

# Scenario Planning in Sales & Operations Planning

A PLANNING FRAMEWORK IN UNCERTAIN AND VOLATILE MARKETS

By Connie Køhler Gudum, Anne Fjelbro, Maja Sandberg Bilstoft and Peter Klitz  
Implement Consulting Group

## Introduction

In recent years, supply chains have become global, more complex and vulnerable to disruptions due to the fact that the world is changing. Furthermore, we see trends such as global changes in supply and demand, higher volatility in demand patterns and more focus on customer centricity. Because the world is changing and we are moving towards a “new normal” state, *we need new perspectives on planning, supply chain management and risk*. In figure 1, we have summed up the most significant trends that we see in global supply chains.

management (SCRM) have become increasingly important when developing a shared view on how to run a company. S&OP processes and SCRM provide companies with the opportunity to be proactive and in better control of the future.

As a result of this “new normal” world, we are experiencing that forecasting and planning become difficult, and we need new ways of working to:

1. Improve the dialogue and decision-making that take place during the S&OP process
2. Assess and manage risk

In uncertain business environments where planning cannot be performed

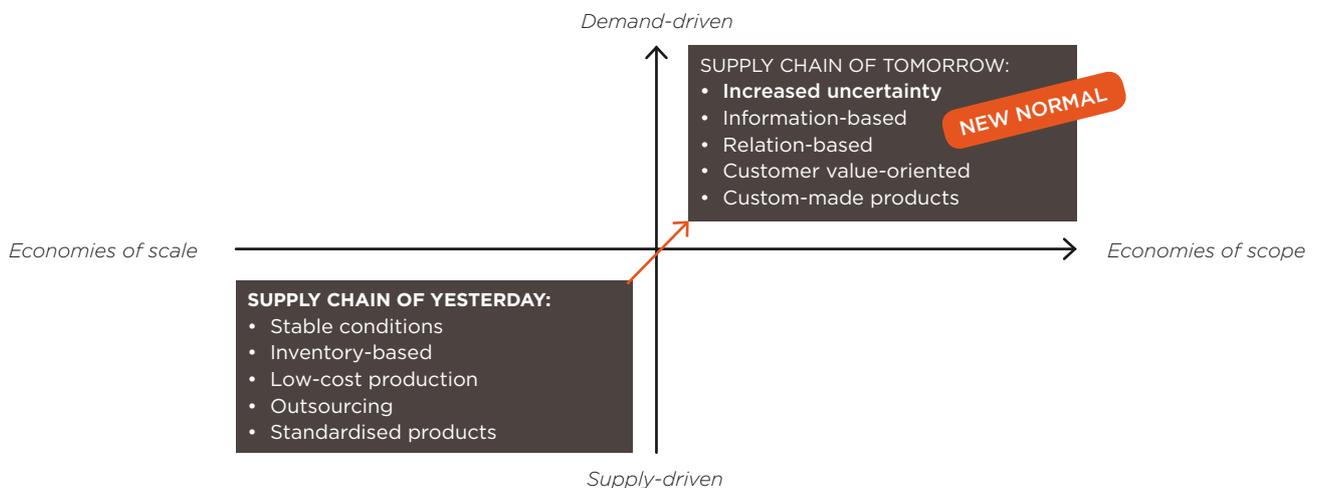
### FACT BOX

Sales & Operations Planning is a collaborative communication and decision-making process that balances supply and demand across the extended supply chain, maximising financial performance and customer satisfaction.

[Definition by APICS]

Sales & Operations Planning (S&OP) processes and supply chain risk

FIGURE 1: Trends in the global supply chains



**FACT BOX**

In S&OP, scenario planning is a strong discipline for analysing the possible outcomes of supply and demand, assessing the risk of possible decisions and understanding the financial implications.

in a steady state, scenario planning can help improve the dialogue and decision-making process and ideally work as a competitive advantage to the company. The different objectives, higher efficiency and lower costs versus a resilient and agile supply chain can be supported by a well-implemented global S&OP process with scenario planning as a vital part.

scenarios. The overall goal is to create the best possible decision proposal to support the S&OP process and, more importantly, the business strategy. An S&OP process with scenario planning will contribute to decisions about new opportunities, growth or gap closures. It will also provide reliable and high-quality decision proposals for contributing to and supporting the management’s focus on the strategic goals.

**Scenario planning – Why should we do it?**

The increasing uncertainty and volatility in supply and demand make forecasting challenging. Decision-making becomes harder when planning is not in a steady state. A high level of uncertainty is created by new products, tenders and high growth rates combined with traditional long-term planning that makes the forecasting process even more challenging. Therefore, a different approach, which is based on qualified assumptions rather than historical data, is required, and a structured process for scenario planning is needed. We need to understand what drives uncertainty and the root causes of risk. Then we will be able to define the relevant scenarios and options to solve the issues in those

**Scenario planning – What is it?**

Scenario planning enables you to be one step ahead of coming events; risks as well as opportunities. Moreover, scenario planning helps to create strong and reliable decision proposals to counter and/or exploit upcoming events in order to support the overall strategy of the company. It is important to highlight the fact that scenario planning can also be used to evaluate future opportunities to secure successful exploitation.

Scenario planning is a great discipline for supporting the dialogue and decision-making at S&OP meetings in a complex and volatile environment

**FIGURE 2: The 5 steps of scenario planning**



where emerging markets and long supply lead time continue to be an increasingly important factor. Scenario planning provides a structured approach to identifying drivers, scenarios and possible outcomes.

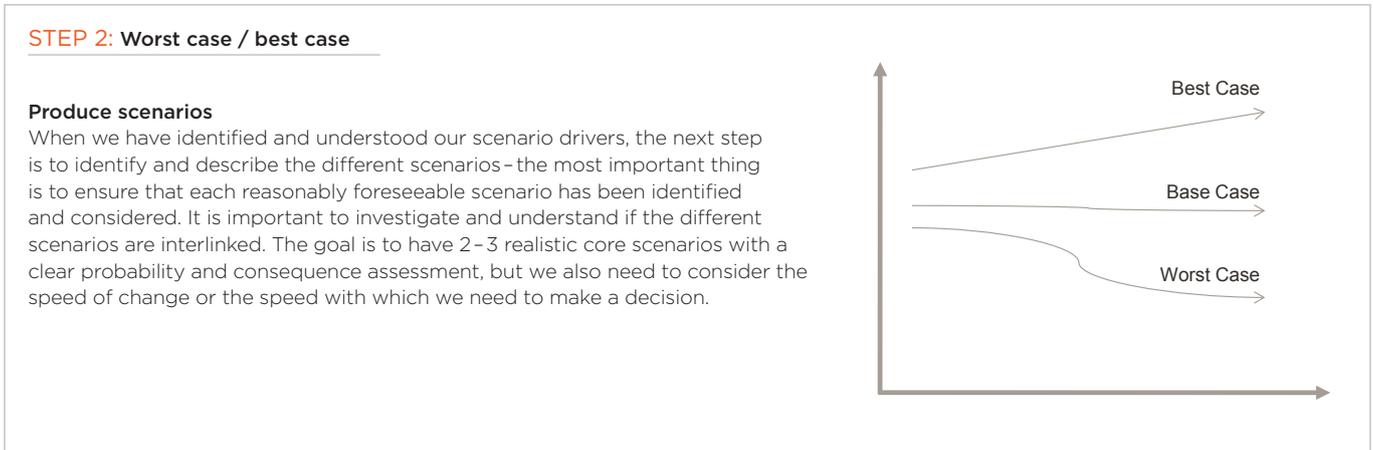
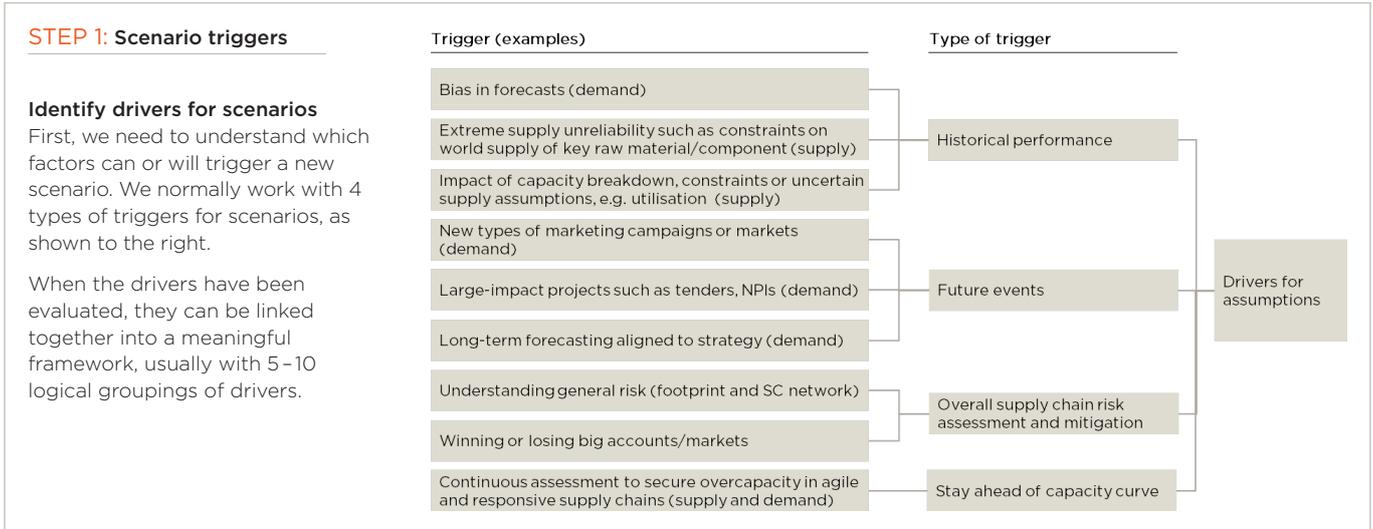
In order to be able to work with scenario planning in a structured way, we have defined the 5 steps illustrated in figure 2 (page 2).

### Scenario planning – How do we use it?

When working with scenario planning, we focus on those risks where the consequence is *high*, meaning that risk events with *low* consequences are not important to deal with from a planning perspective, as they should be part of the natural uncertainty and flexibility within the base case plan. We distinguish risk events from the structural supply chain vulnerability and impact.

### Scenario planning – What benefits can we expect from this?

Scenario planning entails a number of advantages. First, risk management becomes the key focus of the decision-making process. It also improves the forecasting quality in a highly uncertain environment. Moreover, it shifts focus to the consequences for the business (cost, utilisation, service levels, lead time). It also allows for addressing opportunities rather than discussing bias.



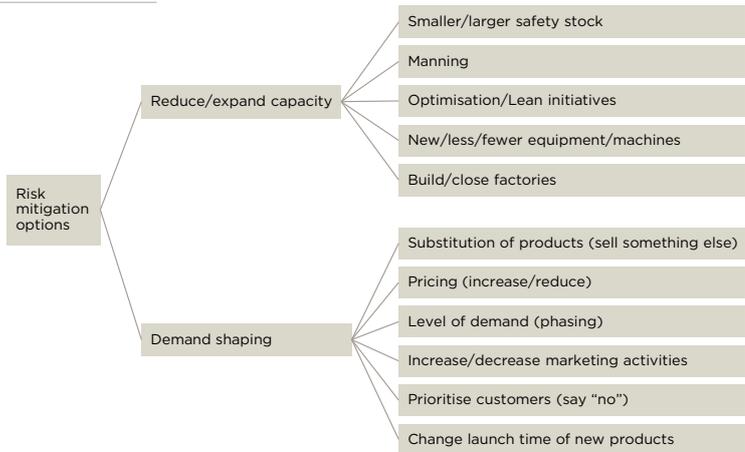
**STEP 3: Identify possible options using the game board method**

**Describe possible options**

When searching for potential options to risky scenarios, doing a brainstorming is often the best idea. However, the brainstorming session benefits from a set of guiding option alternatives, which can be brought to the table after the initial brainstorming.

The next step is to design and describe the option ranges of the core scenarios. When the options have been described, the "game board" can be designed. The game board is a combination of scenarios and options with a clear link between the different scenarios. If the scenarios are not interlinked, you can advantageously create a game board for each group of scenarios.

As shown to the right an example of possible options that have been identified.



**STEP 4: Risk and impact matrix**

**Assess risk and impact**

When a list of options has been found, the next step is to identify the upside and downside of each suggested option. This assessment is conducted by creating a matrix showing the three most critical scenarios in the upper row and the three best option alternatives in the first column.

A group discussion that clarifies the upside and downside of the option to each scenario will help everyone see the possible risks of and gains by selecting a specific option or doing nothing at all. Finance should be involved to estimate the financial implications. To the right, an example of a risk and impact matrix is shown.

SCENARIOS	Base case (util. 90% + growth 2%)	Scenario 1 (util. 90% + growth 5%)	Scenario 2 (util. 85% + growth 5%)
<b>OPTIONS</b>	☉	☉	☉
<b>Option A:</b> Status quo - Do nothing	↑ Capacity just balanced ↓ No flexibility ↓ Risk of stock-out	↓ Under-capacity ↓ Stock-out	↓ Severe under-capacity ↓ Bad delivery performance X%
<b>Option B:</b> Site shifts	↑ Capacity balanced and incl. flexibility	↑ Capacity balanced and incl. flexibility	↑ Extra costs for transport mDKK Y ↑ Sales ok
<b>Option C:</b> Prioritise customers	Not relevant		↓ Say "no" to customers ↓ Lost sales ↓ mDKK Z

**STEP 5: Create decision proposal**

The final step is to evaluate the speed of decision based on well-defined decision horizons for typical options. Do we need a decision now or can we consider the scenario analysis as an early warning? If we need to act on the risk, it is time to create a one-page decision proposal per scenario to support the dialogue and decision-making at the S&OP meeting. The one-pager should include:

- The decision proposal (supported by an appendix containing further analysis)

- High level business case and risk impacts for each option
- Recommendations
- Plan for monitoring
- Proposal for risk mitigation
- Contingency planning

Scenario planning enables a company to discuss and evaluate the early warnings of a wide range of risk events.

The scenarios that have been assessed as early warnings need to be monitored to see how they have evolved and most likely will evolve.

**FACT BOX**

Black swan events as defined by Taleb are characterised by:

1. The disproportionate role of high-profile, hard-to-predict and rare events that are beyond the realm of normal expectations in history, science, finance, and technology.
2. The non-computability of the probability of the consequential rare events using scientific methods (owing to the very nature of small probabilities).
3. The psychological biases that blind people, individually and collectively, to uncertainty and to a rare event's massive role in historical affairs.

## How to support scenario planning from an application perspective

In many large organisations, the ability to execute a structured S&OP process, including scenario planning, and to implement the consequential decisions is a major challenge. Many departments that each supply their own data and calculations are involved, and executing the conclusions reached will often be an intricate set of interlinked actions across the whole business unit. To battle this challenge, SAP provides a strong S&OP tool via Integrated Business Planning based on the S/4HANA database technology. The major advantages include:

1. Full flexibility in data modelling, i.e. the business decides on the data model and which master data is required. With this level of flexibility, it is possible to attain one version of numbers and figures to bridge the gap between several functions such as planning, finance, marketing and sales etc. Calculations of forecast, capacity constraints and derived consequences for turnover, profit and risk can be incorporated into one system, and input data is collected in another system.
2. The S&OP process as well as the underlying processes such as forecasting, capacity calculations etc. can be incorporated via the SAP Jam tool. Hence, it will be visible to all participants, i.e. you can contain both the S&OP and scenario planning processes as well as all data on quantifications in a one-system environment.
3. Simple and user-friendly front end via XLS plug-in and web browser with easy and flexible dash board analytics.
4. The S/4HANA technology provides unequalled speed in handling data and calculations, i.e. an S&OP analysis can be executed on the fly on massive amounts of data, providing a correct basis for decision-making at all times.

5. The IBP S&OP tool contains functionality that enables planning in different versions, scenarios in each version and snapshots of data for comparison of results.

## Use scenario planning to understand the WHY behind the WHY for strategic purposes

Traditional forecasting techniques often fail to predict significant changes in the environment that companies operate in, especially in case of rapid changes or when information is limited. Consequently, severe challenges or great opportunities may be overlooked, and the company's overall performance and strategy may suffer. Scenario planning supports different strategies, e.g. growth or improved profitability, but there are also several other benefits to be gained:

### ” Enter into an honest dialogue on strengths, weaknesses, opportunities and threats

- Encourages strategic conversations among key management stakeholders
- Aligns strategic planning activities across the different levels of the company
- Enhances responsiveness to emerging challenges or opportunities
- Generates, evaluates and communicates innovative strategies
- Changes the mindset to take a broader view when searching for options

The key factor in implementing a successful scenario planning process is to get broad and meaningful involvement of key stakeholders, enter into an honest dialogue on strengths, weaknesses, opportunities and threats to the company and find a balance between plausibility and spread this kind of thinking throughout the entire company.

CASE →

CASE EXAMPLE: NOVOZYMES – UTILISATION SCENARIOS THAT IMPACT THE CAPACITY SITUATION



**The challenge**

The monthly Sales & Operations Planning process showed significant under-capacity for the coming 12 months for one production line. It would be very difficult for production to react to any unexpected issues or market opportunities. The target is to have 10 % capacity surplus to manage monthly variations, product mix changes and demand uncertainty. The base plan showed 5 % capacity surplus. Hence, capacity-enhancing activities were needed.

In parallel, the forecast was evaluated as being too low compared to the strategic targets and, moreover, the utilisation assumptions behind the capacity plan were evaluated as being too optimistic. Both of these factors had a negative impact on undercapacity compared to the base plan. In order to understand the severity and additional risk of this situation, scenario planning was applied.

**Scenario planning**

*Step 1 – drivers:* The key drivers of uncertainty were already identified as bias in the demand forecast as well as the level of utilisation.

*Step 2 – scenarios:* Demand scenarios included a best-case and a worst-case scenario. The best-case scenario was based on the strategic target of growth in the company transformed into target volume increases (+y % compared to last year). The worst-case scenario was based on the current forecasts in SAP (+x % compared to last year).

Supply scenarios also included a best-case and a worst-case scenario. The best-case scenario was based on the optimistic utilisation assumption, which was included in the base plan (index 100%). The worst-case scenario was based on the average of historic utilisation in the last 12 months (index 94%). These combinations and their impact on the capacity surplus were illustrated by a 2x2 diagram.

” Scenario planning has enabled us to be more proactive in understanding risk and making decisions in due time.

*Frede Lei, Head of Global Planning*

*Step 3 – option scenarios:* Short-term capacity extension to create more surplus. However, this is not included in the risk assessment, but is part of the final recommendation.

*Step 4 – risk and impact:* Probability was estimated for each of the 4

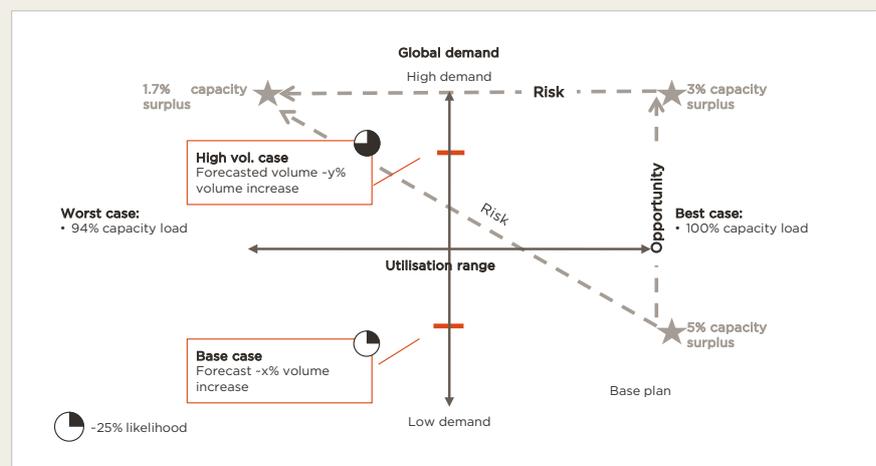
quadrants in the 2x2 diagram, and the most likely outcome was evaluated as “high demand and low utilisation”, which has the worst possible impact on capacity surplus and emphasises that capacity needs to be extended by approx. 10%.

*Step 5 – recommendation:* A decision proposal was created, and key messages included:

- Sales was asked to re-evaluate demand plans for the coming year, identify what is most realistic and adjust forecasts according to this. Sales should prepare a customer priority list in case undercapacity could not be fully solved.
- Ask the factory for a gross list of potential capacity extension: Increase manning or postpone planned maintenance shutdown.

**Impact**

A quick decision-making situation leading to a significant increase in short-term capacity at the factory, thereby avoiding potential delivery issues and lost sales. All cross-functional departments understood the situation and were proactive in relation to risks (and opportunities) and making the extension happen.



## Contact

For further information please contact:

**Connie Køhler Gudum**

ckg@implement.dk

+45 3085 8010

**Anne Fjelbro**

anfj@implement.dk

+45 3085 8088

**Maja Sandberg Bilstoft**

msb@implement.dk

+45 3085 8085

---