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How to Make the Benefits of S&OP Visible for Sales?

Sulzer Pumps Finland Oy

Thesis
Spring 2022
SeAMK Technology and Business
Degree Programme International Business

SEINÄJOKI UNIVERSITY OF APPLIED SCIENCES

Thesis abstract

Faculty: SeAMK Technology and Business

Degree Programme: Bachelor of Business Administration

Specialisation: International Business

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Title of thesis: How to Make the Benefits of S&OP Visible for Sales?

Supervisor: Cory Isaacs

Year: 2022 Number of pages:51 Number of appendices: 2

Balancing demand and supply is a lifeline for companies and organizations in order to keep business profitable. Creating a well-working sales and operations planning process (S&OP) is the right tool for this task.

In this thesis the goal was to find applicable ways to improve Sulzer Pumps Finland Oy's S&OP process SILOP, find out how satisfied are the salespeople to the demand planning activities and sales input, and find the key issues in demand planning activities and sales input.

The theoretical part covered the sales and operations planning process in general and the different phases of the process. In addition to this, success factors of S&OP were listed and explained. Customer relationship management (CRM) and different CRM solutions were covered since the study showed a significance or connecting CRM and SILOP. Empirical part was executed with quantitative research method and data was collected with a questionnaire. The areas that were covered with the questionnaire were how the benefits of SILOP are recognized by sales, ways to improve the process and the practicality of demand forecasting to sales.

The study showed that the benefits of SILOP are not recognized by salespeople because they cannot see the positive effects SILOP has and/or should have. The development idea of connecting SILOP to Sulzer's existing CRM system was found from the results of the study.

[1] Keywords: S&OP, CRM, demand, supply

SEINÄJOEN AMMATTIKORKEAKOULU

Opinnäytetyön tiivistelmä

Koulutusyksikkö: SeAMK Teknologia ja liiketoiminta

Tutkinto-ohjelma: Liiketalous

Suuntautumisvaihtoehto: Kansainvälinen liiketalous

Tekijä: Natalia Rask

Työn nimi: Miten saada S&OP- prosessin hyödyt myynnille näkyviksi?

Ohjaaja: Cory Isaacs

Vuosi: 2022 Sivumäärä:51 Liitteiden lukumäärä: 2

Kysynnän ja tarjonnan tasapainottaminen on elintärkeää yrityksille ja organisaatioille, jotta bisnes pysyy tuottavana. Toimivan sales and operations planning- prosessin (S&OP) luominen on ratkaisu tähän tehtävään.

Tässä opinnäytetyössä tavoitteena oli löytää käytettäviä kehitysideoita Sulzer Pumps Finland Oy:n S&OP- prosessi SILOPin kehittämiseen, selvittää miten myyntiedustajat näkevät SILOPin hyödyt, sekä löytää toimintojen ja raportoinnin kompastuskivet, jotka tekevät työstä hankalaa ja epämotivoivaa.

Opinnäytetyön teoreettinen osa selvitti S&OP-prosessin teorian, sen vaiheet, sekä tekijöitä onnistuneeseen prosessiin. Tutkimus yhdisti S&OP-prosessin ja asiakkuudenhallinnan ja sen takia asiakkuudenhallinta käytiin läpi ja markkinoiden johtavat ja asiakkuudenhallintajärjestelmät esiteltiin. Empiirinen osuus toteutettiin kvantitatiivisin tutkimusmetodein ja tutkimus toteutettiin kyselyn avulla.

Tutkimus osoitti, että myyntiedustajat eivät näe prosessin hyötyjä. Kyselyn perusteella löytyi kehitysidea SILOPin yhdistämisestä Sulzerin käytössä olevaan asiakkuudenhallintajärjestelmään.

[1] Asiasanat: S&OP, CRM, asiakkuudenhallinta, kysyntä, tarjonta

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Terms and Abbreviations

S&OP	Sales and operations planning process
CRM	Customer relationship management
ERP	Enterprise resource planning
SILOP	Sulzer’s S&OP process
SAP	ERP system
SQL	Structured Query Language

1 INTRODUCTION

Balancing demand and supply is a lifeline for organizations. In order to keep business profitable, customer's demand and organization's production and capacity must be kept in balance. Sales and Operations Planning is a tool that assists company's and organization's management in decision making and makes the whole organization participate in the process. According to Pajulahti (2015) Sales and operations planning (S&OP) is a systematic process where the whole company takes part in forecasting the future and it helps the company management in decision making. Lapide (2007) agrees with Pajulahti and states that companies who are adapted to use of S&OP are exceeding companies whose use of the process is minimal or non-existent. The base for the process is created in the first stage of the process which is a demand phase. Data is collected for creation of sales forecast and based on those forecasts a demand plan is created and that directs the rest of the process (Pajulahti, 2015). This thesis studies how Sulzer Pumps Finland Oy's sales representatives from the two sales regions with the most significant demand volume to factory see the benefits of the process.

1.1 Research Problem and Theoretical Framework

The goal of this thesis is to find usable solutions for Sulzer Pumps Finland Oy that they can use to develop their sales and operations planning process SILOP in the sales point of view and especially the demand planning phase of the process.

This thesis focuses on S&OP, demand planning phase and customer relationship management (CRM) and how these can be combined efficiently. Target group for the thesis is sales representatives of two sales regions with the most significant demand volume to the factory. Theoretical framework consists of literature, online publications and previously done studies of S&OP and CRM.

Research questions of the thesis are:

1. How strongly the benefits of SILOP reflect to the sales organization?

2. How are sales experiencing demand forecasting activities?

3. How could the process be developed?

The chosen research method was quantitative, and the research material was collected with a questionnaire. This will be explained further in chapter 5.1. Questionnaire was sent to 20 salespersons from different sales organizations and results were received from 18 respondents. That makes the response rate 90%.

The significance of this thesis is to the case company since the outcome gives concrete ways to develop SILOP which leads to more effective business. For the researcher, writing this thesis grows their professional skillset and it is a key element in finishing the degree. Also, this gives the researcher a better insight and understanding of the S&OP process of Sulzer Pumps Finland Oy. Other companies are also able to utilize the theory part of this thesis and find solutions for their S&OP processes regardless of the industry or field of business.

2 SALES AND OPERATIONS PLANNING

This chapter focuses on the theory of sales and operations planning and the typical phases of the process.

2.1 S&OP process in general

S&OP process is not a new concept (Pajulahti, 2015). It was created in the 1980's by Oliver Wight when companies faced new challenges from customer-oriented marketing. Companies' product portfolios became too broad, and the planning of production became challenging (op. cit., p. 1). Sääksvuori (2016) defines a product portfolio being too large when it has too many parallel products and / or it's too wide. According to him, mature well-balanced companies add 1,8 products for 1 removed product. Originally, the S&OP process was used to balance out demand and production, but later more objects were found (Pajulahti, 2015). Maintaining and improving lead times and keeping delivery promises to customers are the effects of a successful S&OP process.

Logistiikan maailma (2022b) defines S&OP process as a process where the goal is to balance demand and production which leads to profitable business. Instead of sales, production, procurement, and finance department having their own separate plans and goals, S&OP strives for one coherent plan that is based on strategy and can be executed effectively (Småros & Falck, 2013). According to Småros and Falck (2013) one key element in S&OP is recognizing and resolving possible issues in implementation of the plan and setting up the goals. They give an example of creating a sales plan with large grow which can lead to resourcing problems in production. These situations are resolved beforehand for example increasing production capacity with extra work shifts or prioritizing between different product categories. When making these decisions the big picture is kept in mind and the goal of customer satisfaction.

S&OP process is a monthly repeated and revised planning period (Sheldon, 2006, p. 2). The process takes into consideration internal and external activities, history, future and already learnt factors. In order to create an effective process, it is important to name the people responsible and their responsibility areas. The results of defined KPI's are studied and the actions based on those results are executed in the whole organization.

2.2 The phases of S&OP process

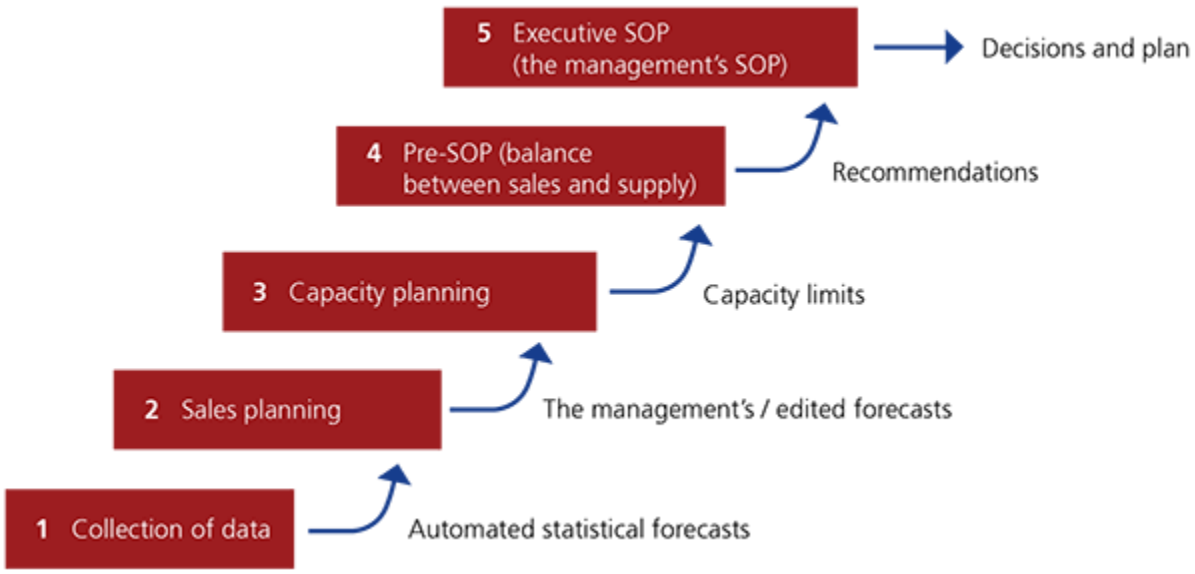


Figure 1Typical process of S&OP (Småros & Falck, 2013)

S&OP consists usually of five phases, in some theories the number of phases can be smaller or larger. Figure 1 introduces the five phases of S&OP and what is the output of each phase and how the process continues. The phases are collection of data, sales planning, capacity planning, operational review meeting and executive review meeting.

2.2.1 Collection of Data

According to Grimson and Pyke (2007, 325) the S&OP process starts with collection of data. The task of data collection is to collect and update last month's numbers and results. Numbers from sales and production are studied and checked how if they met the previously done forecast. Also, the chosen KPI's are studied. The effectiveness and results of the process are studied usually monthly or at an agreed time. Different KPI's should be chosen depending on the organization's field, product portfolio or production process. Using KPI's and studying the

results is mandatory for proceeding with the process and for development. In the collection of data phase, no forecasts are made, only the key factors for the forecast are collected. Wilson (2021) has a different approach to collection of data as a S&OP's first phase. He states that many theories and textbooks include data collection as the first step but nowadays it is no longer a determined step in the process. It is included in each phase of the process rather than being its own phase.

2.2.2 Sales/Demand Planning

The second phase of S&OP is sales planning or demand planning (Grimson & Pyke, 2007, p. 324). The people responsible for sales process, create a demand forecast based on the data collected in the first phase. According to Wilson (2021) sales and demand planning is the first step of S&OP and data is collected throughout the whole process. At this phase the production ability is not considered, only the possible sales (Grimson & Pyke, 2007, p. 324). The forecast takes into consideration the organization's demand increasing activities such as marketing campaigns and fairs, that are planned in the marketing plan.

Creating a sales plan is easy but laborious process and it consists of multiple stages (Småros & Falck, 2013). Småros and Falck state that demand planning is the most important stage of S&OP process and the creation of base forecasts for each product is usually easy but very time consuming. Base forecast is a forecast of sales before any actions are made and it must consider all shifts in demand. Computational forecasting increases the effectiveness in creating the base forecast considerably. Wallace and Stahl (2007) agree with Småros and Falck about demand planning being the most important stage, but they also write that it can be the most difficult one of the five phases.

2.2.3 Capacity Planning

The third phase is capacity planning (Grimson & Pyke, 2007, pp. 324-325). Operational team holds a review meeting where the sales forecast is reviewed and data of stock situation, organizational capacity and the supply chain is collected. According to Jonsson and Mattsson (2009, p. 162) there are different types of capacity that must be studied. For example,

production capacity, the availability of raw materials, delivery capacity and storage capacity. These factors can limit the possibility to meet the plan that is made based on the sales forecast and when these factors are recognized, it is possible to increase capacity and adapt to the situation. The outcome of capacity planning phase is a rough production plan that should meet the forecasted sales (Grimson & Pyke, 2007, pp.324-325).

2.2.4 Pre-S&OP

In the fourth phase of S&OP a preliminary version of S&OP plan is created (Krajewski et al., 2007). In this phase managers from sales, production, logistics and procurement arrange a meeting where forecasts are discussed. Hirneisen (n.d., p. 5-6) states that an action plan is created, and that plan tells the ability of an organization to execute the customers' orders and upcoming wishes. Balancing out the demand and delivery plans well ahead of time makes on-time deliveries possible with the most cost-effective options. Also, acquiring raw materials with the best price is possible when the demand and delivery plans are in balance. In the meeting all point of views and differences are covered and changes are studied and analyzed in the finance department's point of view since production and deliveries have major impact on finances (Jonsson & Mattsson, 2009).

2.2.5 Executive S&OP

The fifth and last phase of S&OP process is the executive S&OP (Sheldon, 2006, pp. 11-13). It is a meeting that is attended by representatives from sales, production, finance, and the person in charge of S&OP process. The attendance of the people responsible is vital for the process in order to make the needed decisions and proceeding effectively. According to Jonsson and Mattsson (2009) a ready-made action plan is proposed to the executive level or/and all factors that haven't been resolved. The executive level then makes the final decision of the implementation of the action plan. All parties involved are committed to this plan, especially sales since the production plan is made based on the sales forecast. Picture 1 shows a sample agenda for executive review meeting and from it can be seen how detailed the meetings are. In chapter 2.4 success factors of S&OP are listed and one of the factors is structured meeting agenda and picture 1 is a helpful example.

Sample Agenda for Executive S&OP Meeting

Review S&OP calendar – critical dates

S&OP aggregate summary

- Actual to plan budget, sales, supply
- Performance metrics – on time, stock-outs, and inventory levels (excess and obsolete)
- Review applicable action items related to this section

Last Month Performance – actual to plan review by category

- Sales and operations deltas
- Causals
- Inventory
- Utilization
- Review applicable action items related to this section

Review 12-month rolling demand and supply plan by category including;

- Short-term concerns
- Capacity and scheduling challenges and plan of action
- New products introduction
- New or lost critical customers
- New or lost critical suppliers
- Product transfers from one facility to another
- Inventory and supply projections and targets
- Other major risk factors in the business
- Review applicable action items related to this section

Summary of new action items

Final approval

Picture 1 Sample Agenda for Executive S&OP Meeting (Demandcaster, 2022)

2.3 Data Processing Systems In S&OP

There are some areas of S&OP that are tied strictly to data processing systems (Småros & Falck, 2013). These are the following:

- Effective and exact sales forecasting and planning
- Support in decision making
- Tracking of results and changes.

S&OP process is done mostly on a computer and having a well-working data processing system is important. Excel could be used as a data processing system, but that would make the job very manual and time consuming. Still, creating a S&OP for a company is not an IT project. Also, some sort of system support is required to make the process smooth.

2.4 S&OP Success Factors

Lapide (2004) lists 12 success factors (Figure 2) for S&OP and in this chapter the factors are explained and compared to Sulzer Pumps Finland Oy's S&OP process SILOP.

FIGURE 1
SUCCESS FACTORS OF SALES & OPERATIONS PLANNING (S&OP) PROCESS

1. Ongoing, routine S&OP meetings
2. Structured meeting agendas
3. Pre-work to support meeting inputs
4. Cross-functional participation
5. Participants empowered to make decisions
6. An unbiased, responsible organization to run a disciplined process
7. Internal collaborative process leading to consensus and accountability
8. An unbiased baseline forecast to start the process
9. Joint supply and demand planning to ensure balance
10. Measurement of the process
11. Supported by integrated supply-demand planning technology
12. External inputs to the process

Figure 2 Success Factors of S&OP process (Lapide, 2004, p. 18)

Below are listed the 12 success factors and the factors are compared to SILOP.

1. Ongoing, routine S&OP meetings
    a. Usually held monthly. Most companies have three meetings where the first one is about the demand plan and sales forecast, second one is about creating a preliminary supply plan and a forecast, and the final meeting is about finalizing the plans
    b. SILOP holds monthly routine meetings
2. Structured meeting agenda
    a. Since the S&OP meetings must be routine there needs to be a structure for them to be effective and a time frame should be followed.
    b. SILOP meetings are structured and effective
3. Pre-work to support meeting inputs
    a. Rough-cut demand forecast and action plan should be prepared for the meetings

   b. Forecasts and action plan are prepared and presented in the SILOP meetings
4. Cross-functional participation
   a. Demand-side managers from sales, customer service and marketing in addition to supply-side managers from manufacturing, logistics, procurement, and supply chain must attend the meetings and actively take part in them.
   b. The participants of SILOP are expressed in detail in figure 7. The attendance in SILOP is cross-functional
5. Participants empowered to make decisions
   a. Participants must be empowered by the executive team to make decisions based on their beliefs.
   b. Participants in SILOP have empowerment by the executive team.
6. Responsible and disciplined process
   a. S&OP process must run on-time and on a schedule
   b. SILOP is run monthly and on a schedule
7. Constructive process that leads to consensus and taking responsibility
   a. Every attendee must be able to give constructive feedback and take part in the process
   b. This is carried out in SILOP
8. An unbiased baseline forecast
   a. Statistical forecasting methods are usually used
   b. Statistics are used in forecasting in SILOP. More of the data sources in chapter 7.
9. Joint supply and demand planning
   a. Demand and supply must be able to balance without trying to meet the demand forecast that's based on inflexible marketing and sales plans
   b. What can happen, is that the focus is on adjusting production plans to meet the demand forecast which can lead to not using the full capacity
   c. In SILOP the whole production capacity is used, and supply and demand planning are joint.
10. Measuring the process
   a. The process should be measured in order for improving it over time
   b. The accuracy of sales' demand plans are measured monthly and the rough input is measured yearly.
11. S&OP process supporting technology

   a. Demand forecasting program should be linked to the ERP system so the demand forecasts and production plans can be connected efficiently
   b. In SILOP, Excel and SQL based tool is used where data from SAP is brought manually.

12. External inputs
   a. It is possible to make use of information and data from customer's systems
   b. In SILOP, external data is not automatically brought from customers' systems but sales has the responsibility to notice these external inputs when making forecasts.

2.5 S&OP in Literature

When gathering sources for theoretical framework, the researcher noticed that the number of existing literatures written about S&OP is relatively small. According to Kreuter et al. (2021) the interest in S&OP is growing and that can be seen from the increasing literature and the existing literature consists mostly of articles rather than academic sources. They state that S&OP is as an emerging topic. A dispersed knowledge base, a lack of shared understanding, inconsistent and proliferating concepts, and lack of coherent theories are all common characteristics of emerging topics. Literature with S&OP as topic is often grey literature. Krawczyk-Sokolowska et al. (2019) define grey literature as literature that is not commonly available in scientific databases, and it has not gone through the academic reviewing process that is done for scientific pieces of literature. Using grey literature when writing about S&OP is acceptable because the origins of S&OP are in the industry (Kreuter et al., 2019).

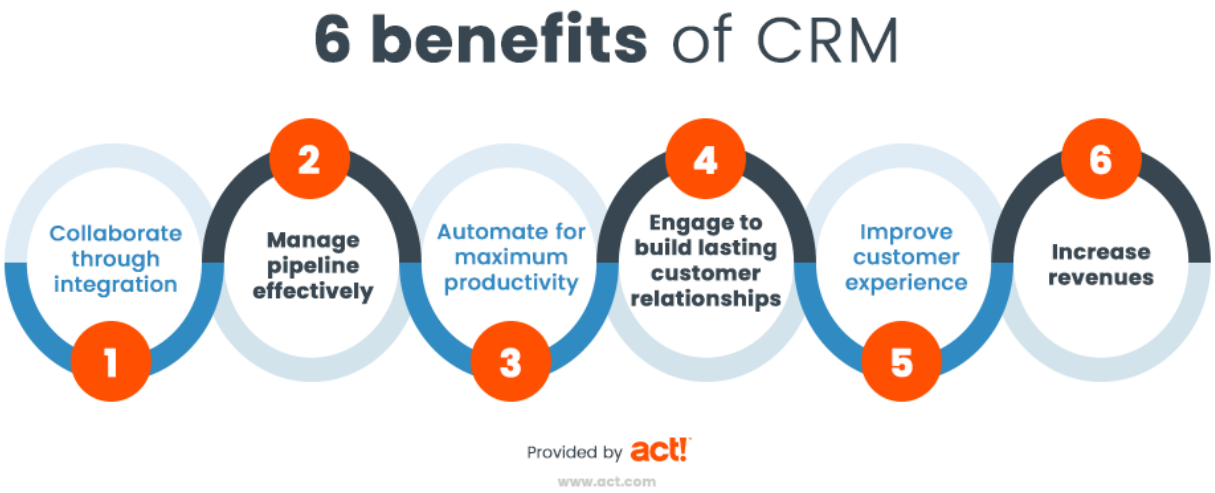
The lack of academic literature was surprising for the researcher since the concept of S&OP has existed for over 40 years (Goel, 2020). Most of the sources available online are from blogs and consulting companies that create S&OP processes for customers. Finding source material with differing opinions and definitions, was challenging as most of the blogs, articles and consulting companies had based their writings on the same sources.

3 CUSTOMER RELATIONSHIP MANAGEMENT

This chapter focuses on customer relationship management (CRM) and different CRM solutions and tools. Integrating CRM and S&OP can improve S&OP's planning and forecasting by using pipelines created by the used CRM system (Kepion, n.d.). Results of the research (chapter 7) will also explain that integration of CRM and S&OP process is desired. Sulzer Pumps Finland Oy uses a CRM system from a top provider.

3.1 CRM In General

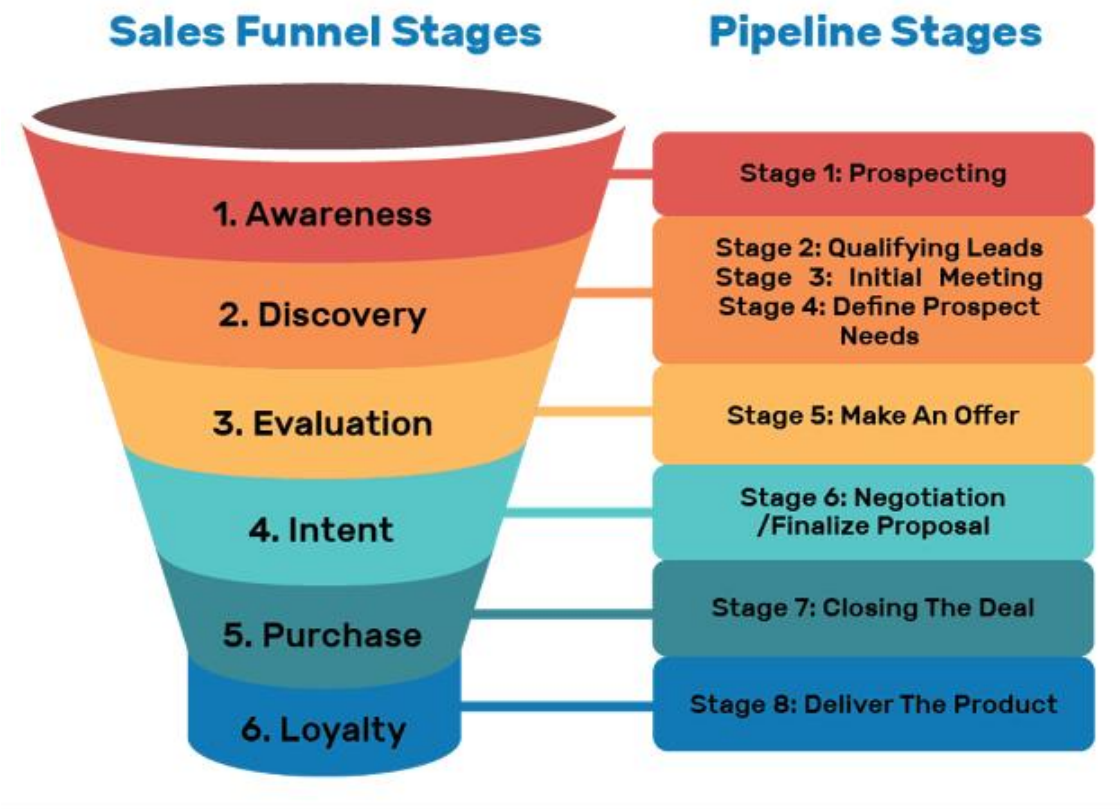
Customer relationship management, CRM, for short refers to managing customer relationships using a CRM system (Act, n.d.). CRM software's track details of customers, their preferences and activity. That makes personalizing service for each customer possible and managing all interactions with current and possible customers easy. According to Oksanen (2010) CRM is relatively new concept since it was solidified into spoken language in the late 1990's. He explains that CRM can refer to customer management, managing customer relations, customer service and ways of operation and systems. CRM can be a way to acquire new customers and keep the old ones. All CRM systems have the possibility to save all transactions with the customer and people from different department have access to the data since it's all under the same system (Turunen, 2021). This makes working with the customers much easier. Picture 2 displays benefits of CRM. Companies who have CRM systems in use benefit from CRM with integrated collaboration, managing pipeline, automation which leads to maximum productivity, long lasting customer relationships & improved customer experiences and the goal of increased revenue (Act, n.d.).



Picture 2 Benefits of CRM (Act, n.d.)

3.2 CRM Solutions

According to Turunen (2021) the number of CRM systems in the market is massive. All of the systems have at least one thing in common which is the control of sales process and sales cycle. Choosing a broader system makes more effective automation, reporting and forecasting possible. Most of the CRM solutions make creation of sales pipeline and sales funnel possible. A sales pipeline is a visual, organized manner of tracking potential buyers as they move through different stages of the purchasing process and buyer's journey (Pipedrive, 2022). The marketing term describing the journey that potential buyers take on their way to making a purchase is a sales funnel (Keap, 2022). A sales funnel has multiple steps, which are commonly referred to as the top, middle, and bottom of the funnel, however these steps can change depending on a company's sales model. Having a sales pipeline and/or a funnel makes monitoring of sales processes easier in addition to easier managing and forecasting of sales. Picture 3 displays the stages of a sales funnel and the corresponding stages in pipeline.



Picture 3 Stages of Sales Funnel and Pipeline (ServiceSource, 2022

Turunen (2021) lists the top 5 CRM systems, and they are the following:

- HubSpot
    - Good for small or mid-sized companies
    - System has been growing over the years into a system with good functions to customer management, automation of marketing, customer service and tools for making sales easier.
- Salesforce
    - Good for mid-sized and large companies

    - Salesforce is the pioneer of CRM solutions. It enables almost limitless tools for sales, marketing, and customer service in addition to ways to customize the system into company's needs.

    - Requires relatively much learning of the system, but after users have finished training periods provided for example Salesforce, using of the system is effective.

- Microsoft Dynamics 365

    - Good for large companies

    - Microsoft as a company is gigantic and it offers the largest CRM system of this top 5 listing. It offers the normal CRM services and enables solutions for ERP, billing and accounting. ERP is abbreviation of enterprise resource planning (Investopedia, 2021). Enterprise resource planning (ERP) is a method for firms to manage and integrate the various aspects of their operations. Many ERP software systems are beneficial to businesses because they help them in implementing resource planning by connecting all of the operations required to manage their businesses into a single system. Planning, purchasing, inventory, sales, marketing, finance, human resources, and other functions can all be integrated with ERP software.

- Pipedrive

    - Good for small and mid-sized companies

    - Easy to use and clear management of sales pipeline. It is considered as the "best friend" of a salesperson since it is easy to learn, and it enables automation of frequent tasks.

- Upsales

    - Good for small and mid-sized companies

- Has automated marketing and suits especially companies that invest in inbound marketing. Inbound marketing is a business strategy for attracting customers by providing relevant material and experiences and it creates connections and solves problems the audience already has (HubSpot, 2022).

According to Tilastokeskus (n.d.) company is small and/or mid-sized when:

- It has less than 250 employees
- Turnover is up to 50 million euros or balance sheet total is up to 43 million euros
- Under 25% of shares or capital is owned by company or companies that cannot be considered as a small or mid-sized company.

If a difference must be made between a small and mid-sized company, small companies have less than 50 employees, turnover and balance sheet total is up to 10 million euros.

Companies are considered as large companies when they have over 250 employees and turnover is over 50 million euros (Suomen Yrittäjät, n.d.).

4 CASE COMPANY INTRODUCTION

This chapter focuses on the case company of this thesis, Sulzer Pumps Finland Oy, and the industry where it operates. The last part of this chapter will look at the current status of Sulzer's S&OP process SILOP and their CRM system.

4.1 Sulzer Ltd. and Sulzer Pumps Finland Oy

Sulzer Ltd. was established in 1843 in Winterthur, Switzerland by Johann Jakob Sulzer-Neuffert (Sulzer, 2022). The headquarters are located in Winterthur. It is an industrial technology and manufacturing company, and it manufactures pumping solutions. Sulzer operations are global, and the number of employees internationally is over 15 thousand. More than 180 locations serve as a part of Sulzer's manufacturing and service network. Sulzer is known globally as a leader in fluid engineering. Sulzer's product range consists of industrial pumps, agitators, dynamic mixers, compressors, and submersible mixers.

Sulzer Pumps Finland Oy is a subsidiary of Sulzer Ltd. Sulzer Pumps Finland is located in Kotka, Finland and it was established in 2004 when Sulzer bought pumping business from Ahlström (Sulzer, 2022). It has 454 employees. In Finland pumps are produced in factories in Kotka and Mänttä. Later this year, the production of all pumps is relocated to Karhula when a new production line will be finished. Sulzer's main line of business is manufacturing pumps and compressors. The whole production is make-to-order with some exceptions. In make-to-order production products are made from the beginning once the customer order is received (Logistiikan Maailma, 2022a). The components for the products are either manufactured by Sulzer Pumps Finland Oy or procured as a ready component from a subcontractor (internal data source).

4.2 Divisions

Sulzer Ltd. is divided into following divisions (Sulzer, 2021):

- Flow equipment
    - Mission: “Wherever fluids are treated, pumped, or mixed, we deliver highly innovative and reliable solutions for the most demanding applications” (Sulzer, 2022).
    - Product range: pumps, agitators and dynamic mixers, compressors and aeration, and submersible mixers
    - Order intake 1324 million CHF (42% of whole order intake)
- Chemtech
    - Mission: “When superior chemical processing and separation technologies matter most, we enable our customers to operate world-class plants and produce high value products” (Sulzer, 2022).
    - Product range: separation technologies, polymerization technologies, process plants, licensing and biobased, recycling and carbon capture
    - Order intake 680 million CHF (21% of whole order intake)
- Services
    - Mission: “We are your partner for uptime and enhanced performance for your rotating equipment and more. Our dedicated people provide unrivalled service and expertise to meet your operational needs – anytime, anywhere” (Sulzer, 2022).
    - Service range: rotating equipment services, spare parts and service centres
    - Order intake 1163 million CHF (37% of whole order intake)

From these divisions, Sulzer Pumps Finland Oy is a part of the flow equipment division (internal data source). Flow equipment division is divided into three business units (BU) which are industry BU, water BU and energy BU.

4.3 Finances

Figure 3 shows the turnover of Sulzer Pumps Finland Oy for the years 2017/12-2020/12.

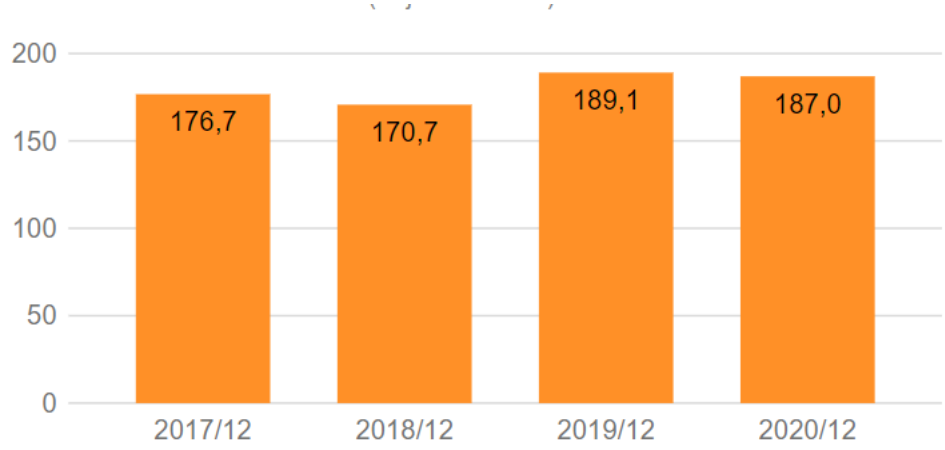


Figure 3 Sulzer Pumps Finland Oy's Turnover in Million Euros (Finder, n.d.)

Figure 4 shows Sulzer Pumps Finland Oy’s profits for the financial years 2017/12-2020/12.

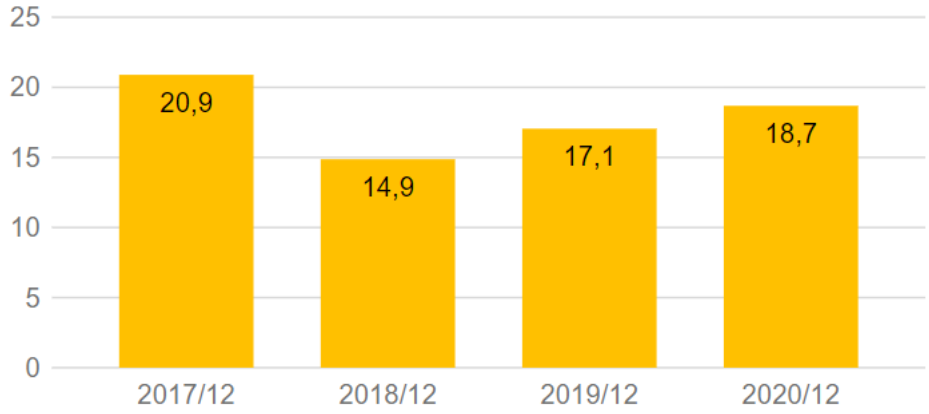


Figure 4 Sulzer Pumps Finland Oy's Profits in Million Euros (Finder, n.d.)

The number of employees being over 250 and the turnover being over 50 million euros, Sulzer Pumps Finland can be considered as a large company (Suomen Yrittäjät, n.d.)

4.4 SILOP and CRM

SILOP is the S&OP process of Sulzer, and it is an abbreviation from the words sales, inventory, logistics, operations, and procurement planning (internal data source, 2020). SILOP has been in use since fall 2019, so it is an adequately new process in the company.

SILOP Process Overview

	Demand Planning	Supply Planning	Consensus	Executive
Input	Sales forecast Open orders Delivery history	Proposed Demand Plan Supply Scenarios	Proposed Demand Plan Proposed Supply Plan	Escalations and Business Unit- wide plan
Meeting	Demand Review Meeting	Supply Review Meeting	Consensus Review Meeting	Executive Review Meeting
Participants	SILOP coordinator Regional Heads of Sales (owners) Sales Office Managers (Optional) Finance (Optional)	SILOP coordinator Procurement Manager (owner) Production Manager (owner) Production Planner Finance (optional)	SILOP coordinator Plant Manager (owner) CFO (owner) Regional Heads of Sales	SILOP coordinators of Americas, Asia & EMEA Head of Operations (owner) Head of BU Head of Sales BU Head of Finance BU Head of Global Procurement
Output	Proposed Demand Plan	Proposed Supply Plan	Approved Demand Plan Approved Supply Plan	Verified Plan

Figure 5 SILOP Process Overview (internal data source, 2020*)*

Figure 5 displays the overview of SILOP process and the phases of it and who take part in each step. The process starts with demand planning. Sales representatives/engineers input sales forecasts 24 months ahead and regional heads of sales create a demand plan using those forecasts. Sales forecasts are formed using different data sources, for example sales and delivery history, current budget, and projects pipeline. After the creation of the demand plan, a demand review meeting is held.

The process continues with supply planning and creation of supply scenarios. Procurement manager and production manager are the decision makers in this phase and based on the decisions, SILOP coordinator creates the wanted scenarios. Supply is reviewed in a supply review meeting and the outcome of this phase is a proposed supply plan.

Next step of the process is the consensus prep and consensus review meeting where plant/factory manager and chief financial officer approve the before made demand and supply plans. The process is finished with **e**xecutive review and executive review meeting where the plan is verified on a business unit level.

Sulzer Pumps Finland Oy uses a CRM system that offers nearly limitless ways to customize the system to the company's preferences. It tracks the behavior of each customer and customer profiles have detailed information about order history, open offers and financing. Chapter 3.2 presents more features that CRM systems can offer.

5 RESEARCH

In this thesis the research was about SILOP process of case company Sulzer Pumps Finland Oy. The goals were to find out how the benefits of SILOP are recognized by sales, and the focus was on the demand planning activities and sales forecast input. Target group for the research was salespeople of two regions with the most significant demand volume to factory. After doing the research, results were analysed, and development ideas were presented.

5.1 Research method

The chosen research method for this thesis was quantitative because a questionnaire was performed. Quantitative research is defined by Bhandari (2021) as a process where numerical data is collected and analysed whereas qualitative research is the same process but with non-numerical data like interviews or audio. According to Vilkka (2021) questionnaires, systematic observation and using existing data and statistics are forms of quantitative research. Both Bhandari and Vilkka state that questionnaires are the most used form of quantitative research. Data from quantitative research is usually analysed with calculating the material using statistical programs like Microsoft Excel and SPSS and the outcome can be for instance averages, standard deviations, and frequencies (RajatOn, 2015). Features of quantitative research are large quantitative samples, measuring and testing, generalizability and it answers to questions “How many?” and “How large?”. Features of qualitative research in the other hand are smaller samples, observing and interpretation, flexibility and it answers to questions “How and why?”.

Mixed method combines quantitative and qualitative research methods (Seppänen-Järvelä et al., 2019, p.332). They state that combining quantitative and qualitative methods creates a better overall understanding for the researcher about the research topic. The division of methods depends on the research topic and which method suits the best for each part of the study. As RajatOn (2015) stated that quantitative research has large samples and qualitative smaller ones combining the data from both of the methods can be time consuming (Seppänen-Järvelä et al., 2019 p.333).

The original thought was to perform a questionnaire and based on the answers choose a few respondents for additional interviews to get also qualitative data and use a mixed method for the study. Research results had to be presented in a yearly held SILOP meeting and

because of the short research time, the researcher chose to perform only the questionnaire and not use a mixed method.

5.2 Research implementation

The implementation of research started with a meeting with Sulzer Pumps Finland Oy's SILOP coordinator. SILOP coordinator explained the company's S&OP process and its current state. The researcher studied materials provided by the company and the development areas were clarified. After clarifying the development areas, questions for the questionnaire were devised in co-operation with the SILOP coordinator. Questions were made based on the areas that wanted to be covered and the chosen areas were the following:

- Background information of the respondent
- General satisfaction and confidence to SILOP and its effects
- Confidence and importance of personal input to the process
- What data sources are used for the sales forecast
- How much time is used to the demand planning activities and sales input
- Satisfaction to the support of SILOP team and Sales Input Tool
- Development ideas

Questionnaire should not be too broad, and it should be designed in a way that the respondents know how to answer to each question (Borg, 2021). The questions should not leave any scope for interpretation, so no misunderstandings occur. This requires language that is understandable, appropriate, and precise. If needed, instructions how to answer each question must be added if there is any scope for interpretation. Also, questionnaires answered online should not exceed the answering time of 20 minutes. Questions must be presented in a logical order and moving inside of the questionnaire should be easy.

The sample was chosen to be a specific portion of salespeople from two regions with the most significant demand volume to factory. The language used in the questionnaire was English and the platform was Google Forms. The questionnaire included mostly scaled questions, and the scale was from 1 – 4. This scaling was chosen so the respondent doesn't have the possibility to choose a neutral or "I don't know" answer. There were also a few open answer questions and answers to those gave good insights of the general opinion of the SILOP process and how it should be developed.

5.3 Reliability and validity of research

The terms reliability and validity are used to assess the quality of research (Middleton, 2022). They describe the accuracy of the measured matter. Reliability concerns the precision of the measured matter while reliability concerns the consistency. According to Heikkilä (2014) in terms of reliability and validity of a study it is extremely important that the chosen sample represents the target group, is large enough, response rate is large, and the questions used in the research measure and cover the whole research problem. Middleton (2022) agrees with Heikkilä and adds that conditions for research should be standardized, and consistency must be applied. With consistency in research Middleton (2022) explains that the whole sample should be given the same instructions and all participants should take part in the research in the same way. Also, circumstances of data collection should be consistent. In this research the results are opinions of the sample. The reliability when doing research of opinions, consists of internal and external reliability (Tietomilli- Mielipidepuntari, n.d.). Internal reliability concerns the content and quality of questions whereas external reliability concerns how reliable conclusions can be made of the population. The questions must present the research topic in a correct way and the answer options must be comprehensive and balanced. Sampling bias is also a factor that effects the reliability.

The sample group of this research were a specific portion of sales organizations, and the same questionnaire was sent to all of the 20 sales representatives/engineers. 18 answers were received and that makes the response rate 90%. The whole sample received the same cover letter, and the research was done consistently. They were all given the same two-week period of time to answer. Questionnaire was tested with the SILOP coordinator before sending it to the sample and there were no ways to misinterpret the questions. Based on the terms of reliability set by Heikkilä and Middleton in the paragraph above, this research can be

found reliable. Tietomilli- Mielipidepuntari (n.d.) states that when researching opinions, respondents can give answers that they think are desired and wanted by the researcher. This is usual in sensitive subjects, and it can cause the research to be unreliable. It could be argued that in this research the before mentioned situation did not happen since the answers were the opposite of the desired.

5.4 Ethicality of research

In accordance with ethical principles research must respect the dignity of the sample, privacy, self- determination, and other rights (Vuori, n.d.). Bhandari (2022) explains that when gathering data from people, scientists and researchers must always follow a set of rules. Understanding real-life occurrences and investigating habits, are common goals of human research. What is being investigated and how it is performed are both important ethical issues. Table 1 shows the various ethical issues that should be constantly considered when designing research and how these issues were taken into consideration when designing a questionnaire for Sulzer Pumps Finland Oy. The ethical issues presented by Bhandari are coherent with TENK, the Finnish National Board on Research Integrity (2019).

Ethical Issue	Definition	Implementation in research done for Sulzer Pumps Finland Oy
Voluntary participation	Your participants are free to opt in or out of the study at any point or time	Participation in the questionnaire was voluntary.
Informed consent	Participants know the purpose, benefits, risks, and funding behind the study before they agree or decline to join.	Introduction to the background and reasons for the study were in a cover letter sent to the sample before making the decision to take part or not.
Anonymity	You don’t know the identities of the participants.	Identities were needed for conducting further interviews

	Personally identifiable data is not collected	but those were not conducted after all.
Confidentiality	You know who the participants are, but you keep that information hidden from anyone else.	Identities of the participants are confidential, and they were informed that the results will be reported anonymously to SILOP coordinator.
Potential for harm	Physical, social, psychological and all other types of harm are kept to an absolute minimum	No harm was possible in this research.
Results communication	You ensure your work is free of plagiarism or research misconduct, and you accurately represent your results.	Results were published in a yearly SILOP meeting where the whole sample was invited. Results were analysed with the SILOP coordinator to avoid any misunderstandings.

Table 1 Ethical issues based on Bhandari (2022) with implementation in research done for Sulzer

Since the research included identifying information, there are principles that must be followed. TENK (2019) defines the key principles of handling material with identifying information being planning, responsibility and legality. Planning must consider the possible risks in handling identifying information. Responsibility covers the whole life cycle of the research, and the researcher must follow organizational ruling and legality when collecting identifying information.

In the research done by the researcher participation was voluntary and all participants were introduced to the purpose and background of the study in a cover letter before they made the decision to take part in it or not. Answers were not anonymous, because identities were needed for further interviews but those weren't executed after all. The respondents were informed that the answers are reported to Sulzer's SILOP coordinator anonymously and the identities of the respondents are confidential and not told to anyone. It was also brought to their attention that all answers given to this research will be destroyed after

the thesis is finished. The research caused no harm in any way to the respondents and the results were presented in a yearly SILOP meeting where all respondents were invited. After studying and viewing the ethical issues presented by Bhandari (2022) and TENK (2019) and comparing those to the implementation of the conducted research, it can be said that the research was ethical.

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6 RESULTS OF RESEARCH

After analyzing the answers from the questionnaire, the author will present the results and observations made based on the results. The main research questions were the following:

- How strongly the benefits of SILOP reflect to the sales organization?
- How are sales experiencing demand forecasting activities?
- How could the process be developed?

In the first part of the questionnaire the background information of respondents was covered. Over 90% of the respondents had worked for the company over 9 years and the work years for 7,1% of the respondents was 3 – 5 years. SILOP was taken into use in Fall 2019, so all of the respondents have been participating in the process the same time and have had the same time to adapt. Malik (2021) states that adapting to a new process fully is an important factor of success. Hays (n.d.) also highlights the importance of adaptability since it is a skill that employers appreciate.

The second part of the study included questions regarding the respondents' experience of benefits of the process. The study showed that majority of the respondents do not see SILOP as a useful process and worth of doing. Almost 10% of the respondents disagreed strongly to the statement "SILOP is a useful process and worth doing" and 57,10% disagreed with the statement. The majority of the respondents don't see the value of the process and 1/3 of the respondents were not familiar with the actions that are made based on the process. Not seeing the value of the process and not knowing the actions that are made based on the respondents' inputs can explain the occurring unsatisfaction towards SILOP.

As mentioned in theory chapter 2.1 maintaining and improving lead times and keeping delivery promises are effects of a good S&OP process. With the study the researcher wanted to detect if the sales representatives/engineers have confidence in SILOP's abilities to achieve those effects. The results showed that over 85% of the respondents don't feel confident in SILOP's ability to improve and/or maintain lead times and almost 93% of the respondents don't have confidence in SILOP's ability to help keep delivery promises. The researcher analysed Sulzer's capacity and delivery times and noticed that there has not been changes to neither

of those for multiple months (internal data source). Capacity has been running on a maximum level and there has not been any added capacity. Also, lead times have been standard and there has been no improvements. Taken the world crises into consideration, being able to keep the delivery times and capacity on a standard level is a positive matter.

The researcher wanted to detect how important the sales representatives feel their personal input in SILOP, how much time they use for it and from where they collect data for the forecasts. The study showed over 2/3 of the respondents don't see their personal inputs important to the process and 1/3 see it as somewhat important or very important. The average time the respondents use for the reporting of monthly sales input was 1,5 hours. The median answer was also 1,5 hours and 42% of the respondents used less time than the average. The shortest time used was 15 minutes and some used multiple hours. If the sales representatives/engineers do not think their inputs are important and don't put effort to the forecasts, that reflects straight to the accuracy of the forecasts.

The question regarding data sources for demand forecasts was a multiple-choice question and respondents had the possibility to add their own answers. The given answer options were current budget, delivery history and projects pipeline. Table 8 shows the most used data sources, and they are projects pipeline, delivery history and current budget. Some sales offices had their own excels of incoming orders and local follow up files. The study showed that 12% of respondents use the CRM system as a source. This number is surprisingly low, since the used CRM system has such a broad automated database, and it tracks customer behaviour as explained in chapter 3.

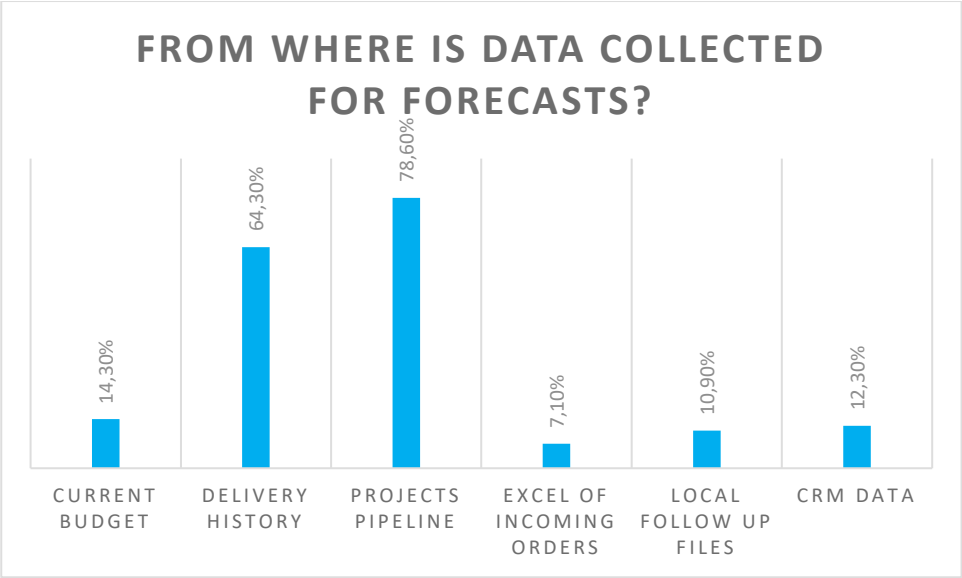

Chart 1 Chart based on questionnaire answer

The researcher wanted to detect how the respondents feel about the Excel-SQL based tool that is used for inputting the sales forecasts and how it could be improved. The study showed 3/4 of the respondents think the tool is very easy or somewhat easy to use while 1/4 think it's harder to use. Respondents think the tool is far too manual and it should show more clearly the dependency between old forecasts and succeeded accuracy and how SILOP has helped the production. This would make the input process more meaningful as the sales representatives would see how accurate their old forecasts have been.

As mentioned in theory chapter 2, one part of S&OP processes are monthly demand review meetings. The participants in the meetings are SILOP coordinator and Heads of Sales. The attendance of sales representatives/engineers of Sulzer is optional and they have not been invited to these meetings. The researcher wanted to detect if they would be interested to take part in these meetings. Taking part in the meetings and seeing the effects their personal input, could improve the meaningfulness of the process to each participant. The study showed majority of the respondents are not interested in the meetings whereas approximately 14% would be interested. This result goes conjointly with the overall opinion of SILOP not being interesting.

Also, satisfaction to the support of SILOP team was detected. The study showed that almost 86% of the respondents are very or somewhat satisfied to the support of the SILOP team. The responses and support of the team were stated to be fast and accurate. This result is very pleasing since the SILOP support team is essentially the SILOP coordinator alone.

In the last part of the questionnaire the researcher wanted to investigate how could the monthly sales input activities be improved to be more meaningful and easier to do and the respondents were given an opportunity to give feedback freely regarding SILOP and the questionnaire. According to the answers SILOP is too manual tool and linking to existing CRM system would be highly appreciated as it would make automation of the creation of sales forecasts easier. This is also explained in the theory chapter 3.2. CRM is used actively by the sales representatives/engineers, and it is a very well-working tool. Also, suggestion was made to shorten the forecast time from 24 months to 12 months. This would decrease the load related to SILOP and making a forecast for 24 months is seen as too uncertain.

The freely given feedbacks included negative and positive feedback. Majority of the salespeople don’t see the results of the process and they have no interest in it. They don’t think it is useful for sales. The researcher can understand that point of view because it is more work for the salespeople and they don’t necessarily get any advantage of it, but it should be seen as what is good for the company, is good for all employees of the company. There were also some positive feedbacks. Some of the respondents think that the process itself is good put the approaches are still under consolidation phase. The process should be developed into more user-friendly tool and the use of CRM was once again highlighted. Like mentioned before, the process was taken into use in Fall 2019, so like said it is still in consolidation phase and under development.

7 SUGGESTIONS AND CONCLUSION

In conclusion Sulzer has been able to create a well-working S&OP process in theory and it has nearly all of the success factors listed in chapter 2.1. Unfortunately, the people doing the base work for the process, demand phase, do not see the positive effects the process has, and that is why they are not motivated to do it. Also, having a separate tool for inputting the forecasts for the process, and a CRM system, they feel like they are doing the same job twice when inputting potential sales and sales forecasts to the systems. The theoretical part of CRM showed how versatile and editable tool CRM is, so Sulzer's S&OP process SILOP should be connected and linked to it. The study showed that is also what the sales representatives/engineers wished for. Connecting SILOP to CRM would increase the effectiveness and save a lot of sales representatives/engineers' time and make their jobs more pleasant. Research questions of this study are listed in chapter 1.1 and the study gives clear answers to these questions. The researcher found the opinions of sales representatives/engineers as reliable as they were very coherent.

7.1 Future Research Areas

Like mentioned in chapter 6, SILOP is still in consolidation phase and under development. This research gave a good insight which way the development should go in the sales' point of view. If the automated data from CRM is connected to SILOP in the future, the same questionnaire could be performed again to see if the salespeople see the benefits of the process differently. It would be interesting to see if the automatization has made the sales representatives feel differently towards SILOP. In addition to this, the accuracy of the sales forecasts should be researched when the data from CRM system has been in use for at least a year to see if it has increased the accuracy of the forecasts.

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APPENDICES

Appendix 1. Questionnaire

This questionnaire is a part of thesis work done by Natalia Rask. The goal of this questionnaire is to collect feedback and data about satisfaction to demand planning (sales input) activities of SILOP and find ways to improve the process.

All answers will be reported anonymously to SILOP coordinator and deleted once the thesis is finished. Name information is needed only for further interviews. The results of this questionnaire will be published in January in a yearly SILOP meeting.

1. What is Your name?

2. What is your position in Sulzer?

3. For how long have You been working for Sulzer?

4. SILOP is a useful process and worth doing. (Scale from 1- strongly disagree to 4- strongly agree)

5. How satisfied are you with the effects SILOP has had so far? (Scale from1- not satisfied at all to 4- very satisfied)

6. How confident are You that SILOP is helping factory in improving capacity planning for SILOP products? (Scale from 1- not confident at all to 4- very confident)

7. How confident are You that SILOP is helping the factory in improving/maintaining lead times for SILOP products? (Scale from 1- not confident at all to 4- very confident)

8. How confident are you that SILOP is helping us to keep our delivery promises to customers? (Scale from 1- not confident at all to 4- very confident)

9. How important do you feel Your input is regarding capacity planning, lead times and delivery promises? (Scale from 1- not important at all to 4- very important)

10. How could the monthly sales input activities be improved to be more meaningful and easier to do?

11. How much time do You usually use for sales input activities monthly? (Data collection, planning and reporting) Please, give answers in hours and to the nearest 30 minutes. For example, 1 h 30 minutes.

12. From where do You collect data for the forecast? You can choose multiple answers.

13. How satisfied are you with the support from SILOP team? (Scale from1- not satisfied at all to 4- very satisfied)

14. Is the Sales Input Tool easy to use? (Scale from 1- not easy at all to 4- very easy)

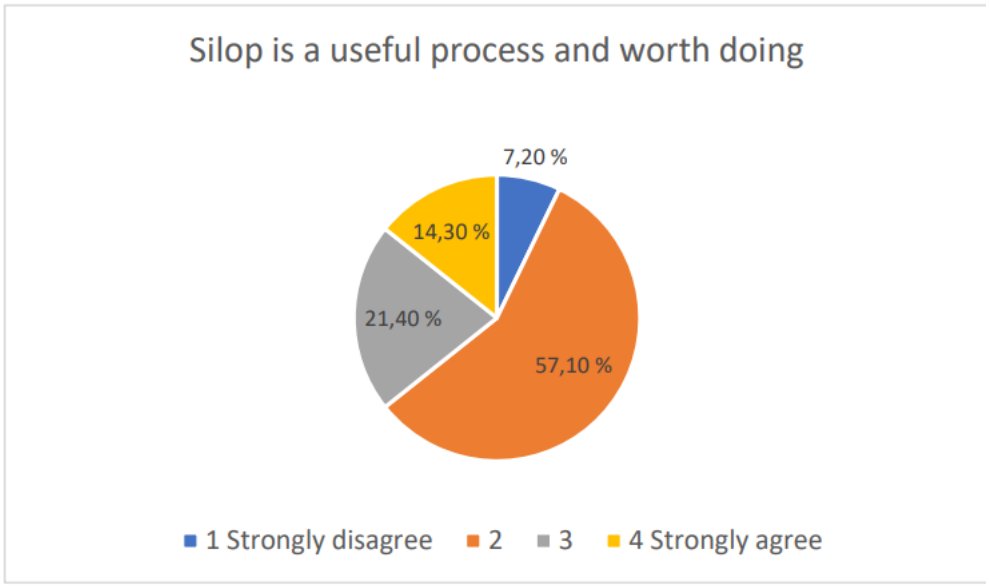
15. Is there something that should be developed about the Sales Input Tool? If yes, please explain what.

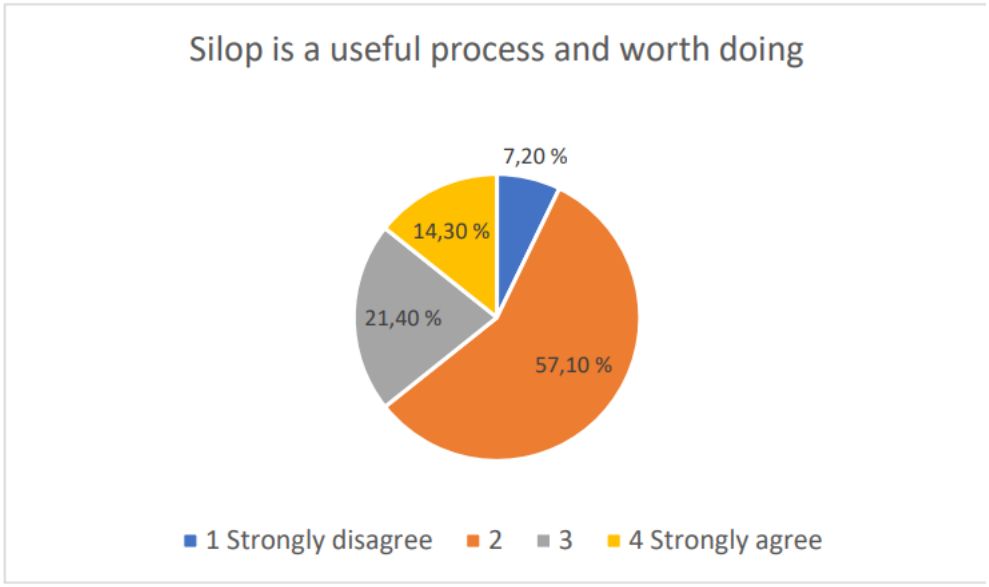
16. Are You familiar with the actions made based on SILOP?

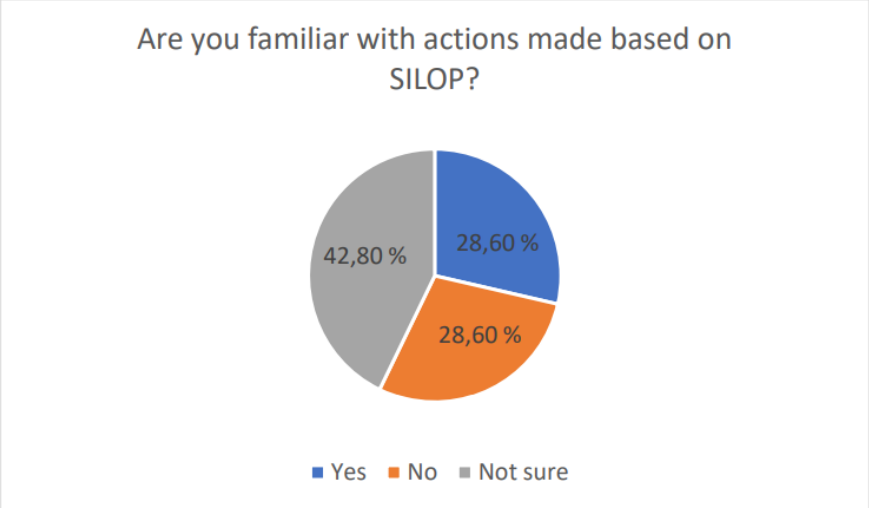
17. Would You be interested in taking part in the monthly demand review meeting?

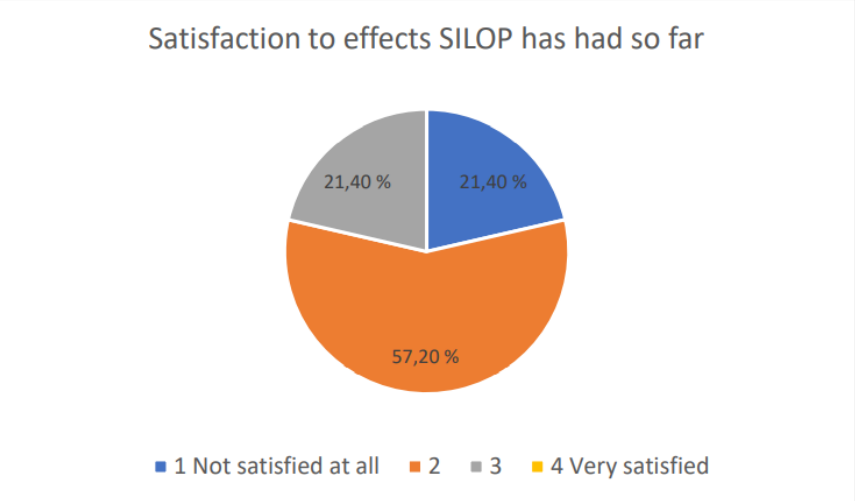
18. Here You can give feedback freely regarding SILOP.

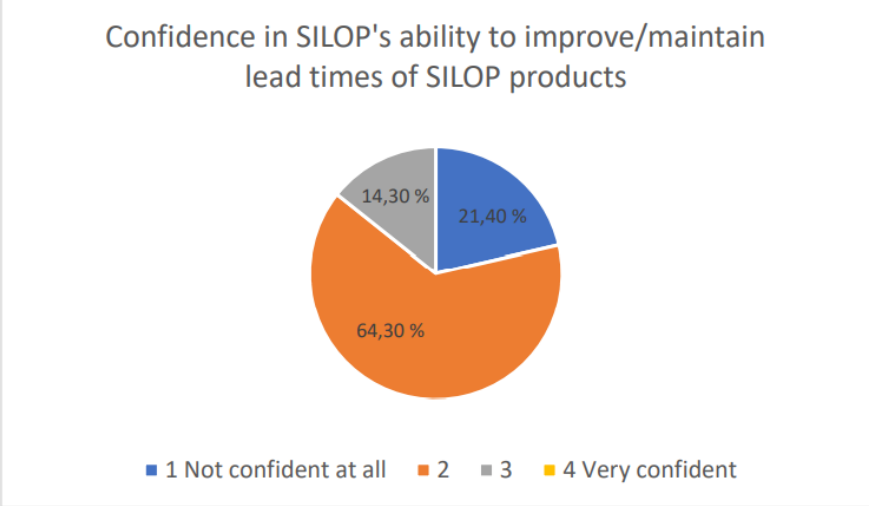
Appendix 2. Charts based on the questionnaire answers

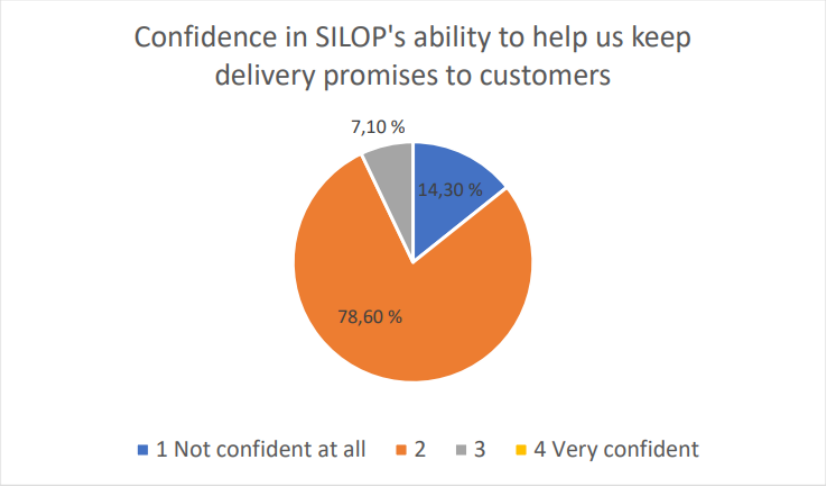


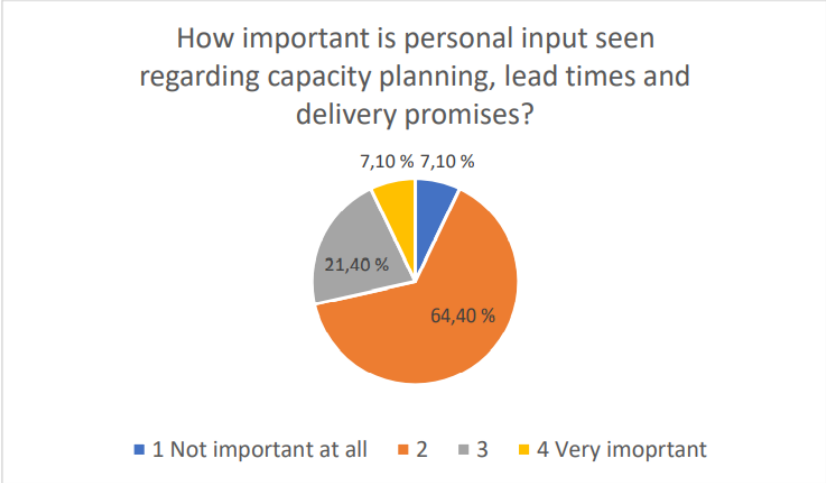


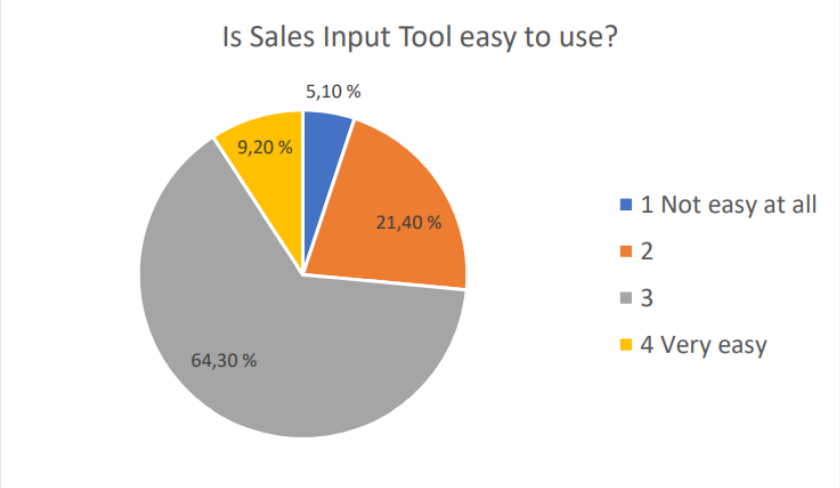

Are you familiar with actions made based on SILOP?
28,60 %
28,60 %
42,80 %
Yes
No
Not sure

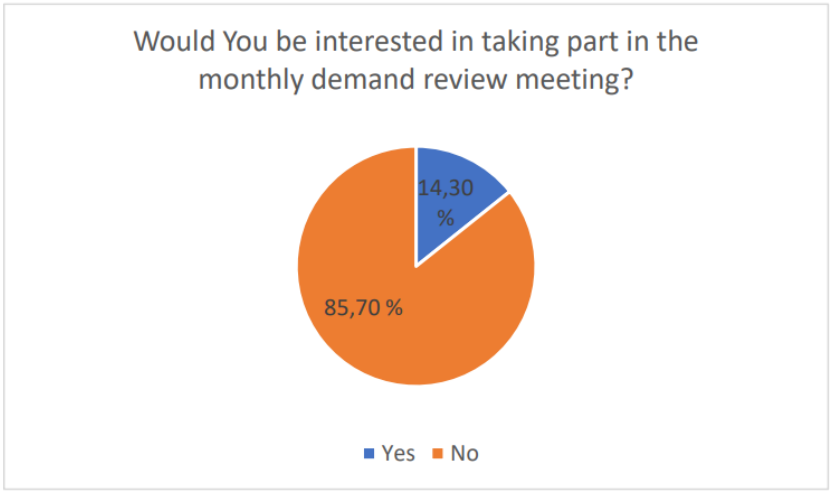

Satisfaction to effects SILOP has had so far
21,40 %
21,40 %
57,20 %
1 Not satisfied at all
2
3
4 Very satisfied

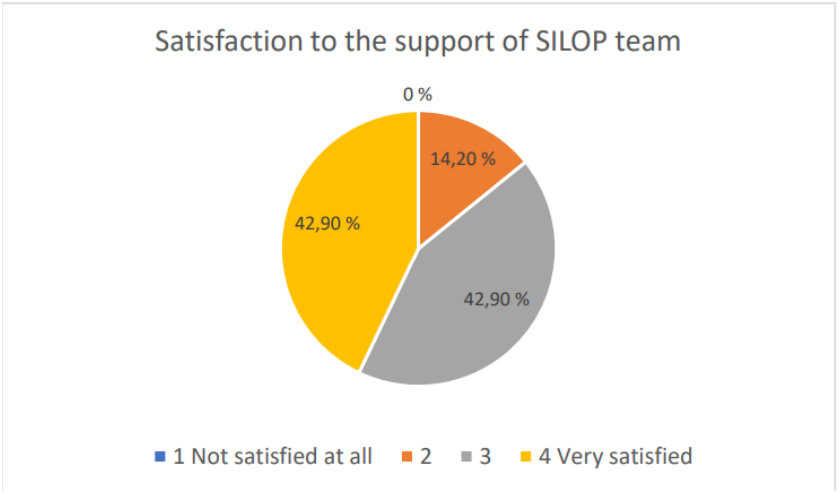

Confidence in SILOP's ability to improve/maintain lead times of SILOP products
14,30 %
21,40 %
64,30 %
1 Not confident at all
2
3
4 Very confident


Confidence in SILOP's ability to help us keep delivery promises to customers
7,10 %
14,30 %
78,60 %
1 Not confident at all
2
3
4 Very confident


How important is personal input seen regarding capacity planning, lead times and delivery promises?
7,10 %
7,10 %
21,40 %
64,40 %
1 Not important at all
2
3
4 Very imoprtant


Is Sales Input Tool easy to use?
5,10 %
9,20 %
21,40 %
64,30 %
1 Not easy at all
2
3
4 Very easy


Would You be interested in taking part in the monthly demand review meeting?
14,30 %
85,70 %
Yes
No


Satisfaction to the support of SILOP team
0 %
14,20 %
42,90 %
42,90 %
1 Not satisfied at all
2
3
4 Very satisfied