) operation. The procedure appears in Figure 4.1.

For the five main phases, 25 tools were developed (see [www.salesandoperationsplanning.dk](http://www.salesandoperationsplanning.dk)). The tools emerged from theory as well as from the experience gained in the research project. Other tools could have been chosen for development; however, the 25 tools developed were relevant for SMEs in particular. Similarly, it was important in the project that managers find these tools relatively easy to access, of low complexity, and not too time-consuming to use. The tools are intended as a starting point to begin an S&OP project. In addition, the tools highlight some key points and challenges in the process. The 25 developed tools should inspire evaluations of a company's current state as well as further reflection. Each tool contains an introduction designed to answer questions regarding why, who, when, and, if necessary, how to use the tool.

**Figure 4.1: Five phases and 25 tools**



**”***In several cases, it was observed that the participants in the process needed to take more responsibility and exercise leadership in new ways.*

#### **4.1.1 Recognition phase**

In the recognition phase, four tools were developed to help managers determine whether a purpose was identified for the implementation of an S&OP process, as well as the degree to which the company is ready to initiate an S&OP project. The readiness assessment includes organizational and resource readiness to launch the S&OP project. In addition, a stakeholder analysis tool is included. After the recognition phase, company managers should be able to assess whether moving forward to the next phase makes sense.

#### **4.1.2 Analysis and diagnosis**

This phase is about creating a common overview of how the company currently conducts its work. For the analysis and diagnostics phase, eight tools were developed for creating an overview of the current situation (AS-IS). The tools relate to processes as well as to whether and how the company currently measures performance and on what parameters. In addition, the focus is on mapping the currently existing underlying systems and reporting structures and determining whether they can support data collection or if challenges need to be addressed. On the human side, some tools are designed to articulate and reflect on the management paradigms prevailing in the company as well as for conducting competence analyses. In continuation of this research project's main thesis that S&OP is 10% about technique and 90% about people, a tool was designed to introduce personality analysis. It





was beyond the scope of this project to provide more than an introduction to this tool; the tool can be overly comprehensive. The analysis and diagnostic phase can help managers decide whether to start the next phase of the S&OP process. Further, it may reveal the need for more preparation before launch. Finally, the phase could end in a no go decision to launch S&OP because of, for example, poor timing or lack of resources.

#### **4.1.3 Defining the S&OP process**

This phase is about defining how the future (TO-BE) S&OP process should operate in the company. Because companies are different, the S&OP process will also be different, although some common elements exist. To support this phase, eight tools were developed for inspiration. The tools focus on the technique-oriented part, such as KPI identification and process, as well as on the human side of the S&OP process, including roles and responsibilities, team composition based on MBTI, and KBIs. It is especially important at this stage that managers visibly communicate the overall novelty of the project through a strong focus on the human side of the new S&OP process. Here, workshops with a focus on behavior play a central role.


#### **4.1.4 Pilot**

The pilot phase is about the pilot implementation of the S&OP process. Four tools were developed for this phase. In the pilot phase, managers learn they might need to adjust some areas before implementing S&OP in the entire organization. Therefore, tools are provided that show how to measure change and determine if the desired progress is occurring. In addition, tools are included that can inspire a communication plan, a meeting agenda, and an evaluation of KBIs.

#### **4.1.5 Operation**

The final stage is the operation phase, for which one tool was created. The tool is intended as a reminder to participants to follow up, monitor the process, and ensure corrective actions if performance is not at the expected or desired level. For example, after six months, participants should conduct performance effect measurements for both KPIs and KBIs. Such a data-gathering activity should be carried out with fixed frequency depending on the company and the actual S&OP project momentum.

In addition to the process and tools developed through the research project, the process of studying the companies has clarified the importance of continuously gaining implementation support from members of management and leadership. The different phases with their respective activities could

 *In some companies, we observed strong support from top managers to focus on behaviors; financial, time, and management resources were invested in the work.*

produce new insights that require action. In several cases, it was observed that the participants in the process needed to take more responsibility and exercise leadership in new ways. Previously, participants were used to identifying challenges but asking top managers for solutions. Beyond simply establishing new facts (e.g., noting that supply capacity must be improved), participants now suggest how to resolve problems—and then act. In several of the case-study companies, such new tasks have become visible, requiring leadership not only from senior managers but also from middle managers. Change inspires new leadership roles and behaviors. However, new behaviors do not happen over a weekend. It takes time and continuous follow-up, which requires specific attention. Observations and reflections on the S&OP process are summarized as follows:

- Top manager commitment is crucial.
- It is important to invite members of Sales early (showing them benefits of joining the project).
- Success requires employee engagement—if employees are unwilling to take on tasks and challenges, and if they do not want to listen and understand each other’s challenges, reaching goals will be difficult.
- S&OP is a company project, not a Sales or SCM project.
- Thorough preparation is paramount.
- Thorough training and education about S&OP and about communication in S&OP are important for internal and external stakeholders.
- The 10% technology needs to be in place before managers can focus on the 90% people.
- Appointing an S&OP manager makes a difference (a dedicated resource).
- Vulnerability emerges when key resources in the S&OP process leave.
- External consulting assistance makes a positive difference.
- S&OP provides a common language that helps people tear down functional silos.
- S&OP focuses on fact-based decisions and contributes to improved decision-making competence.
- Persistence is crucial; launching an S&OP project is a long process that has only just begun.

#### **4.2 Behavior**

An essential part of the project was a focus on the human aspect of the S&OP process. Companies achieved this focus through personality analyses based on MBTI and team compositions using the TeamDiamond® tool. In addition, KBIs were introduced as a new concept in an S&OP context. We recommend a continued focus on implementation from management and leadership.

Although all participants acknowledged the human side was important for successful S&OP implementation, different approaches working with behavior and behavioral changes occurred in the case-study companies. This

finding is quite natural—organizations are unique entities with different challenges and resources. In some companies, we observed strong support from top managers to focus on behaviors; financial, time, and management resources were invested in the work. The company that seemed to achieve most in terms of this element was Mac Baren Tobacco Company. From the beginning, the executive board adopted the premise that a focus on behavior was an important source of unleashing the employees' unfulfilled potentials, which could be developed to improve the company's KPIs. Other companies recognized the importance of behavior but needed more time to gain a foothold, for example, through hiring external assistance. Finally, some companies could see the importance of behavior but senior managers were reluctant to accept the S&OP approach. This reluctance spread quickly in the organization, limiting conditions for success.

Companies and employees may feel these behavioral elements move too close to their comfort zones; thus, negative statements were heard: "This is too much guitar with pearls in your hair!" Observations and reflections on behavior are summarized as follows:

- ▶ Employees in different functions have different perceptions of reality and thus differ in their opinions of what is important.
- ▶ Openness to other approaches and understandings of reality is central—employees must remember to work well with each other.
- ▶ The ability to listen is crucial for the S&OP process to have the desired effect.
- ▶ KBIs make a difference and create a basis for a successful process, but they can be challenging to establish.
- ▶ MBTI language and KBIs must be maintained on a continuous basis to ensure long-term sustainability so that the S&OP project does not appear to be a short-term management stunt.
- ▶ Teams are different, and employees must be aware of how differences can affect the process.
- ▶ Everyone involved must learn the common language, and when replacing the S&OP team, new team members must be trained in the terminology.

**”***In MBTI, each person is assigned four letters, indicating the four dominant personality traits. In this case, there is a clear pattern among all the participating companies, indicating that the type **ESTJ** dominates the field of participants and that participants seems to quite homogeneous measured by an MBTI scale. ESTJ's are high performance-driven people who do not attach great importance to relational work.*

Lars Sørensen, Chief Consultant, Mercuri Urval, quoted in Breil-Hansen (2019, s. 8).

Management consultants from Mercuri Urval were responsible for the MBTI analyses and feedback. Their observations and reflections from the work of the case-study companies appear in Table 4.1.

### 4.3 SMEs

This research project focused especially on learning how SMEs implement S&OP projects. We consciously chose case-study companies in the SME segment (fewer than 250 employees and less than 50 million Euros in sales turnover). Among the eight companies included in the final report were five SMEs: Mac Baren Tobacco Company, A/S Bryggeriet Vestfyen, SPORT 24 BUSINESS, SGM Light, and Qubiq. Based on studies at these companies, it can be concluded that S&OP is highly relevant for SMEs. However, SMEs are characterized by a tendency to work on multiple simultaneous tasks; S&OP project participants manage busy work environments. The implementation and the process must be adapted to this demand. Top managers should pay extra attention to their sponsorship role in the project and articulate the importance of S&OP. This approach will help S&OP avoid getting lost among other daily operations. Further, managers should define participants' roles and responsibilities from the beginning of the process so participants understand their roles. Observations and reflections on the SME perspective are summarized as follows:

- SMEs are dominated by operations that put business-oriented development activities under pressure in a busy work environment. With attention, development activities can be achieved by allocating entire days so employees' S&OP tasks do not conflict with operations.
- Compared with the large participating companies, the S&OP decision-making processes in the SMEs seemed faster and more transparent; neither did they seem burdened by much internal politics.
- The resource side can be a challenge for SMEs. Companies may consider the benefits from acquiring external consulting assistance to foster speed and quality in the new S&OP process.
- It is important to appoint a responsible employee (an enthusiast) to lead the S&OP process.
- Managers should not only be committed but also be involved to ensure progress. This is in fact a dilemma; on the one hand, managers should be deeply involved to ensure support and progress. On the other hand, managers should leave room for the employees so they can be empowered to make decisions in the new S&OP process and not have to ask managers constantly for help.



”*Based on studies in these companies, it can be concluded that S&OP is highly relevant for SMEs.*

**Table 4.1: Observations and reflections from Mercuri Urval**

- High concentration was found of certain personality types (MBTI).
- Continued great learning occurred based on a relative placement in relation to the four dimensions of MBTI.
- Employees showed great interest in and commitment to learning about their own and others' types.
- Employees showed great recognition of the significance of type insight for collaboration and communication.
- Types with a "human" focus were under-represented – "values and relationships".
- Participants showed a lack of recognition of a need for continuous processing of a focus on people.
- Case-focused meetings had high priority.
- Behavior-focused meetings had high demand but received little priority from management in some companies.
- KBIs were difficult to bring from the abstract level to the very concrete level.
- Obtaining an effect of the KBIs required they become concrete, measurable, and monitored.
- Active listening was eye opening, with a catalyst effect on behavior.
- Mostly massive and positive feedback was received from the workshops.
- The development of collaboration and communication is "simple, but not easy".

*Source: Mercuri Urval.*



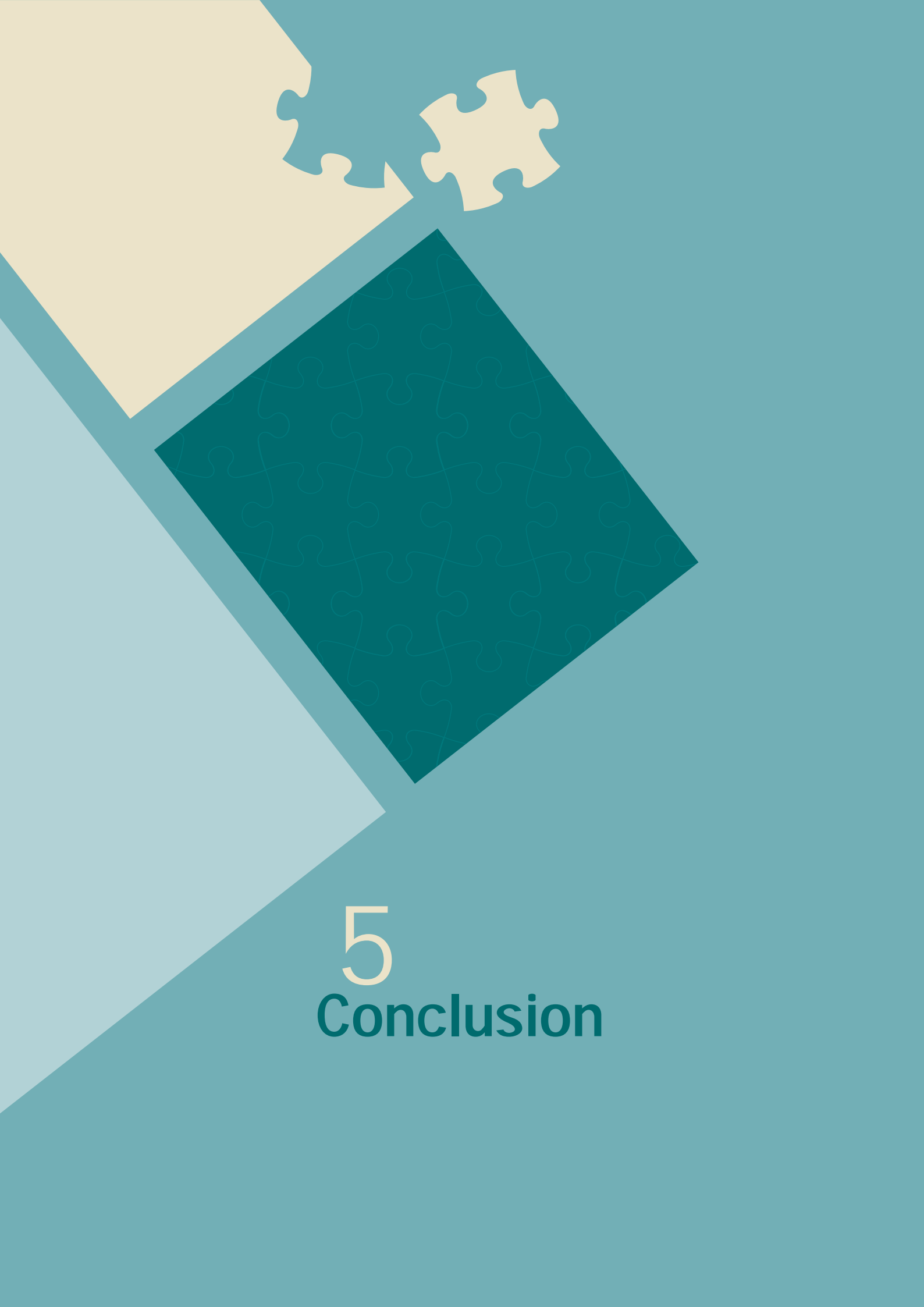
## 4.4 COMPANIES WITHOUT S&OP

Earlier in this report, the theoretical benefits of implementing S&OP were outlined. However, not all companies work with S&OP. Of special interest in this project was a desire to investigate the reasons why companies do not work with S&OP. This goal was accomplished through a questionnaire-survey. On a 5-point Likert scale ranging from 1 (very low degree) to 5 (very high degree), the respondents rated statements to explain why S&OP was not implemented. The following scores were collected:

- ▶ “We have previously tried one or more times without success”
  - overall average = 4.23
  - ▶ Large companies average = 4.15
  - ▶ SMEs average = 4.24
  
- ▶ “We generally have too little knowledge about S&OP in the company”
  - overall average = 3.87
  - ▶ Large companies average = 3.90
  - ▶ SMEs average = 3.86
  
- ▶ “We lack human resources to work with S&OP”
  - overall average = 3.83
  - ▶ Large companies average = 4.10
  - ▶ SMEs average = 3.79
  
- ▶ “There is a low knowledge of S&OP in top management”
  - overall average = 3.81
  - ▶ Large companies average = 4.00
  - ▶ SMEs average = 3.79
  
- ▶ “We are not mature enough to work with S&OP”
  - total average = 3.70
  - ▶ Large companies average = 3.95
  - ▶ SMEs average = 3.67
  
- ▶ “We have difficulties seeing that the benefits exceed the cost of working with S&OP” - overall average = 3.69
  - ▶ Large companies average = 3.85
  - ▶ SMEs average = 3.67
  
- ▶ “We do not need an S&OP process”
  - overall average = 2.52
  - ▶ Large companies average = 2.00
  - ▶ SMEs average = 2.60







# 5 Conclusion

**”***In the same way that S&OP processes need attention, KBIs and behavior require top managers’ focus to maintain S&OP momentum.*

The purpose of this research project was to develop new knowledge about improving competitiveness in Danish companies through the implementation of S&OP processes. The project focused particularly on SMEs and the importance of participants’ behavior in the implementation of S&OP.

The overall project was divided into three phases: (1) best practices, (2) S&OP implementation process, and (3) surveys of Danish manufacturing companies on their S&OP practices.

In the first phase, interviews were conducted with staff from Arla Foods, TOMS Group, Pandora, Lantmännen Unibake, and JBS. The purpose of the interviews was to gain insight into participants’ experiences implementing S&OP. Common recommendations distilled from the interviews included gaining commitment from top managers, applying dedicated resources with clear roles and divisions of responsibility, and developing KPIs that are aligned horizontally and vertically in the company. Short summaries of each company’s S&OP process appear on the project website: [www.salesandoperationsplanning.dk](http://www.salesandoperationsplanning.dk).

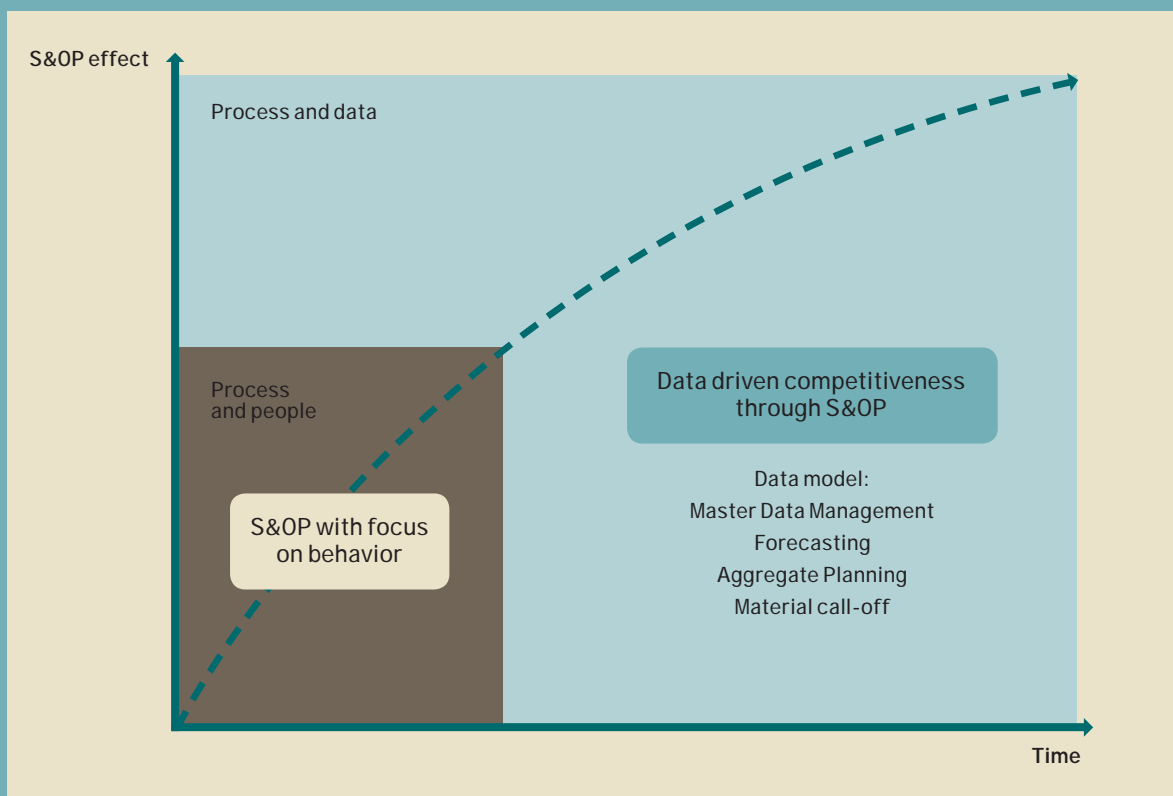



The second phase of the project concerned the S&OP implementation processes. Initially, ten companies were approached to participate: eight completed S&OP implementations. Through the process, a five-phase process model containing 25 tools was developed. Participants can seek inspiration in these tools as they move through the phases.

The overall conclusion of the project was that even though there might be challenges with implementing S&OP, the benefits are easy to identify. At the same time, it seemed clear that a focus on behavior—including KBIs, personality profiles, and team composition—made a difference in the implementation of S&OP among the participating case-study companies. For example, participants gained understanding of the importance of behavior.

On the other hand, although participants recognized it made sense to work with KBIs in the S&OP implementation, they found it difficult to identify and work with the KBIs. In the same way that S&OP processes need attention, KBIs and behavior require top managers' focus to maintain S&OP momentum. Thus, these results indicate a need for further research into the importance of behavior and KBIs for successful implementation of S&OP.

Figure 5.1: From a behavioral focus to data focus



 *It's amazing how much can be achieved when you start talking together.*

Additionally, practitioners need operationalization of KBIs in the context of the companies' everyday life.

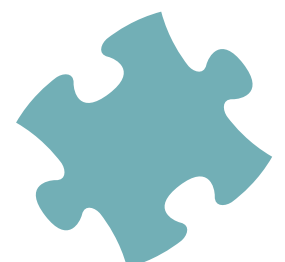
The final phase of the project focused on investigating S&OP practices more widely among Danish manufacturing companies. One study focused on companies that currently operate S&OP. The data collection is ongoing; thus, data from that study are not included in this report. The second study focused on reasons why companies do not work with S&OP. The results of that study seemed to reinforce the relevance of this report—companies indicated that a lack of success with previous implementations, lack of knowledge about S&OP, and too few resources to develop and implement S&OP were key reasons why they have not implemented S&OP.

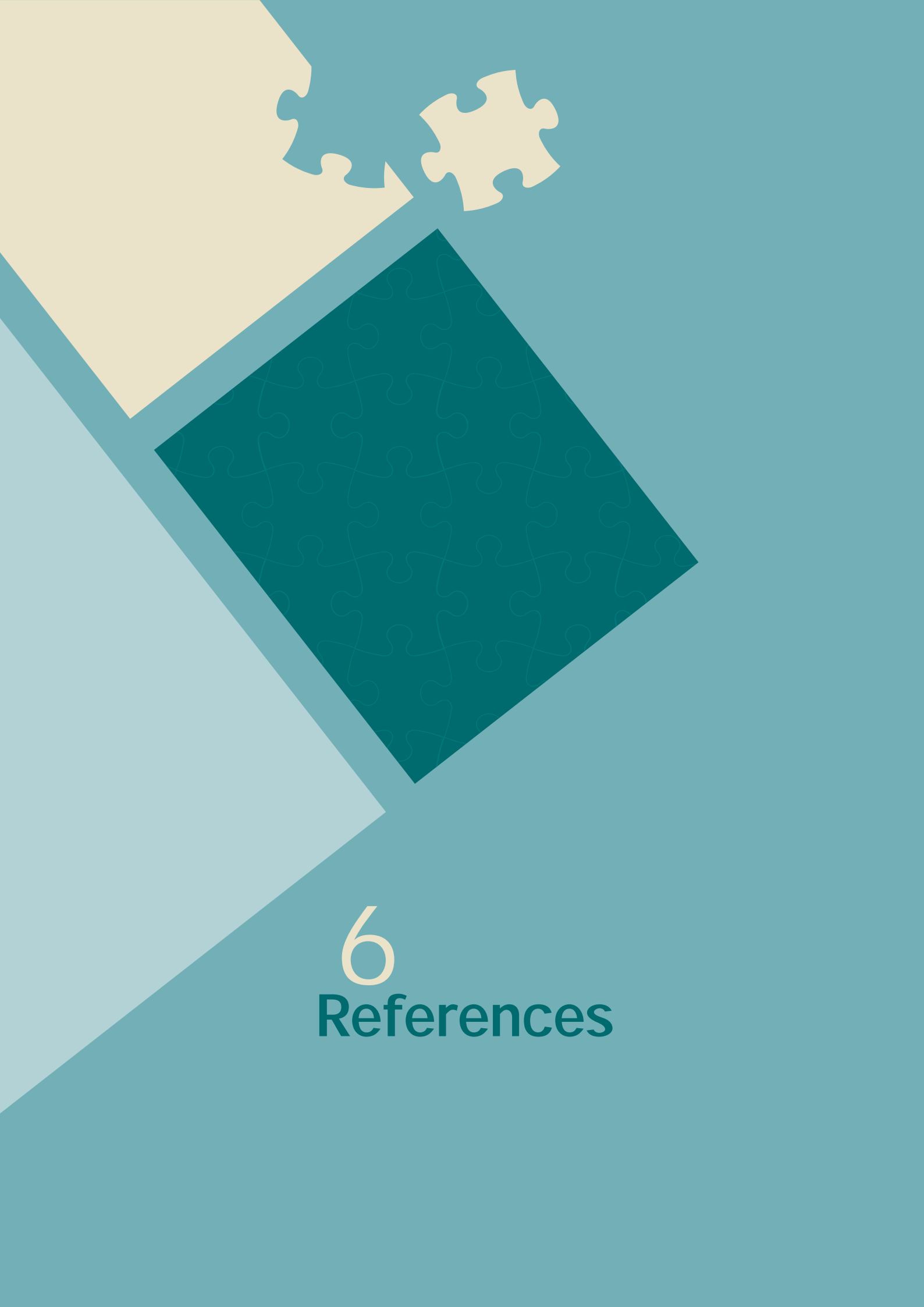
The overall project particularly focused on manufacturing companies. However, the results reported here are also highly relevant in private and public sectors in services, retail, and transportation.

This research project emphasized the behavior among the staff in the S&OP process. The main message, illustrated in Figure 5.1., indicates that companies should first focus on the most basic elements. As one of the salespeople from one of the best practice companies said, “It’s amazing how much can be achieved when you start talking together” (Stentoft, 2017b, p. 25). Beginning with the basic human fundamentals sets the foundation and establishes a process, enabling participants to develop toward higher maturity levels.

After adopting a behavioral focus, participants can optimize the process further with a data-driven focus, as shown in Figure 5.1. Data-driven objectives involve the optimization of data models and systems.

This research report shows a need for more practice-oriented research on S&OP. Future researchers can place additional focus on behavioral elements and explore how they are maintained over time. Next, from both a practical perspective and from a research-oriented point of view, it could be interesting to follow the eight companies in this report to examine the development of their S&OP processes in the future. What long-term effects will emerge? How far would it be appropriate to take the development and application of S&OP? Finally, further empirical research is needed that illustrates to what extent and how behavioral-based S&OP processes can be optimized through data-driven models.





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Appendiks A:

# CASES

**The eight cases are taken out of the report. They can be downloaded on the website.**

***“Overall, the introduction and the operation of S&OP is an amazing tool to bring the customers even more to the center and to rethink workflows”.***

Simon Sophus Nielsen, CEO with responsibility for sale and marketing,  
Mac Baren Tobacco Company A/S.

***“S&OP is like getting new glasses and a new view. Better capacity utilization and above all a reduced level of fighting fires”.***

Jarl M. Rigner Freiesleben, CEO with responsibility for operations,  
Mac Baren Tobacco Company A/S.

***“The S&OP project has helped BPI towards a better organization and management of the intersection between sales and operations. Uncovering our personality types has improved our collaboration and communication, and we experience fewer conflicts and which are managed much easier compared with earlier practice. The S&OP meetings are under development where we train in being more fact-based and to operate with a longer planning horizon – including a more structured approach to sales pipeline management”.***

Hans Vejs-Petersen, COO, Bramming Plast-Industry A/S.

***“The project has provided sales and operations a common world-view to work from”.***

Jan Hansen, Logistical Manager, SPORT 24 BUSINESS.

***“Basically, it is not the plan per se that makes the difference, but the process and the collaboration behind making the plan”.***

Ulrik Jakobsen, COO, SGM Light A/S.

***“The S&OP project has brought focus on our cross-functional workflow and the importance of coordination and a holistic understanding to ensure a competitive platform”.***

Kiri Vølund, Brand & Campaign Manager, A/S Bryggeriet Vestfyen.

***“The cross-functional commitment and knowledge sharing have created a new level of understanding in the organization. Now, all have a common picture based on the same data, and with this, we minimize inappropriate discussions and misinterpretations. We are working towards common objectives independently our functional affiliation”.***

Esben Jansen, Vice President Supply Chain, Nissens Automotive A/S.

***“Our participation in the S&OP project chaired by the University of Southern Denmark has improved our cross-functional coordination at VIKING. The insight into own and other personality profiles has among others also provided better communication during and between meetings. The project has contributed with a deeper insight into the process and the team members strengths and challenges. We have now obtained a strong foundation for S&OP that we will continue to strengthen in the coming years”.***

Peter Husted, Logistical Manager, VIKING Life-Saving Equipment A/S.

***“Despite Qubiqa, among other reasons, had chosen to stop the S&OP journey, the project has contributed with a better fact-based working day. We do now proactive apply capacity plans in different areas. Furthermore, the S&OP has created a more direct dialogue due to a better and respectful understanding of each other’s dilemmas and personality types”.***

Jørgen Dybro, Technical Director, Qubiqa A/S.

