



LAPPEENRANTA UNIVERSITY OF TECHNOLOGY  
School of Business and Management

Anton Jääskeläinen

**Managing and utilizing information flow for new products' periodic account  
sales process**

Master's thesis

Supervisors: EVP Rauno Hiltunen & EVP Elli Siltala

1<sup>st</sup> Examiner: Professor Vesa Harmaakorpi

2<sup>nd</sup> Examiner: D.Sc. (Econ. & Bus. Adm.) Tuija Oikarinen

## ABSTRACT

**Author:** Anton Jääskeläinen

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**Keywords:** Knowledge Management, Process Modeling, Embedded Knowledge, Tacit Knowledge, Knowledge Codification, Process Management.

The goal was to understand, document and module how information is currently flown internally in the largest dairy organization in Finland. The organization has undergone radical changes in the past years due to economic sanctions between European Union and Russia. Therefore, organization's ultimate goal would be to continue its growth through managing its sales process more efficiently.

The thesis consists of a literature review and an empirical part. The literature review consists of knowledge management and process modeling theories. First, the knowledge management discusses how data, information and knowledge are exchanged in the process. Knowledge management models and processes are describing how knowledge is created, exchanged and can be managed in an organization. Secondly, the process modeling is responsible for visualizing information flow through discussion of modeling approaches and presenting different methods and techniques. Finally, process' documentation procedure was presented. In the end, a constructive research approach was used in order to identify process' related problems and bottlenecks. Therefore, possible solutions were presented based on this approach.

The empirical part of the study is based on 37 interviews, organization's internal data sources and theoretical framework. The acquired data and information were used to document and to module the sales process in question with a flowchart diagram. Results are conducted through construction of the flowchart diagram and analysis of the documentation. In fact, answers to research questions are derived from empirical and theoretical parts.

In the end, 14 problems and two bottlenecks were identified in the process. The most important problems are related to approach and/or standardization for information sharing, insufficient information technology tool utilization and lack of systematization of documentation. The bottlenecks are caused by the alarming amount of changes to files after their deadlines.

## TIIVISTELMÄ

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**Hakusanat:** Tietämyksenhallinta, prosessien mallintaminen, prosessien johtaminen, tietämyksen kuvaaminen, hiljainen tieto, sisäistetty tieto.

Tarkoituksena oli sisäistää, dokumentoida ja mallintaa miten informaatio virtaa tällä hetkellä Suomen suurimmassa meijeriorganisaatiossa. Kyseinen organisaatio on läpikäynyt radikaaleja muutoksia viime vuosina johtuen Euroopan unionin ja Venäjän välisistä talouspakotteista. Tästä johtuen yrityksen tärkein tavoite on jatkaa kasvua hallitsemalla myyntiprosessia entistä tehokkaammin.

Diplomityö koostuu kirjallisuuskatsauksesta ja käytännön osuudesta. Kirjallisuuskatsaus koostuu tietämyksenhallinnan ja prosessien mallintamisen teorioista. Alussa tietojohdamisen osalta käydään läpi miten data, informaatio ja tieto vaihtuvat keskenään prosessissa. Lisäksi, tietohallinnan mallien ja prosessien osalta esitellään miten tietoa luodaan, vaihdetaan ja hallitaan organisaatiossa. Prosessien mallintamisosiossa keskitytään tietovirtojen visualisointiin käymällä läpi mallinnuksen lähestymistapoja. Lisäksi esitellään erilaisia prosessien mallinnuksen metodeja ja tekniikoita. Teoriaosion lopuksi esitellään tiedon kirjaamisprosessi. Tutkimuksessa käytettiin konstruktivistista lähestymistapaa prosesseihin liittyvien ongelmien ja pullonkaulojen paikantamiseen. Tutkimuksessa löydetty ratkaisuehdotukset perustuvat tähän lähestymistapaan.

Työn käytännön osuus perustuu 37:ään haastatteluun, yrityksen sisäisiin tietolähteisiin ja teoreettisen viitekehukseen. Hankittu data ja informaatio käytettiin myyntiprosessin dokumentointiin ja mallintamiseen vuokaavion avulla. Tulokset muodostettiin kehitetyn vuokaavion ja dokumentaatioanalyysin pohjalta. Vastaukset tutkimuskysymyksiin ovat johdettu käytännön ja teorian osioista.

Työn tuloksena esitettiin 14 ongelmaa ja kaksi pullonkaulaa prosessissa. Merkittävimmät ongelmat liittyivät tiedonjakamisen lähestymistapaan ja/tai standardisointiin, IT-työkalujen hyödyntämiseen ja dokumentoinnin systematisoinnin puutteeseen. Pullonkaulat johtuivat pääasiassa dokumenttien merkittävistä muutoksista määräaikojen jälkeen.

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## LIST OF ABBREVIATIONS

APO	Advanced Planner and Organizer
ASPro	Account Sales Process
CRM	Customer Relationship Management
EDI	Electronic Data Interchange
ERP	Enterprise Resource Planning
EVP	Executive Vice President
FS	Food Service
IDEF	Integrated Definition
IT	Information Technology
K-J	Jiro Kawakita's technique
KM	Knowledge Management
MS	Microsoft Office
PDF	Portable Document Format
POS	Point Of Sale
PPA	Preliminary risk analysis
ProMa	Product development and Marketing
RAD	Role Activity Diagrams
SAP	Systems, Applications and Products in data processing
SECI	Socialization, Externalization, Combination and Internalization
SVP	Senior Vice President
SVP of BU	Senior Vice President of Business Unit
TiTo	Order and Delivery
VP	Vice President
e.g.	For example
etc.	And so forth
i.e.	That is
F	Feedback
POS	Retail's POS-data
VSR	Valio's sales report
cf.	Compare
$\Sigma$	Sum

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## 1 INTRODUCTION

The purpose of this chapter is to introduce a reader to the research. The reader will gain understanding of importance of this work after getting acquainted with the following text about background of the research, objectives, scope, structure of the report, limitations and execution of the study.

### 1.1 Background of the research

In year 1943, Sir Winston Churchill said in his speech at Harvard University: "*The empires of the future are the empires of the mind*" (Bethell, 1998). Traditional accounting methods are failing to capture the full value of an organization. (Allee, 1997, p. 74) Organizations are recognizing that knowledge is their core asset and it needs to be studied properly. (Xuelian, et al., 2015, p. 257)

In the current age of information, organizations strive for differentiation rather than scale. Differentiation can be achieved through better knowledge of organization's customers (Xuelian, et al., 2015, p. 257). Only few firms are able to improve organization's performance through creating more value for customers. (Smith & McKeen, 2005) Most commonly, successful companies use Customer Relationship Management (CRM) system to absorb and storage as well as discover customer related information, such as names, favorites, order history and habits, requirements, etc. Other popular Information Technology (IT) tools are such as Enterprise Resource Planning (ERP), Contact Centre and e-business systems that gather customer data at every possible contact point (Rollins & Halinen, 2005). Measurement tools are also developed and implemented in order to identify customer's value to organization (Reinartz & Kumar, 2002).

Knowledge has become the basis of competitive advantage for an organization and has formed a valuable strategic resource (cf. Bueren, Schierholz, Kolbe & Brenner (2004)). In addition, the most important type of knowledge is the customer knowledge, which is emphasized by numerous publications, and empirical researches and being quoted as the most important type of knowledge to assist organizations actions effectively. (Bueren, et al., 2004) In other words, organization as a whole desires to know what it actually knows about customers

and what it needs to know in order to operate effectively. Customer knowledge is followed by knowledge types such as best practices and effective processes, and knowledge about competencies and capabilities. (Smith & McKeen, 2005)

Finland is undergoing difficult times, especially from economical point of view. First, Finnish economy was hit by global economic recession in 2009 (SVT, 2015) and then it was followed by economic sanctions in 2014 (Suoninen, 2014). Economic sanctions were imposed between Russian Federation (Russia) and European Union (EU) targeting multiple industries on both sides. According to Yle (2014): *“The Finnish dairy giant Valio has announced the loss of 126 jobs and will temporarily lay-off 50 more employees as a result of an expected collapse in income because of Russia’s ban on imports of dairy products from the EU.”* (Yle, 2014). As the sanctions continued, Valio Oy had to reduce up to 320 jobs in Finland in 2015 (The Moscow Times, 2014). Because the environment had changed drastically during the past years, Valio Oy had to develop itself accordingly to the situation. The organization has undergone large scale changes. Economic sanctions between EU and Russia were prolonged from the end of 2015 until June 2016 (Taloussanomat–Reuters, 2015). Therefore, Valio Oy started to increase its export to other markets, according to Taloussanomat (2015).

According to Senior Vice President (SVP) Hiltunen (2016), on one hand, a strong organizational culture takes organization forward and helps to overcome small environmental changes. On the other hand, it slows down inner changes and can prevent adoption of new teachings. Thus, organizational culture is difficult to influence. (Hiltunen, 2016) Nevertheless, Valio Oy’s culture has supported the organization during the crisis in a number of different ways. Employees quickly understood the whole depth and importance of the crisis for the organization and its stakeholders. Drastic measures were immediately taken. A strong sense of community was born and employees had to do their best in order succeed. The drastic measures did not paralyze activities and organization quickly adapted to the new situation after radical changes that have occurred. (Hiltunen, 2016) It was mentioned by Hannus (2004, p. 266), that in the world of fast pace changes the know-how of employees is the cornerstone for long lasting organizational success.

Markets change, new technologies mature, competition gets tougher and products' lifecycles shortens. (Hannus, 2004, p. 266) According to Erden, von Krogh, & Nonaka (2008), during such economic changes, organizations are under constant pressure to perform effectively and efficiently. Therefore, organizations need to differentiate themselves from the competition based on their capabilities and competencies. (Erden, et al., 2008, p. 15) A successful organization is constantly creating new knowledge that is efficiently communicated to all stakeholders and exploited in products, services and processes. (Hannus, 2004, p. 266) Furthermore, the top-notch organizations are better at addressing these products and services for present and new markets. This is achieved by managing organization's products and markets more effectively. In fact, managers need to be committed to their organization altogether. (Smallbone, et al., 1995, pp. 59 - 60)

The case organization, called Valio Oy or simply Valio is trying to find ways to improve its operations internally in order to perform better externally. On the other hand, Valio Oy is the market leader in the Finnish market, thus its growth is somehow limited there. Furthermore, growth in the current market can be only achieved through improvement of internal management of the organization. Improving internal management means utilizing organization's knowledge to its full potential. Knowledge is an essential business asset. (Allee, 1997, p. 73) The primary challenge of knowledge is the transaction from tacit to explicit knowledge, so that it can be shared and renewed constantly (Hansen, et al., 1999, p. 55). In order to systematically exploit organizational knowledge, codification and personalization strategies are important to be defined. On one hand, codification strategy is based on "*re-use economics*", which means invest once in creating or acquiring a knowledge asset and re-use it many times. Codification strategy is usually implemented in a form of electronic document systems that codify and store knowledge and allows an easy dissemination and usage. In other words, IT-systems can help in management of vast amount of documents. (Hansen, et al., 1999, pp. 56-57; Hannus, 2004, p. 268) Codified knowledge is explicit. On the other hand, personalization strategy is based on "*expert economics*", which means channeling individual expertise to less experienced individual, who then can employ it to achieve organization's goals, thus

tacit knowledge is transferred through face-to-face interaction. (Hannus, 2004, p. 268) The strategy tends to transfer tacit knowledge through this kind of interaction, which is also called the soft mechanism. (Hansen, et al., 1999, pp. 57-58; Jasimuddin, 2008) The above mentioned tacit and explicit knowledges will be discussed further in the theory part of the study. After defining strategies, the closest to this study will be the codification strategy, because the purpose of this study is to understand how data, information and even knowledge are exchanged between employees during different tasks and activities. According to Davenport (1993, p. 148), process modeling can be used as a method in order to understand how above mentioned data, information and knowledge can be communicated between employees.

In this thesis it will be attempted to manage information possessed by Valio Oy's Account Sales Process (ASPro) in Finland by first introducing reader to theoretical and research methodology chapters. Gained knowledge will be then used to analyze ASPro's periodic account sales process. Analyzation of the process will be carried out accordingly to the constructive research approach. The research approach combined with empirical part of the study can possibly help Valio Oy in identifying bottlenecks and issues in the process. Theoretical part of the study will aid in proposing possible solutions in identified problematic areas. Valio Oy will be further presented in this thesis during case company introduction. The goal is to gain understanding of how sales information is set up for new and old products in addition to the customers. The exchange of such information between stakeholders will be evaluated. This will be done by first discussing knowledge management and process modeling theories and then applying them accordingly to the empirical part of the study. Interviewing will be used as the main method for gathering information, combined with collecting data from Valio Oy's intranet, interactions and observations with employees in the main headquarters of Valio Oy where this thesis was mostly written. Interviews will hopefully provide the reader with a better understanding of the internal atmosphere, current situation, thoughts and feelings of the case studied organization as a whole. Thus, interviews will be adding transparency to this thesis.

This study can be useful for managers that are seeking examples of how information about products is being managed before, during and after sales. An insight about the information and how it is exchanged through documentation in the Finnish dairy industry is also presented. In addition, useful methods and steps for modeling of such process will be discussed. The study is strongly related to knowledge and process management as well as modeling. There is also a slight view presented from IT perspective.

## 1.2 Objectives and scope

The purpose of this thesis is to understand how information is exchanged in ASPro's periodic account sales process for trade in Finnish retails. The ultimate goal is to make the information presented in this research more flexible, agile, accessible and usable. This will be done by answering to the following questions presented in **Table 1**. The first three research questions (RQs) are related to the empirical part of the study. The last two RQs are related to the theoretical part of the study.

**The first RQ:** *“How information is currently managed in periodic account sales process for retail trade?”*. The objective is to control accumulation of knowledge by identifying deviations that can occur during the process. **The second and third RQs:** *“How information management can be enhanced in periodic account sales process?”* and *“How information management can be utilized in periodic account sales process?”*. Their objectives are to improve the process by first identifying issues, such as process's weak spots, bottlenecks and problems and then suggesting improvements based on theoretical part of the study. Planning refers to future utilization of knowledge in the organization's business process.

**The fourth RQ:** *“How information is exchanged within organizations?”*. The objective is to understand how information exchange is made possible and by what means of transfer. This will be done by extensively reviewing knowledge management and process modeling theories. **The fifth RQ:** *“How information exchange processes can be modeled?”*. The objective is to discuss how information exchange process is usually modeled, present modeling benefits and

drawbacks. Different modeling methods will be discussed, but only the best suited technique's modeling steps will be presented.

**Table 1.** Research questions and objectives.

Research questions	Objective
<b>RQ1:</b> How information is currently managed in periodic account sales process for retail trade?	- Identifying deviations. - Controlling accumulation of knowledge.
<b>RQ2:</b> How information management can be enhanced in periodic account sales process?	- Identifying process's weak spots, bottlenecks and concrete problems.
<b>RQ3:</b> How information management can be utilized in periodic account sales process?	- Proposing solutions to improve process management and planning.
<b>RQ4:</b> How information is exchanged within an organization?	- Discussing information exchange mediums and related models through literature review.
<b>RQ5:</b> How information exchange processes can be modeled?	- Discussing benefits and drawbacks of information modeling, reviewing different techniques and presenting modeling steps.

The scope of this study is focusing on describing the process as it currently is and methodically identifying issues as well as proposing solutions. There will be less focus on the time aspect, i.e. how long activities consume time to complete. In addition, measurement is not in the scope due to the time limit of this study. Thus, measurement will not be discussed during the main part of the study, although it will be mentioned in the suggestions for future research. This being said, reengineering or redesigning of a process is left out of the study. Nevertheless, suggestions for improvement will be somehow mentioned. Furthermore, the study focuses solely on internal processes of Valio Oy leaving external processes outside of the scope. The research is not focusing solely on improvement of the process in question, but rather laying cornerstone for future research in this field for the organization. An overall analyzation of product's success on the market is not going to be the main goal of the study. Nevertheless, understanding how current processes are operating, indicating issues and improving them is an important milestone for bringing successful products to the market more frequently. If one attribute of a successful process needs to be pointed out from the study perspective, it is the output quality of documents.

Valio Oy's core process called Order and Delivery (TiTo) will be left out. Product development and Marketing (ProMa) will be somehow discussed. Nevertheless, above mentioned TiTo and ProMa will be briefly presented in order for the reader to gain comprehensive understanding of ASPro. Presentation of ASPro will be limited to periodic account sales process. ASPro is a core process and periodic account sales process is its sub process. Above mentioned core processes will be explained later. All in all, thesis will be kept in the scope of the research questions. The overall field of research would be quite vast without mentioning objectives and scope. Questions outside of the scope will be presented in the suggestions for further research. Processes mentioned in this thesis are operating in Finland.

### **1.3 Structure of the report**

There will be a total of eight chapters. The current chapter is introduction and it is also the first chapter. In chapter two, the theory part of this thesis will be presented. The theoretical background will lay a cornerstone for the main point of view, through which results will be discussed. Literature review will present existing literature and theoretical models to the reader. This part will also create a framework for the empirical part of the study. In addition, theoretical questions will be answered based on this part. Then, chapter three, research methodology will be presented as an addition to the theoretical part. All theoretical bases related to constructive research approach in this thesis will be covered and explained as comprehensively as possible. A research process of the study will also be presented in addition to the data analysis method used. After the methodology, the case company will be presented in chapter four, covering basic information about Valio Oy and its core processes. Most important details about Valio Oy will be mentioned.

Chapter five, the empirical part of the study will lay foundation for results. First, group interviews with simplification of observations will be presented. Secondly, a process map will be presented. Open and semi-structured interviews will be discussed along the chapter. Thirdly, a diagram of new product development's process will be briefly introduced. This will be followed by presenting a diagram

of periodic account sales process and its parts. Later, analyzation of documents in the periodic account sales process will be conducted based on the criteria gained from the theory part and interviews. Results of the analysis will be summarized in the end of this chapter. In chapter six, comprehensive results and answers to RQs will be presented. In addition, a SWOT-analysis of the process will finalize the study. In chapter seven, key findings, validity and reliability of the research and suggestions for future research will be discussed. Finally, chapter eight will summarize the results with a causal map, briefly answer to RQs and conclude with managerial implications.

#### **1.4 Limitations of the study**

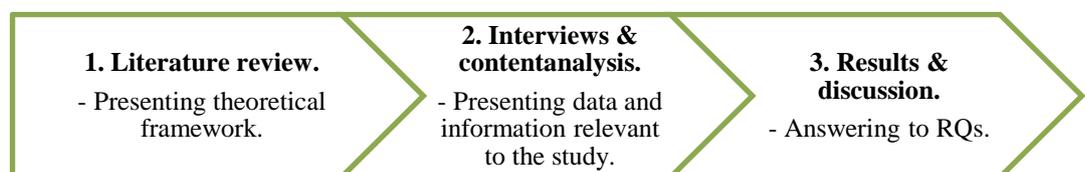
As it was stated earlier, the study is focusing on ASPro's periodic account sales process. The most important limitations of the study are organizational changes that can affect goals of this work in addition to their interpretation. Moreover, any environmental changes that affect sales process, i.e. eliminating or adding steps to current process during or after this work, cannot be controlled. Limitations of the study are also coming from supervisors and Valio Oy's needs and wishes as a whole. The data and information gathered for empirical part from Valio Oy's sources is unquestioned and relied upon. Results and findings will be based on knowledge gained from theory and empirical parts. In fact, any internal or external changes can potentially make the process studied in this thesis different or bear weak resemblance to it. In the end, this paper does not revise time after this study. Nevertheless, some expectations are made about implementations of results. The study holds information about products, marketing, pricing, production, timing, brand management, intellectual property rights and analysis, but these information pieces are not revised separately, thus are hard to distinguish.

#### **1.5 Execution of the study**

The execution of the study mainly consists of three parts which are: literature review, interviews and content analysis, results and discussion. Execution of the research is presented in **Figure 1** below. First of all, literature will be reviewed, which means that necessary theories and their best practices will be presented.

Knowledge management (KM) and process modeling theories were chosen for this thesis. KM suits Valio Oy's need for internal process analyzation from information management perspective. KM is the function for an organization to operate its processes as well as develop methodologies and systematic ways to support them, simultaneously motivating people to participate in them. (King, 2009, p. 4) Process modeling theory will be implemented for modeling above mentioned activities.

Theoretical framework, which will consist of the literature review, will be gathered from topic related literature, scientific articles and other internet sources. Following that, this research will be carried out in addition to interviews through carefully studied material provided by Valio Oy's intranet called "*Weeti*" and through Microsoft Office's (MS) SharePoint. MS SharePoint is called Valio's workspace or simply workspace. Workspace will be explained later. During interviews and content analysis, the current process of ASPro needs to be understood. This will be done by interviewing Valio Oy's employees. Interviewees will be the experts and specialists in their field, mostly from the organization itself, but also interviews with other specialist's and professors will be revised. The content analysis will be conducted based on pre-emptive answers from interviewees combined with studied material as well as relying on comprehensively discussed theory presented in the literature review.



**Figure 1.** Execution of the research.

The results and discussion part will culminate everything that was presented during the study. The ultimate goal is to leverage and improve Valio Oy's knowledge assets to improve organizational behavior and practices as well as enhance decisions and performance to find a better path for growth. The vision of this thesis is to benefit Valio Oy's customers and its stakeholders through

improvement of internal processes. The study was conducted in Helsinki, Finland for Valio Oy in its main headquarters. A brief description of the research process of the study can be found in the methodology part of this thesis.

## **2 LITERATURE REVIEW**

The literature review helps the reader to understand the study deeper by presenting knowledge from previous studies. According to Hirsjärvi, et al. (2004, p. 11), a problem becomes more concrete by reviewing existing literature. This being said, this chapter introduces to theories of knowledge management and modeling information flow. The creation of knowledge, information and data will be discussed in addition to its management within organization. The most important part will be the knowledge conversion theory.

The following theory part will continue to discuss knowledge management, but this time from process modeling point of view. Different ways for process modeling or description will be presented. In addition, modeling benefits and drawbacks will be mentioned. Finally, the best suited modeling technique will be revealed and its modeling steps presented. In overall, literature review will lay ground for the empirical part, where theory will be utilized in this study. In addition, research questions four and five will be answered based on this chapter.

### **2.1 Knowledge management**

According to King (2009, p. 4), "*Knowledge management is the planning, organizing, motivating, and controlling of people, processes and systems in the organization to ensure that its knowledge-related assets are improved and effectively employed*". The above mentioned knowledge related assets include knowledge in the form of printed documents such as patents and manuals, knowledge stored in electronic repositories that are databases, knowledge about the best way to do a certain task by employee, knowledge from working on focused problems generated by teams and knowledge that is embedded in the organization's processes, products and relationships. (King, 2009, pp. 4-5)

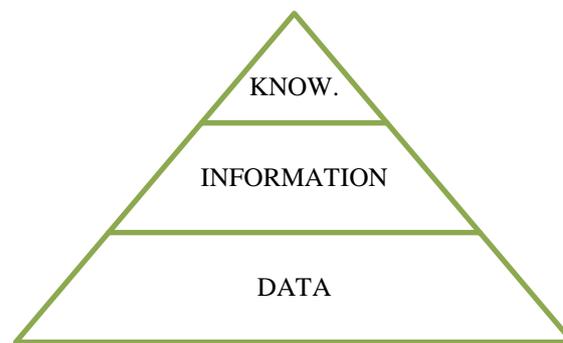
According to Alavi & Leidner (2001, p. 109): "*Knowledge is information possessed in the mind of individuals: it is personalized information (which may or may not be new, unique, useful or accurate) related to facts, procedures, concepts, interpretations, ideas, observations, and judgments.*". The most recognized authors described knowledge management as knowledge that is

needed to manage a business and to maintain competitive advantage (Davenport & Prusak, 1998; Nonaka & Takeuchi, 1996). Knowledge management is also related to the creation of explicit knowledge, i.e. written form of knowledge and identification of existing knowledge in the organization.

Knowledge is often confused with information and vice versa. Therefore, words knowledge and information must be distinguished from each other. On one hand, Nonaka & Takeuchi (1996) mentioned that information is a flow of messages. Knowledge is then created by combination of such information, individual's belief and commitment of its processes. In other words, knowledge is a combination of new information and individual's experience that also consists of personal values and insight (Nonaka & Takeuchi, 1996). Interestingly enough, Polanyi (1966, p. 4) summarized above in one sentence: *"We can know more than we can tell"*. On the other hand, information is a message, that is brought up through documents or other forms of communication (Davenport & Prusak, 1998, p. 3). According to Davenport & Prusak (1998, p. 5): *"Knowledge is a fluid mix of framed experience, values, contextual information, and expert insights that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms."*

Before moving to further discussion about knowledge management, we need to understand differences between data, information and knowledge. Davenport & Prusak (1998, p. 1) compared knowledge with information and data. In fact, these three words represent different things, as shown in the **Figure 2**. The figure is constructed from bottom to the top, whereas the pyramid also demonstrates volume correlation of data to information and finally to knowledge. In other words, there can be a huge amount of available data, less information and very small amount of knowledge. This is due to the sheer amount of work that has to be put into unstructured data for it to become structured information and later combined into knowledge.

A typical data, especially from management's perspective contains customer's contact data, interaction data, purchasing data, customer's feedback, facts and figures that are not organized. (Buchnowska, 2011, pp. 25-26). According to Davenport & Prusak (1998, pp. 2-6), data is a group of iterative and objective facts, e.g. numbers or character set. Data does not explain reasons nor does it describe consequences. (Davenport & Prusak, 1998, pp. 2-6) By interpreting data and following conceptual commitments, information is being produced. Conceptual commitments means that data is being filtered accordingly or contextualized to desired information as well as integrated, extracted or formatted, if necessary. Information can also be characterized as categorized, condensed and calculated data. (Rollins & Halinen, 2005)



**Figure 2.** Visualized correlation between data, information and knowledge.

Knowledge is literally information that has been organized and analyzed in a way that is understandable and applicable in solving actual problems and assisting in making decisions. (Rollins & Halinen, 2005) Information is transformed into knowledge through four processes, which are: comparison, consequences, connections and conversation. (Davenport & Prusak, 1998; Buchnowska, 2011). In other words, in order to develop any knowledge that can be used in decision-making, data needs to be transformed into information and then must be integrated throughout the organization. Knowledge is always related to a person or a group of people and technology is merely a tool to support this process. Therefore, knowledge is related to know-how, insight, understanding, personal experience and intuition. (Rollins & Halinen, 2005) Due to the importance of knowledge, it must be managed. According to Alavi & Leidner (2001, pp. 110-113), knowledge can be managed by four basic processes, which are (**Figure 3**):

1) **Knowledge creation:** Represented later in in Socialization, Externalization, Combination and Internalization model or shortly “*SECI-model*”. A spiral process model, that represents interaction between tacit and explicit knowledge that leads to creation of knowledge. New knowledge is being created when tacit and explicit knowledge interacts (Nonaka & Takeuchi, 1996). Tacit and explicit knowledge be explained later in the text.

2) **Knowledge storage or retrieval:** According to Stein & Zwass (1995), organizational memory is referred to storage and retrieval of knowledge. This type of knowledge can be stored in two forms: semantic and episodic memory. Semantic memory appears in general explicit knowledge, such as archives of annual reports. Episodic memory appears in specific situations and periods, such as specific decision making situations (Stein & Zwass, 1995).

3) **Knowledge transfer:** Usually requires two actors, knowledge provider and receiver. Knowledge transfer is also present in the SECI-model. Authors Gupta & Govindarajan (2000) described five elements of a conceptual knowledge transfer framework:

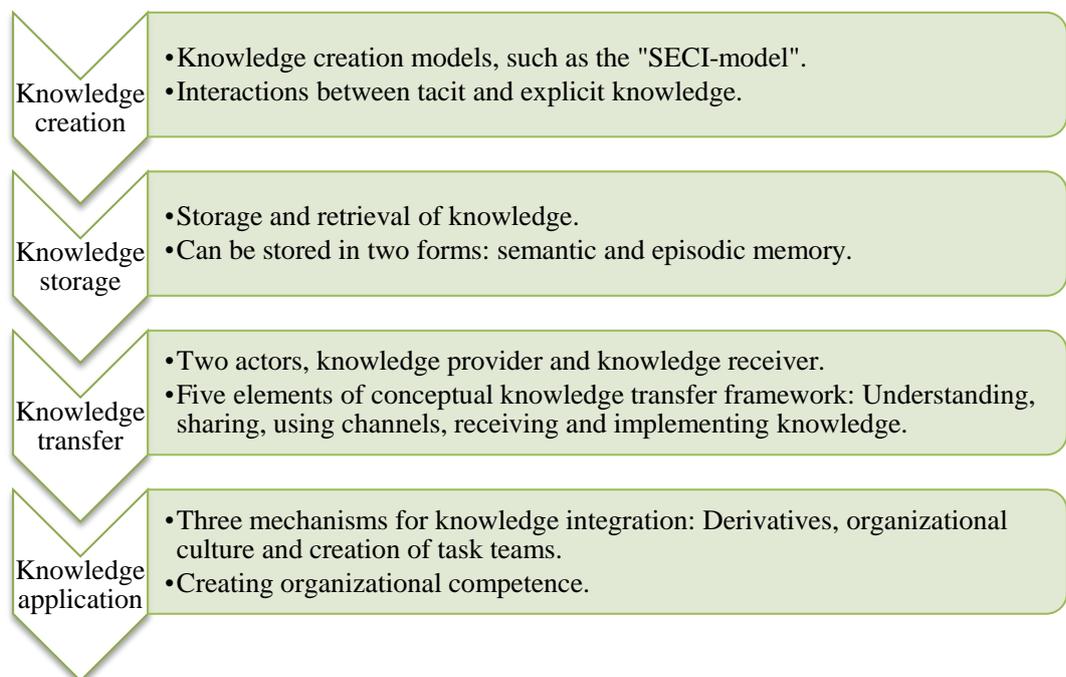
- Understanding the value of a knowledge from the knowledge provider.
- Motivation to share new valuable knowledge.
- Using existing channels to transfer knowledge. These channels can be informal or formal.

Informal channels are such as conversations during breaks with colleagues, informal meeting, etc. Formal channels are such as scheduled meetings or seminars, training sessions, corporate news, etc.

- Understanding the value of the received knowledge from knowledge provider.
- Ability to implement acquired knowledge.

4) **Knowledge application:** According to Grant (1996), there are three primary mechanisms for knowledge integration in order to create organizational competence. These are:

- Derivatives: Converting tacit knowledge to explicit knowledge using standards or procedures.
- Organizational routine: Employees are able to integrate their expert knowledge by using developed coordination or interaction protocols.
- Creation task teams: Employees are able to form teams with specialized knowledge for problem solving.



**Figure 3.** Four basic knowledge management processes (adapted from Alavi & Leidner, 2001, pp. 110-113).

Knowledge management is needed to locate gaps between what an organization knows and what it needs to know. Processes and tools that are supporting this are widely known and used. These tools are such as expertise directories, intranets, communities of practice, knowledge audits, discussion forums, knowledge maps, post- project or after-action reviews, lessons learned banks, building and

documenting knowledge-based and expert systems, storytelling, benchmarking and so on. (Srisamran & Ractham, 2014; Maier & Remus, 2003)

### 2.1.1 Tacit and explicit knowledge

Knowledge can be tacit or explicit. Tacit knowledge is the knowledge that is within employee and is tightly connected to his/her responsibilities. Tacit knowledge can be characterized as unarticulated, hard to identify and to share. Furthermore, it is difficult to formalize and communicate to other individuals. It is the know-how, which turns into action, experience and later into innovation. Tacit knowledge is hard to copy or to imitate. (Srisamran & Ractham, 2014) Furthermore, tacit knowledge combines two dimensions: technical and cognitive sides that can be found in every employee. Technical side includes such treats as know-how, expertise, personal skills, insight, etc. Cognitive side includes such treats as culture, beliefs, ideals, personal values, etc. (Nonaka & Takeuchi, 1996) On the contrary, explicit knowledge is an information that is easy to transmit to others. Explicit knowledge is the opposite of tacit knowledge, because it is already codified, accessed and verbalized as well as imitated and copied. In other words, it exists in form of words, sentences, documents, organized data, computer programs, etc. (King, 2009) Nevertheless, tacit knowledge is regarded as the most valuable source of knowledge. Tacit knowledge is most likely to lead to breakthroughs (Wellman, 2009). Authors Gamble & Blackwell (2001) correlated lack of focus for tacit knowledge with organization's reduced capability for innovation and sustained competitiveness.

According to Al-Shammari (2009), knowledge can be further stratified in to different levels. These levels are from lowest to highest: basic understanding of "*know-what*", applied as the "*know-how*" and rule-of-thumb as "*know-why*" (Al-Shammari, 2009). "*Know-when*" and "*know-with*" can be characterized simply as "*know-who*", which means personal relationships with others. In other words, know-who means knowledge sharing and acquisition through community and social skills. (Al-Shammari, 2009; King, 2009; Jensen, et al., 2007) Basically, **know-what** specifies what action to take when a specific situation occurs and needs a right decision. An example is a salesperson that has been trained to know

which product is best suited for various needs. Then, **know-how** is the next higher level of knowledge, which means knowing how to make a proper decision or a proper response regardless of the presence of significant “*noise*”. This kind of noise can be in symptomatic information, as an uncertain link between symptoms and diagnosis. In other words, it is a set of skills and competencies acquired through experience of learning by doing. (King, 2009; Jensen, et al., 2007) Lastly, **know-why** is the highest level of knowledge according to King (2009). At this level an individual has a deep understanding of causal relationship, interactive effects and the uncertainty levels associated with symptoms. This level of knowledge requires understanding of theories that are involved in the situation and/or a broad experience that includes interaction, instances of anomalies and exceptions to the conventional wisdom of the field and norms. In other words, know-why is scientific understanding of laws and principles. (King, 2009; Jensen, et al., 2007)

Interestingly enough, Jensen, et al. (2007) points out that on one hand know-what and know-why can be obtained through studies, books, lectures and gathering knowledge from data bases. On the other hand, Know-how and know-who knowledge comes from practical experience. Usually organizations that are operating in a high competition fields, such as production of inexpensive economy of scale products use explicit knowledge. This knowledge is globally accessible because it is written down and could be learned by studying as mentioned earlier. Organizations that are using tacit knowledge are usually in a niche position, producing human-capital intense products. Such organizations have a powerful feedback loop that helps them to improve products, do the right thing and often quicker than competitors as well as being open to new solutions. Such knowledge as know-how and know-who is strongly linked to organizational learning. (Jensen, et al., 2007) It was suggested by Daneshgar & Bosanquet (2010), that variety of supporting component technologies and methods are required for managing tacit and explicit types of knowledges.

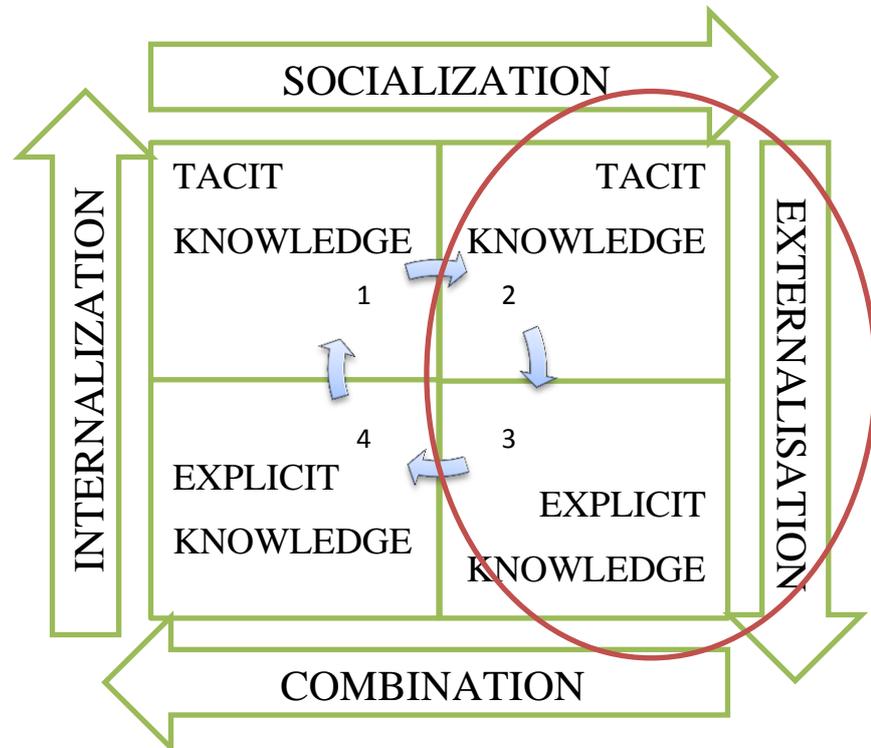
### 2.1.2 Knowledge conversion model

Tacit knowledge at some point becomes explicit, due to organizational and environmental dynamics. The SECI-model demonstrates how knowledge becomes explicit or tacit depending on the situation, as it is shown in **Figure 4**. According to the figure, start with the tacit knowledge that is being transferred via socialization to the other person. This is where new knowledge is created by exchanging employee's tacit knowledge with another employee's tacit knowledge through mutual activities (Nonaka, 1994, p. 19). Mutual activities means that employees are spending time together, communicating and sharing knowledge rather than following verbal or documented instructions. Physical closeness and knowledge dissemination are two main aspects of acquiring tacit knowledge. The process of transferring ideas to other employees requires socialization, which can be troublesome for some unsocial individuals. (Srisamran & Ractham, 2014)

Secondly, knowledge is being expressed by individual's tacit knowledge and translated into new comprehensive explicit knowledge that can be understood by others during externalization. (Nonaka, 1994, p. 19; Jensen, et al., 2007). This is where this research is mostly focused in and is marked with a red oval in **Figure 4**. According to Srisamran & Ractham (2014), there are two significant processes involved in converting knowledge from tacit to explicit. The first process is about individuals' ability to express their ideas, thoughts, knowledge into documents, words, graphs, etc. The second process is about translating expert's tacit knowledge, because it is usually hard to understand and needs to be written down into comprehensible forms. (Jensen, et al., 2007)

Third stage is the combination of two explicit knowledge resources. It is the phase of creation of new knowledge by reorganizing, synthesizing existing explicit knowledge into new more complex yet usable forms of knowledge. (Nonaka, 1994, p. 19) Srisamran & Ractham (2014) mentioned that there are three crucial processes involved. Firstly, knowledge is gathered and integrated, then it is transferred and disseminated and in the end, knowledge is finally edited and processed. Gathering and integrating is done from the externalization stage. Transferring and disseminating is done especially for a specific organization.

Editing and procession is done to make the knowledge more usable. (Srisamran & Ractham, 2014)



**Figure 4.** Knowledge conversion model (adapted from Nonaka, 1994, pp. 19).

Last stage is internalization, which means creation of new knowledge by converting explicit knowledge into individual's tacit knowledge (Nonaka, 1994, pp. 19-20). Such transaction is happening when employees are being trained, or practicing or simply learning-by-doing. There are also other ways of gathering new tacit knowledge. Explicit knowledge must be embodied in an organization's actions and practices in order for an employee to absorb it. Employees also need to make use of gathered explicit knowledge. (Srisamran & Ractham, 2014)

## 2.2 Modeling information flow

Knowledge management is related to business processes which are both responsible for the creation, transfer and adaptation of knowledge (Srisamran & Ractham, 2014). A business process or simply a process needs to be understood in order to be managed correctly. (Ungan, 2006, p. 400) Information flow can be visualized with information modeling tools (Bocij, et al., 2008, pp. 39, 423).

The history of business process management goes as far as to the year of 1776. Smith (1776, p. 8) argued that by breaking up a manufacturing process and creating special tasks for employees to specialize in, it would be possible to speed up the process as a whole. In other words, it would make the manufacturing process more efficient, if different workers and work stages would be combined in a chain of activities. Lately, Davenport (1993, p. 5) stated: *"a process is simply a structured, measured set of activities designed to produce a specified output for a particular customer or market"*. The purpose of process modeling is to understand data, information and even knowledge flow between employees during different tasks and activities. (Davenport, 1993, p. 148) In contrast to Davenport (1993), Hammer & Champy (1993, p. 35) defines business process as *"a collection of activities that takes one or more kinds of inputs and creates an output that is of value to the customer"*. There are many other definitions, but in essence they are the same. According to Aguilar-Savén (2004, p. 133), *"Processes are relationships between inputs and outputs, where inputs are transformed into outputs using a series of activities, which add value to the inputs."*

For a business process to be understood, it must be first documented. A documented process can then be reengineered, improved, redesigned, described and/or standardized. In short, reengineering is synonymous to radical improvement (Hammer & Champy, 1993). At the same time, process improvement is an incremental improvement (Harrington, 1991). Process improvement and reengineering can be seen as a subset of redesign (Valiris & Glykas, 1999, pp. 66-67). Documentations usually aids in the discovery of value adding and non-value adding procedures. Documentation of a certain process may provide additional thoughts on identifying possible problematic areas and present solutions to them. Process's documentation analysis may reveal overly complicated or unclear process parts, problematic outputs or unnecessary efforts. (Ungan, 2006, p. 400-402; Biazzo, 2000, p. 111; Martinsuo & Blomqvist, 2010, p. 1)

Furthermore, understanding of a process requires it to be described or in other words codified or modeled. For example, flow diagrams are granting possibility to describe causal relationships among objects that make up a process. (Ungan, 2006, p. 402) The business process that such flow diagrams are representing are meant to be formal, with which business logic can be described in declarative, unambiguous way and possibly without errors (Wan, et al., 2006, p. 196). According to Laamanen & Tinnilä (2009, p. 121), a process model represents critical steps and interdependencies of operations in a certain process. Process models are playing fundamental role in improving activities in the organization due to the nature in which processes are typically documented (Recker, 2007, p.333-335). Process modeling is a tool to identify and connect different activities that creates a desired outcome. Process modeling describes the process design and can sometimes be called a process walkthrough. (Laamanen, 2005, pp. 76-78; Verma, 2009, pp. 45-49) There have been developed a variety of such methods and tools to represent, model and analyze business processes (Wan, et al., 2006, p. 195). In fact, a successful process model requires experience and/or understanding of how the modeled process fits in the bigger picture among other organizational processes. Inputs, outputs and stakeholders must be recognized. (Martinsuo & Blomqvist, 2010, pp. 8-9; Luukkonen, et al., 2012, p. 20) It was also mentioned, that in order to comprehend a process, a process map may be included in the process modeling. (Martinsuo & Blomqvist, 2010, p. 1; Biazzo, 2000, p. 102; Ungan, 2006, p. 401) A process map will be discussed later in this chapter.

### **2.2.1 Benefits and drawbacks of modeling**

The focus of business process modeling is to make it more transparent. The model should be simple enough for every employee to be able to understand it. (Becker, et al., 2003, p. 43) A visualized process model helps to recognize problems and bottlenecks of the current process. Bottlenecks can be related to output quality, consumed time, budget. (Klein, et al., 2009, p. 1) Furthermore, Bolsinger, et al. (2015, p. 355) stressed out the use of such models for change management. It is important for a process to be as transparent as possible, controlled output quality and project as a whole. (Klein, et al., 2009, p. 2) Process model is an important part of process development and management. Process development and

management means identification, modeling, measuring, and improvement of tools and knowledge. (Laamanen, 2005, p. 155) According to Urgan (2006, p. 402), process documentation's biggest benefit is its possibility to standardize. In other words, well-defined process documents may be used in development of standard operating procedures. These standard operating procedures will aid in achieving consistency in operations and administrative advantages. Furthermore, these will in time enhance training new employees regarding how a specific task should be performed and possible reduce conflicts among current employees. (Urgan, 2006, pp. 402-403)

It must be noted, that any process can be improved. A detailed modeling gives possibility for a clear picture of the process. Thus, process analyzers are able to pin-point out problems, bottlenecks and suggest solutions. Usually, problems that are detected are such as unclear or overly complicated processes, unnecessary actions and outputs. (Rohleder & Silver, 1997, p. 150) Organizational success is mostly based on its ability to share knowledge that has been embodied in organizational routines from one organization unit to another, as well as improving their capabilities by using new technologies. (Gilbert & Cordey-Hayes, 1996)

Goals and content of a process that is going to be modeled defines how the modeling itself should be done. In other words, modeling framework should be somehow defined in the scope of the study. (Martinsuo & Blomqvist, 2010, pp. 3-4) In addition, the level of modelling necessary for the study needs to be understood (Luukkonen, et al., 2012, p. 28). This will be discussed later in this chapter. The model typically shows critical parts of the process, which usually includes tools, methods, employees' responsibilities, input, output and interfaces with other processes. (Laamanen & Tinnilä, 2009, p. 123; Laamanen, 2001, p. 78; Davenport, 1993, p. 11) In other words, the goal is to highlight how employees are supposed to function for the process to be efficient, create value for customers and in overall for an organization to be successful. (Laamanen, 2005, p.160) The most important parts of the process will be derived from the empirical part of the study.

**Figure 5** demonstrates a simplified process, where the inputs coming from previous process' outputs are utilized in the current process. Process uses attributes which depends on the purpose of the process as a whole. Attributes are such as output quality, cost, time and customer satisfaction (Davenport et. al., 1995, p. 57-58; Davenport, 1993, p.12). More specifically, an input is a piece of information that is needed in order to start a process. An output is the combined outcome of the process and input's information. Unnecessary outputs can remain within the process. (Laamanen & Tinnilä, 2009, pp. 104-116) The customer keeps the process cycling in the organization. The customer makes the first and the last step of the process. From the process point of view, this kind of approach promotes customer orientation. (Laamanen, 2005, pp. 52-54) A supplier and a customer are external business partners, according to Becker, et al. (2003, pp. 113-114). A supplier can sometimes be perceived as a customer. The opinion of Harrington (1991) is that inputs can be organization's resources or requirements, whilst outputs can be products or results. Resources are such as tangible or intangible. Anyhow, outputs do not always add value, but they could be used as inputs for another process. (Harrington, 1991) In fact, a process is a chain of activities which can have a beginning and an end. Inputs and outputs are also distinctly defined as well as the value they are bringing to the next process. Thus, core processes are responsible for adding value to the organization. (List & Korherr, 2005, p. 87; Aguilar-Savén, 2004, p. 133)



**Figure 5.** A simplified process.

A developed process model is “*as-is*”, and it gives possibility to identify bottlenecks, excessive costs, long cycle times and duplicated efforts. There are different techniques available for identifying root causes, problems and solutions. These will recommend a model as “*should be*”. Thus, a model will provide management with facts, not assumptions and guesswork. The process must be

understood before applying any changes. (Nesbitt, 1993, p. 38; van der Aalst, 2004, p. 4) Data gathering methods and techniques for identifying issues will be mentioned in the methodology chapter.

On the contrary to the above stated benefits, the drawbacks are such, that there is no rule for a methodologically execution of an improvement procedure to reduce uncertainty from going as-is to should be or “*to-be*” (Zellner, 2011, p. 204; van der Aalst, 2004, p. 4). There is a vast amount of business process improvement approaches, modeling methods, techniques and tools available. Bolsinger, et al. (2015, p. 354), Zellner (2011, p. 204) and Reijers & Mansar (2004, p. 284) discussed different frameworks for choosing process improvement approach. These approaches will be briefly mentioned later in this chapter. It can be challenging to find the right technique and the tool for organization’s own specific process (Hannus, 1994, p. 94). In addition, Trkman (2010, p. 126) pointed out, that there has not been many empirical researches about success factors of process modeling. Aguilar-Savén (2004, p. 131) mentioned, that “*the process of selecting the right technique and the right tool has become more and more complex not only because of the huge range of approaches available but also due to the lack of a guide that explains and describes the concepts involved*”. Most popular modeling techniques will be discussed later in this chapter.

Another drawback is decision on how detailed or relevant a process model should be. On one hand, the degree of detailing is determined by the purpose of modeling (Becker, et al., 2003, p. 64). On the other hand, too detailed model hinders the understanding of such process model. (Laamanen, 2005, p. 160) Thus, a sufficient balance of details for process modeling must be found for a better clarity. A process model must be read as a story, thus containing all important parts and details about it in addition to being simple to comprehend. (Laamanen, 2001, p. 92) As Hannus (2004, p. 106) perceptively states, that defining a process is not math nor physics and that there is no single right way for doing it. In any case, a model needs to represent the process as relevantly as possible without unnecessary information (Becker, et al., 2003, pp. 58-59). Furthermore, as Becker, et al. (2003, pp. 58-59) has indicated, that modeling is also related to the issue of

correctness, which means that a model must meet technique specific standards. Technique specific standards can somehow increase comparability in between different models in extensive modeling projects. In any case, a practical model that grants intuitive readability and can be re-used is hard to come by. (Becker, et al., 2003, pp. 58-59) In the end, Vergidis, et al. (2008, p. 76) stated, that: *“business process modeling does not add much value without further inspection and analysis of the business process model”*. This actually means that improvement of the process must be conducted through analysis of the constructed model.

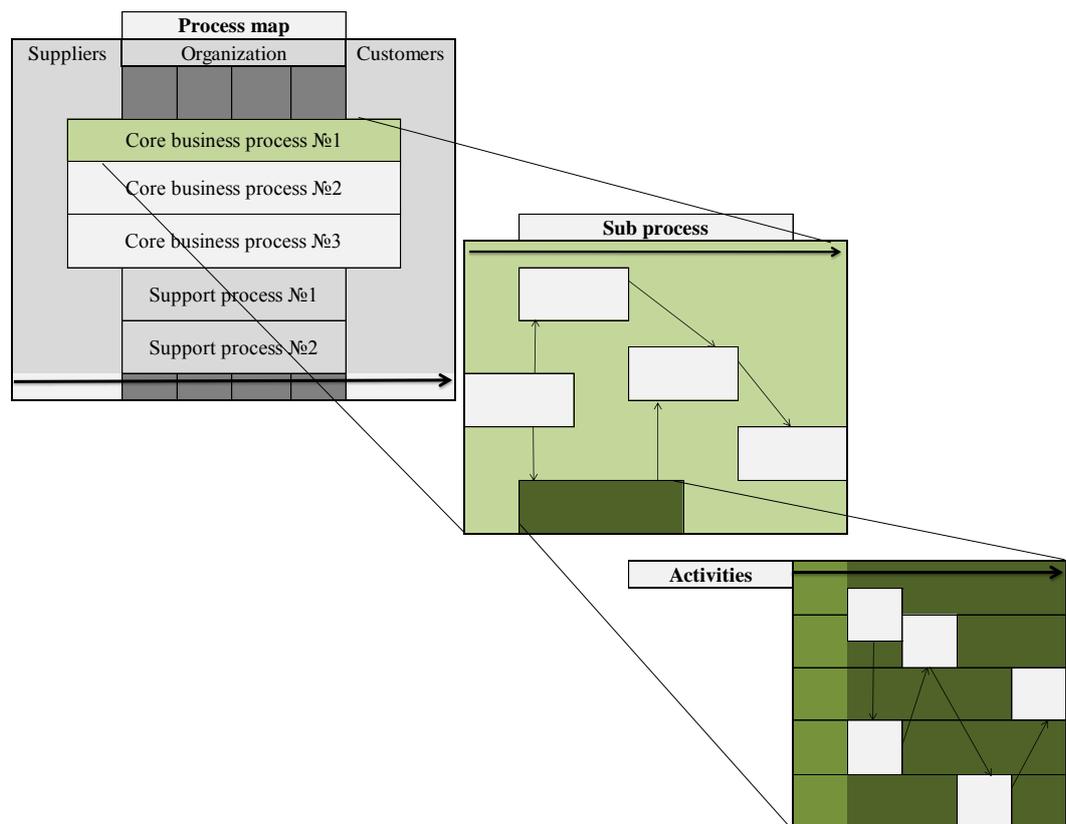
### **2.2.2 Different modeling levels**

According to Hannus (2004, pp. 104-105), business processes are usually divided into core and support processes, and the further into sub processes, activities and actions (**Figure 6**). Core processes are focused on satisfying external customers, while support processes are focused on satisfying internal customers, i.e. employees. Support processes may add value to external customers indirectly by supporting their activities (Nesbitt, 1993, p. 37). Support processes are ensuring that core processes will continue to function (Bolsinger, et al., 2015).

Core processes can be described roughly by using a process map method. The preliminary role of a process map is to present organization's core functions, its customers and other stakeholders. (Hannus, 1994, p. 44) It usually contains more than one function and can sometimes become too complicated to describe. A complicated core process can be then split down into multiple sub processes. (Harrington, et al., 1997, p. 2) For example, a product development process can be viewed as a sub process, which is executed through a combination of development projects (Hannus, 2004, p. 104). As Dumas, et al. (2013, p. 5) wrote, core processes are: *“collection(s) of inter-related events, activities, and decision points that involve a number of actors and objects, and that collectively lead to an outcome that is of value to at least one customer”*.

A sub process performs a specific objective in support of core processes. Sub process can be further divided hierarchically in to activities and then to tasks.

Activities are usually executed in units, which can be a person or a department. Activities are usually documented in a form of instructions. Such instructions usually tend to have specific tasks for the activity to be carried out. Thus, a task can be described as a specific assignment for an employee. (Harrington, et al., 1997, p. 2) The relationship between a process map and sub processes together with activities can be found in **Figure 6**.



**Figure 6.** Different modeling levels (adapted from Hannus, 2004, p. 105).

A separate business management process has been mentioned by Melão & Pidd (2000, p. 108) List & Korherr (2005, p. 87) and Aguilar-Savén, 2004 (2004, p. 133). Business management process's main role is to manage the two other processes. This process is used for planning at the business level. Business management process entails the planning, communication, organization, controlling and monitoring of activities (Bolsinger, et al., 2015, p. 355). For simplicity of this thesis, business management process is being part of the support process.

### **2.2.3 Different modeling techniques**

There is a huge range of methods and techniques available for process modeling and it has become more and more complex to choose the right one. There are different modeling languages available to create process models for different purposes. (Recker, et al., 2009) On one hand, a model can serve purpose of building a system to control the process. On the other hand, a model can be presented in order to describe a specific process or its part. (Aguilar-Savén, 2004, pp. 130-131) According to van der Aalst (2004, pp. 2-3), the latest shift was from data to process approach. Until the nineteenths, the focus was on storing and retrieving information. Lately, there was an increased emphasis on a process driven approach. This meant that a process design is now carefully planned. (van der Aalst, 2004, pp. 2-3) This being said, the emphasis of the study would then be on the process-based approach. In addition, only modeling techniques that are simple enough to be implemented and are best at visually describing certain process' parts will be presented. Becker, et al. (2003, p. 53) argued, that techniques must clearly present process's sequences of functions, relate to the data models and provide basis for extended applications. Extended applications for the technique can be management of a workflow, software design or simulation. (Becker, et al., 2003, p. 53)

There are different modeling frameworks available. According to Vergidis, et al. (2008, p. 70), process model techniques can be divided according to their structural characteristics and their capabilities for analysis and optimization. These three methods are diagrammatic, mathematical and execution-oriented. In short, diagrammatic models are aiding in visualizing and communicating processes to the stakeholders. Mathematical models give possibility for formal validation, optimization and verification. Execution-oriented models strive for automatization of processes. Only few process models enable structured improvement. (Vergidis, et al., 2008, pp. 69-72; Aguilar-Savén, 2004) From the model-based approach perspective, only the diagrammatic model-types will be presented that do not require programming language skills. The diagrammatic method serves the purpose of this study and is chosen for further discussion. This

being said, diagrammatic process models are built based on the experience of process experts. Such modeling approach is criticized for requiring great amount of manual effort, providing little guidance, prone to subjective biases and concealing how improvement ideas are generated. (Reijers & Mansar, 2004; Zellner, 2011; Vergidis, et al., 2008; Aguilar-Savén, 2004, pp. 144-146) Diagrammatic models can depict a business process usually without a standard notation (Havey, 2005) and were initially developed for software specification (Knuth, 1963). According to Vergidis, et al. (2008, pp. 70-71), the most popular diagrammatic process models are flowchart diagrams, Integrated Definition for Function Modeling (IDEF) and Role Activity Diagrams (RAD) presented in **Table 2** below.

**Table 2.** Popular modeling techniques, their description and model type (adapted from Vergidis, et al., 2008, p. 71 and Aguilar-Saven, 2004, p. 134).

Modeling technique	Main characteristics
Flowchart	All around flexible and easy to use.
IDEF	A combination of versatile techniques.
RAD	A detailed description of functions that is easy to understand.

Flowchart is a formalized graphic representation, where symbols are used to represent things, such as operations, data flow directions and equipment. It is possible to use flowchart diagram for analysis and solving process related problems. No breakdown of activities is allowed, thus a flowchart is sequential. (Aguilar-Savén, 2004, p. 134; Shukla, et al., 2014, p. 276) Furthermore, flowchart helps to understand how documents are being used in the process. In addition, it is easier to communicate modeling results to employees. Flowchart diagram makes it possible to visualize process from different level perspective simply, quickly and flexibly. (Bocij, et al., 2008, p. 391; Aguilar-Savén, 2004, p. 144) It was stated by Martinsuo & Blomqvist (2010, p. 10), that a flowchart is a popular technique for visualizing business processes. Flowchart helps to recognize if the process's flow is logically correct. Flowchart also gives directions from where additional information can be found. Visualizing a process can reveal differences how organization is thinking the process is done and how it is really conducted, simultaneously revealing bottlenecks or inefficiencies. Flowchart is usually very

detailed but is not suitable for giving an overview of a targeted process. In addition, a flowchart does not describe responsibilities, or performers in the chart, i.e. flowchart is not good at describing tasks of the process. (Aguilar-Savén, 2004, p. 134; Martinsuo & Blomqvist, 2010, pp. 11-12)

The Integrated Definition for Function Modeling (IDEF) consists of family of methods for supporting organizational needs in its business areas. IDEF is used widely, from functional modeling to data, simulation, knowledge acquisition, and object-oriented analysis and design. IDEF family was developed under funding by United States Air force. Similar to flowchart and Role Activity Diagrams (RAD), IDEF is sequential. (IDEF, 2016; Aguilar-Savén, 2004, pp. 136-137) According to Aguilar-Savén (2004, p. 137), the best suited methods for business processes are IDEF0 and IDEF3. IDEF0 is conducted through very strict rules, as an opposite to the flowchart technique. IDEF0 is suitable for implementation of computer software. The benefits are that it is much easier to analyze and improve the process by working the process backwards, from output to inputs. This way data can be controlled and defined. IDEF0 is great at describing the process without going into details. In other words, it shows the high-level activities of a process indicating input, output, control and mechanisms related with each major activity. The visual representation is similar to the flowchart. (Aguilar-Savén, 2004, p. 137; IDEF, 2016) IDEF3 is a “*Process Flow and Object State Description Capture Method*” (IDEF, 2016). It captures behavior or causality aspects of a process and describes how things are working within an organization. Thus, IDEF3 is being the opposite to IDEF0. IDEF3 is used in areas such as business process engineering and reengineering, software process definition, development, maintenance and improvement. Thus, it is being suitable for complex and simple processes. (IDEF, 2016; Aguilar-Savén, 2004, pp. 137-138)

Role Activity Diagram (RAD) is modeling the process from individual’s role perspective. RAD mainly concentrates on the responsibility of roles and interactions between them. (Holt, et al., 1983) These roles are describing behavior through abstract notations. Notations are organizational functions that can also include software systems, suppliers and customers. (Aguilar-Savén, 2004, p. 135;

Shukla, et al., 2014, p. 275) RAD is useful for supporting communication within the organization. It is easy to understand, is somehow intuitive to use and is presenting a detailed view over process's interaction. RADs can also be described as object-oriented models, similar to IDEF3. This means that RAD shows how object's role changes as a result of interactions and actions during the process. The disadvantage is that objects are not mentioned. Objects are machines or products. RAD is as sequential as the flowchart or IDEF. (Aguilar-Savén, 2004, p. 135; Shukla, et al., 2014, p. 277)

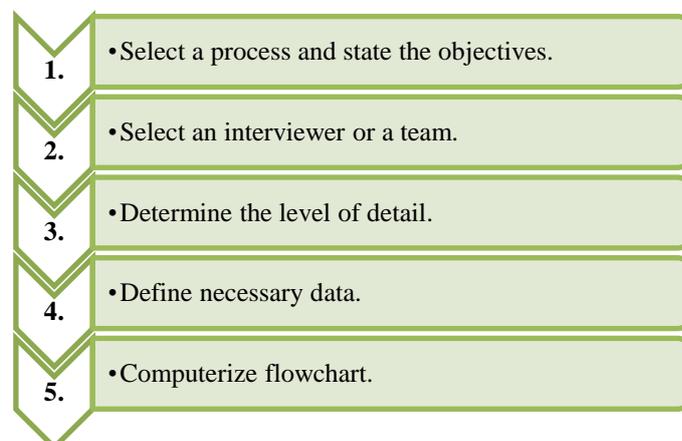
In conclusion to the above mentioned techniques, the flowchart seems to be the best technique. Flowchart's modeling steps will be discussed in the following sub-chapter. Flowchart is flexible and easy to use in comparison to IDEF, which has strict modeling rules. Flowchart and RAD can be viewed somehow similar to each other, although the flowchart gives possibility to describe a process from different levels. Becker, et al. (2003, p. 53) mentioned, that the chosen modeling technique needs to be supported with an appropriate tool. Discussion about different modeling tools is not relevant to this chapter. A tool will be chosen in the empirical part of the study.

#### **2.2.4 Flowchart modeling steps**

In order to reduce subjective influence and to make clear how improvement ideas are deriving, the best practice for modeling technique must be discussed (van der Aalst, 2004, pp. 8-9). Based on discussion about different modeling techniques, best practice for flowchart modeling will be described in steps below. It was mentioned by Mendling, et al (2010, p. 127), that users of modeling tools rarely receive any support in modeling process models that business stakeholders can understand and implement with ease. This is especially true, when process models are constructed by unexperienced modelers. (Mendling, et al., 2010, p. 127) To compensate for the lack of experience in this practice, the modeling procedure steps are presented below in **Figure 7**.

According to the figure, **the first** step is to select a process, which has a major effect on customers, company's vision, mission or objectives in addition to being

problematic, thus failing to produce required output. In addition, processes that need to be standardized and described can also be modeled using these steps. Other objectives can include redesigning or reengineering. Next, starting and ending points of the desired process must be stated. This will help in gaining joint understanding among the stakeholders. By stating borders for the process it can possible to avert an expansion outside the originally planned boundaries of the model. (Nesbitt, 1993, p. 34) Furthermore, objectives must be stated clearly. Objectives can include standardizing, describing, redesigning and reengineering of the process. (Ungan, 2006, p. 403) Then, any tasks, resources and interfaces surrounding the process must be identified. The current state of the process needs to be modeled from the start until the end. The person responsible for modeling must know how the value for customers is made and through which stages value is generated. (Nesbitt, 1993, pp. 34-35) According to Mendling, et al (2010, p. 130), the size of the model correlates with understandability and likelihood of errors. The larger the model grows, the more difficult it gets to comprehend it and the amount of errors grows. (Mendling, et al., 2010, p. 130)



**Figure 7.** Step-by-step procedure for process documentation (adapted from Nesbitt, 1993, p. 34; Ungan, 2006, p. 403).

**The second**, in order to collect flowchart data, an interviewer or a team must be chosen. A possible process owner must be chosen. The process owner knows how value for customers is made and through which stages value is generated in the process (Nesbitt, 1993, p. 35). On one hand, the process owner must be identified in order to conduct interviews. On the other hand, the process owner could

possibly help to select team members, because interviewees may have difficulties at describing their responsibilities as the level of detail increases. Thus, the team members are the performers, who would be interviewed. (Ungan, 2006, p. 405) Team members are ideally not managers of the process, they are active participants, innovative and open-minded, willing to take risks, motivated and respected by the organization. (Nesbitt, 1993, p. 35) Interviewing will be discussed further in the methodology part of the study. According to Ungan (2006, p. 403), the employees involved in processes are usually possessing knowledge of know-how and information and that these type of knowledge can impede efforts of documenting a process. Knowledge in question is tacit and it can be converted into explicit knowledge through conversations, according to the knowledge conversion model presented earlier.

**The third**, in order to successfully model a process, the level of details must be determined. The represented process must be a reasonable size (Wan, et al., 2006, p. 196). Process should not be too complicated and long, due to the risk of it not being used nor comprehended. According to Babicz (2000, p. 36), the flowchart must be less than three pages in length and comprise of a simplistic layout. Additional information with sophisticated details may decrease usefulness of the diagram. (Babicz, 2000, pp. 34-36) Nevertheless, enough detail must be implemented for stakeholders to gain understanding of the process, which also depends on the purpose of documentation. (Ungan, 2006, p. 404) According to Nesbitt (1993, p. 35): “*..sufficient detail is needed in problem areas or you will not be able to identify root causes of process problems*”. In fact, core processes need to be divided in to sub processes. A core process contains more than one function and is too complicated to be flowcharted. In turn, a sub process can be divided even further, if necessary (Harrington, et al., 1997, p. 2) i.e. into different level perspective. A core process can typically be a product development, order and delivery fulfillment, customer support, account sales, etc. (Laamanen & Tinnilä, 2009, p. 122) In addition, symbols that will be used in the flowchart must be agreed upon and explained.

Symbols that are presented in **Figure 8** are used in Microsoft Office's Visio flowchart diagrams. There are a total of seven symbols and each of them represents its own unique role. A "process" means a task or an operation that produces an output for next process to use it as an input. In the figure, A "decision" is a point, where flow direction can go either way and have a separate process. A "document" is a vital part of the diagram, which stores outputs of previous process and is being used as an input for next processes. "Flow direction" is an arrow, which shows which way data or information is flowing. The "start/stop" symbol means when the process in question begins and ends. A "Predefined process" means a bundle of processes and documents unnecessary to be shown or described. "A process outside Valio Oy" means a process which goes outside Valio Oy, e.g. to customers and is irrelevant to discuss any further.

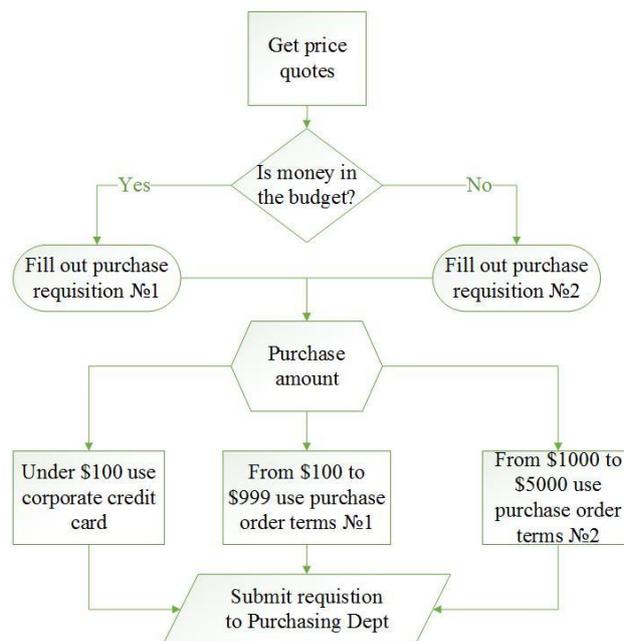
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	Process		Flow direction		Predefined process
	Decision		Start/Stop		Process outside Valio Oy
	Document				

**Figure 8.** Flowchart diagram's symbols and descriptions.

**The fourth**, define necessary data, e.g. process's inputs, outputs, responsibilities, cost data, cycle time, actions, forms, roles or any other attributes of what the process is aimed to achieve (Wan, et al., 2006, p. 196; Ungan, 2006, p. 407). Interviews must explain the process sufficiently for it to be codified. Process parts that work well probably do not need to be analyzed in great detail. (Ungan, 2006, p. 407) In addition, produced models must be made as structured as possible. A structured model means that all inputs and outputs are somehow connected in the diagram. It was mentioned before, that stakeholders understand unstructured models less easily. (Mendling, et al., 2010, p. 130) Thus, the modeler needs to pay attention in defining necessary data, simultaneously leaving out unnecessary parts. The problematic areas of the process must be focused on in order to identify root causes and to increase understanding of the model. Properties such as cost data

and cycle time are not required, but they can aid in search for root problems. If properties are not available, estimations of these can be used. (Nesbitt, 1993, p. 37)

**The fifth**, these days there are many graphical tools available to computerize flowcharts (Nesbitt, 1993, p. 38). These tools are such as Microsoft Office's Visio that was mentioned, Microsoft's Power Point, ARIS and Casewise (Mendling, et al., 2010, p. 127). **Figure 9** is an example of a simple process flowchart that has been computerized. The flowchart in question can be an example of an employee buying a product step by step. Symbols and description can vary from chart to chart. (Nesbitt, 1993, p. 37) The flowchart below starts from the top and ends at the bottom. Mendling et al. (2010, p. 127) suggests to use verb-object activity labels.



**Figure 9.** A simple flowchart (adapted from Nesbitt, 1993, p. 37).

As it can be seen in **Figure 9**, the decision making symbol affects the next route of the process. As it can be noted, process can continue through filling out purchase requisition number one or two. Flowchart should not contain too much information, because details decrease the usefulness of the chart (Babicz, 2000, p. 36). The purchase amount is then chosen and employee is expected to act accordingly to the price of the purchase. The flowchart ends at submitting

requisition to Purchasing Department. (Nesbitt, 1993, p. 37) The differences between **Figure 8** and **Figure 9** are the symbols or notations that tend to vary from chart to chart. In addition, it was also noted by Nesbitt (1993, p. 34), that additional interviews are needed to check whether the flowchart diagram is correctly composed.

### **2.3 Summary of literature review**

Literature review started with a discussion about the differences between data, information and knowledge from knowledge management's perspective. Then, different processes for information transformation into knowledge have been discussed. The first example of information transformation consisted of comparison, consequences, connections and conversation. The second example was discussed from SECI-model or knowledge conversion model's perspective. Its key insight is the cyclical transaction between explicit knowledge and tacit knowledge. Tacit and explicit knowledges were also discussed from know-who, know-what, know-how and know-why's point of view. In addition, knowledge management has been presented in a form of four basic processes, which are namely: knowledge creation, knowledge storage or retrieval, knowledge transfer and knowledge application.

After covering theory of knowledge management, discussion moved on to the process modeling theory. Process modeling was presented as an important milestone for modeling information flow in an organization. Its benefits and drawbacks have been mentioned from more of a practical point of view. In fact, a process was described as a chain of activities. A process map was presented to give a comprehensive understanding of different modeling levels. Then, modeling approach, different methods and diagrammatic techniques were discussed. In the end, the flowchart diagram technique was comprehensively discussed and emphasized on. Therefore, a step-by-step procedure for process documentation was provided in the theory. An example of a flowchart diagram was also presented.

### **3 RESEARCH METHODOLOGY**

This part of the study will discuss different research methodologies and necessary parts related to the study. First, background and definition of constructive research approach will be presented. The constructive research approach is selected as a method due to the purpose of this thesis, which is to provide a solution for improving ASPro. ASPro consists of flowing information between stakeholders, thus the constructive research approach responds to the need for identifying and solving problems related to improving information utilization. In other words, this thesis is based on empirical qualitative research that is based on previously presented theory of knowledge management and process modeling. Secondly, market test types will be introduced as part of the methodology. Then, the constructive research approach will be explained in comparison to other relevant research approaches. Finally, content analysis for interviews will be presented. In the end, a brief discussion about validity and reliability of this thesis will be facilitated together with a brief description of research process of the study.

#### **3.1 Constructive research approach**

In this study, a wide range of information and insight about Valio Oy is gathered. It is intended for the study to go deeply into details and intensively analyze necessary pieces of information that can be obtained (Cohen & Manion, 1994, p. 186). Metsämuuronen (2008, p. 14) stated in his book, that the qualitative study is used when information about relationship of cause and effect needs to be gathered and/or when research would not be possible to conduct through experiment. This statement is backed up by Gibbert, et al., (2008, p. 1468) and Koskinen, et al., (2005, p. 156), where they mention that advantages of case study is to understand an organization as a whole in a rather realistically depicted environment. It is also a great tool for researching a strategy for an organization (Gibbert, et al., 2008, p. 1466).

Valio Oy's situation naturally leads to normative way of conducting the research, i.e. trying to produce a standard model of the process from an empirical point of view. Thus, the constructive research approach was chosen from other research approaches presented in this chapter because of the nature of Valio Oy's

relationship with its customers in Finland. The situation in Finland is more of an exception for a product supplier such as Valio Oy and the limited amount of sales channels it can use to deliver its goods to consumers. Situation in other countries can be vice versa, meaning that there can be more sales channels than suppliers. The normative way of conducting research means observing and gathering necessary research material from within the targeted organization. Other research approaches are such as nomothetical, decision-oriented, action-oriented and conceptual which will be described later in this chapter.

Constructive research approach comes from management accounting in the '80s and it was used to solve problems through deeper understanding of the particular practice. (Kasanen, et al., 1993, pp. 248-251) Constructive research approach focuses on improving the existing practice (Lindholm, 2008, p. 345). Different research approaches were first discussed by Neilimo & Näsi (1980, p. 67) and later completed with constructive research approach presented by Kasanen, et al. (1991, p. 317) that can be found later in **Figure 11**. According to Kasanen, et al. (1993, p. 245), the method was defined a construction research approach, where a problem was solved through construction of elements, such as models, diagrams, plans, organizations, etc. These elements are providing a link between the stated problem and researcher's knowledge. Moreover, these elements also serve as an indicator for functionality and novelty of the produced solution. On one hand, the solution has to be demonstrated as a new approach. On the other hand, employee's resistance to change may hinder the start and success of implementation of such solution. Moreover, the solution may simply not work in practice or results may not be evident. (Kasanen, et al., 1993, pp. 245-247)

Kasanen, et al. (1993, p. 253) observed, "*However, the actual usefulness of a managerial construction is never proved before a practical test is passed*". This actually means that a practical solution requires a lot of time spent on applying changes after piloting the actual solution for the first time. This raises the importance of the solution being relevant, simple and relatively easy to apply. According to Yin (2003, p. 15) and Remenyi, et al. (1998, p. 51), this also means that such approach can be used in management research. Kasanen, et al. (1993, p.

253) suggests a three-step market test for validating solutions as showed in the **Figure 10** below.

<b>Weak market test</b>	<ul style="list-style-type: none"> <li>• Involving managers to use the solution.</li> </ul>
<b>Semi-strong market test</b>	<ul style="list-style-type: none"> <li>• Adapting to organization's broad usage.</li> </ul>
<b>Strong market test</b>	<ul style="list-style-type: none"> <li>• Making positive impact on financial results.</li> </ul>

**Figure 10.** Market test types (adapted from Kasanen, et al., 1993, p. 253).

**Weak market test** means that, if more managers are willing to refer to the solution, the more it will be used in the decision making in the organization. Eventually, a successful solution will gain organization's broad adaptation. In other words, it will pass **semi-strong market test**. Finally, **strong market test** means that the solution affected financial results in comparison to those not using the solution. It must be noticed, that some solutions may struggle even to surpass the weak market test through failing to achieve any usage from managers. (Kasanen, et al., 1993, p. 253) In fact, a practical solution is hard to come by due to the sheer complexness of organizational processes. In order to increase chances for a solution to be passed through above mentioned market tests, the seven phases of constructive approach must be understood. (Kasanen, et al., 1993, p. 246; Lindholm, 2008, p. 345; Kekäle, 2001, p. 558; Labro & Tuomela, 2003, p. 415). If a solution cannot be constructed, there is no reason to continue the process (Kasanen, et al., 1991, pp. 306-307). The order of these phases may vary from case to case:

1. Finding a practical problem worth of research potential.
2. Ensuring long-term research collaboration with the target organization.
3. Obtaining a general and comprehensive understanding of the case.
4. Examining the scope of applicability for a possible solution.
5. Constructing a solution based on gained insight from the target organization and presented theory.

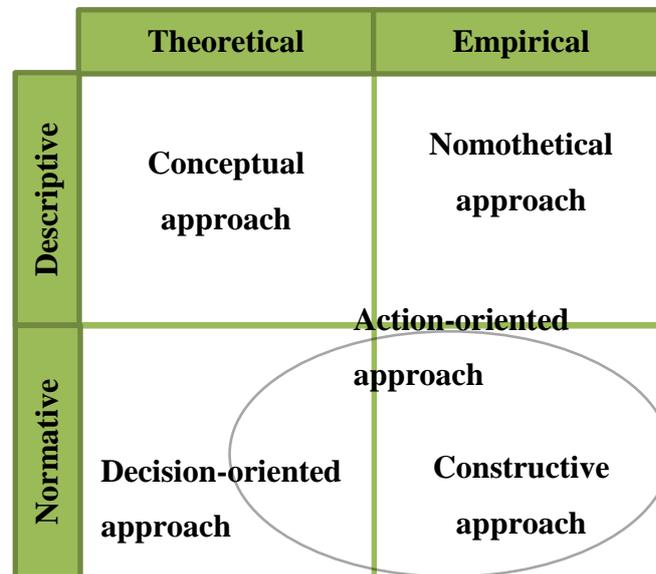
6. Showing a theoretical connection with the concept of the solution.
7. Demonstrating solution's functionality.

### 3.2 Different research approaches

There are a total of five different research approaches presented in this chapter. **The nomothetical approach** is causal or in other words attempts are made to state the findings in the form of general laws. The nomothetical approach is an explanatory research. **The decision-oriented approach** is based on nomothetical assumption. Nevertheless, the fundamental nature of the research is different, if a normative perspective is taken instead of descriptive one. **The action-oriented approach** is an alternative to the nomothetical approach because it brings an employee into the focus of analysis. The study is often based on the function of an end goal and examines its historical background. **The conceptual approach** produces new knowledge mainly through a method of deductive or inductive reasoning. (Kasanen, et al., 1993, pp. 256-257) Inductive reasoning or simply induction means coming up with a conclusion based on individual cases or in other words generalization. Induction typically answers to questions such as “*how?*” and “*why?*”. On the contrary, deductive reasoning typically strives to make conclusions about single cases based on more generalized understanding. In other words, research conclusions can be drawn from theory related to the case study. (Kananen, 2008, pp. 20-22) Kasanen, et al. (1993, p. 257) concludes, that **the constructive research approach** is very similar to decision-oriented and action-oriented approaches. **Figure 11** demonstrates interdependence between above mentioned approaches.

There are few common features between a constructive and a decision-oriented approach, which can be such as theoretical analysis, thinking, etc. These can ultimately lead to construction of a new entity. Nevertheless, it must be noted, that the decision-oriented approach is deductive but the constructive approach is inductive. Action-based approach takes up a direct and pragmatic empirical connection to the problem, thus characterizing the constructive approach as it is. (Kasanen, et al., 1993, pp. 255-257) Moreover, according to Kasanen, et al. (1993, p. 257) the researcher must adopt a role of a change agent, meaning that the

person will be supporting employees of the organization in their learning processes.



**Figure 11.** Constructive research approach with respect to other approaches (adapted from Kasanen, et al.,1993, p. 257).

From the constructive research approach's point of view, the main condition for validity is its functionality. In other words, the most suitable solution is also the most simple one to use and relevant to the problem. Constructive approach may be qualitative, quantitative or both (Yin, 2003, p. 15). Qualitative approach is chosen to analyze necessary information acquired from interviews. Hirsijärvi, et al. (2010, p. 232) stated, that in order to increase reliability of a qualitative research, the study execution should be explained as accurate as possible without losing the main focus. According to Johnson & Harris (2002, p. 109), the study can be either normative or descriptive. It is important to notice, that qualitative study leaves space for interpretation of meanings and words. In any case, Miles & Huberman (1994, p. 89) mentioned that qualitative study features:

- Integral and long-term cooperation with the case organization.
- Bringing a holistic view over the organization.
- Information is gathered from inside based on consensus of actors.
- Few standardized tools are used; most of the analyses are conducted verbally.

- Gathered material can be interpreted differently.

### 3.3 Content analysis

Content analysis was used in order to find similarities from different interviews and to make conclusions based on the results. This means that repeated structures were looked up from gathered material and they were compared to the theory presented earlier. Content analysis is a technique that is used to systematically picture and analyze written, spoken or visualized material. Content analysis is best suited for analyzation of qualitative material while, at the same time, continuously comparing the content to theory, experience and also to changes happening in the organization. (Tharenou, et al., 2007, pp. 251-252) According to Hirsjärvi, et al. (2004, pp. 216-218) results from research needs to be as close as possible to the reality. This means, that content analysis needs to be broken down methodologically using three steps described in the **Table 3**.

**Table 3.** Three steps for content analysis (adapted from Miles & Huberman, 1994, pp. 10-12).

Steps	Description
Data reduction	Looking for essential elements.
Data display	Structuring these elements according to most used categories, themes, types or specifying the content.
Conclusion drawing and verification	Presenting cause and effect, regularity, possible actions and other recommendations.

According to the table above, **data reduction** means that the content is being critically reviewed, trimmed and connected to other observations as well as being categorized. **Data display** means looking up for data pieces that display, explain and predict factors. These factors are then presented in **conclusion drawing and verification**. It must be noted, that this kind of analysis is conducted based on skeptical yet still subjective interpretation. (Miles & Huberman, 1994, pp. 10-12)

### 3.4 The research process of the study

The very early meeting with the first instructor, EVP of Strategy and Human Resource Rauno Hiltunen was arranged in late August at the main headquarters of

Valio Oy in Pitäjänmäki, Helsinki where the preliminary topic was briefly discussed. Knowledge management was proposed as the main theory by the first examiner, Professor Vesa Harmaakorpi for this thesis in November 2015. Furthermore, methods for gathering material for the study were discussed, such as: interviews, queries, internal data and researcher's own observation (Tharenou, et al., 2007, p. 78). The internal data consists of information that could be found in Weeti, e.g. information packages about Valio Oy's core processes, activities, reports, news, etc.

The official writing of the thesis started in the mid of November 2015, which was followed by numerous interviews with the sales department's personnel, other organizational employees and managers that were somehow related to ASPro. According to Hirsjärvi & Hurme (2009, p. 35), interviewing suits the research in the best possible way because the answers cannot be predicted and answers are based on interviewee's own experience. This way it is possible for the researcher to deepen knowledge about the organization. During these interviews researcher gained crucial insight about how Valio Oy is operating on a daily basis. Researcher actively participated in the office life by attending "*the coffee table conversations*" and meetings for sales department. External interviews were not conducted due to the nature of the study. No concrete problem was pointed out until two group interviews were conducted in January 2016. The results from group interviews lead to development of the second theory used in this study, which is modeling information flow. Other interviews were conducted as theme and unstructured interview. Theme interviews is also called a semi-structured interview, although according to Hirsjärvi & Hurme (2009, p. 48) it is closer to unstructured one. Unstructured or open interview is based on interviewer's and interviewee's interaction and it is not framed around specific questions. Structured interview is being the opposite of unstructured, e.g. having a rigid list of questions to ask. Nevertheless, theme interview consists of same themes and theme-areas which are same for all interviewees. (Hirsjärvi & Hurme, 2009, p. 48) It is stated by Järvinen & Järvinen (2004, p. 80) and Tuomi & Sarajärvi (2002, p. 76) that the interpretation of interviews is largely based on facilitators ability to make good questions and to interpret the results from interviews. This being said, after

analyzing results from K-J technique and consulting with other researchers and professors from Lappeenranta University of Technology (LUT), the problems were somehow identified. In short, K-J is a brain storming technique for organizing and prioritizing opinions and subjective data. (Spool, 2004) The steps for the technique will be presented during the empirical part of the study. After a series of consulting with newly arranged second instructor, EVP of sales and marketing Elli Siltala, the final research questions and limitations were set.

Every interview was either transcribed, if it was voice recorded or made a summary from notes right after each session. This was done to understand how interviewees were organizing their speech (Metsämuuronen, 2008, p. 14). Development propositions were figured out and then proposed as a solution to examiners in May 2016. These solutions were based on vast interviews, internal data and theoretical framework. The research questions were answered at the same time. All of the interviews were done in Finnish and later translated in to English.

## 4 CASE COMPANY INTRODUCTION

This chapter will present a brief description about the case study organization and its core processes.

### 4.1 About Valio Oy

Valio Oy or simply Valio was established in 1905 as a cooperative society for exporting butter from Hanko to England. Valio Oy has been growing since 1909 mostly by absorbing smaller dairies and producing other dairy products, such as milk and cheese. (History, 2016) These days Valio Oy is positioning itself as a responsible organization that is pioneering the dairy industry. (Valio Oy, 2015)

Valio Oy is Finland's largest milk processor and it is owned by 17 cooperatives. Eight of these cooperatives are belonging to Valio Group that comprises of c. 6 500 dairy farmers. Valio Oy is paying all of its profits to the owners. Turnover in 2015 was 1 720 million euros with at least 4 000 staff employed. At least 1900 million liters of milk was received in the same year. Valio Oy poses 13 production factories in Finland, two in Estonia and one in Russia. (Hiltunen, 2016) Investments comprised of 119 million euros that year (Report & Financial Statement, 2016).

Valio Oy has good cultural values that are spread throughout the organization. These values are such as maximizing milks value, producing best products, sustainability throughout the production and achieving development goals set by the managers. (Responsibility Report, 2014) According to European Commission (2014, p. 21): *“The Finnish milk market is considered by some interviewees as the most developed in the world, offering a wide range of innovative products.”* and *“Milk plays a central role for Finnish consumers and there is strong consumer demand for added value milk products, thus encouraging innovation”*. Valio Oy develops innovative products and is known abroad for its high quality. This statement can be proven by a vast variety of products it has been launching annually. (Responsibility Report, 2014)

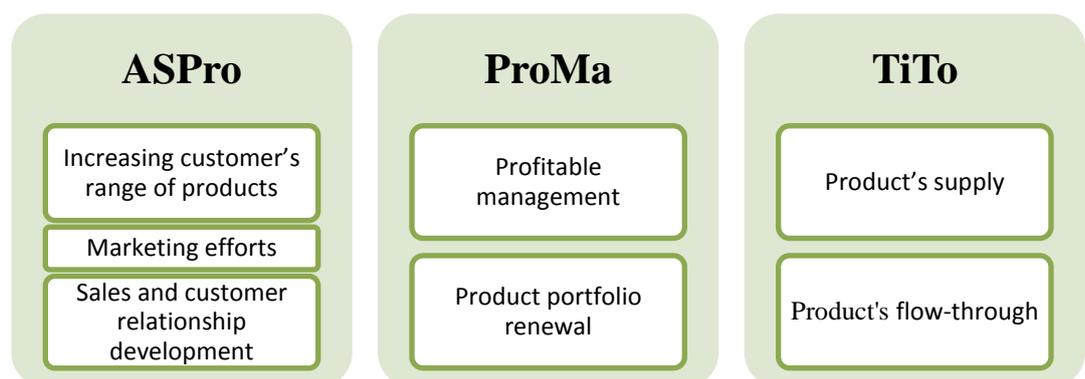
The latest changes in the organization from this study perspective were implementation of Valio's workspace. Workspace is MS SharePoint and it provides flexible and agile access to libraries and lists. Workspace enables employees to read and modify library documents from any computers with access to the internet and permission. Work can also be done offline. Documents are automatically synchronized online with document libraries and lists. Workspace gives possibility to upload or update documents for other employees to use. (Workspace, 2011)

#### **4.2 Valio Oy's core processes**

There are three core processes currently operating in Valio Oy. These are Order and Delivery (TiTo), Product development and Marketing (ProMa) and Account Sales Process (ASPro). First of all, **Account Sales Process (ASPro)** is responsible for maximizing milk margin, i.e. consistent pricing depending on the market situation. The means are such as: increasing customer's range of products, marketing efforts, sales and customer relationship development. Milk return is a metric that was developed for Valio Oy's performance measurement in 2000's and it serves as a sensor for profitability in euros (€) per liter (l) of fresh milk. Milk margin can be naturally maximized by pricing end products higher over its margin, getting more products to retailer's shelf, actively marketing products to consumers and constantly improving and developing customer relationship to enhance above mentioned targets. In other words, succeeding in profitability of a certain product, and being attractive to customers and consumers. An average milk return in 2015 was 0,365 €/l. Milk margin was adopted due to different amount of milk that is required for producing a certain product. (Report & Financial Statement, 2016) ASPro as a core process can be further divided into sub processes based on sales channels. There are three channels through which ASPro is selling its products: retailer, food service (FS) and industry. By dividing sales channels this way, Valio Oy strives for best sales operations in the industry. The main channel for sales is retailer due to the sheer amount of sales volume and income. Most common retailers are Kesko Oyj (Kesko) and SOK Liiketoiminta Oy (SOK). (Weeti, 2016) In general, these two sales channels are quite unique and thus, are not going to be described in this thesis. In addition, the further

discussion about customers will only be concerning the above mentioned retailers in periodic account sales process.

Secondly, **Product development and Marketing (ProMa)** is in charge of renewing Valio Oy's products as often as needed and taking care of value-based pricing of such products as well as managing product range. Product range means a variation of the same product platform, e.g. different yoghurt tastes. Usually new products are presented to customers in periodic account sales action, which happens three times a year. There were 169 new products coming out in 2015 annually or circa 10 per cent of Valio Oy's total range. Roughly same amount of products were also discontinued. In 2015 Valio Oy discontinued 164 products. Valio Oy's total portfolio accounts for over 1100 products with additional 500 products for exporting (Interviewee 7). Products are considered to be new, if they were on the market for less than 5 years. New products make up for circa 25 per cent of Valio's turnover. In other words, most profit comes from older products. (Interviewee 21) ProMa is also responsible of responding to market-specific consumer needs and meeting international quality standards. (Weeti, 2016) Valio Oy's core processes are showed in the **Figure 12** below with their main responsibilities briefly presented.



**Figure 12.** Valio Oy's core processes.

Finally, **Order and Delivery (TiTo)** is Valio Oy's backbone for any kind of processes that involves transportation of physical goods from A to B. TiTo is responsible for cost-efficient planning and transportation of goods as well as smooth flow-through of products to customer while maintaining good supply

performance. This can be achieved only through tight cooperation within Valio Oy's core processes and its customers. TiTo is measured in performance of supplying goods to customers, which was an average of 99 per cent in 2015. TiTo's three success factors are: Most importantly, supply's performance is positively affected by undisturbed order and manufacturing as well as managing any unpredictable changes along the process; Then, performance is also affected by accurate planning of warehousing related activities, packaging and sufficiency of raw material supply in production; Last but not least, a positive impact on supply's performance is affected by correct warehousing and distribution activities as well as functionality of systems such as ValioSAP. ValioSAP is Enterprise Resource Planning (ERP) software provided by software corporation SAP AG (SAP, 2016). SAP products will be discussed later. TiTo's flow-through is affected by prediction of sales in advance, production batch and frequency of product manufacturing, managing product range and storage. (Weeti, 2016)

## **5 EMPIRICAL STUDY**

First, this chapter presents group interviews conducted during January. Group interviews influenced the study the most and had impact on the results. Secondly, numerous comments and insights from semi-structured and open interviews will be mentioned along the work to give the reader a comprehensive understanding of the empirical study and its transparency. A total of 37 interviewees were contacted in open discussion, by semi-structured or group interviews since 16<sup>th</sup> of November until 19<sup>th</sup> of April. Most of the interviews were held personally face to face or in a group, while one interview was held through a phone call. During the interviews questions were usually asked accordingly to how the discussion shifted. Sometimes questions were predefined, but they also changed every time when a new piece of information has been learned by the interviewer. Interviewee's information can be found in **Appendix 1**.

Thirdly, this chapter presents a process map and describes new product's development process. Interviewee 6 is the process owner, according to the modeling guidelines. Most of the process' related interviews were held with Interviewee 7 and Interviewee 21 in addition to Interviewee 6. The process map visualizes how Valio Oy's core processes are related to each other. The main focus will be emphasized on ASPro. This part will connect theory with empirical part of the study. Process meetings and documents mentioned in this part can be seen as knowledge transfer between employees. The result of the empirical part is a visualized model of how information is stored and transferred in the process. This chapter will also answer to the first three research questions. Finally, an analysis of documentation will be presented.

### **5.1 Group interviews**

Two separate group interviews were conducted on 15<sup>th</sup> and 25<sup>th</sup> of January 2016. K-J technique was used as a tool to gather and organize ideas coming from the participants. K-J-technique can sometimes be referred as an affinity diagram. The name comes from its inventor, Jiro Kawakita. The technique consists of multiple steps, which are described below. (Mindtools, 2016; Spool, 2004)

The first group consisted of two account managers, three salespersons, one sale assistant and sales planner. The second group consisted of three key account managers, two sales planners and one system specialist. Each session lasted for an hour and a half. All participants were selected from sales department except for one system specialist. Every session started with a discussion about information flow and problems related to it. Facilitator guided the discussion and managed the time. Both sessions were voice recorded. The key words of the meeting were information and information flow. Group interviews were part of defining ASPro's bottlenecks and problems together with interviews that laid down criteria for analyzing process's documentation presented later in this study. All participants were encouraged to bring up their problems, worries and thoughts on how to improve their work. Questions like "*What can be done better*", "*How can you improve your work?*", "*What is getting you frustrated?*" or "*What is working well for you?*" were used to guide participants. In addition, reasons for the research were clearly communicated to the participants. They were told that they are the everyday heroes and were asked to bring their ideas based on their own experience working in the organization.

First, through extensive discussion the participants had to decide their common theme for the meeting. The theme could be a specific problem or just a name that is describing their common problems. Discussion was followed up by a brainstorming session. Participants were asked to write their thoughts on a sticky note as simply and clearly as possible. The sticky note was then placed on a flip board for others to observe. Then, after gathering a sufficient amount of sticky notes or when enough time have passed, notes were discussed one by one and categorized into major topics. Usually, major topics gathered too many sticky notes under them and were then reorganizing into multiple subtopics. Both topics were named according to their content. In the end, groups were given task to give points to subtopics. Three points from a participant meant that the topic is very important. Two and one point indicated less importance. Points were given simultaneously by writing a number under the subtopic. After the voting session, points were counted and finally arrows were drawn to visualize the relationship between major topics.

In **Appendix 2** and **Appendix 3**, major topics are indicated with a number. Every major topic has its subtopics that are indicated with a dot in between numbers. Sessions were conducted separately without facilitator telling the results of the previous group. Nevertheless, a common problem has emerged. The result can be clearly identified from both sessions. The problem is lack of correct information flow and its management or in other words communication problem that was voted as the most important issue for both of the groups. The iteration analysis based on voice recording and both diagrams showed that there are similar themes recurring in both groups. After combining two results together, three most important themes could be distinguished. These themes are:

- Information distribution responsibility
- Information documentation
- Timetable management

**Information distribution responsibility** meant improving openness and prioritization of information that is forwarded to other employees. Openness means that new information needs to be shared to all stakeholders. Prioritization means that there can be different levels of importance: varying from very important to not important. At the same time, avoiding information flood and highlighting the critical message that needs to be understood by the receiver. In addition, there is a need for more understanding of employee's task responsibilities and his/her direct contact. Employees need to share unambiguous objectives in order to understand each other better. Information distribution responsibility can be also characterized as lack of clear definitions or terms for words used in the organization.

**Information documentation** was somehow discussed with the second group, but most thoughts were found during session with the first group. Information documentation needs to be compact at the same time avoiding disinformation and unnecessary e-mails. E-mailing is the main channel for information distribution and it is sometimes used as storage for documents. This means that sometimes

important pieces of information are stored in the e-mail and not in Valio's workspace for other employees to make use of. Workspace will be discussed later in the results. In addition, the problem in information documentation means deficiency in information being properly grouped, thus making it harder to search for. Employees are used to ask each other for general directions in order to find the right document they were looking for. There also seemed to be a lack of a list of all available documents, updates and changes to them.

Issues related to **timetable management** were vastly discussed in both groups because it plays a crucial role from start to finish of the process that brings new products to market. Timetable management consists of worries such as: information sharing about product shortcomings, distribution and product availability changes as well as informing about significant problems that may cause delays. Changes in information of any sort are not always communicated in given time boundaries to recipients. A failure of such sort may cause hectic behavior among employees that are relying on up-to-date information. Similarly to bullwhip effect in distribution channel, a hectic behavior is caused by the overall volatility of actions that are conducted by the employee. There is a demand for synchronized information of sales among departments and its employees. If there are exceptional situations or inquiries, they are needed to be solved without distracting schedule of the process or appropriate actions need to be taken. As Interviewees 28 and 29 stated, they have "*never thought how to act in exceptional circumstances*". In addition, there have been issues regarding "*who put what information*". (Interviewee 28 and Interviewee 29)

## **5.2 Process map**

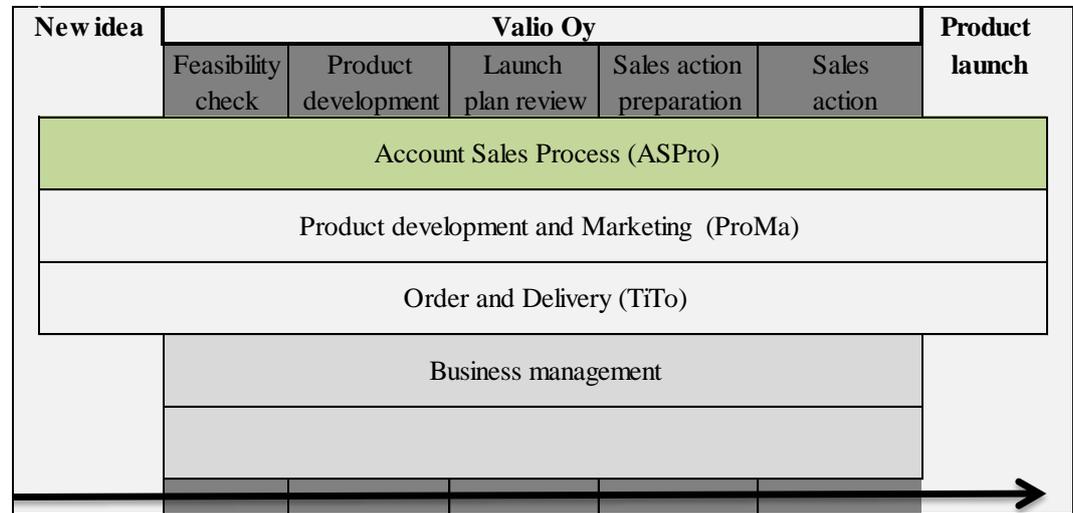
After numerous open interviews, a decision was made to focus on picturing information flow in ASPro. The result of such work is intended to demonstrate how information is flown from ASPro to other parts of the organization. Picturing information flow can also indicate possible bottlenecks and problems in the process. It was also stated by Interviewee 21, that "*ASPro has caused headache, if something did not go as planned on the way*". It must be noted, that the main sources of customer and consumer knowledge are ProMa and ASPro. A modeled

information flow diagram can potentially increase understanding of how information is being transferred within and between core processes. As Interviewee 12 stated, that Valio Oy's processes and groups within these processes are somehow sealed within themselves, thus failing to observe the bigger picture from organizational perspective. This causes core processes in the **Figure 13** presented later in this chapter to be somehow disintegrated from each other and that ultimately leads to lack of common organizational goals. In addition to sealing within groups, Interviewees 22 and 23 mentioned that there is also a lack of unambiguous communication from managers. Managers are sometimes unwilling to take active participation in guiding their employees at work.

In fact, Interviewees wished managers would participate more during exceptional situations because tasks are unclear and mistakes often occur. Interviewees also commented that employee's responsibilities can sometimes be defined only partially and that employees are having different approaches to similar tasks. This can be a burden especially when a common approach needs to be defined especially in case of documentation and information sharing. (Interviewee 28 and Interviewee 29) Employees are using Microsoft Outlook for e-mailing and Microsoft Lync (Lync) to communicate with each other. Lync is a real-time communication application, where messages and voice calls can be exchanged. (Interviewee 28 and Interviewee 29)

**Figure 13** shows that ProMa and ASPro are involved in new product's development and sales in a different way. TiTo is shown along the process because it is involved at every phase of product development. Eventually, all core processes are involved in product development. The main focus is on ASPro, which is responsible primarily for periodic account sales process. ProMa's sub process is new product development and ASPro's sub process is periodic account sales process. New product development's activities together with periodic account sales process' activities will be described in the current part of the study. Furthermore, tasks are the lowest level description of a process and will be

mentioned throughout the study. Different phases of new product development process will be also discussed later in this chapter.



**Figure 13.** Process map from new product’s development and sales perspective.

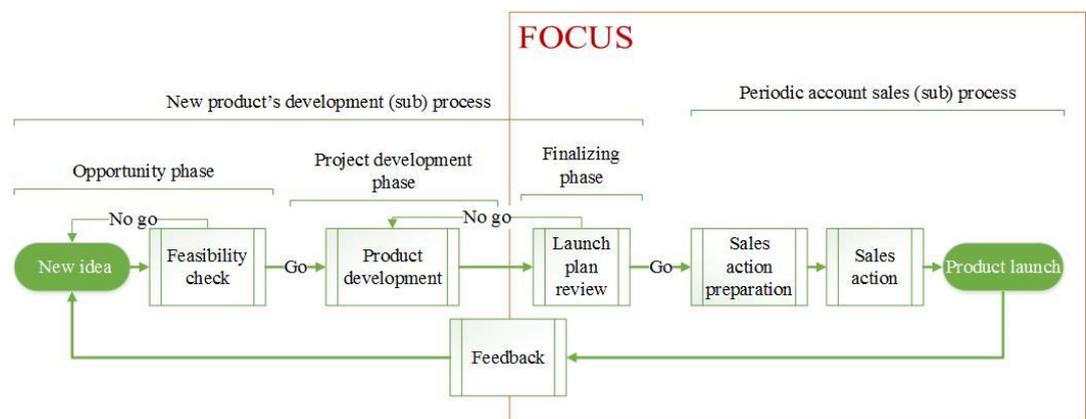
It must be noted, that there is a slight distinction between Finalizing phase and periodic account sales process. Finalizing phase is part of product development’s process, where a new product is being launched to the market. At the same time, periodic account sales process is a general name for selling products to the market regardless of their novelty. In addition, the supporting processes are only partially viewed in the process map, are out of the scope and are not necessary to be described in this study.

### 5.3 New product’s development process

Interviewee 16 mentioned that any kind of information flow diagram could potentially help, because employees rarely have a clear picture of how individual work affects the outcome of an organization. Interviewee 15 added that ASPro in comparison to other core processes is “*not tight enough*” and that its development “*stopped half-way finished*”. This caused confusion amongst employees, because ASPro was not fully defined in comparison to ProMa or TiTo. Furthermore, Interviewee 13 referred to employee’s current approaches as “*old fashioned*” and that Valio Oy needs to improve that by using information technology (IT) tools. In fact, Valio Oy is possessing variety of IT tools, but these tools are rarely used,

Interviewee 13 stated. Due the statement, the simplest way of visualizing the process has been chosen from the theory part of the study. This was done in order to ease the understanding of the chart so that as many employees as possible will gain insight of the process as a whole.

In the end of January, after conducting group interviews, an idea to clarify data and information flow within ASPro was finally taking form of a flowchart diagram. In the **Figure 14** below process of new product development is described with flowchart technique. Microsoft Office Visio 2013 Pro was used for this task. The flowchart diagram shows briefly how idea is first introduced in Opportunity phase. Ideas are usually born through technological push or pull method. On one hand, technological push means that, e.g. R&D develops a new way of processing milk in a way that grants possibility to create completely new product portfolio. On the other hand, technological pull means that e.g. there can be demand for a certain type of product or flavor on the market. (Interviewee 15)



**Figure 14.** Process of new product development and sales.

According to the **Figure 14**, new idea has to be lined with category business plan that is decided on organization's top level business decision process, i.e. business management in **Figure 13**. Category business plan is made for three years for each product portfolio. This means that in first 12 months a precise marketing plan is made in addition to action plan for launching products. (Interviewee 21) This plan is then used in Periodic account sales group meeting discussed later in the chapter. After the category business plan, idea goes through feasibility check.

Feasibility check consists of target setting and money making questions. In other words, estimations such as sales volume for first 36 months, net sales in euros, milk return and margin level estimation, marketing activities and critical success factors are conducted. In addition, planning for where the product can be manufactured at and comparison to competitors needs to be made. In any way, the consumer-centric thinking is the most important part of feasibility check. The idea is then either passed to the next stage or returned to the previous stage. This is marked as “Go” or “No go” in the **Figure 14**. Feasibility check is conducted by Senior Vice President of Business Unit (SVP of BU) in Finland, and if necessary also sent to SVP marketing director or Vice President (VP) marketing in Russia and Sweden. An accepted idea becomes a project and is moved to Project development phase. (ProMa, 2016)

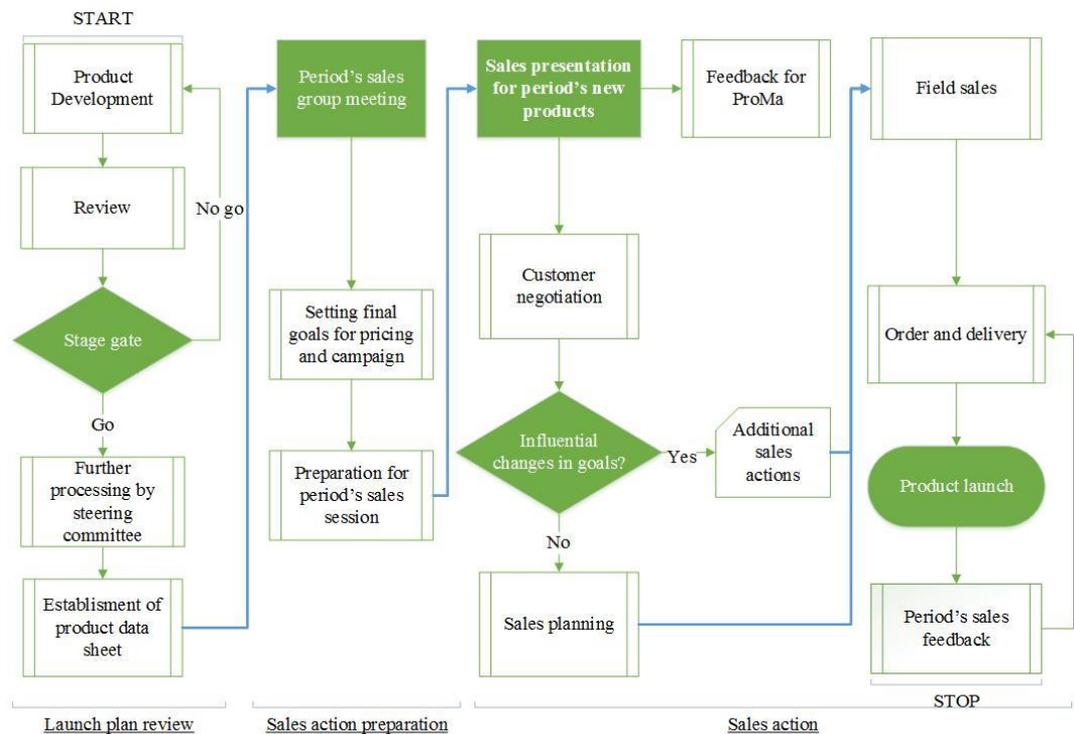
In the Project development phase, a product is naturally developed further by a team to meet its final goal, which is to be launched to the market. The period is changed three times a year and period’s change happens cyclically after launch of products. A kick-off meeting is arranged with chosen project group members, where project schedule, quality target and product development brief are written down. Preliminary risk analysis (PPA) and check-list for compliance with the food legislation are also checked. Project development phase consists of tasks that are related to income calculations, product’s production, testing and tasting, packaging, advertisement and logistics. (ProMa, 2016) ProMa is represented by the product group. Product group is responsible for Opportunity and Project development phase. During Project development, it is common to invite participants from sales group for sparring. ASPro is represented by the sales group. Sparring is used for improving awareness and focus via actively discussing product related ideas and concerns. (Interviewee 6)

According to Interviewee 1, ASPro can be compared to Porter’s 4P, which means Product, Promotion, Place and Price. By this interviewee meant that ASPro is responsible for setting up a good product with a correct price for the market, promote it well enough for customers to take them into their product range and place them on retail shop’s shelf for consumers to purchase. Interviewee 1 also

mentioned that there is room for improvement in sales, i.e. sales process. (Interviewee 1) Lastly, after going through above mentioned checking and tasks, a Launch plan review for sparring is arranged. SVP of BU makes decision for the product to continue or not to the next phase, which is Finalizing phase. This decision is taken during Launch plan review, which happens three times a year. (ProMa, 2016)

#### **5.4 Periodic account sales process**

Employees sometimes refer to Valio Oy as *“too big to fail”*. The truth is that Valio Oy is big in Finland, but internationally it is rather small. Valio Oy needs to continue bringing new products, innovate and renew its portfolio. In worst case scenario, competitors will take over Valio Oy’s leading position in Finland. Employees need to be shacked up in order to avoid such failure from happening. (Interviewee 16) According to Interviewee 17 *“Periodic account sales process is like a train”* and it is the fundamental part and it works well. Similarly, Interviewee 30 put it as *“this (ASPro) is only carrying out performance”*. Thus, in order to gain a better understanding of periodic account sales process, Finalizing phase was included in the flowchart (**Figure 15**). Launch plan is part of Finalizing phase and it is the last phase before periodic account sales process starts. The sales process consists of Sales action preparation and Sales action. Product is launched in the end of Sales action. Three different groups are participating during this process: product, sales and sales planning groups. (Interviewee 6)



**Figure 15.** Finalizing phase and periodic account sales process.

Periodic account sales process takes up from seven to eight months to complete. On one hand, Launch plan review and Sales action preparation takes up around from three to four months to complete, i.e. from one to two months each. On the other hand, Sales action's duration is around two to three months. The last month in the end of the process is a so called buffer zone, where the next period starts at the same time as the present Product launch is conducted. During this last month, preparation for the next period starts with new Review. (Interviewee 6) The process diagram proposed in this thesis is a simplified form of how the real periodic new product's sales process is happening. Things such as e-mails, coffee table discussions and meetings outside of the process that can affect decision making are not taken into consideration here. In addition, time is not taken into consideration, although an average meeting duration is known. An open interview with Interviewee 5 has led to exploring information flow from ASPro to ProMa, which will be somehow described in the following subchapters.

### 5.4.1 Launch plan review

Product development - stage being discussed earlier is now culminating in the next stage. Launch plan review - stage consists of the Review, Stage gate, Further processing by steering committee and Establishment of product data sheet. Periodic account sales process starts with Launch plan review. Interviewee 16 and Interviewee 30 pointed out, that exchange of information between core processes happens during periodic account sales. In both interviewees' opinion Period's steering committee's meeting is connecting different core processes by bringing employees together and interchanging information. Otherwise departments are pretty much sealed from each other (Interviewee 30). From this thesis perspective, the interchanged information is stored in documents as an output of the meeting. The output is then used as an input for further meetings or preparation. Documentation will be presented later in the thesis.

During Launch plan **Review** a decision to pass the product further or not is taken. The review means that for every new product there is its own review session, where sales group takes active participation in commenting the Launch plan. The commented Launch plan is a Microsoft Office's (MS) Power Point file, which is in turn used for Launch plan review meeting. Launch plan also consists of economic data about every product. After the review, product group makes necessary changes to the Launch plan based on comments, changes, clarifications and any additional thoughts occurred during the meeting. During or after the meeting, a final decision to launch a specific product or return it to Product development phase for rework is made. (Interviewee 6) Interviewee 21 stated that *"reviewers do not make the decision, the managers do"*.

The case of not passing through the **Stage gate** could be due to bad timing for the product in question and it could be possibly relaunched in later period. For example production-scale trials can be still being conducted during this stage and can sometimes postpone launch of the product due to errors in the production line. (Interviewee 6)

Nevertheless, Product launch can also be postponed due to lack of sufficiently planned product portfolio. In other words, launching a single product is a poor decision because customers will most likely want to order a variety of the basic product. On one hand, product portfolio needs to be small enough for customers to order all of them. On the other hand, product portfolio needs to be big enough to capture customers' and then consumers' attention (Interviewee 7). Usually product and sales groups make a common decision on whether to leave out a product or not. On some occasion, such as a disagreement between these two groups, the product group makes the decisive decision. (Interviewee 6)

Second part of the stage is **Further processing by steering committee** which contains a reviewed Launch plan, which is used for sales group's commenting meeting. The meeting gives an important aspect from customer's point of view, giving birth to Period's steering committee's material. The material is originally built up from Launch plan with added comments from the sales group. Period's steering committee's material serves as a basis for further development of sales arguments to consumers and customers. The initial material is then presented in **Period's steering committee's meeting**, where answers to comments are presented. Some small changes can possibly be implemented in the material, but most of the material should be ready before this meeting. Especially material related to new products has to be reviewed and changes being already put in place. Steering committee's meeting gives a broad vision over all products as a whole and the amount of new products coming to market. (Interviewee 6)

Last part of the stage, is **Establishment of product data sheet**. This stage starts with Establishing and filling in product data sheet, which is then stored in SAP's program called Perus. Perus is Valio Oy's own internal data bank that contains everything about its products arranged hierarchically and grouped. The data from Perus is synchronized with data pool called Synkka at least once a day or oftener. (Interviewee 6) Synkka Oy services provide a solution for transmitting product data and digital materials from suppliers to retailers and other receivers (Synkka, 2016). On one hand, Synkka consists of new and discontinued products. On the other hand, Synkka does not contain wholesale prices for new products. It has to

be noticed, that Valio Oy is not selling for wholesale prices, meaning that prices are negotiable. Necessary data from Perus is then used in Generating information package that is then presented in MS Excel format. In other words, Period's information package is a simple tool for Valio Oy's sales group, which contains all necessary data for new products. Billing has its own role in filling in additional data to the billing data about new products. It is important for sales group to inform its customers about changes through Period's information package. Data from billing needs to be transmitted before synchronization. (Interviewee 6)

#### **5.4.2 Sales action preparation**

Sales action preparation – stage consists of Period's sales group meeting, Setting final goals for pricing and campaign and Preparation for period's sales session. The stage starts with **Period's sales group meeting** which is also a kick-off. Period's information package is presented to the group together with material from Period's steering group's committee and Prioritizations. Kick-off means that the developed Launch plan would be now followed up and that there would be no more planned changes to it. During the Period's sales group meeting, questions about new products are answered or taken notes of. In addition, a common view about upcoming period is developed and committed to. Period's sales group meeting also indicates start of Sales action preparation –stage. During Sales group's meeting some employees may finally hear about the products for the next period. (Interviewee 6)

Secondly, **Setting final goals for pricing and campaign** consists of two parts, the Sales group's pricing meeting and the Operational meetings. These meetings give birth to Pricing program, Marketing campaign plan and Common view on period's actual goals and concrete actions. The first two documents are made in MS Excel format and the last one in MS Power Point. During the Pricing program meeting the lowest possible market prices are set, under which the product cannot be sold profitably. A general pricing policy was set in the earlier stage, such as whole sale pricing, discounts, minimum average price, etc. Prices are graduated within Valio Oy for different retail shops. Sales group is responsible for pricing and usually present price list four months before period's change. (Interviewee 6)

Interviewee 1 and Interviewee 2 mentioned, that product's prices are steering consumer's buying habits. In their opinion, consumers are more prone to buy a cheaper product because Valio Oy fails to fully communicate its products benefits to them, such as product's purity and healthiness. On the contrary, Interviewee 15 mentioned, that consumers that purchase Valio Oy's products are willing to pay a premium. Interviewee 1 and Interviewee 2 mentioned that the situation gets complicated when Valio Oy's products are deemed to satisfy customers and consumers expectations at the same time. Customers and consumers can sometimes seek different values from the product they are taking into their range or consuming. Interviewee 4 briefly described the situation as retail chains are facing increasing global competition. Interviewee 4 stated that while product supplier's influence is diminishing, retailer's influence is growing worldwide. The main reason behind this is global competition that forces retailers to lower their prices in order to compete with each other. Although Kesko and SOK are currently dominating the Finnish market, these retail chains are comparatively small to their European counterparts. The counterparts such as Aldi from Germany or Tesco PLC from U.K can pose a threat to the Finnish market chains.

The Operational meetings are sales group's own meetings, where participants discuss new products. These products are fresh dairy products, cheeses, fats and baby food. During these meetings a 12 month plan about new and discontinued products is presented. Main focus for the next period is being discussed as well as some small changes are validated. In addition, risks for new products are presented. Risks can be positive, meaning that products will most likely sell more in volume than it was expected. On the opposite, negative risks mean that products will most likely sell less than it was originally planned. Moreover, successes and corrections during the previous period's new products are being discussed. Marketing campaign plan consists of campaigns possibly held by retailers with Valio Oy's products planned for few months in advance. The idea of Operation meetings is to have a common action vision between sales and product groups. (Interviewee 6)

Lastly, **Preparation for period's sales session** is conducted. Preparation consists of analyses, sales material, ordering samples, drawing up and then sending offers to customer. Sales material means having 3D-images of the product, package designed, advertisement material and timetables. Ordering samples is a process which is necessary for having a physical representation of a new product to showcase it to customers during Sales presentation for period's new products. Drawing up offers to customer means combining data from previous part of preparation stage. These offers are stored in Product group's range and marketing campaigns' MS Excel file, which is then forwarded to retailers around a week before the beginning of Sales action. (Interviewee 6)

### 5.4.3 Sales action

Sales action- stage consists of 10 parts including part in case some influential changes have occurred in goals. These parts are: Sales presentation for period's new products, Feedback for ProMa, Customer negotiation, Influential changes in goals, Additional sales actions, Sales planning, Field sales, Order and Delivery, Product launch and Follow-up meeting.

Therefore, Sales action-stage starts with **Sales presentation for period's new products**, where new products are presented to customers using arguments from the Sales pages. All the necessary information and goals are provided together with packaging pictures for the presentation. In addition, advertisement plan and physical samples of the products are presented. It is important to notice, that during this presentation monetary offers are not discussed. New products are genuinely being promoted to customers. A secretary makes notes during the Sales presentation for period's new products from comments, which are then carefully transferred in **Feedback for ProMa**. In addition to feedback from notes, a separate customer's feedback request is sent to customers through Digium. Digium is an online survey for gathering customer's feedback. Both feedbacks, from notes and from Digium are sent to ProMa for further use in development of new products. Then, **Customer negotiation** starts after the sales presentation, where key account managers conduct necessary meetings, phone calls and e-mails are exchanged in order for customers to make decision on product range and

marketing campaigns. Prices are used from Pricing program for new products or from Product data sheet (Perus/SAP). It is important to understand, that customer decisions are not final and that they can change during the process. Nevertheless, Customer's decision on product range and marketing campaigns is a good indicator for new products, meaning that selected products were somehow accepted to customer's product range. (Interviewee 6)

During the Follow-up meeting an achievability of goals set for the product are discussed. On one hand, if there were **Influential changes in goals** for a specific product, **Additional sales actions** are set up. Influential changes are for example: failure for the product to be selected in sufficient volume or not being selected at all for customer's range. In case when additional sales actions do not achieve minimal product specific goals, the product in question gets removed from the product range. On the other hand, if there were no changes big enough to affect the goal, the **Sales planning** starts its Sales forecast after product range decision in MS Excel format. The most important forecast is the sales forecast without marketing efforts, which is then brought to Advanced Planning and Optimization (APO), a SAP program for production facilities to plan their production schedule. Thus, the sales forecast without marketing efforts is a calculation for new product using previous data from a similar product. Therefore, it is easier to forecast basic sales based on a similar product and then add up possible volume sales using marketing campaigns. (Interviewee 7) For example, Valio's Lumo cottage cheese is similar to Valio's Profeel, which is also a cottage cheese. During Sales planning it is important for the sales planning group to identify where Profeel is currently sold in Finland and how much coverage it has in different retail shops. According to the sales planning manager, *"A product that receives marketing campaign straight after its launch will make calculations harder and results won't look positive on the long run"*. (Interviewee 7) In addition, a discussion between sales, planning and product group is conducted to decide to which range products in question could be allocated to. During such discussions a vision for a product is produced. Most often, product groups are overestimating sales volumes of their new products. On one hand, Interviewee 17 stated, that information is working

well in between ASPro and ProMa during Sales planning. On the other hand, Interviewee 16 mentioned that it can be improved.

In fact, the responsibility of sales planning group is to plan sales numbers for the product in hands as realistically as possible. Very few new products may require investment in production line, e.g. purchase of packing machine for additional packing capacity due to increased overall production volume. (Interviewee 7) Later on, a discussion with interviewee 7 shed light on information flow from customers to ASPro's sales planning group. From the interviewee point of view, information flow within ASPro is very good because Valio Oy's operational reliability is over 90 per cent. In other words, ordered products are delivered correctly for over 90 per cent of the time. In less than 10 per cent cases products were not delivered at all or were severely delayed. During one of many interviews with Interviewee 6, account sales process was described in one sentence: *"ASPro's offering is the measure how of successfully it communicates and commercializes novelties to customers"*.

During **Field sales**, sales representatives receive instructions from key account managers. Sales instructions and tasks can be later seen in CRM/SAP. Interviewee 17 mentioned that CRM was integrated to SAP rather badly around two years ago. Key account managers are presenting upcoming new products to sales representatives which they will be demonstrating to customers during the period. Managerial actions are also presented to sales representatives. These actions ensure coverage of the product range, such as: promotions, themes, campaigns, space usage, ensuring product visibility, consumer communication, advertisement, etc. In addition to new products, changes in previous products are also presented. Field sales group's meetings are on a monthly basis, where actions for the next month are discussed and planned. Their main focus will be on products that did not pass to chain store's product range, thus products that require additional sales actions. In addition, due to differences how SOK and Kesko are operating, sales representatives mostly focus on Kesko's retail shops. Most of the products sold to SOK are sold through key account managers. It must be noted, that sales representatives are meeting customers a month before the **Product launch**, where

the representatives are presenting the sales material created during **Sales action preparation** to demonstrate new products. In addition to **Period's demonstration**, sales representatives are said to be the “eyes” and the “ears” of the company. Sales representatives collect information based on what they have observed in the retail shops and pack their observations into weekly report. After demonstration session, customers can proceed to product ordering process. (Interviewee 14)

During **Order and Delivery**, Customer's confirmation on product order serves as a final decision for product volume calculation. Confirmation usually is done through Electronic Data Interchange (EDI), which is used as a communication method for ordering products from Valio Oy by customers. Circa 97 per cent of all orders are coming through EDI (Interviewee 28 and Interviewee 29). It is advised for the customers to order products 10 weeks in advance, but sometimes orders are placed quicker, leaving less time for product production and distribution. (Interviewee 7) According to sales planning specialist, realizing quick orders is an outstanding example of reliability of a supplier. In addition, last evaluation of planned sales is being conducted by sales planning group. Sales forecast is being either increased or decreased in respect to customer's product order and thus, corrections to forecasts for every product are made. Order and Delivery process is outside of thesis's scope and will not be discussed any further. The basic function of Order and Delivery is to manage orders coming from EDI and arrange deliveries. (Interviewee 7) Moving on to the **Product launch**, this actually means that new products are received by customers and are stored on their shelves. Also, Product launch indicates an end to the period's sales process. After the product is launched, **Period's sales feedback** starts. Interviewee 4 mentioned, that in order to bring competitive products to market, external customer information intake must be automated in the process. Thus, Period's sales feedback's process is responsible for reporting Valio Oy's sales results (**Table 4**). This means tracking sales results at least once a day; e.g. how product sales have started and how often customers place new orders. Tracking frequency depends on the category of a product, e.g. fresh products are tracked more frequently than cheese products. From two to four weeks in a row after initial

launch, a new product is being tightly followed up and every progress is reported. Sales volume predictions in Order and Delivery are corrected according to the sales progress.

**Table 4.** Periodic account sales process's Feedback.

Feedback	Description
Feedback ( <sup>F</sup> )	All below mentioned feedback categories.
Valio's sales report ( <sup>VSR</sup> )	Sales results, information from profit center and data from Atlas.
Retail's POS-data ( <sup>POS</sup> )	Data about consumer's purchases from retail shops.
Consumer's trends	Current and possible future behaviors or habits.
Consumer research	Observation of consumer's preferences.
Nielsen Homescan	Marketing information, audience measurement, business media products and services

The **Feedback** consists of a bundle of different processes as shown in **Table 4** and refers to the model in **Figure 16**. Product group's specialists is producing analysis that will help sales and product group to improve sales of new and current products as well as improving customer experience. (Interviewee 16) Abbreviation will be implemented to indicate where feedback is used as an input in upcoming detailed process diagram of periodic account sales process in **Figure 16**. All Feedback is used in Launch plan, Period's steering committee's material, Sales pages, and Analysis material. Valio's sales report is used in Common view on period's goals and actions, Pricing program, Marketing campaign plan, and Field sales group's actions, Order and Delivery. Retail's POS-data is used in Marketing campaign plan and Field sales group's actions. Consumer's trends, consumer research and Nielsen Homescan are combined in (all) Feedback according to **Table 4**. In addition to sales results, Valio Oy's sales report consists of information from profit center and data from Atlas. Atlas is SAP SE's product. Information from profit center consists of reviews by product group, ad hoc requests and profit tracking of Valio Oy's sales actions. From periodic account sales process perspective, profit center uses Atlas's reports as a tool for product and customer profitability calculation that provides managers with useful data for upcoming account sales' marketing campaigns (Interviewee 6). Moreover, the

product group presents new sales goals for every product and product category based on Atlas's reports. Sales group can then use the data to present how marketing for Valio Oy's products can be planned at the retail shops. In other words, above mentioned actions together are called sales planning. (Interviewee 7)

Information from other sources is also gathered. These sources are such as Nielsen Homescan, which is world's leading provider of marketing information, audience measurement, and business media products and services (Nielsen Homescan, 2016); retail's point of sale data (POS-data), which is provided by retail shops and contains data about products that consumers have been purchasing; consumer's trends, where current and future consumer's behaviors or habits are discussed from dairy product's perspective; and consumer research, which presents observations of preferences for dairy products from consumer's point of view. These pieces of information are analyzed at Valio Oy by product group's specialists that turn gathered information into useful knowledge. This knowledge is written down and following results can be used during periodic account sales process. These results are such as: supporting material, marketing analysis, analysis for sales period, tracking new products on the market and market overview. (Interviewee 6) Although vast varieties of facts are taken into consideration during Sales planning, it is still up for the consumers to buy these products from the shelf. This underlines the fact that planning is almost never perfect and changes almost certainly occur. An experienced sales planner knows how to interpret signals and to make corrections or changes to Sales planning before it is too late. In other words, when to decrease or increase sales expectations based on how well product is selling. Meanwhile, future orders and previous sales can be traced back to APO, but the application is unable to provide data about current state of sales. (Interviewee 7)

On the contrary to the statement about benefits of an experienced planner, an open discussion with Interviewee 8 and Interviewee 9 led to a new perspective that the knowledge possessed by employees is not always heard because of failed communication between information sender and receiver. There are examples of

such behavior that ultimately lead to unnecessary expenses in the organization. This can be seen as a failure of managerial decision making, because apparently information that employees possessed was not made use of. In other words, the lack of feedback from employees. Feedbacks mentioned here are only partial and they are not describing the whole feedback process at Valio Oy. Due to limitations of the research, only necessary feedbacks for the topic were presented.

### 5.5 Analysis of documentation

Interviewee 19 suggested analyzing ASPro documentation in order to describe the process properly. It was Interviewee 33 who said, that: *"communication contains sending message, senders properties, communication tool or method and receiver's interpretation"*. Interviewee 19 stated that documents are a way of communication in an organization such as Valio Oy, where employees are not always in face-to-face contact. Therefore, documents are a solid way of managing process, as long as documents are standardized. In other words, documents containing data and information needs to be somehow similar to each other in order to be evaluated. (Interviewee 19) Interviewee 4 also mentioned that the benefits of documentation must be made clear and that benefits need to be tracked in order to measure the value they are bringing for customers. Questions such as: *"What is missing from the process?"*, *"What information could be shared with others?"*, *"Who relies upon the information?"*, *"Which information pieces are important and for whom?"* and *"Who benefits from information?"* were leading to detailed analysis of documentation in periodic account sales process.

The following analysis of content or analysis of documentation, i.e. analysis of gathered data, information and how these are stored in the periodic account sales process will be presented. **Figure 16** represents a more detailed process diagram of the previous **Figure 15**. The process itself was explained previously. It was also mentioned by Interviewee 21, that documentation of products are playing important role. If there are errors in documents, timetable is rescheduled or can even cause delay for Product launch. Interviewee 21 stated, *"We have some systematic error; every year there is same proportion of products that reach goals"*; *"This is the big goal, to understand in which point of the process we*

*should focus our efforts on, so that we can be smarter in setting goals for products”.* (Interviewee 21)

At Valio Oy documents are usually stored in Valio’s workspace, V-storage and Weeti. Workspace is a platform to share documents within the organization. V-storage is Valio Oy’s network storage for documents, similar to personal computer’s storage medium. Weeti is Valio’s intranet. (Interviewee 36) Therefore, this analysis will preliminary be focusing on the data and information management. This process can also be described as studied know-why about the **Figure 16** mentioned below. Knowledge application, as mentioned in the theory can be traced back to the documentation. Documentation is the externalization stage of knowledge conversion model.

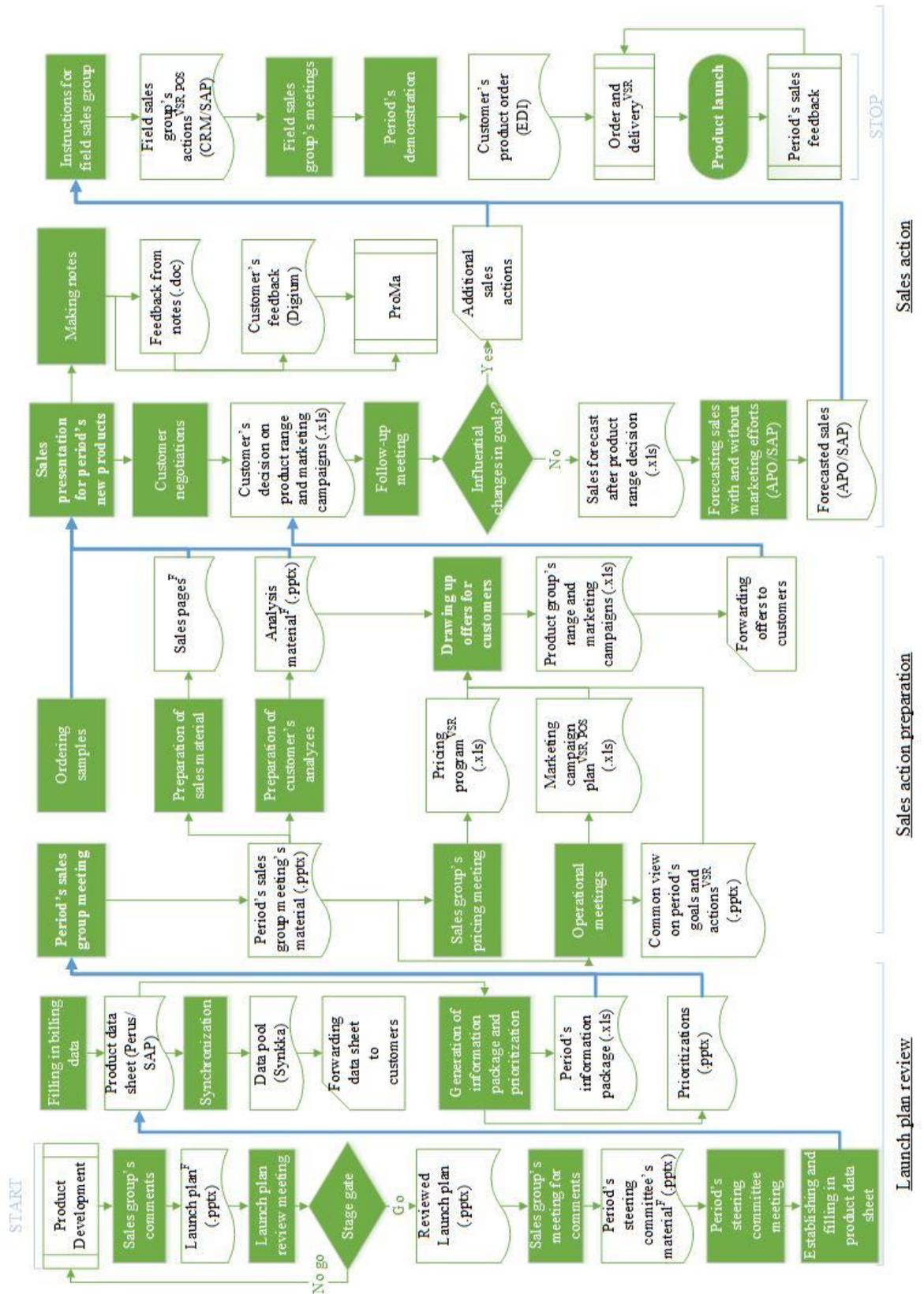


Figure 16. Detailed process diagram of periodic account sales process.

According to Interviewee 21, *“Workspace is a new thing and it has been actively used for the past year”*. Periodic account sales process has its own workspace and it is the largest and the most organized workspace that Interviewee 21 has observed so far. In fact, Workspace is making documents more usable and accessible, according to the survey conducted at Valio Oy (Interviewee 36). On the contrary, additional training was requested by workspace users. In addition, survey pointed out that improvement for saving documents and an overall common documentation approach is needed. (Pulkkinen, 2016) Then Interviewee 36 stated that: *“Precise instructions, procedures and process guidance can be found from Valio’s Quality management system. Factories are using Quality management system in abundance. On the contrary, the head office is not instructed in how data is stored. Or if they are, instructions are not followed.”*

In this study, the analyzed content can be in different forms. There is a .pptx format, which is Microsoft Office’s Power Point, .xls, that is Microsoft Office’s Excel and .doc which means Microsoft Office’s Word. In addition, content in applications, such as SAP, Synkka, Digium and EDI will be analyzed.

### **5.5.1 Launch plan review**

Interviewee 33 pointed out, that in order to have a clear organizational goal, inputs and outputs of documents must to be thought out. The combined inputs from documents dictate the final output of a process in question. According to Interviewee 19, *“communication issues are caused by process’s related things that are not defined well enough”*. It must be noted, that Interviewee 13 stated that employees currently have their hands full of tasks and responsibilities and have close to no time for additional work. Interviewee 13 added: *“Employees are working in the same way as a train goes on tracks”*. This means that there are a lot of obligatory responsibilities for employees to conduct. This being said, responsibilities for documents will also be presented. In addition, Interviewee 37 stated, that deadlines for documents must be respected. When process shifts away from Launch plan, the document must be completed. (Interviewee 37) Thus, necessary documentation information will be analyzed.

The following tables represent analysis of content for every document and application in question. Input, responsibility, output and documentation are representing point of view for analysis derived from business process modeling theory and interviews' comments. Launch plan in the **Table 5** contains inputs from sales group's comments and output from Product development's stage. The input from Product development's stage is described previously as well as Feedback. Reviewed Launch plan is the same document as the launch plan, but "reviewed" means that the product has passed the stage gate.

**Table 5.** Launch plan and reviewed Launch plan.

Point of view	Content
INPUT	Sales group's comments. Output from product development's stage. Feedback.
RESPONSIBILITY	For the task: product group. Main responsible: project manager.
OUTPUT	<ul style="list-style-type: none"> <li>- Product's information.</li> <li>- Concept commercialization.</li> <li>- Order and Delivery.</li> <li>- Product viability.</li> </ul>
DOCUMENTATION	Used in Period's steering committee's material and Pricing program. In workspace. Documented in MS Power Point. Different file names for the same document. 12 files and average of six modifications per file. Average of less than two changes per file after DL.

Product group is responsible for producing the output, while the main responsible for the task is the project manager. The output from this document is the description of product's information or concept, how it is planned to be commercialized, activities related to TiTo and viability of a product. Furthermore, the file name for Launch plan varies. Launch plan's file name contains document's name, what the document is for and date for the file. There were a total of 12 files and average of six modifications per file. An average is calculated by summary of all modifications made in workspace and then dividing them by the total amount of files per document. Gathering of these numbers was done during 15-19 of April. An average of less than two changes per file was done after deadline for the document, where only three of all 12 files were changed 20 times

after. Deadlines for documents are agreed upon long before the period starts. Changes to deadlines are usually made to period specific calendar. Above mentioned files were used from “9.2016 – 1.2017” period. Other files in the analysis are from the “2 – 4.2016” period.

Period’s steering committee material’s (**Table 6**) input is coming from reviewed Launch plan and Feedback. Product group is responsible for creation of this document. Project manager is responsible for the document to be completed. The output is that new products are being categorized in accordance to predicted amount of sales per year, generated turnover and milk return. Changes to current products and to delisted products are presented. In addition, background information for Product launch, e.g. market situation and research is presented. From sales group point of view this document is used for creation of sales arguments for customers. In other words, describing reasons based on facts for a specific product to be passed to the market and its benefits to stakeholders.

**Table 6.** Period’s steering committee’s material.

<b>Point of view</b>	<b>Content</b>
INPUT	- Reviewed launch plan. Feedback.
RESPONSIBILITY	For the task: product group. Main responsible: project manager.
OUTPUT	- New business unit’s name and prioritization. - Changes and delisted products. - Background information for Product launch and research. - Main arguments. - Goals from Valio’s perspective. - Marketing priorities and actions. Used in Product data sheet (Perus/SAP), Sales pages, Period’s sales group meeting’s material, Period’s information package and Prioritizations.
DOCUMENTATION	In workspace. Documented in MS Power Point. Different file names for the same document. Eight files and average of 17 modifications per file. Over eight changes per file on average after DL.

Moreover, goals for new products are presented for the next year. Goals are set using the same measurements as during product categorization. Other important

information is mentioned, such as product's marketing measures and shelf placement. In the end, future marketing priorities and actions are presented briefly. Period's steering committee's material output is used in Product data sheet (Perus/SAP) and Sales pages. Then, the output is documented in the workspace using MS Power Point. The document is saved under different variety of names, thus the name not being standard. Nevertheless, same name pattern can be observed throughout these files, which are: category name, what the file is for and for which period time the file is made for. Lastly, there were eight files of this document during "2-4.2016" period and average of 17 modifications per file. Over eight changes on average have been made per file after the deadline.

Product data sheet (Perus/SAP) receives its input from Period's steering committee's material, Sales group's comments and Billing data (**Table 7**). Billing data for new products comes from Pricing program. Responsibility for the task to be completed is on business manager, project manager or their assistant. The main responsibility is on business manager or project manager. The output is retail product's basic information, such as EAN-code, official name in Finnish, Swedish and English, size, etc. Transport packaging information consists of packaging type, which can be for example cardboard or pallet, packaging size and other information. There can also be additional product information: composition, nutrient content, vitamins, ingredients on the package, nutrition properties, different markings, etc. Data pool (Synkka) contains same information as Product data sheet (Perus/SAP), thus it will not be discussed separately. Some documentation can be found in V-storage. Nevertheless, most of the information is in the application itself. Product data sheet (Perus/SAP) is used in Period's information package and Field sales group's actions (CRM/SAP). (Interviewee 6)

**Table 7.** Product data sheet (Perus/SAP).

Point of view	Content
INPUT	<ul style="list-style-type: none"> <li>- Period's steering committee's material.</li> <li>- Billing data (Pricing program).</li> </ul> Sales group's comments.
RESPONSIBILITY	For the task: business manager, project manager or their assistant. Main responsible: business manager or project manager.
OUTPUT	Basic information about: <ul style="list-style-type: none"> <li>- Product.</li> <li>- Transport packaging and packaging material.</li> <li>- Additional product information.</li> </ul> Used in Period's information package and Field sales group's actions (CRM/SAP).
DOCUMENTATION	Some documentation can be found on V-storage. File name is standard.

Period's information package in the **Table 8** receives its input from Period's steering committee's material and Product data sheet. Responsible for the task is business manager, project manager or their assistant. The main responsible is business manager or project manager. First, data about new products consists of product information, pricing, marketing information and goals for sales volume. Second, data about discontinued products consists of information about the product. The other data that can be found is concerns a specific week when a product is planned to be discontinued, a possible replacement product, replacement causes and comments. Third, information about changes for every product is described. As earlier as possible, the first data about the product in question is presented. After, possible information about changes is presented but preliminary about pricing, packaging and other important notifications. In addition, sales goals for SOK and Kesko are presented. Period's information package is used in Sales pages and Product group's range and marketing campaigns.

Lastly, the document can be found in workspace in MS Excel format. File name is marked accordingly to the sales process of the period, for example "2-4\_2016", where first two numbers represent months the document belongs to and 2016 represents the year. Period's information package is a single file. There were over

112 changes for the document. More than 10 changes were made after the deadline for this document.

**Table 8.** Period's information package

Point of view	Content
INPUT	<ul style="list-style-type: none"> <li>- Period's steering committee's material.</li> <li>- Product data sheet (Perus/SAP).</li> </ul>
RESPONSIBILITY	For the task: business manager, project manager or their assistant. Main responsible: business manager or project manager.
OUTPUT	Data about products that are: <ul style="list-style-type: none"> <li>- New.</li> <li>- To be discontinued.</li> <li>- Other changes.</li> <li>- Sales goals.</li> </ul> Used in Sales pages and product group's range and marketing campaigns.
DOCUMENTATION	In workspace. Documented in MS Excel. File name is standard. 112 changes for the document. Over 10 changes after DL.

Input for Prioritization (**Table 9**) is from Period's steering committee's material. Responsibility for the task is on sales and product group. Main responsible is development manager. The output is sales group's prioritization that is done together with product group and is based on Period's steering committee's material. The result is a common prioritization for new products, marketing and sales focus. Prioritization means that products that are the most suitable for the market will be chosen. The reasons for launching a product are also mentioned and are backed up by market analysis and/or arguments. It must be noted, that prioritization happens mostly before Sales action preparation – stage, but sometimes important changes to prioritization are done during the stage.

**Table 9.** Prioritization.

<b>Point of view</b>	<b>Content</b>
INPUT	- Period's steering committee's material.
RESPONSIBILITY	For the task: sales and product group. Main responsible: development manager.
OUTPUT	- Prioritized new products. - Prioritized marketing and sales focus. - Launch reasons. Used in Marketing campaign plan and Sales pages.
DOCUMENTATION	In workspace. Documented in MS Power Point. File name is standard. Final version not modified.

The document in question is available in workspace, documented in MS PowerPoint and file name is standard, for example: “*FINALPriorisointi 2\_4\_2016*”. In other words, file's name represents the name of the document and date. The output is used in Marketing campaign plan and Sales pages. File was never modified after being published at workspace.

### **5.5.2 Sales action preparation**

Moving on to Sales action preparation, which is the second stage out of all three stages for launching the product to market. As it can be seen from the **Table 10**, input for Period's sales group meeting's material comes from Period's steering committee's material. Then, responsibility for the task is on product group and their managers are responsible for the work. The output consists of more detailed arguments, material and means for sales in comparison to Period's steering committee's material. In addition, comparison of Valio Oy's products to rival products, differences, strengths, pricing, packaging, advertisement and promotion are presented. Moreover, the comparison contains reasons for Product launch, consumer and customer benefits, focus group and product information. Product group's most important actions are also discussed. The document is used in Sales pages, Marketing campaign plan, Common view on period's goals and actions. Lastly, the documentation is held in workspace, in MS Power Point format. There are different file names for the same document similar to Period's steering committee's material. There are eight files and average of four modifications per file. An average of more than two changes per file has taken place after the

deadline. Only three out of eight files were changed at all, comprising a total of 18 changes.

**Table 10.** Period's sales group meeting's material.

Point of view	Content
INPUT	- Period's steering committee's material.
RESPONSIBILITY	For the task: product group. Main responsible: product group's manager.
OUTPUT	- Detailed arguments, material and means for sales. - Comparison to rival products. - Important actions. Used in Sales pages, Marketing campaign plan, Common view on period's goals and actions.
DOCUMENTATION	In workspace. Documented in MS Power Point. Different file names for the same document. Eight files and average of four modifications per file. Average of more than two changes per file after DL .

The input for Common view on period's goals and actions (**Table 11**) is from Product Development - stage and Period's sales group meeting's material and Valio's sales report' i.e. where annual Sales planning and budget is discussed. Responsible for producing document in question is the product group. The main responsible is product group's managers. Then, the output is establishment of upcoming period's goal as well as goals for the next 12 months. This basically means going through all products and discussing them one by one. In addition, analysis and numbers can be presented in support for decisions. Period's changes and clarifications are such as product's design, packaging, recipe, marketing, etc. must be presented. Risks are mostly related to production and production facility's downtimes. Lessons learned from previous period are taken into consideration by analyzing things that went well and what went badly earlier. Moreover, an analysis using 4P's is also presented as Interviewee 1 had already mentioned. Lastly, the file is documented in MS Power Point in workspace with semi standard name for the file. Most of the files look similar with various positioning of date, purpose and product's name. On average, the file name is: *"Toimenpidepalaveri\_9\_2016\_1\_2017\_lastenruoat"* or purpose, date and name of product's group. There were seven files all together during "2-4.2016" period,

where each file was modified on average of two times. Only one file was modified once after deadline.

**Table 11.** Common view on period's goals and actions.

Point of view	Content
INPUT	- Period's sales group meeting's material. Valio's sales report.
RESPONSIBILITY	For the task: product group. Main responsible: product group's managers.
OUTPUT	- Period's goal for products. - Goals for next 12 months. - Period's changes or clarifications. - Risks. - Lessons learned from previous period. Used in Product group's range and marketing campaign.
DOCUMENTATION	In workspace. Documented in MS Power Point. File name is semi standard. Seven files and average of two modifications per file. Only one file was modified once after DL.

Marketing campaign plan (**Table 12**) is part of Operational meetings together with Common view on period's goals and actions. The input is Period's sales group meeting's material together with Valio's sales report and Retail's POS-data. Furthermore, the decisions from Prioritizations are used. Main responsible for producing and managing the document in question is sales group. Then, the output is campaign planning, which consists of product category and new product's name, desired and confirmed campaign duration in a fiscal year. This is done separately for SOK and Kesko. Lastly, the documentation is in workspace in MS Excel and the file name is standard. File name consists of Customer's name, document type in question and time period or a year. For example: "*Kesko kampanjasuunnitelma 2016*". There were three changes for the document and no changes after the deadline.

**Table 12.** Marketing campaign plan.

<b>Point of view</b>	<b>Content</b>
INPUT	<ul style="list-style-type: none"> <li>- Prioritizations.</li> <li>- Period's sales group meeting's material.</li> </ul> Valio's sales report. Retail's POS-data.
RESPONSIBILITY	For the task: sales group. Main responsible: sales group.
OUTPUT	<ul style="list-style-type: none"> <li>- Campaign planning.</li> </ul> Used in Product group's range and marketing campaign.
DOCUMENTATION	In workspace. Documented in MS Excel. File name is standard. Three changes for the document. No changes after DL.

The input for Pricing program (**Table 13**) comes from Reviewed Launch plan, or more specifically from pricing range that is calculated during Product Development. Additional input comes from Valio's sales report, i.e. preliminary from Atlas for pricing the products accordingly to the current market situation and previous period's data. Responsibility is on product group and development manager is the main responsible. Then, the output is the net pricing guidance for different retail shop sizes. In other words, net prices are the lowest prices which under the products cannot be sold profitably anymore for small, medium or large size retailers. There is also a profitability report based on data from previous year. Other outputs are such as discounts for products, campaign and product range prices. These are then used in Product group's range and marketing campaign. Documentation is held in V-storage in MS Excel and file is name is standard. (Interviewee 6) Because the file was stored in V-storage, there was no data available about the amount of times the file was modified.

**Table 13.** Pricing program.

Point of view	Content
INPUT	<ul style="list-style-type: none"> <li>- Reviewed Launch plan.</li> <li>- Product data sheet (Perus/SAP).</li> </ul> Valio's sales report.
RESPONSIBILITY	For the task: product group. Main responsible: development manager.
OUTPUT	<ul style="list-style-type: none"> <li>- Net pricing guidance.</li> <li>- Profitability report.</li> <li>- Discounts.</li> <li>- Campaign prices.</li> <li>- Product range prices.</li> </ul> Used in Product group's range and marketing campaign as well as Billing data.
DOCUMENTATION	In V-storage. Documented in MS Excel. File name is standard. Unknown amount of changes.

Product group's range and marketing campaigns' (**Table 14**) document works as a basis for Customer's decision on product range and marketing campaigns. In other words, the same document is used for displaying same information and data about customer's marketing actions for Valio Oy's products. The latter one is an updated version of the current document holding updated information about retailer's decision. Input for Product group's range and marketing campaigns comes from Pricing program, Marketing campaign plan, Common view on period's goals and actions, Analysis material and Period's information package. In addition, when the customer has made its decision, the document will contain customer's decision on product range and marketing campaigns. In fact, this document is product group's vision on how a specific product will be accepted to customer's range including possible marketing campaigns until a customer makes its decision. Responsibility for the task is on sales group and main responsibility for the document to be completed is on key account managers.

Furthermore, the outputs of the document are retailers' actions related to marketing and product, range class and billing prices. Product's range class indicates in which retail shops the product will be sold in. Billing prices means the price which will be used in billing for sold products to customer. Marketing actions are such as arranging marketing through media, field promotion, etc.

Retailers' actions at Kesko's retail shops are conducted together with the customer. Kesko has vast variety of different campaigns for small, medium and big retail shops. SOK has actions similar to Kesko, but due to the nature of how SOK is operating, its own actions are based on long term volume sales. In addition, SOK is relating sales campaigns to volume planning. Nevertheless, in this thesis sales campaign is used instead of volume planning for both cases. Documentation is held in V-storage. The file name is standard and is in MS Excel format. The document in question is modified throughout the period.

**Table 14.** Product group's range and marketing campaigns & Customer's decision on product range and marketing campaigns.

Point of view	Content
INPUT	<ul style="list-style-type: none"> <li>- Pricing program.</li> <li>- Marketing campaign plan.</li> <li>- Common view on period's goals and actions.</li> <li>- Analysis material.</li> <li>- Period's information package.</li> </ul> Information about Customer's decision.
RESPONSIBILITY	For the task: sales group. Main responsible: key account managers.
OUTPUT	<ul style="list-style-type: none"> <li>- Retailers' marketing actions.</li> <li>- Weekly marketing plan for products.</li> <li>- Product's accepted to retailers range.</li> <li>- Product's range class.</li> <li>- Billing prices.</li> </ul> Customer's decision on product range and marketing campaigns is used in Sales forecast after product range decision.
DOCUMENTATION	In workspace. Documented in MS Excel. File name is standard. Document is modified throughout the period.

The Analysis material (**Table 15**) uses Feedback discussed in previous chapter as an input. This feedback consists preliminary of calculations from Atlas which is based on previous period's sales and campaigns, market overview, product group's reviews, and product and customer profitability. Analysis material depends on the customer. Product group's specialist is responsible for the task and key account managers for the Analysis material to be completed. Then, the outputs are in form of recent changes in product segments, sales feedback, findings, action proposals for upcoming period's campaigns and product range.

Analysis material is used in Product group's range and marketing campaigns. The document is stored in V-storage and documented in MS Power Point with a standard file name.

**Table 15.** Analysis material.

<b>Point of view</b>	<b>Content</b>
INPUT	- Previous period's sales and campaigns. Feedback.
RESPONSIBILITY	For the task: product group's specialist. Main responsible: key account managers.
OUTPUT	- Recent changes in product segments, successes and challenges. - Valio's campaign tracking. - Findings and action proposals for upcoming period. Used in Product group's range and marketing campaigns.
DOCUMENTATION	In V-storage. Documented in MS Power Point. File name is standard.

Sales pages (**Table 16**) are an information package for customers during Sales presentation for period's new products and for Period's demonstration. Input is from Period's steering committee's material and Feedback. Responsibility for the task is carried out by product group's managers and the main responsible are key account managers. Moreover, Sales pages contain information about Valio Oy's new products in a form of numbers in MS Excel files that are transmitted in to sales material. In other words, Sales pages' output consists of important sales information for customers such as planned marketing actions in accordance to market trends, target group, arguments for new product, etc. Sales pages are used in Sales presentation for period's new products, where new products are presented to customers. Moreover, Sales pages are the core material for Sales presentation for period's new products.

**Table 16.** Sales pages.

<b>Point of view</b>	<b>Content</b>
INPUT	<ul style="list-style-type: none"> <li>- Period's steering committee's material.</li> <li>- Period's information package.</li> <li>- Period's sales group meeting's material.</li> <li>- Prioritizations.</li> </ul> Feedback.
RESPONSIBILITY	For the task: product group's managers. Main responsible: key account managers.
OUTPUT	<ul style="list-style-type: none"> <li>- Visualized information package.</li> <li>- Sales material summary.</li> <li>- Common package.</li> <li>- Customer specific.</li> <li>- Core material for Sales presentation for period's new products.</li> </ul>
DOCUMENTATION	In workspace and printed version. Documented in PDF. File name is standard. 17 files and average of slightly over one modification per file.

Lastly, documentation is in workspace and in printed out booklet material. The file is in Portable Document Format (PDF) and the file name is standard. There were 17 different files in workspace that averaged in total of slightly over one modification per file.

### **5.5.3 Sales action**

Input for Feedback from notes (**Table 17**) comes from retailer's feedback at the Sales opportunity for period's new products. Both responsibilities are on key account managers. The output consists of comments and new knowledge gained from participants of the meeting. The overall output is how retail chain representatives are reacting to new products. This type of information combined with Customer's feedback will be then transferred to ProMa for further analysis. Nevertheless, the reaction to new products can be then seen reflected in the amount of product's range and marketing campaigns taken in by retailers. (Interviewee 6) Lastly, documentation is in MS Word and file name is standard for this document. The document can be found in workspace.

**Table 17.** Feedback from notes.

Point of view	Content
INPUT	Sales presentation for period's new products.
RESPONSIBILITY	For the task: key account managers. Main responsible: key account managers.
OUTPUT	<ul style="list-style-type: none"> <li>- Feedback for each new product.</li> <li>- Improvement suggestions.</li> <li>- Knowledge transfer from customers to ProMa.</li> </ul>
DOCUMENTATION	In workspace . Documented in MS Word. File name is standard.

Digium is a feedback program to help Valio Oy in gathering feedback from its customers that were participating in the Sales opportunity for period's new products gathering (**Table 18**). Digium questionnaires are sent after the meeting and it contains simple questions and comment request about the sales presentation. Responsible are the same managers as in Feedback from notes. Then, the output is similar to the Feedback from notes, i.e. feedback for each new product and knowledge transfer from customers to ProMa. The questionnaire is a feedback about the presentation session. There are comments for participants to answer about products that were presented during the session. Total of four answers were required about Valio Oy's 2016 spring novelties. Lastly, documentation is held in MS Word under a standard file name in workspace. (Interviewee 6)

**Table 18.** Customer's feedback (Digium).

Point of view	Content
INPUT	Sales presentation for period's new products.
RESPONSIBILITY	For the task: key account managers. Main responsible: key account managers.
OUTPUT	<ul style="list-style-type: none"> <li>- Feedback for each new product.</li> <li>- Knowledge transfer from customers to ProMa.</li> </ul>
DOCUMENTATION	In workspace. Documented in MS Word. File name is standard.

Sales forecast after product range decision's (**Table 19**) input is from Customer's decision on product range and marketing campaigns. Based on customers' commitment to the above mentioned decision, the sales planning group starts to

calculate possible sales for the upcoming period. At this point, differences between goals set by product group and customers decision on product range are evident. Goal differences for Sales forecast after product range decision are presented in comparison to Product group's range and marketing campaigns, a prediction that was set long before customers made their decision. Then, the output document contains product's producing factory and its details, product's final details, sales prediction and sales group's comments and change of the period date. The period change date means the date when customers are able to order new products. The document is then used in Forecasted sales (APO/SAP). Lastly, the document can be found in workspace. It is documented in MS Excel and file name is standard. Sales planning group is responsible for the task and for the whole document. There is one file representing the document and it was not changed. (Interviewee 6)

**Table 19.** Sales forecast after product range decision.

Point of view	Content
INPUT	- Customer's decision on product range and marketing campaigns.
RESPONSIBILITY	For the task: sales planning group. Main responsible: sales planning group.
OUTPUT	- Goal differences to the original planning. - Product's producing factory and its details. - Product's final details. - Sales prediction and sales group's comments. - Period's change specific date. Used in Forecasted sales (APO/SAP).
DOCUMENTATION	In workspace. Documented in MS Excel. File name is standard. 1 file and no changes.

Forecasted sales (APO/SAP) uses input from previously mentioned document called Sales forecast after product range decision (**Table 20**). Responsibilities are on sales planning group. The output is a calculation of sales per week for an upcoming period that will be tightly followed by Period's sales feedback. In fact, the calculations are taking into consideration marketing campaign's effects. The sales numbers will guide TiTo and also production facilities. There are predictions, such as base sales per customer without any marketing action, and

marketing campaign sales. Lastly, documentation is still done in V-storage, but it will be moved to workspace in near future. File is in MS Excel and the file name of the report is standard. Nevertheless, the report are made from the application (APO/SAP), thus application stores all the documentation mentioned above. (Interviewee 7)

**Table 20.** Forecasted sales (APO/SAP).

Point of view	Content
INPUT	- Sales forecast after product range decision.
RESPONSIBILITY	For the task: sales planning group. Main responsible: sales planning manager.
OUTPUT	- Sales per week. - Marketing campaign's effect on sales. - Guiding TiTo. - Production planning.
DOCUMENTATION	In V-storage. Documented in MS Excel. File name of the report is standard.

The input for Field sales group's actions (CRM/SAP) comes from "*Instructing field sales group*" and customer's information comes from Perus/SAP (**Table 21**). Additional input comes from Valio's sales report and Retail's POS-data. Customers are the retail shop owners with whom field sellers appoint representation meetings. Customer's information consists of previous period's Field sales group's actions outputs. Instructions are such as tasks, guidance, sales person's responsibilities, customer specific information, etc. Field representatives are responsible for the task. Field sales managers are main responsible for the task to be completed. Then, the outputs are: Sales and task performance measurement, observation, campaign confirmation and sales action cost. Sales and task performance measurement means how many customers contacting there have been done and how well the tasks instructed by key account managers were conducted. Observations means gathering information about retail shops, e.g. how Valio Oy's products and shelf space are managed, checking correct prices, making sure that retail shop's warehouse is sufficient for upcoming campaign, etc.

Finally, sales group makes comments based on these findings field and take pictures of what they found important in the shop. The documentation is mainly in CRM/SAP, but there are weekly reports about customer contacts, i.e. customer contact per sales representative. Based on the mentioned report, an expenditure report is made once a month. This documentation can be found in workspace, in MS Excel file. The file name of the report is standard. (Interviewee 27)

**Table 21.** Field sales group's actions (CRM/SAP).

Point of view	Content
INPUT	<ul style="list-style-type: none"> <li>- Product data sheet (Perus/SAP)</li> </ul> Instructions from field sales group Valio's sales report. Retail's POS-data.
RESPONSIBILITY	For the task: key account managers. Main responsible: field sales manager.
OUTPUT	<ul style="list-style-type: none"> <li>- Sales and task performance measurement.</li> <li>- Observations.</li> <li>- Campaign confirmation.</li> <li>- Sales action cost.</li> </ul>
DOCUMENTATION	In workspace. Documented in MS Excel. File name of the report is standard.

Inputs for Customer's product order (EDI) are customer's information and products information as well as requested delivery date by customer (**Table 22**). The responsibility for the task is on sales service, in case there are errors in the order placement. Main responsibilities are on system specialists that aid sales service employees in solving complicated order issues. (Interviewee 28 and Interviewee 29)

**Table 22.** Customer's product order (EDI).

Point of view	Content
INPUT	Customer's information, product's EAN-code and requested delivery date.
RESPONSIBILITY	For the task: sales service. Main responsible: system specialists.
OUTPUT	<ul style="list-style-type: none"> <li>- Order rows.</li> <li>- Error report.</li> <li>- Feedback to customers.</li> </ul> Used in TiTo.
DOCUMENTATION	In V-storage. Documented in application and report in MS Excel. File name of the report is standard.

The output of Customer's product order (EDI) consists of order rows, error report and feedback to customers. Error report means collecting orders with invalid inputs from customer's product order in to MS Excel file. Invalid rows are such as incorrect or incomplete product information, delivery date and place, etc. In case there are too many invalid orders, feedback is given to customers. Customer's product order is then further used in TiTo. Documentation is held in EDI, apart from the error report, which is held in V-storage. File name of the report is standard. (Interviewee 28 and Interviewee 29)

## 5.6 Summary of analysis

A summary for documentation is presented based on analysis of the periodic account sales process' documents. Documents are presented in the **Table 23** below in amount of outputs for other documents they are used for, amount of files for documentation, changes per file and changes per file after their deadline. If there were more than one file, an average per file was calculated. As it was mentioned before, the data is gathered mostly from "2-4.2016" period, apart from Launch plan and reviewed Launch plan that was taken from "9.2016 – 1.2017" period. The following applications were not used for creation of documents according to the table, but are still playing an important role for data and information storage and management: Customer's feedback (Digium), Forecasted sales (APO/SAP), Field sales group's actions (CRM/SAP) and Customer's product order (EDI).

In fact, according to the **Table 23**, Sales pages uses 17 files for its documentation, this is the largest number out of all. The most “*used for*” document is Period’s steering committee’s material, which is used in five other documents. There were 112 changes made to Period’s information package, making it the most changed document. In addition, the same document was also changed the most after the deadline. The actual number of changes is unknown, but it is more than 10.

**Table 23.** Documents analyzed during the study.

Document	Amount of files	Times document was “ <i>Used for</i> ”	Average changes per file	Average changes after DL
Launch plan and reviewed Launch plan	12	2	6	Less than 2
Period’s steering committee’s material	8	5	17	<u>8</u>
Product data sheet (Perus/SAP)	-	2	-	-
Period’s information package	1	2	112	<u>More than 10</u>
Prioritization	1	2	None	None
Period’s sales group meeting’s material	8	3	4	More than 2
Common view on period’s goals and actions	7	1	2	1
Marketing campaign plan	1	1	3	None
Pricing program	1	2 (1 billing data)	Unknown	Unknown
Product group’s range and marketing campaigns & Customer’s decision on product range and marketing campaigns	1	1	Continuously	No DL
Analysis material	1	1	Unknown	Unknown
Sales pages	17	0	1	None
Sales forecast after product range decision	1	1	None	None
Σ13 documents	Σ59	Σ22	Σ145	More than 23

All in all, there were a total of 13 documents presented in the table. A sum (Σ) of 59 files represents all documents. All documents were used for 22 times and there

were 145 changes on average per file. There was also an average sum of more than 23 changes after deadlines. Deadlines are document specific and were not mentioned in this study.

## 6 RESULTS

This chapter consists of results of the study. First of all, an answer to the first research question will be given based on the flowchart diagram analysis presented in earlier chapter. After, an answer to the second and third research question will be presented based on interviews and theory part of the research. The fourth question will be mainly answered based on knowledge management theory. The fifth research questions will be preliminary answered with business process modeling theory.

### 6.1 Answering to research question one

The answer to the first research question “*How information is currently managed in periodic account sales process for retail trade?*” was presented by visualizing process flow with the flowchart diagram. In other words, the first research question was answered by braking flowchart diagram down into three descending levels and analyzing them. The top level flowchart diagram described briefly how product is developed from new idea to Product launch. Then, the middle level flowchart diagram described periodic account sales process’ most important meetings and actions that lead to Product launch. The lowest level flowchart diagram described ASPro in details, i.e. how information is exchanged by documents during the process. Lastly, the lowest level flowchart diagram provides an answer to the first research question: Information in periodic account sales process is mostly managed by MS Office applications, such as Excel, Power Point and Word. The documentation stored in these files are playing key role in creation of data and information used in the periodic account sales process. In fact, the MS Office’s applications are the backbone for the process. The most important file is the Period’s steering committee’s material stored in MS Power Point format, because it is used the most for creation of documents that are following it. It also has an alarming amount of files and changes to them after the deadline, which in turn, causes deviation in information.

According to **Table 23**, Period’s information package is also important due to the amount of changes before and after the deadline. All in all, process’s information is managed by total of 16 MS Office documents in addition to one PDF. There

were also three business suits provided by SAP, which are Perus, APO and CRM. In addition to MS Office, PDF and SAP, other applications were also used. These are: Synkka, EDI and Digium

## **6.2 Answering to research question two**

Answer the second research question "*how information management can be enhanced in periodic account sales process?*" can be derived from analysis of the interviews conducted during the research. According to the interviews, problems can be generalized into:

- Lack of approach and/or standardization for information sharing
- Insufficient tool utilization
- Lack of systematization of documentation
- Nonexistence of measurement for documentation

**Lack of approach and/or standardization for information sharing**, this means that employees tend to have different approaches at work. This is mostly concerning communication, due to the nature of this thesis. For example, a problem using information channels, such as e-mails too much rather than prioritizing information through workspace. Another example is how workspace is currently utilized from documentation point of view. Files can be modified many times before they have been actually uploaded to the workspace, thus skewing documentation quality attributes showed in the previous chapter. To solve this problem, a possible solution for this can be a launch of information sharing policy that dictates how different types of information must be shared between groups of employees. Most urgent information pieces can be sent through e-mails, while messages that encourage discussion would be posted through workspace. Policy concerning documentation can consist of uploading the first version of a file to workspace as early as possible and updating it when necessary in order to control documentation quality. It can also be assumed based on this study, that most problems related to documentation are caused by this problem.

**Insufficient IT tool utilization** partially correlates with above mentioned lack of approach standardization, i.e. using workspace more often. It must be noted, that in order for any tool to be used, its possibilities and benefits must be made clear for employees. In addition, managers need to take active participation and lead tool utilization by personal example. On one hand, during interviews it was mentioned that Valio Oy is possessing different IT tools, but somehow they are not utilized fully or were forgotten about. On the other hand, some tools are being overused, such as Microsoft Outlook's e-mailing application. Finally, it can be stated, that tools that are being used the most at Valio Oy were familiar to employees beforehand. Therefore, new IT tools have to bear resemblance to the applications employees are used to. A good example is workspace's commenting section, which bears resemblance to social networking services.

**Lack of systematization of documentation**, this means that guidance is not coming frequently enough from managers on how to properly manage vast amount of documents that Valio Oy possess. According to the interviews, there is Valio's Quality management system (QMS) that contains procedures that are required by management system standards and other official instructions. Moreover, there are varieties of approach procedures from Valio Oy's stakeholders. Nevertheless, these approach procedures are neglected by employees and are not reinforced enough by managers at Valio Oy's head office. Finally, the solution to this problem is to start taking care of responsibility and ownership. This means that central managers need to reinforce responsibilities and ownership or organization can end up with no control over shared or reused knowledge.

**Nonexistence of measurement for documentation** means that there is no current measurer for adequate comparison between documents that are used in the periodic account sales process. The need for measurement for documentation can be traced back to group interview's results, which findings indicated that there is no measurement for successfulness of periodic account sales process. On one side, absence of such measurer hindered the analysis, because there was no possibility to indicate neither efficiency nor effectivity of the process. On the other side, such

finding gave birth for a demand of such measurement. Nevertheless, measurement is outside of the scope and will only be mentioned in the discussion part.

Based on interviews and the analysis, the most important property of the **Table 23** is the **document changes after deadline**. Based on the analysis, it is important to avoid any changes after the specific date, because of the possible multiplication of errors that it can cause. This is true especially for documents that are mostly used in the process, such as Period's steering committee's material and Period's information package. Errors, mistakes or unattended changes that look harmless at first glance can be amplified later in the process and accumulate into bigger problem that hinders sales process as a whole. In other words, document changes after deadline weakens the output quality of the process. It must be noted, that there is no single answer for the causes for changes after deadline and the problem needs yet to be investigated. Changes can be caused by employees, process itself or environmental changes. Whenever the cause of the problem is unclear, it is unlikely to generate a correct solution to it.

### **6.3 Answering to research question three**

Answer to the third research question "*how information utilization can be enhanced in periodic account sales process?*" can be derived from combination of theory with the empirical part. Therefore, the most important part of utilizing information is in organizational culture, according to KM theory. In order to improve information utilization, sharing of the information between employees needs to be taken care of. Valio Oy's employees have naturally established routine and task related assumptions in order to complete tasks as time efficiently as possible. Nevertheless, it is important to start questioning these routines and avoid "*way doing things around here*". There is always room for improvement.

During the research, **Valio's terminology** was found confusing because different names were used with the same meaning. This means that self-evident assumptions need to be written down for colleagues to understand each other better. Most of the time confusion was caused by old and new terminology mixing together. Even though Valio Oy possesses a dictionary that can be accessed

through Weeti, the dictionary is outdated and lacks of above mentioned content. In addition to the dictionary mentioned above, **loss of knowledge** from employee's changing employers or retirement is not fully capitalized on. Even though Valio Oy is conducting exit interviews with employees, the knowledge gained is not systematically stored for current employees to learn from. A possible "*lessons learned*" database in a form of wiki, forum or a blog can be created to help current employees at their current tasks. As an additional feature, the database can have a feedback section for fast response from expert. On one hand, the above mentioned solutions can be emphasized by codification strategy mentioned in the beginning of the study. In comparison to the personalization type of strategy, codification is based on easy dissemination and re-use of stored knowledge by investing once in to systems or processes that are supporting them. On the other hand, periodic account sales process can be seen as ASPro's core competence against its rivals. By giving it another thought, the process is still effective even though over 300 employees were laid off during previous years.

The most important problems that were mentioned above combined with the rest of the interviews and content analysis are presented in the **Table 24** below. The first seven problems in the table and their possible solutions were mentioned earlier in this chapter. In addition, cause and effect describes the relationship between problems. It must be noted, that a loop has been indicated starting from №8: "*Responsibilities unclear*" and ending with №10, №9, №7 and №12. A causal map will be presented in the conclusion part.

According to the group interviews, **responsibilities are unclear**. This means that employees struggle in finding the right person for queries or to communicate information personally. A possible solution for this problem can be a list of the employees, their current responsibilities and possible skills acquired from previous working experience. Then, **Period's timetable is unclear** means that employees are not always informed about such things as: period's change, when new products are available for order, when old products are discontinued and/or when customer's period starts. A possible solution for this problem can be to

negotiate a fixed location for the document, where it can always be checked from and kept up-to-date.

**Table 24.** Identified problems and their possible solutions.

<b>№</b>	<b>Problem</b>	<b>Suggested solutions</b>	<b>Cause and effect</b>
1	Lack of approach and/or standardization for information sharing	- Create information sharing policy.	Cause from №2. Effect on №3.
2	Insufficient IT tool utilization	- Manager's active participation and lead by example. - Clearly communicate benefits to employees. - Tool should be familiar to use.	Effect on №1.
3	Lack of systematization of documentation	- Reinforce responsibility and ownership.	Cause from №1 and №8. Effect on №11.
4	Nonexistence of measurement for documentation	- Comparing documents, e.g. <b>Table 23.</b>	Effect on №14.
5	Document changes after DL	- Find causes for the changes and act accordingly.	Cause from №13. Effect on №12.
6	Valio's terminology	- Update dictionary accordingly.	Cause on №8.
7	Loss of knowledge	- Establish "lesson's learned" wiki/forum/blog.	Cause from №13. Effect on №8.
8	Responsibilities are unclear	- List of employees, their responsibilities and skills.	Effect on №3 and №10. Effect from №10, №9, №7 and №12.
9	Period's timetable is unclear	- Inform fixed location for the document.	Cause from №11. Effect on №8.
10	Period's important goals are unclear	- The most important goals are in Launch plan, Product data sheet (Perus/SAP), Data pool (Synkka) and Pricing program	Cause from №11, №8 and №14. Effect on №8.
11	Document placement is confusing	- Standardize document names. - Standardize workspace search.	Cause from №3. Effect on №10, №13 and №9.
12	Incorrect data in documents	- Select single responsible employee.	Cause from №5. Effect on №8.
13	Narrow information sharing	- Utilize workspaces for information sharing.	Cause from №11. Effect on №7 and №5.
14	Periodic account sales process changes not measured	- Develop an appropriate measurement tool.	Cause from №4. Effect on №10.

**Period's important goals are unclear** means that employees are confused with variety of goals that sales process can have during different periods. This is caused by changes in goals during previous periods and current environmental changes. Nevertheless, the most important goals are mentioned during meetings

and in following documents: Launch plan, Product data sheet (Perus/SAP), Data pool (Synkka) and Pricing program. Keeping these documents updated regularly for employees to check them can possibly solve this problem.

**Document placement is confusing** means that employees sometimes struggle in finding the right documents, which is mostly caused by variations of names for them. A solution proposal would be to standardize naming of documents. In addition, workspace can significantly improve searching for documents, because workspace categorizes documents automatically. In other words, first looking for general document placement, such as for the process the document relates to. After the placement has been found, searching for relative date and file name of the document is simple. It was also mentioned throughout the research, that **incorrect data in documents** occurs from time to time. This problem is preliminary caused by manually inputting data by multiple individuals with shared responsibility for the task. A possible solution can be to select a single responsible employee for the job. Single employee will keep all changes in check.

**Narrow information sharing** means that task related information that other employees possess is not shared widely enough to make full use of it. E-mails are mentioned in the study to be used as the main source for sharing information. While some employees argued that important information is not shared wide enough, others argued that there is simply too much information coming through e-mails. Due to large quantities of e-mails and replies to them, critical information can often be overlooked, thus causing unwanted outcomes. In this case, a possible solution can be to use workspace as the main information sharing platform.

During the last group interview, it was noted by the participants that **periodic account sales process changes are not measured**. Regardless of the fact, that there are tangible results from the process, there is no measurement tool used during the process itself. This means that the performance during the process is unknown and that only results matter. Therefore, a suggestion for a solution would be to develop an appropriate measurement tool. Due to the scope of the research, measurement tool will not be discussed in details. It can be debated, that

the measurement can take place during Sales group's comments, Period's steering committee meeting, Period's sales group meeting and after Sales presentation for period's products. Measurement can be based on individual's own perception of period's successfulness or faultiness per product that is planned to be launched.

#### **6.4 Answering to research question four**

The research question four: "*How information is exchanged within organization?*" can be answered by looking back to the literature review chapter of the study. Numerous authors discussed knowledge management and how data, information and knowledge are exchanged in an organization. In short, knowledge management theory gives an answer to this question by presenting the SECI-model. In the SECI-model, there are four different phases for knowledge conversion. During the externalization phase, knowledge is usually explicitly presented in documents. This type of knowledge is used as a piece of information by organization's employees. In other words, the information is explicitly written knowledge. Therefore, information is exchanged through documents in the business process, which preliminary consists of conducted tasks and activities. Interestingly enough, the data used in the documents can be seen as a feedback for the stakeholders, because it depicts how the smallest parts of knowledge can be built up to influence information exchange. Whenever the information and knowledge can be skewed, the data stays always relevant.

The literature review covered the prologue for this answer. Briefly, knowledge management is related to business management. The knowledge itself is embedded mostly in organization's processes. The correlation between knowledge, information and data was presented respectively. On one hand, the information itself is part of knowledge. On the other hand, there is distinction between these two words. Anyhow, information and knowledge are often confused with each other. Knowledge is more of a combination of information and individual's experience. Thus, information represents only a piece of knowledge. The real research question would then be about knowledge exchange instead of information. This would be difficult to answer due to the confusion mentioned above. Therefore, it is more certain to construct an answer to the

current research question. This is especially true, when the discussion about tacit and explicit knowledge was facilitated in the same chapter. In short, explicit knowledge is mostly written in documents and tacit knowledge is embedded in employees' mind. The alternative way for discussing tacit and explicit knowledge would be with know-how, know-what, know-how and know-why. These were presented in literature review and are somehow explaining knowledge types from more of a practical point of view. Anyhow, the most evident knowledge is the explicit or know-what and know-why knowledges, which can be learned by employees through documents. Learning is also an important part of exchanging information between employees.

The usage of tacit and explicit types of knowledge is better explained in **Figure 5** with the SECI-model. In other words, knowledge is exchanged through Socialization, Externalization, Combination and Internalization. The SECI-model can be seen as the cornerstone for understanding how knowledge is exchanged in an endless spiral. The spiral represents knowledge conversion or/and knowledge creation. In the model, the knowledge is continuously converted from tacit to explicit knowledge. As employees are conducting their tasks, they learn crucial insight or know-how, which they pass to other employees through communication within the organization. It can be argued that knowledge is created as employees practice and learn from work and from each other. A more practical description of how knowledge is exchanged was presented in **Figure 4**. The four basic knowledge management processes answered this research question by presenting best practices for knowledge creation, storage, transfer and application. To sum up, the study as a whole focused preliminarily on the externalization of knowledge, which means converting tacit knowledge to explicit knowledge. From this study perspective, information is exchanged through organization's process related documents. Nevertheless, the actual knowledge and information comes from data, that is stored and interpreted from these documents.

### **6.5 Answering to research question five**

The research question five: "*How information exchange processes can be modeled?*" is related to the previous research question. The information exchange

was mentioned to be part of a business process, because it is usually transferred through documents. Therefore, an answer to this research question can be derived from business process modeling theory. In short, there is a huge range of different techniques available to choose from. Therefore, there are different possibilities to model information exchange in the process. The techniques mentioned in this study were Flowchart diagrams, Integrated Definition for Function Modeling (IDEF) and Role Activity Diagrams (RAD). In the end, it all comes down to the requirements and goals, researcher's personal experience and skills.

In the business process modeling theory documents are used as an input to create an output. Output's content is usually stored in new documents. The process of such creation somehow bears resemblance to the externalization phase in SECI-model. Both theories are responsible for knowledge or information transfer, adaptation and creation. The process was mentioned to be a chain of tasks and activities that have a beginning and an end. The information modeling method helps to visualize information flow because the SECI-model is too abstract to describe such thing. Therefore, business process models are used when a demand for a precise description of how documents are exchanged is needed. It must be noted, that there are different modeling levels. According to the literature, a business process can be split up hierarchically from general to more specific. First of all, there are core business processes and their sub processes. Then, activities are describing how a sub process is operating, while tasks are the smallest part of a process. This study focused on modeling information flow by describing the activities. Tasks were somehow deemed too small to model, but are present in the documentation analysis.

Based on the theory part of the study, the first step towards modeling information exchange would be to select an improvement approach. The latest trend in improvement approach selection in the field of business process modeling is the process driven approach, which means emphasizing on how the process is designed and planned to work with desired parts. The approach was influenced by managing data, i.e. storing and retrieving information from IT-system processes. Secondly, different modeling methods need to be considered, so that there would

be fewer techniques to choose from later on. For this study, the diagrammatic models were selected because of their simple visual way of communicating process's insight to stakeholders. In addition, these models do not require programming language skills. The other methods were mathematical and execution-oriented. It must be noted, that there are other ways of categorizing modeling methods, but these were not properly discussed in the study.

Thirdly, there were three corresponding modeling techniques to choose from. The flowchart was seen as the best suited for the task, because it simply was the most flexible and easy technique. The other techniques were IDEF and RAD. Finally, the information exchange process was modeled with Microsoft Office's Visio 2013 Pro in accordance to the documentation steps. There were a total of five documentation steps reviewed in the theory part: selecting a process and stating the objectives; selecting an interviewer or a team; determining the level of detail; defining necessary data; computerizing flowchart. It must be noted, that the above mentioned documentation steps were not possible to follow up in the presented order. In some occasions, previous steps had to be reviewed before flowchart could be computerized. This was largely due to income of new knowledge and ideas, which in turn needed new data to be implemented in the flowchart diagram and its analysis. Therefore, these documentation steps did not provide the understanding of how the desired module will work with the stakeholders. For the most part of process documentation steps, the chosen interviewer or a team gave general hints on how the process model will be perceived in the organization. Then, the defined data was used as a construct from which the model was computerized. To sum up, a combination of other data inputs would result in a different process model.

## **6.6 Summary of Account Sales Process**

SWOT-analysis (**Table 25**) has been conducted in order to summarize and highlight ASPro's strengths, weaknesses, opportunities and threats from this study perspective. To begin with, **Strenghts** of the periodic account sales process are in its ability to create organizational competence through bringing products to market. There is a strong know-how and thus, a great source of knowledge for

customers. The know-how knowledge consists of proficiently packed up sales material that is comprehensively presented to customers and communicated to consumers. ASPro brings up around 100 new or changed products to market annually with effectiveness. The effectiveness has formed through strong organizational cultural presence of delivering best value through products and services, being responsible for actions, striving for improvement of these and continues learning. Employees identify themselves with these values, thus being part of the culture, despite recent lay-offs. In the end, periodic account sales process is well established in sense that it had undergone development to the current state through trials and errors. The insight of documentation is believed to be strong. The process is also timetabled and relied upon it.

**Weaknesses** were mentioned as the problems during this study. In short, these were problems related to IT utilization, approach standardization for information sharing, documentation systematization, managerial challenges and measurement of the process. Communication can be seen as the cause of the above mentioned problems.

**Table 25.** SWOT-analysis of ASPro's periodic account sales process.

<b>Strenghts</b>	<b>Weaknesses</b>
Creates organizational competence Know-how Source of knowledge for customers Brings c. 100 new products annually Organizational culture and identity Well established Documentation's insight Timetabled	IT utilization Approach standardization Documentation systematization Managerial challenges Measurement Communication
<b>Opportunities</b>	<b>Threats</b>
Flexibility Know-why Definition Efficiency Documentation quality improvement Further cultural development Co-operation with institution Process measurement	Tacit knowledge Loss of control Irresponsibility External influence Radical changes Full systematization <i>"Too big to fail"</i>

**Opportunities** are such as increasing flexibility of the process as a whole, e.g. through IT tool utilization. Also know-why can be further developed, due to confusing definition of ASPro, e.g. how employee's individual inputs are affecting process' output as a whole and ASPro's relationship to ProMa and TiTo. Process efficiency or how tasks are carried out can be improved by lessening burden of employees conducting it. This can be done by improving quality of documentation, i.e. lessening variations in between different files of the same document. In turn, documentation can be improved through development of organizational culture to adapt to new IT tools and approaches more flexibly. ASPro has received less attention from co-operation with institution that has been conducted in other parts of Valio Oy. Focusing efforts on ASPro and its periodic account sales process may open new opportunities. These opportunities can be such as development of process measurement, which the current process is definitely lacking of.

**Threats** are related to having too much tacit knowledge, which does not convert to explicit knowledge for colleagues to make use of. Tacit knowledge in its own right can be seen as a bottleneck. Conversion of tacit knowledge to explicit knowledge must be organized or it may develop into loss of control over the process. As an outcome, irresponsibility can slowly develop, corrupting culture's values. In addition, external influence, i.e. processes outside Valio Oy can force changes within the organization. Radical changes are known for their unpredictable effect on organization as a whole, thus are treated as a threat. Lastly, full systematization of the sales process can be seen as a threat, because vast amount of knowledge and information is flowing undocumented. Such action will most likely reduce process' performance, if attempted to systematize information flow and leave out unstructured or unofficial communication between employees. In addition, an assumption of "*too big to fail*" means that organization has grown over critical mass that it can no longer fail due its sheer size. From thesis perspective, Valio Oy is big in Finland, but even the biggest corporations can fail, if decisions lead to unwanted results.

## **7 DISCUSSION**

This chapter will try to give a deeper understanding of reasons behind the results by looking into the future of the organization. Key findings will summarize the results, while suggestions for further research will shed light on questions that were kept out of the scope. Validity and reliability of the research will serve as a guideline for understanding the outcome of the research as a whole.

### **7.1 Key findings**

In the beginning, researcher's biggest challenge was to come up with a methodology to systematically identify possible problems and root causes in the periodic account sales process. Answers to empirical research questions could be derived from finally identifying these problems and their possible root causes.

Constructive research approach was selected for this study because of normative way of conducting the research. The outcome of the methodology was to produce a standard model of the business process from empirical point of view. This was done by first interviewing employees at Valio Oy and then constructing a process model based on their words. In fact, one of the theoretical questions was answered when a flowchart technique was chosen from other possible techniques by first deciding on modeling approach and then choosing the diagrammatic modeling method. Other techniques discussed were IDEF and RAD. The flowchart diagram was used as a solution model tool based on gained knowledge from the organization and vast literature review, as it was stated in the methodology part of the research. Finally, the flowchart diagram was made by using Microsoft Office's Visio 2013 Pro. In addition, the theory of knowledge management gave a comprehensive understanding of how knowledge or information is exchanged within an organization and this also answered to the second theoretical question. In the end, theoretical part of the study was an important milestone for conducting structured results.

In fact, knowledge management synergized well with business process modeling because it brought necessary understanding of people-centric way of exchanging information. Knowledge management was also somehow combined with

methodological part of the study to increase the understanding of how often social interaction should be iterated when the main goal is process modeling. Therefore, the flowchart diagram was validated many times within the organization. Flowchart diagram was created in accordance to the process modeling theory. Nevertheless, as new knowledge and ideas evolved during interviews, the documentation steps had to be reviewed. For example, only after computerizing the flowchart, additional critical data was identified. This way, additional interviews and validation had to be carried out.

The flowchart diagram answered to the first research question and turned out to be a fundamental milestone for answering to the second and third research questions. Flowchart diagram gave possibility to pin point out process's problems and a bottleneck in combination with interviews and knowledge management's theory. If one key finding must be pointed out, then it is the failure of IT tool utilization. Most problems mentioned in the **Table 24** are stemming from this problem. The most important ones are: lack of systematization of documentation and lack of approach and/or standardization for information sharing. Other mentioned problems can be seen as an outcome of these three apart from unclear responsibilities and lack of measurement. Furthermore, bottlenecks seems to be in the Period's steering committee's material and Period's information package, because they are used for other documents the most and are often modified after their deadlines. The importance of Period's steering committee's material is backed up by the interviews, where it was mentioned to be critical for the outcome of the process in addition to the reviewed Launch plan.

Finally, it was mentioned in the methodology, that solution's functionality needs to be demonstrated. The functionality of the solution can be tested by three different market tests. Unfortunately, the testing of the proposed solutions will take place after this research. Nevertheless, presented problems, solution suggestions and the flowchart diagram itself will most likely shed light on the least defined ASPro of all the other core processes. Current problems are hindering process's operation, which means that at least managers will be involved in the solution implementation. In addition, in order to properly measure

changes, a process measurement tool must be implemented beforehand. Thoughts about different measurement tools were presented. In the end, there were numerous articles and some studies that were somehow combining knowledge management and process modeling. Unfortunately, none of these were practically based on an organization in the dairy industry. In that sense, this research is unique.

## **7.2 Validity and reliability of the research**

First of all, the researcher has no prior experience in the industry, thus having no effect on the results of the research. In particular, researcher had no possibility to analyze documentation critically, e.g.: separating document's necessary from unnecessary data, its reliability and actuality, thus stating document's overall usefulness. Secondly, researcher's academic background had potentially impact on the research due to possession of basic knowledge about knowledge management and business process modeling theory. During the research few limitations could be identified. On one hand, there were no interviews with Valio Oy's customer. Valio Oy's process is based on customer's process and thus, periods are revolving around customer's periods. Moreover, interviews turned out to be a good source of knowledge. On the other hand, core knowledge could only be gathered from employees that are directly involved in the process, as it was mentioned in the theory. Nevertheless, the final amount of interviews can be considered enough, because the results could be successfully derived from the research.

The results of the study can somehow be generalized and used for improving other processes. However, the flowchart diagram of periodic account sales process is organization's own unique process and can hardly be used elsewhere in the industry without vast modifications to it. Then, the analysis of the process was hindered by nonexistence of measurement for documentation. Therefore, it was not possible to compare period's successfulness and analyze them. The results could potentially be more in-depth, if any process measurement's data would have been used at the time and included in the scope of the study. Likewise, an information exchange outside flowchart diagram was not considered. The

information exchanges through e-mails, personal meetings, unofficial discussions or any meetings outside of the process are influencing periodic account sales process. In fact, considering these additional information exchanges in the flowchart diagram would make it too complicated, thus hard to understand by a reader. There were also access restrictions to some of the documents. These documents required additional meeting with interviewees to view them for the analysis. Important details could have been left out due to the lack of access to these documents. Researcher was relying on notes and audio recording and could potentially misinterpret them. In fact, researcher used the data that was available at the time. In spite of above mentioned limitations, time was the biggest restriction, because an outcome of it the methodology was not fully completed. Despite of all the limitations, study has been successfully completed.

### **7.3 Suggestions for further research**

Firstly, a future research can analyze sales processes case by case. This means studying very successful and unsuccessful products that were launched during previous periods. Analyzing such results and comparing them to each other can make it possible to identify root causes. Such findings can potentially indicate whenever problems can be caused by employees, process itself or changing environment. The ultimate goal would be to learn from mistakes and try to avoid them by further improvement of the process. Secondly, an additional research can measure changes in documents that frequently occur after deadline. These changes can be related to the time spent on applying changes, quantity and quality of problems, fixing any other problems that may occur after deadline to other documents, etc. The changes in documents can become parameters for measurement. In the end, a possible measurement of the process can be developed from such measurement. In addition, the measurement of the process mentioned above can possibly indicate a need for improvement of IT systems. In other words, larger investments can be approved for development of a unified system, e.g. ERP that will integrate separate documents under united database. Unfortunately, measurement was outside of the scope of this study and could only be discussed briefly in this study.

## 8 CONCLUSION

The purpose of this study was to implement a method that could demonstrate how information is currently managed in Valio Oy's periodic account sales process. At first, it was necessary to comprehend how information is exchanged in organizational processes and then how such processes can be modeled (RQ4 and RQ5). Furthermore, based on the conducted process model and interviews, the answers to the first, second and third research questions were developed together with theoretical framework. It must be noted, that the presented process modeling technique combined with conducted interviews respond to the constructive research approach discussed in the study. This chapter will conclude the study as a whole through first summarizing the results in empirical (**Table 26**) and theoretical (**Table 27**) conclusions and finally presenting managerial implications.

**Table 26.** Answers to empirical questions.

Empirical question	Answer
<b>RQ1:</b> How information is currently managed in periodic account sales process for retail trade?	By 16 MS Office documents, 3 different SAP business suits and 3 other applications.
<b>RQ2:</b> How information management can be enhanced in periodic account sales process?	By improvement of IT tool utilization, standardizing approaches for information sharing with such tools and increasing usage of IT tools.
<b>RQ3:</b> How information management can be utilized in periodic account sales process?	By improving organizational culture's routines and questioning assumptions.

**Answer to RQ1.** The information is currently managed mostly by MS Office documents, i.e. 16 different Word, Power Point and Excel documents combined. There is also one PDF used. Perus, APO and CRM are three SAP business suits used in the sales process. Other applications are Synkka, EDI and Digium. It was also found, that Period's information package is changed often after deadline, which probably causes the most information deviation in the process.

**Answer to RQ2.** Information management in the process can be improved with increased utilization of IT tools together with standardized approaches for information sharing. Information is shared through documents, thus the

approaches are strongly related to document management. In overall, IT tools are beneficial for information sharing and management, thus such tools need to be used more frequently.

**Answer to RQ3.** In short, information management can be utilized better in the process by improving organizational culture's routines and questioning assumptions. In other words, starting to question current way of doing work, and look out for more effective ways of doing it. Such mindset could ease implementation and usage of new IT tools and work related approaches, if employees find them adding value to their work. In addition, any kind of employee's assumption about work related things that seemed obvious at first glance, but in fact were not, must be noted. It can be argued, that errors are caused by mistakes that were in turn caused by misinterpretation of things that were assumed differently between employees. Concrete problems were highlighted in the results.

**Table 27.** Answers to theoretical questions.

Theoretical question	Answer
<b>RQ4:</b> How information is exchanged within organization?	Through constantly ongoing conversion process between tacit and explicit knowledge, this is then explicitly written down into documents.
<b>RQ5:</b> How information exchange processes can be modeled?	By choosing best suited process modeling technique and following guidelines for process documentation and description.

**Answer to RQ4.** The information is exchanged through a combination of tasks and activities, which forms a business process. Thus, information is mostly exchanged through process related documents. In this business process different types of knowledge are continuously converted between tacit and explicit through socialization, externalization, combination and internalization (SECI). During the SECI conversion process new knowledge is constantly created and transferred in between stakeholders. It must be noted, that information is lesser part of knowledge. Knowledge is a combination of information within individual's mind

in addition to his/her personal experience. In fact, the information is explicitly written knowledge.

**Answer to RQ5.** The information exchange processes can be modeled with a large number of different process modeling techniques. It is important to choose the right technique specifically for the task. A set of requirements and goals can guide in choosing a suitable modeling method and thus leaving out unnecessary techniques. In addition, process documentation steps must be taken into consideration in order to reduce mistakes, errors and derivations. These general guidelines or steps will aid in process description. First of all, a process must be selected and objectives stated. Then, an interviewer must be selected or a team for gathering data. A certain level of details must be determined, to keep the work in scope in addition to defining necessary data. Finally, the model needs to be computerized with appropriate tool.

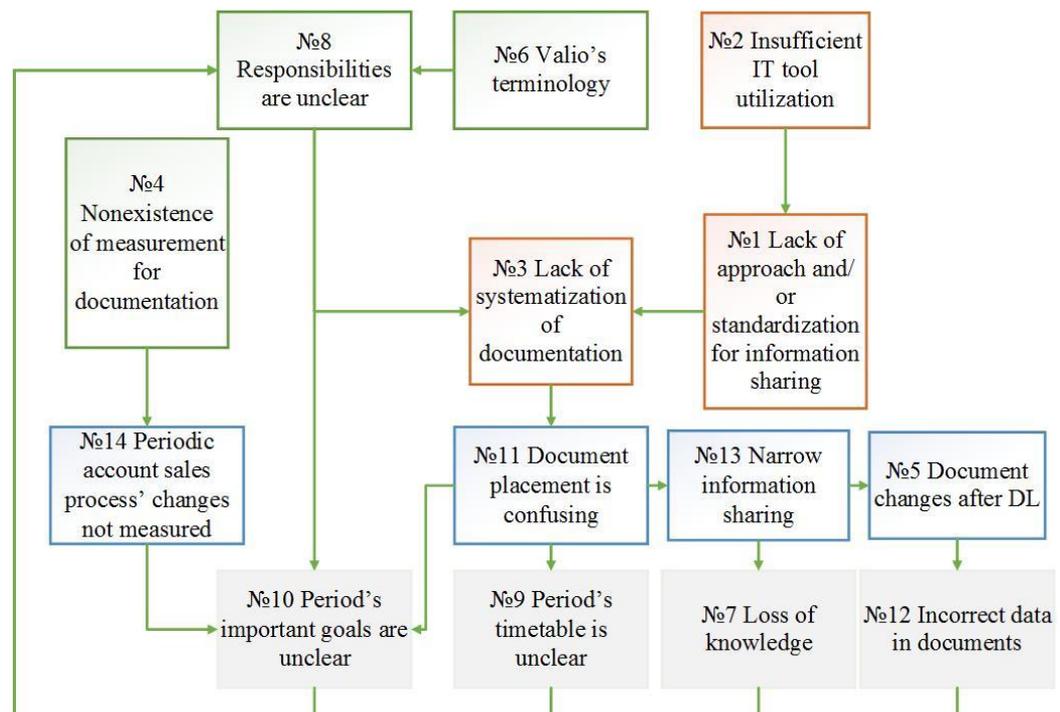
### **8.1 Empirical conclusion**

The main output of this thesis is the flowchart diagram that demonstrates how a new product is traveling from product development to retailer's shelf. The flowchart is mainly focused on periodic account sales process for a new product, but it also shares documents with older types of products, e.g. that were launched before. The decision to draw such process flowchart was after analyzing group interview, where communication came up as the main problem for employees in sales department.

The solutions deriving from the flowchart diagram analysis are mostly related to information management, but other solutions could also be found, such as: Valio's dictionary, lessons learned wiki/forum/blog, process and documentation measurement. The process flowchart diagram is a long lasting solution for process visualization that would not change radically any soon. Radical changes can be caused by changes in the way Valio Oy is doing business with its customers. Due to the time limitation, solution's functionality could not be demonstrated in this study. Furthermore, the limitation of the flowchart diagram is that it is suited for the current ASPro and preliminary in Finland, where it has been functioning.

Nevertheless, the flowchart diagram serves as a basis for future development of similar processes. For example, in order to create a process for international ASPro, i.e. process that suits customers in the international market, customer's specific buying process needs to be understood first. Then, customer's process needs to be compared to Valio Oy's process and changes needs to be designed accordingly. In addition, the process flowchart diagram demonstrates the urge for employees to fully understand how their personal input can be traced back to the sales process. Flowchart diagram can be used for educational purposes for new or senior employees. It also demonstrates connection between stakeholders, different kinds of documents and applications that are involved during the process.

Bottlenecks were found in documentation or more precisely in Period steering committee's material and Period's information package, because they are being used in many other documents. All in all, 14 problems were identified, as shown in the **Figure 17** below. The most important ones are: lack of approach and/or standardization for information sharing, insufficient IT tool utilization and lack of systematization of documentation. In addition, a loop of problems has been indicated as it was mentioned before.



**Figure 17.** Causal map of identified problems.

In the end, the flowchart diagram presented during empirical part of the study serves as a description for current process as-is and can be used for further process improvement as long as the current periodical account sales process stays unchanged.

## **8.2 Theoretical conclusion**

From theoretical point of view, there are two main outputs that form the theoretical conclusion. The first output is related to the knowledge management theory and the second output relates to the business process modeling theory. The goal of these theories combined was to understand how information could be optimally disseminated within the case organization. During process modeling the actual knowledge gaps were identified and presented as process related issues. The above mentioned theories are somehow related to each other. The importance of business processes has been emphasized by organizations that strive to increase their productivity and interconnectivity of activities. This statement can be underlined with the large amount of modeling methods and techniques available. In fact, modeling is an important part of describing the process as-is or striving for improvement with to-be process. Improvement usually means incremental or radical changes, which are usually mentioned as process reengineering or redesigning. Also, modeling of a process is an important milestone when it comes to implementation of new IT-tools. In any way, due to vast amount of different techniques available, there can be difficulties in finding the most suitable one.

Business process modeling is somehow lacking of a holistic view over the situation described in this chapter. During process documentation procedure, different kind of data was gathered. The most critical data from this study perspective is presented in the analysis of documentation. There was possibility to gather unnecessary data that would not be useful for the stakeholders or for the analysis. As the model was validated with supervisors, new ideas and thoughts emerged, so that additional data had to be implemented. The process modeling theory did not discuss how the end results can actually be synergized with the organization. This ultimately led to “*back and forth*” motion through the process of documentation. Therefore, knowledge management theory can provide a useful

framework for indicating valid and useful data for the task, in addition to the literature review. Most of the time, modeling a business process is more of a social activity. In addition, modeling is influenced by organization's strategy and vision. Nevertheless, the original data is not usually affected by organization, thus it always stays relevant. This means that the data can be interpreted regardless of organization's own interests. The data itself can be read as a story of how the process is actually being carried out. The stakeholders can then review the data to interpret results of the study and the process. In other words, presenting data in other ways than in this study can tell a different story.

The flowchart diagram was stated in the empirical conclusion as being an important milestone for the study. It must be noted, that modeling of the flowchart would not be possible without vast article review and their best practices. Furthermore, the basic understanding of how different modeling levels could be hierarchically put in order was discussed and presented in this study. The order of modeling levels helped in organizing flowchart's levels in a simple way, so that process's stakeholders would have easy time recognizing the described model and its origins, i.e. process map. Moreover, knowledge management theory gave a much needed edge for process facilitation. It underlined the need for interviewing employees and facilitating back-and-forth discussions. The most uncertain parts of the process received the most interviewing iterations.

The modeling process is somehow similar to externalization phase in the SECI-model. This kind of activity involves intensive interaction between researcher's tacit knowledge and interviewed employees' knowledge that is being externalized. In other words, it is the transformation from tacit knowledge to codified knowledge that was eventually presented in the flowchart diagram. Therefore, conducted interviews have influenced researcher's knowledge. Researcher has found himself relating interviews to his present knowledge or replacing it with new knowledge. This activity bears resemblance to the socialization phase. Furthermore, the empirical results can be interpreted as knowledge internalization in the case organization. At the same time, codification phase was conducted through implementation of case studied organization's own documents. In

addition, knowledge management theory is often related to soft approach in describing how information is exchanged within an organization. On the contrary, business process modeling theory uses hard approach because it relies upon data that has been gathered from process related documents. Soft approach is more people-centric and uses individual's thoughts and interpretation as starting point for modeling. In other words, a business process is actually a social activity system, where information is mostly exchanged through interpersonal communication. All in all, knowledge management theory gives more of a general understanding of how knowledge or information is exchanged. Knowledge management theory's vital input was in bringing in thoughts that are related to managerial implications.

On one hand, the best practices for knowledge creation, storage, transfer and application were used throughout the study. The literature review of these four basic management processes gave researcher the possibility to analyze the organization from more of a professional perspective. On the other hand, the study used modeling and knowledge theories to understand organization's processes. Nevertheless, the most important information exchange channels were left out. These channels are beyond the formal communication or the scope. These informal communication channels are such as daily conversations, interpersonal relationships and off-topic discussions during meetings outside of the process and so on. Moreover, conducted process model is also strongly related to so the embodied knowledge that stakeholders or participants of the process poses in them. This possessed embodied knowledge is what plays a key role in the meetings. This knowledge can be only partially codified in documents. Therefore, the vision is to improve sharing and dissemination of knowledge not only through documents, but also through tight collaboration and interaction between employees.

Moreover, knowledge management theory provided support and insight for conducting social interaction during interviews. It must be noted, that business process modeling requires active interaction with process' stakeholders on a daily basis. In the end, theoretical part of the study called attention to the importance of

internal communication. It underlined the importance of communication between employees and putting IT into practice. The theory also emphasized on using and continuously improving existing channels for sharing knowledge. The empirical part of the study could then be somehow benchmarked with the theoretical ideals and concluded in this chapter. It must be mentioned, that the most demanding part of the study was to combine the above mentioned theories logically and practically together and to make them synergize in the study. This was done by implementing bits and pieces from different articles, books and reports. Therefore, as it was mentioned in the beginning of the study, Valio Oy's process is somehow unique in the Finnish dairy industry; nevertheless, the insight from this process could be implemented elsewhere. Needless to say, due to the overwhelming contribution of the literature review to this thesis, a lot of practical ideas were seamlessly harnessed from other industries. In fact, by describing meetings and documents of the whole process and then putting them back together in a form of a flowchart, the reader can get a much better idea of how the process in question is operating.

### **8.3 Managerial implications**

According to the results, Valio Oy is lacking of IT utilization. There are numerous documents available for Valio Oy's employees. These documents are somehow scattered throughout organization and they need to become more usable and accessible. A necessary and relevant technology needs to be used in the organization in this case, rather than too sophisticated and complex one that an average user struggles to work with. Therefore, actions need to be taken by top managers to bring Valio's workspace to its full potential by conducting additional trainings and setting standards for its exploitation. In addition, workspace was not regarded as an everyday tool for employees. In this case, managers need to communicate the benefits of workspace to their employees and set example by doing. Sharing of information was mentioned in the third research question as a possibility to improve information utilization, i.e. usability and accessibility. This solution is tightly bonded with organizational culture and reflects the current way IT tools are used. When trying to change or even when slightly modifying organizational culture, it is obligatory to keep in mind, that culture reaffirms itself

by rejecting changes, misfits and promoting those, who are suitable to the norms of organization. Managers need to keep above mentioned things in mind, when implementing solutions proposed in this study. Managers need to be equipped with skills such as entrepreneurship, leadership and personal abilities in decision-making, judgement and most importantly knowledge about management. It must be noted, that management is trust, ability to guide, learn, and support of informal communication, openness to change, mistake tolerance, positive attitude and commitment.

It was stated in the study, that employees get productive through information sharing. Consequently, managers need to take care of facilitating, motivating, supporting and leading employees by providing suitable working environment. Employees need to take active participation in creation of this environment. Every employee is unique and his/her knowledge must be assessed for its relevance and importance. This can be done through involving employees in decision making. In practice, managers need to consider employees' feedback before making changes. For example, process's measurement was brought up by employees during group interview. Moreover, periodic account sales process has embedded knowledge, relationships with other processes and activities over long period of time through implementations of continuing series of improvement. It is important to start comparing these improvements from process's point of measurement. Until this research was written, sales process was only measured through its total output, which is bringing product successfully to market. This being said, there can be a positive correlation between operation control and process management.

Indeed, Valio Oy's workspace can potentially solve most of the problems occurred during the research. Workspace is a necessary tool for managing information, but it does not contain knowledge by itself. Tacit knowledge is a shared understanding within a certain social community, thus making it difficult to move such knowledge via IT-based tools. This means that sharing of tacit knowledge must be done via social interaction or in self-organizing group of employees that are sharing common interest, and networks that are established to transfer knowledge from those with greater expertise to those with less expertise.

However, in case of Finnish organization, the best way to share information would be to build teams for problem solving through which information will be shared. The above mentioned social processes are necessary because knowledge must be transmitted through social groups, teams and networks. Knowledge is already there in the mind of employees and it only needs to be utilized. All in all, knowledge management processes are more people-intensive and less technology-intensive. As a result, information management and its utilization should not be focusing solely on Valio's workspace or any other IT-based tools.

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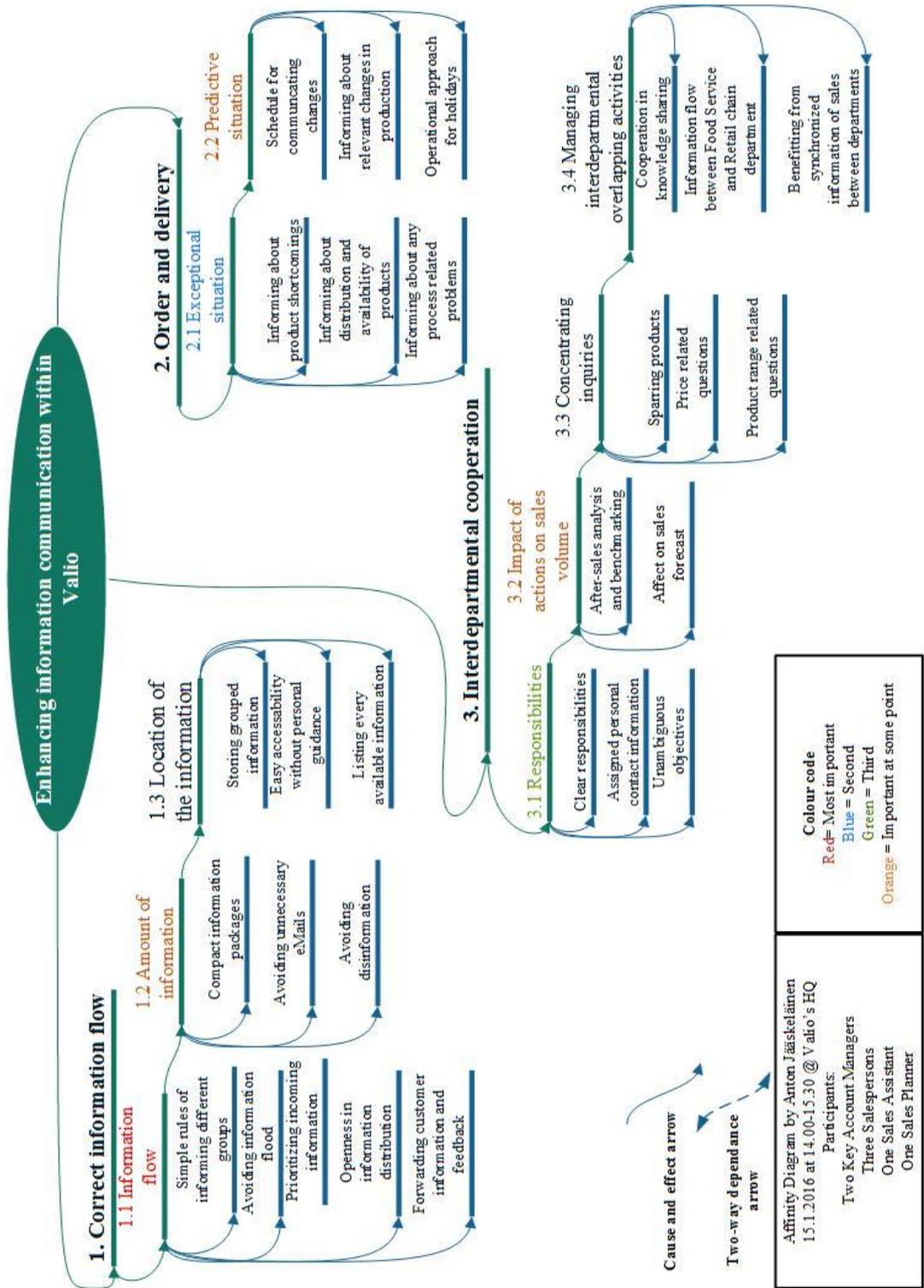
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## APPENDICES

## Appendix 1. Interviewees' information.

Name	Title	Date	Method
Interviewee 1	Senior Vice President	16.11.2015, 9.3.2016.	Face to face
Interviewee 2	Key Account Manager	20.11.2015, 15.1.2016.	Face to face and group
Interviewee 3	Key Account Manager	20.11.2015.	Face to face
Interviewee 4	Professor	24.11.2015.	Phone call
Interviewee 5	Executive Vice President	25.11.2015.	Face to face
Interviewee 6	Development Manager	26.11.2015, 22.1.2016, 3.2.2016, 18.2.2016, 22.2.2016, 23.3.2016, 4.4.2016, 12.4.2016.	Face to face and group
Interviewee 7	Sales Planning Manager	1.12.2015, 25.1.2016, 25.2.2016, 15.4.2016.	Face to face
Interviewee 8	Graphic Designer	3.12.2015.	Face to face
Interviewee 9	Graphic Designer	3.12.2015.	Face to face
Interviewee 10	Senior Vice President	4.12.2015, 22.1.2016, 9.3.2016.	Face to face
Interviewee 11	Vice President	8.12.2015.	Face to face
Interviewee 12	Key Account Manager	9.12.2015.	Face to face
Interviewee 13	Senior Vice President	16.12.2015.	Face to face
Interviewee 14	Field Sales Manager	17.12.2015, 8.4.2016.	Face to face
Interviewee 15	Executive Advisor	22.12.2015.	Face to face
Interviewee 16	Key account manager	29.12.2015, 25.1.2016, 5.2.2016.	Face to face and group
Interviewee 17	Export Manager	4.1.2016.	Face to face
Interviewee 18	Sales Manager	5.1.2016.	Face to face
Interviewee 19	Post Doctoral Researcher	7.1.2016, 29.1.2016, 3.3.2016, 10.5.2016.	Face to face
Interviewee 20	Key Account Manager	12.1.2016, 25.1.2016.	Face to face and group
Interviewee 21	Executive Vice President	13.1.2016, 2.2.2016, 7.3.2016, 13.4.2016.	Face to face
Interviewee 22	Key Account Manager	15.1.2016.	Group
Interviewee 23	Salesperson	15.1.2016.	Group
Interviewee 24	Salesperson	15.1.2016.	Group
Interviewee 25	Sales planner	15.1.2016.	Group
Interviewee 26	Sales assistant	15.1.2016.	Group
Interviewee 27	System Specialist and Salesperson	15.1.2016, 11.4.2016.	Face to face and group
Interviewee 28	System Specialist	19.1.2016, 25.1.2016, 13.4.2016.	Face to face and group
Interviewee 29	System Specialist	19.1.2016, 13.4.2016.	Face to face
Interviewee 30	Senior Vice President	21.1.2016.	Face to face
Interviewee 31	Key Account Manager	25.1.2016.	Group
Interviewee 32	Sales Planner	25.1.2016.	Group
Interviewee 33	Professor	29.1.2016.	Face to face
Interviewee 34	IT Manager	24.2.2016.	Face to face
Interviewee 35	IT Manager	24.2.2016.	Face to face
Interviewee 36	Information System Manager	15.4.2016.	Face to face
Interviewee 37	Senior Vice President	19.4.2016.	Face to face

Appendix 2. Group interview 15.1.2016.



Appendix 3. Group interview 25.1.2016.

