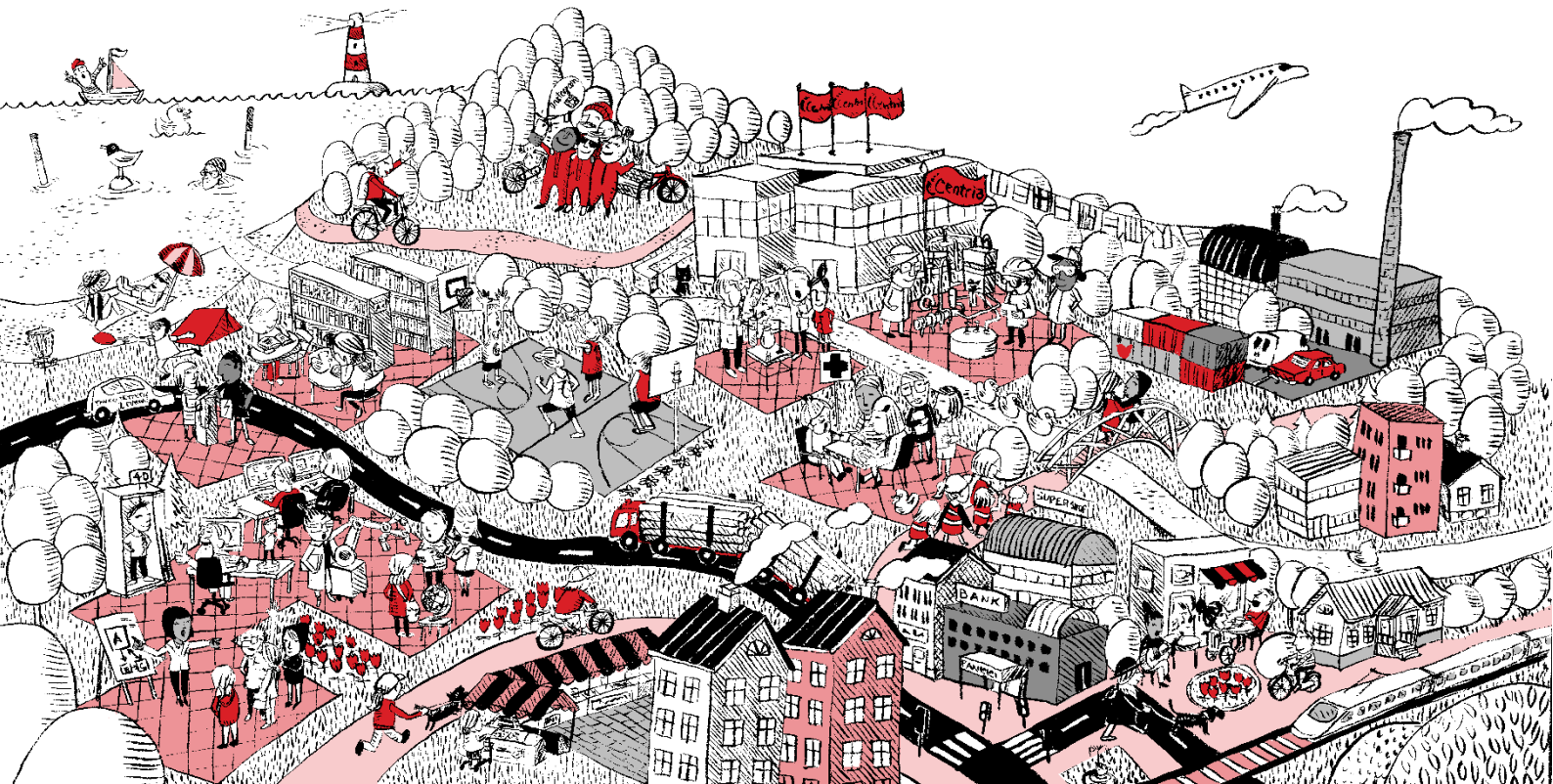
Leena Toivanen

DIGITALIZATION STRATEGIES IN SMES IN CENTRAL OSTROBOTHNIA AREA

A guide for creating a digitalization strategy for SMEs

Thesis
CENTRIA UNIVERSITY OF APPLIED SCIENCES
International Business Management
May 2021



ABSTRACT

Centria University of Applied Sciences	Date May 2021	Author Leena Toivanen
Degree programme International Business Management		
Name of thesis DIGITALIZATION STRATEGIES IN SMES IN CENTRAL OSTROBOTHNIA AREA. A guide for creating a digitalization strategy for SMEs		
Instructor Marjo Heikkilä, Centria-ammattikorkeakoulu Oy		**Pages** 61 + 7
Supervisor Janne Peltoniemi		

This thesis defines a nine-step process of creating a digitalization strategy in a small to medium sized company. The foundation of the process was a survey which was done in order to evaluate the current state of digitalization strategies in Central Ostrobothnia, Finland. The survey was distributed to companies of different fields and it discussed the digitalization strategy in perspectives of future, organization, business strategy, competition and customers.

The key results were that digitalization is recognized as important part of business but the lack of resources and documentation hinders the projects. The results were used to create a guide to digitalization strategy creation. The guide provided support in the topics that came about in the survey. The guide used storytelling and metamodeling approaches. It included scientific research, a comic-style document and a note sheet. The documents aimed to provide a low threshold to strategic planning in regards to digitalization.

The thesis was commissioned by Centria University of Applied Sciences Research and Development in digitalization department. It provided supportive information to further enhance research & development activities in Central Ostrobothnia area.

Key words
Business management, digitalization, metamodel, storytelling, strategic planning, strategy

ABSTRACT
CONTENTS

FIGURES

1 INTRODUCTION

Digitalization is not anything recent or new. The Internet was invented in the 1960s as network of multiple computers communicating with each other and by the 1990s World Wide Web was launched and it quickly expanded from research centers to home and business use. Internet provides almost everyone with a chance to access and use information. (Andrews 2019.) Even though computers, Internet, smart networks and even Internet of Things have been part of life for years, or even decades, digitalization has not seized to evolve the world around us.

Hajkowicz reflects in his book “Global Megatrends: Seven Patterns of Change Shaping Our Future” on the seven topics that will shape the world in future. Technology is a one of the key elements that related to most of the megatrends, and it is also a megatrend itself. Hajkowicz mentions how data collection and handling power has brought our virtual and physical life on to new dimension. We live in a hybrid model of traditional reality and virtual existence. This virtual existence is not only representing our lives today but it can present us with ideas and experiences that are physically still in the future. In addition to data, digitalization shapes the experiences we have. Sensors and devices give us experiences, feelings and knowledge that has never been as attainable before. These technological possibilities change the way we consume and behave. Digital products can be developed much faster than traditional, tangible products. In addition, digital planning, analysis and controlling make traditional product configuration fast. This means new products and services are emerging all the time and competition is hard. (Hajkowicz 2015, 108-110.)

Hajkowicz forecasts technology to change the way we live: how we fulfil basic human needs like food, how we interact and what we consume. New products and services can swipe away whole business fields and create new ones. Digitalization is not only technological work but is also based on human experience, needs and wants, marketing and storytelling. These topics are much wider than just technology itself. Combining it with biology and medicine can enhance our health or develop new ways of creating and using energy. (Hajkowicz 2015, 142.) As technology gives an opportunity of these massive changes in individual’s and societies, businesses are faced with a great opportunity and a great risk: will your business be the innovator or the one swiped away?

Megatrends are tremendous changes in the global environment that evolve slowly but have a huge impact in general scale. Megatrends have an important role in many changes and processes and they lay foundation of how the world evolves. (Hajkowicz 2015, 14.) In Suomen itsenäisyyden juhlarahasto Sitra's report of the megatrends of year 2020 by leading specialist of forecast Mikko Dufva (2020), technology is one of the five megatrends. Sitra reflects on the role of technology and how it will blend in to everything. New innovations and applications are developed and taken into use fast. The key elements of the role of technology as a megatrend are that technology will change the way we behave, artificial intelligence will be used across the societies, the next wave of digitalization will change and normalize the ways we interact with technology, technology is used even more in health care, new organisms are created through genetic manipulation, renewable energy sources will be used more efficiently and lastly the understanding of technology deepens. (Dufva 2020, 37-39.) It is clear that the work with digitalization is just beginning.

Looking in to the future depends on foresight and guessing. It is challenging to gain a clear view of what is happening right now because our vision of now is shaped by what we have experienced before and how we think these experiences repeat themselves in the future. Usually this moment can only be defined later on, as history. Often the development is slow and steeps into daily routines without noticing. (Hajkowicz 2015, 1-5.) Technology has shaped our lives for years and the overall change is very noticeable but in daily life we do not notice much changing. As an example, only a few years ago our view of "fast internet connection" was much slower than today. Now we are accustomed to the communication speed we have, but after few years our expectations and the products created on the basis of 5G are the new norm. This is an example of a mega trend and how it is viewed by individual. From business viewpoint this sets up brand new opportunities of business growth. For example, services like Über would not be possible without large scale wireless networks. The key is to utilize the technology as it comes and find the service that is applicable for the users. As future cannot be seen, one can only prepare for it to best of their knowledge.

Hajkowicz divided the key elements of future forecasting in to four Ps. The first P is probable, which means that something can be expected according to previous experience. Second P is plausible which means that the future event can be expected through logic and reasoning even though there is no previous experience of such event. Third P is possible, which takes

into consideration all “X-factors”, which are events that are possible in theory even if they are unlikely. These unlikely events may still happen and have even a tremendous effect on the world. It is important to note also the possibility of such event so one does not close their future forecasts to previous experiences and probabilities. The world has shown many surprises in its past so it is likely to happen again too. The fourth P stands for preferable which points to the desired direction. This helps to create strategy and plan that is wanted and not only based by outside powers but turns the power to the actor themselves. (Hajkowicz 2015, 14-18.) These elements should be noted when creating a business strategy and digitalization strategy because it will provide a solid foundation that takes note to facts and probabilities but also notes that the world is unexpected and surprises may turn the business on a completely different course. Every business has their strengths and resources that makes it viable, these factors should be used as the tool to reach the strategic objectives.

The topic of this thesis is digitalization as a strategic theme and source of actions that provide businesses competitive advantage. As mentioned, digital solutions are developed rapidly and taking new applications in to use is agile and common. At the same time, entrepreneurs are feeling great pressure to keep up with the competition and, most importantly, their customers. Even though digital solutions are easier to use, attainable and cheaper than before, merely getting the information of which services to choose and how to use them and integrate them into business activities takes time and expertise. Whereas customers can download and test apps and let them go just as fast, companies need to make decisions with resources and possible returns in mind. This means mindless scrolling and constant changes according to today’s trends may cause the company more harm than good. This is why strategic business thinking in regards to digitalization is important.

The year 2020 COVID-19 pandemic has shown dramatic proof on how important it is to be able to be agile and change the way of business in a moment’s notice. Digital solutions can be the thing that sets you apart from competition. Customers are expecting to receive customer service and even deep, multimedia information and personalized experience through technology. Websites are cited for only 15 seconds (Zheng 2020.) and if the loading time is more than three seconds over half of the users leave the site (Kirkpatrick 2016). Not to mention the high competition of digital content. With this highly competitive situation, it is no wonder company representatives feel the pressure of succeeding online. On top of the

customer's digital experience, business can be improved by multitude of internal procedures such as customer relationship management, enterprise resource planning, device controls and analysis.

Sky is the limit on what digitalization can do to develop business, and even after a few years, the limits of digitalization are set even higher than now. As Sitra's leading specialist Mikko Dufva stated in their prediction of megatrends: technology will change the way we behave (Dufva 2020). In this thesis this is examined from a business viewpoint; how the business can be more efficient in their strategy in order to fulfil the needs of their customers, staff, administration, competition and society. Even though this thesis focuses on the digitalization strategy of Central Ostrobothnian companies in Finland, it is worth noting the global effects digitalization have. In the digital age businesses are not tied to their location and the changes they pursue within their customers may have an important impact globally.

The world's population is growing and becoming wealthier rapidly. This means that highly populated areas are being able and willing to purchase and use products and services that were previously not attainable; these are for example private cars, internationally bought goods, travelling and luxury brands. Simultaneously the environment is suffering from the over-consuming of western countries. New technologies emerging in both developing and welfare areas need to take in to consideration how to preserve the environment for the future. This is a behavioral and psychological challenge for both groups: the western societies are based on carbon-heavy production which is hard to fight on an individual level. In developing countries, individuals want to reach the same comfort what has been available in western society for long time. The harm of this behavior should not be paid off by the people who are just entering the economically comfortable state. The question is how to provide environmentally friendly services that are also attainable and have a market in areas such as Asia and Africa. (Hajkowicz 2015, 42-49.)

New consumers, new products in global market will change the global market as a whole. As new cultures and groups are able to spend money, the cultural differences may even change the products and how people choose to consume. Even though the western lifestyle is often desired, in a large scale these new developing areas will present their own wants and needs to international markets. The development in these areas is fast and includes four steps: subsistence agriculture, industrialization, science and technology and lastly knowledge and

services. For example, China has already reached the last step and is a serious competitor to wealthy western countries. (Hajkowicz 2015, 78.)

The so called Fourth Industrial Revolution is characterized similarly to Sitra's megatrends; it will blend in to daily life of digital and physical world, biology and communication and utilize new emerging technologies such as artificial intelligence, cloud computing, robotics, 3D printing, the Internet of Things, and advanced wireless technologies. Continents such as Africa and Asia are developing and more countries and populations are being able to use technology and even make it a business. If these areas of the world have previously been left out of industrial revolutions, maybe this time they can be the drivers of change? Ndung'u & Signé (2020) state in their article that for example artificial intelligence and blockchain may attract interest in Africa because of their potential to address social and economic challenges.

Some fast development has already been seen in this area especially in the field of mobile digital financial services; nearly half of global money accounts were in Africa in year 2018 and the growth will be the fastest in the world until 2025. Mobile technology development has created 1,7 million direct jobs and income to areas businesses and governments via taxation. By year 2030 Africa's potential workforce is the largest in the world, there is no denying that Africa have a chance of playing a key role in digitalization, and further, solutions that enhance equality, accessibility and education. However, these areas are still lacking in some of the indicators such as infrastructure, education and technology access. (Ndung'u & Signé 2020.)

The correlation between lack of access and infrastructure and growth in mobile services in Africa shows how the digital services that have low threshold of investment to an individual are the kind of services that have a viable chance of becoming mainstream in these areas. This challenging business environment can lead to two very different outcomes: Africa may fall more behind as digitalization takes other areas by storm or Africa can be the area where the new way of digitalization is created. Finding solutions that work in a challenging area can lead to highly successful, accessible solutions that may even hit global markets. Whereas, physical systems are the reason of slow development in areas like Africa, similar psychological effect can be seen in western countries as well; services that are easily accessible are the ones that can become mainstream hits. On the other hand, businesses are willing to spend money and resources to create systems that are easily accessible and enjoyable to their customers.

Boston Consulting Group (BCG) conducted a study of over 5000 managers and employees, where over 80% stated that digitalization has helped them through the COVID-19 pandemic's caused slowdown. The work for digital transformation has been on happening for much longer than the recent pandemic. The BCG's survey states that most of the companies have not yet created a culture that embraces change and experimentation. Even when large scale plans of digital transformations are done, they are still far from being executed. The survey states that the way of executing the transformation demands creating a vision for the future and steadily building the capabilities, technological and human, to achieve it. (Boston Consulting Group 2020.) This thesis aims to give guidance on how to do so. Having a vision and strategy on how to get there, will help the company to keep their focus on the goals, values and themes that are the core elements of the business itself. This will prevent the company from becoming "leave in the digitalization's wind" but rather a steady and growing modern business.

This thesis was executed during the time of the global COVID-19 pandemic. The global crisis changed the way companies work in digital field which is an important attribute to note while citing this thesis. The data was collected before the pandemic started and since then the world, business and digitalization has taken huge leaps of development. The guide for digitalization strategy and storytelling as a tool in the world where historical stories are evolving as we speak, this research topic has gained a new value, unforeseen at the beginning of this research.

2 BACKGROUND OF THE STUDY

This thesis was done to support small to medium sized enterprises (SME) in Central-Ostrobothnia to be able to utilize digitalization as a competitive advantage. This aim is based on the work of Centria University of Applied Sciences (Centria) research and development - department's digitalization team's objective. Research and development is a part of business where Centria has an important role locally in its area. It is noted that digitalization is not used to its full advantage and this thesis aims to give a framework that opens the eyes of an entrepreneur to take digitalization as part of their strategy and growth. Even though, digitalization and ICT are tools towards competitive business advantage, it is worth noting that only for the broad variety and complexity of digitalization as a transformative force, it has earned its place as part of business strategy.

The idea for this thesis stems from the experience of carrying out multitude of digitalization projects on many fields as the research partner and noticing some benefits but also issues with digitalization projects. Digitalization projects provide a great stepping stone to utilizing digitalization in the company. It is a low-risk but high-value way of evolving and developing a business. However, digital projects may end up as one-off test runs that did not become part of the business. Of course, this is one objective of applied research in general; pinpointing the valuable solutions and discarding the ones that are not creating advantage. In addition to this, it was recognized that sometimes digitalization projects fade away because they do not connect with the business in a deep level or it does not show practical results, if those were even put to place. The objective of this thesis is to create that framework where the digital solutions and tests have a suitable place in the business.

Strategy is a high-level long-term document that outlines the vision, mission and practical objectives. Even when the strategy is done to guide the business for 2,5 or even 10 years, it must be updated as necessary. Digitalization as a transformation is fast and requires companies to be ready to adapt and even come out as the winner. Digitalization strategy is an editable, evolving part of the strategy that involves everyone in the company.

The thesis topic started as a guide to create a digitalization strategy. While conducting the research it was realized that digitalization in general is reasonably well-known as it is but

tools to take practical steps on using it are lacking. This is why the storytelling method of strategy formation became the key element of the thesis. The comic (APPENDIX 1) and steps described in it are a solution that brings digitalization and strategy work close to daily life and provides a context for the strategy. Storytelling is a common tool in external activities such as sales and marketing but in this thesis, it is used to enhance the business from within. The comic provides a rough outline of a story that each company can create on their own. If digitalization is noted as a part of business growth in a company, this thesis has reached its objective.

2.1 Case study

This study is done in order to evaluate the current state of Central Ostrobothnia's small and medium sized companies' digitalization strategies and readiness to advantage from digitalization as a whole. The study is commissioned by Centria University of Applied Sciences research and development (R&D) department, digitalization team, which works closely with developing the local area's companies' digital solutions in regards of software, networks and other fields related to information technology. This study focuses mainly on the software used by the companies in order to create competitive advantage. The study includes internal and external software, programs and online services such as social media and customer relationship management (CRM) services.

The survey was done to pinpoint the main struggles, successes and needs of Central Ostrobothnian companies in order to provide useful and realistic advice on digitalization strategy. As the objective of Centria's digitalization team is to support companies in their digital activities, this survey provides them with valuable information for long term. At the same time, when companies are ready and willing to develop their digital services, R&D is a good partner in this development work. Therefore, the survey on its own provides value. The main target is to support the companies in creating a tangible, valuable and editable digitalization strategy.

The aim is to provide the reader with a concrete guide on creating a digitalization strategy in their company as part of their general business strategy. This study will focus on the strategic viewpoint but notes also the tactics and daily activities related to digitalization. The key is to

be able to use digitalization as a tool in daily activities but also as a tool that sets the company apart from competition. Even though the digitalization strategy guide is based on the survey that was aimed for Central Ostrobothnian companies, it will provide useful information for all entrepreneurs and staff members. As digitalization makes the business world more open and global than ever before, the issues and successes are also similar across the board.

2.2 Storytelling as a strategic tool

The guidebook of digitalization strategy is based on a comic style template. Strategic planning in small to medium sized companies is in many cases challenging where the micro-company's owner is often a professional on their own field rather than in business. Therefore, storytelling tools are used to ease the strategic work. In this case it is so called internal storytelling where the main objective is to encourage and ease the communication and collaboration within the company to reach common goals. In comparison to external storytelling often used in marketing, internal storytelling is aiming to market and clarify the company's activities within the company. As the strategy is presented on a commonly understood manner, it will further support the internal work culture to grow among reaching the strategic goals. Storytelling will note the different personas and stakeholders and their motivations and their effect on the strategy. The core goal of using storytelling in strategic work is to gain collaborative benefits and trust. (Rius 2014.)

The comic style story "Digitalization Strategy Creation as a Story" includes humane examples and situations build around generic business situations. The story can be viewed as a whole to gain overall idea of how to create and keep up a digitalization strategy or it can be followed step by step.

The supporting template for the "Digitalization Strategy Creation as a Story" comic, is the "Digitalization Strategy Note Sheet". The template provides further support on vocalizing the strategy into a document that is useful and understandable for the stakeholders. The note sheet follows the same layout as the comic. They should be used alongside each other and other company-specific strategy tools. The note sheet is meant to be used as the summary of each step as it is done in the company. It provides ideas and simplifications of each step and

aims to ensure that each step is done. In addition to the information provided by Digitalization Strategy Creation (APPENDIX 1) as a Story and Digitalization Strategy Note Sheet (APPENDIX 2), the section 4.3 “The process of creating a digitalization strategy” defines each step, its background and practical activities. All these parts are designed to be used together, however they can be viewed independently.

The users presented in the comic template are recognized through the survey and other research done in this thesis. The aim of the template is to broaden the user’s perspective to multiple stakeholders but also the elements of business that are affected by the strategy. Digitalization will naturally bring along technologies, so they are also presented throughout the template. The objective is to recognize and use the technologies that support the strategic goals rather than embracing technologies “blindly”. Adopting new technologies is an exciting yet demanding process so it is important to recognize the tools that will provide added value.

2.3 Metamodel of digitalization strategy

The “Digitalization Strategy Creation as a Story” comic and “Digitalization Strategy Note Sheet” include a metamodel of digitalization strategy. The model represents three key parts that are necessary to note in strategic process: users, elements and technology. These key parts are further defined in the section “4.2 Key parts of a digitalization strategy”.

A metamodel can be created by using previously evaluated solutions in order to create a model that is used to evaluate new candidate solutions (Emmerich, Giotis, Özdemir, Bäck & Giannakoglou 2002). Clark, Evans, Sammut & Willans (2015, 19-21) defines a metamodel as a model of a language that captures its essential properties and features. It includes the language concepts it supports, its textual and/or graphical syntax and its semantics. Semantics means the certain aspects of the world in which the metamodel is focused on. It excludes inherently excludes some parts of the world as a whole and aims to create a closed conceptualized model of the topic it is created for. (Génova 2009.)

Matthew Emerson & Janos Sztipanovits (2006) described three metamodel composition models; metamodel merge, metamodel interfacing and class refinement. Metamodel merge

refers to the situations where the elements of different metamodels collide and two metamodels domains intersect in some way. When these intersecting points capture semantic entities, those concepts can be used as “join points” to merge the metamodels to signify a concept that unifies the colliding concepts. Metamodel interfacing refers to two distinct but related domains metamodels and their interactions between these domains. Composing the interfacing metamodel, the metamodels are delineated to specify and represent the entities that do not strictly belong to either of the previous models. Class refinement is used when one metamodel does not capture the concept fully, but includes some entities only as a “black box”. The relationship between the two composed models is given by the hierarchical containment of the constructs of one metamodel within a single construct of another metamodel. (Emerson & Sztipanovits 2006.)

Metamodeling is commonly used in information technology engineering and research because it supports the user to understand the various kinds of design–level modifications that a system undergoes throughout its entire life-cycle. In this thesis, the metamodel is created to represent the dynamics that are considered in a viable digitalization strategy. The metamodel is a graphic model that can be used as a unit to evaluate the digitalization strategy as a whole. The parts of the unit are carried through the digitalization strategy creation as perspectives of the strategic planning process. The metamodel serves as a conceptual definition of a digitalization strategy in general but it is also used as a supporting tool to create a strategy which is viable for all stakeholders.

3 CENTRIA UNIVERSITY OF APPLIED SCIENCES: RESEARCH AND DEVELOPMENT IN DIGITALIZATION

Centria University of Applied Sciences is located in Central Ostrobothnia area, in three campuses. Centria's operations are divided into two processes which are education and research and development (later R&D). (Centria-ammattikorkeakoulu 2020a.) Centria offers bachelor's degrees in information technology, business, health care, music and humanities pedagogy, chemistry and production technology among others. Master's degrees are available in business, technology and healthcare. In addition, Centria offers short and blended learning in many fields. (Centria-ammattikorkeakoulu 2020b.) The education is based on four focus areas which are production technology, chemistry and bio-economy, digitalization and business services. The focus points are also the fields of R&D operations. The R&D operations and staff is divided into teams of their field, but co-operation and multidisciplinary operations is the key to successful development. The operations are based on the local needs and employer's fields. Industrial area, entrepreneurship and health care services are the most important employers in the area. Therefore, Centria's education and R&D operations can provide skills, expertise and workforce to these important sectors. (Centria-ammattikorkeakoulu 2020c.)

Centria's R&D is rated as one of the most successful in Finnish universities. In year 2018 the overall volume of R&D was 8.6 million euros and 1.6 million euros in other services. The staff consisted of 110 people in 2018 but has faced rapid growth over the following year of 2019. R&D and education are in co-operation and therefore some teachers and R&D staff works in both sectors of Centria. The volume is achieved through about 80 national and international projects. The main public funders are EU, Business Finland, local unions and funds and Centre for Economic Development, Transport and the Environment. The objective of R&D is to support the development of existing fields and enable new growth industries to appear. R&D works in close, interactive co-operation with local and international companies and organizations. (Centria-ammattikorkeakoulu 2020d.)

This thesis is assigned by the digitalization team of Centria R&D. Digitalization team is managing eleven national and international projects and is involved in multitude of other field's projects and services. Digitalization is a growing field that is utilized in practically all

other fields. This means noticeable chances of growth. Companies are using increasing amounts of digital technology which means the need of research and innovation is ever growing. Digitalization team provides knowledge of hardware, software, networks, virtual and artificial intelligence, gaming, cyber security and industrial internet.

As digitalization as a field has grown vastly over the last decades, planning and strategic operations are still less commonly executed. In order to provide companies and organizations with digitalization support that leads to business advantage, it is vital to understand the needs in digitalization in the future. As digital solutions and projects are still decided and executed often on a short notice and molded in to business functions in retrospect rather than proactively, companies are struggling to create real, predictable business profit. The information of current status of digitalization and the future plans of digital development help the digitalization research as whole to focus, grow and offer services that are interesting for the companies. In addition, the guidebook of digitalization strategy will help the companies to reach similar base level of knowledge and create concrete needs to fulfil the strategy. When digitalization is handled as a strategic tool of growth, companies will gain profit, competitive advantage and skills to expand even internationally.

4 DIGITALIZATION STRATEGY

Digitalization and digitization are concepts that may be easily confused. It is important to know the difference of these concepts in order to gain broad view on the processes one will face while creating their digitalization strategy. Digitization is the process of converting previously analog information such as paper documents, VHS-videos and other forms of data into a digital form. This can mean digitizing a whole process which was previously analog into digital, for example providing a questionnaire and saving the results on a web page instead of a paper form. It will not change the process itself, but provides it a different format. (i-Scoop 2021.)

Digitalization in business means improving or changing the process by using the new data provided by digital systems. By leveraging digital technologies and a broader use and context of digitized data the business will gain intelligence and actionable knowledge. Often this means a mixture of physical and digital processes finetuned into a process or activity that will provide added value. The digital systems are based around data which is created an enormous amount. The value is created through smart use, analytics and handling of this data. This so-called big data is the baseline of most digital systems. (i-Scoop 2021.)

Digitalization has taken a broad role in most activities of a business ranging from back-office efficiency, to distribution and product or service development (Sklyar, Kowalkowski, Sörhammar & Tronvol 2019). Technology has taken the role of both operand resource (facilitator or enabler) and operant resource (initiator or actor) in business operations. (Lusch & Nambisan 2015.) As a large section of businesses are using digital technologies in their operations, the operations are not anymore independent but expand through the whole business network. This transformation is pushing the companies to adopt digitalization in to their operations. This force is molding the field and individuals. The change is creating a digital ecosystem where large structures are creating the direction of operational development. (Sklyar et al. 2019.) Actors are co-creating context-specific, uniquely determined value, both for themselves and for other actors in the ecosystem (Kleinaltenkamp, Roderick, Brodie, Frow, Huges, Peters & Woratschek, 2012). Value is created not only in business’s internal operations but it is also adding value to customer experience, thus involving customers in this digital ecosystem. As this ecosystem is

expanding and involving more actors by the day, it is vital for a company to have sufficient knowledge and strategy about digitalization to use it as a value adding tool, rather than forced, extra responsibility. (Sklyar et al. 2019.)

In a research conducted by Sklyar et al. in 2019 the findings state that the effect of weak ties in a digital ecosystem is highlighted. The scalability of digital systems connects actors such as customer segments, information links, software interfaces that have previously been disconnected. Digital systems have become an operant resource which is closely linked to business operations. This shift requires coordination and strategic digital planning. (Sklyar et al. 2019.)

On a technical viewpoint, the digital ecosystem requires well-working integrations among the actors, which is the point of which, weak points are highlighted. The ecosystem includes strongly and weakly tied actors. The strong ties relate to repeated activities in the ecosystem that also foster trust in the system and nurtures common growth through collective action. These actions are done through system integrations. As Sklyar et al. (2019) states “The more frequently resources are integrated, the more mutually knowledgeable actors become.” (Sklyar et al. 2019)

In 2016 the automotive supplier Schaeffler created a digital platform together with IBM in order to create added value to their customers and integrate their vast technological solutions to a common platform. The platform includes data and operational features of mechatronic components, systems and machines into the rapidly expanding 'Internet of Things' (IoT), as well as implementing market ready new business models based on digital services. The digital platform processes large amounts of data in order to create insights valuable to both the customers and their internal business operations. (Roberts 2016.)

The platform created together with the company and technology provider IBM was the starting point of their digital ecosystem. Peter Gutzmer, Schaefller's deputy CEO and chief technology officer states that their aim is to connect data from across their products and activities in order to create added value for the customer. The value adding insights are created through analytics. Schaefller was able to increase their efficiency in existing operations and creatr new services via the platform. This includes the optimisation of production processes, real time analysis of data and context-driven maintenance, networking

and optimisation of multiple machines within a production line. Their goal was to continuously optimise production and supply chain. They focus on internal optimization to increase efficiency and to leverage this for the creation of new service offerings for customers and partners. (Roberts 2016.)

4.1 Why does a company need a digitalization strategy?

It was evaluated that by year 2017 a lack of digital competence in businesses will cause 25 percent loss in competitive ranking globally. Digitalization is not only the ICT-systems but an ecosystem that involves the business activities, co-operative partners and even the business domain as a whole. "CIOs or IT professionals who hear 'digital business' and think 'IT' will be blindsided," said Ken McGee, vice president and Gartner Fellow. Rather digital business means the new ways of transforming and even innovating how business is conducted now and in the future. Digital tools may increase efficiency but it also brings the business to the forefront. Digitalization is the string that ties together businesses' back and front office operations and departments. (Stamford 2014.)

Digitalization can be viewed as a tool to reach existing business goals efficiently or it can be the foundation of new services and products. When thinking of digitalization and digital transformation, one often thinks of disruptive innovations. While it is true that digitalization field is fast-growing and disruptive on itself, not to mention the innovations within it, in daily business life these innovations are often used as a tool to reach business goals. Companies such as Amazon and Über have created a disruptive business model where the service is something that is not possible without digitalization and it changes the field as a whole. (Heberle, Löwe & Gustafsson 2017, 1071.) Digital transformation is pushing SMEs to update and innovate their ways of doing business and even their business models. Simultaneously these companies are struggling with adequate resources to keep up and differentiating themselves in the digital competition. (Bouwman, Shahrokh & Reuvera 2019.)

Digitalization causes changes in the operating environment and provides new ways of working. Parviainen et al. (2017) has created a four-step model of positioning the company in the digital market. The steps are to first position the company and defining goals, then analyzing the current state in respect to the goals. After that a roadmap is created and

carried out to reach these digitalization goals. (Parviainen, Tihinen, Kääriäinen & Teppola 2017, 71-74.) This model's first step will position the company in the digitalization field but simultaneously it provides the company with benchmark-knowledge on what digitalization can provide to others and how that could be either an objective to reach as well or even create own disruptive product that positions the company on a higher ranking.

Digitalization can evolve the business on four levels: process, organizational, business domain and society level. On the process level company starts to use new digital tools and enhance their processes. On organizational level the company offers new services and creates change in the way they conduct business. On business level roles and value chains in the ecosystem are changed and on society level, the society structures evolve. (Parviainen et al. 2017, 71-74.) This thesis is focused on process and organizational level because that practical need was highlighted in the survey. These are also the levels that need to be in order to be able to make business domain or societal change.

Carsten Stiller discussed the digital transformation and its effect on production company such as Siemens. He defined the driving factors of digital transformation to be efficiency, flexibility, quality and time-to-market. Cyber security was mentioned as the horizontal theme and a prerequisite across all these drivers among regulations. As Stiller points out, digitalization means tools that do not add value themselves, but the company needs to create the business model that utilizes these technologies and therefore adds value to the business. In the case of Siemens, they created a holistic approach that supports the process of transforming digital tools to customer value. The transformation process consists of scope, assessment, definition and implementation. This defines a two to three years long digital roadmap that showcases the projects to implement to reach business benefit. (Stiller 2018.)

4.2 Dynamics of a digitalization strategy

Digitalization is generally considered to be important, which was noted in the survey done in this thesis and in extensive research literature. Digitalization is perceived as an option for business model innovation and it holds value itself. Organizational capacities and competence are identified as a future challenge within the digitalization topic. (Rachinger, Rauter, Müller, Vorraber & Schirgi 2019, 1143.) All of the key parts of digitalization strategy

relate to the competences that are used internally and externally to create and execute a digitalization strategy.

The metamodel of digitalization strategy presented in figure 1 includes users, elements and technologies which represent the so-called dynamics of the model. The model's objective is to represent the users and business departments that are affected by the strategy. The key idea is to serve as a reminder that digitalization strategy extends far beyond technology and is actually user- and even human-centered process. The dynamics are carried along the digitalization strategy creation process as reminders to consider the dynamics throughout the process. The key parts are represented in the document "Digitalization Strategy Creation as a Story" as a list of examples of such stakeholders. It is important to adapt the contents of each to each user's case. These three key perspectives are defined next.

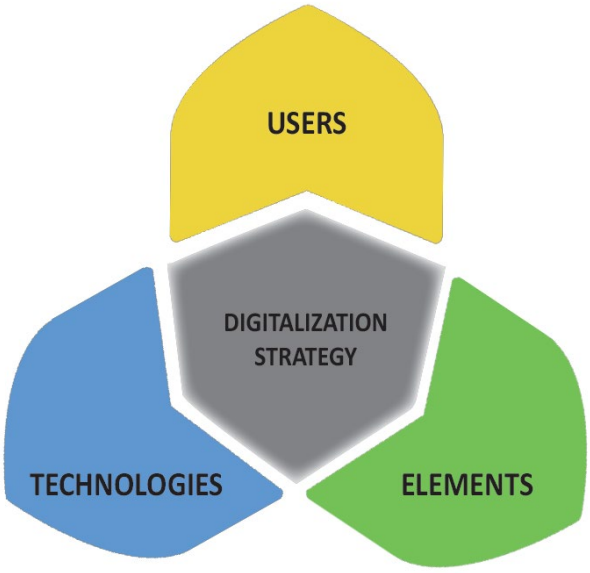


FIGURE 1. Metamodel of a digitalization strategy

Users are for example customer, IT-department, administration, stakeholders, target groups and ecosystem. The users represent both internal and external networks that are affected by the strategic choices. Internally one must note that carrying out digital changes affect not only the IT-department but all staff members. Digitalization strategic choices are usually done by the administration but also the effects of such decisions are reflected back to administration in minimum with profit gain or loss. Human resources will cover the topics related to changed job descriptions and tasks and the wellbeing of staff in the changed environment.

Just as important as internal users are the external networks such as the customer. They may be a user of a new technology but even in a traditional field of customer contacts, the customer will note for example the time of service, tasks the customer needs to do and the end product or service they receive. Further in external connections, the suppliers and other close co-operatives systems must correspond with the new solutions. In major digital development of products and services, even the ecosystem may be affected by the strategy. User-section is on top of the digitalization metamodel because of its key role in the process.

Elements, such as marketing, customer service, cyber security, business models, continuity, production, usability and remote services, represents the departments and factors of a business that bring value to the strategy. The elements of the strategy include the business intelligence and previous work which adds knowledge and best practices to include in the strategy. The elements may even be the drivers of a development point. For example, accelerated production time may be an objective of the strategic work but it can also be a factor that affects on marketing-related development points or ensure continuity of the business in general.

Technologies represent one third of the key roles of digitalization strategy. The technologies are the most challenging section to forecast as it changes continuously. Some technologies have gained their position in the market and are expected to add value to most businesses, such as mobile services and social media, data management and cloud services, where as other technologies such as robotics, automation and artificial intelligence may gain relevance to some fields only in the future or even never. For example, the massive, fast expansion of Internet of Things and Big Data have resulted in a mass of disorganized knowledge. These technologies have shaped the business processes, products and services but the knowledge and practices are highly inconsistent. On the other hand, these technologies have increased the general and company-specific knowledge of topics such as consumer behavior, attitudes, consumption, and choices. (Sestino, Prete, Piper & Gianluigi 2020.) This data is highly valuable if the company has the resources to utilize it within their resources.

With technologies, the key is to pinpoint the objectives and resources and align the chosen technologies with it. Digital technology development is relevant to fields such as ICT and production technology but are not in the business core of some traditional fields. Noting this will help the company to choose technologies that are realistic and viable for them.

4.3 The process of creating a digitalization strategy

The following section will describe the steps to take in order to create your digitalization strategy. The steps are practical and they consist of a theory-based explanation on the step and few tasks that are required to be carried out in order to move on to the next step. The steps are iterative in a sense that new ideas, issues or development needs may arise during the process, where one needs to take a step back. Usually the process circles back to step two of defining the development points. Previous work can be an advantage if there is a need to backtrack on the process.

The process is defined in a highly practical manner but it is based on the theoretical frameworks presented earlier in this thesis and a considerable value is on the survey results. Gartner representative Stamford presented a six-step process on taking advantage of digitalization in business. The following description of the steps is fully based on the article by Stamford (2014). The process is illustrated in figure 2 as a circular process. It represents the continuous nature of strategic planning. The process is iterative. Gartner's process acts as a background, broad-perspective vision on creating this guide. Gartner's process' step four includes the activities that are defined in detail in this thesis. The first step of the Gartner's process' step one is to create the right mindset and shared understanding. They created the term "business moment" which means the pipeline of opportunities that emerge when digital business matures. This moment is the catalyst that encourages and pushes the events and activities in the network of people or even in broad ecosystems. It is the moment where the company rethinks their ways of working and opens up for innovation. It integrates people, business and technical solutions that were not possible before. (Stamford 2014.)

FIGURE 2. Gartner's six steps of taking advantage of digitalization in business (adapted from Stamford 2014.)

The second step is to put the right leaders in place. Gartner defines three types of leadership roles that have emerged to fulfil the need of digital transformation leadership; the digital strategist, marketing leader and business unit leader. These types of leadership may be embodied in persons that are not the hierarchical leaders but rather take on this role to advance the process. As digitalization is settling in to businesses across fields and inspiring innovations, these roles will have an importance in the future as well. (Stamford 2014.)

Launching a digital business center of excellence is defined as the third step in Gartner's process. This means to set up a collaborative hub of input, advice and opportunities regarding digitalization strategy. This is the center where the deep insights of company's current state, opportunities, needs and threats are examined and actions are put into place in a collaborative manner. Step four is based on this collective data to formulate a digitalization strategy. Gartner's process includes five elements of strategy: new digitally enabled business models, the product and service portfolio, information as an asset, technology and lastly content, media and channels. This step is the state of the process where the following guide for strategy creation takes place. (Stamford 2014.)

After the strategy formation step, the fifth step is to find, develop and acquire digital business skills and roles. The skills and roles are not only regarding ICT but rather the insights in between digitalization and business. Decision making and project managing are in key

position to be successful in the process. According to Gartner's 2014 CIO Agenda survey, 42 percent of 2,339 CIOs from 77 countries surveyed said their IT organization did not have the right skills and capabilities in place to meet upcoming digital business challenges. This data ties together with the forecast described before, where companies will face competitive loss as digitalization progresses. This underlines the need of expertise in this field. (Stamford 2014.)

The sixth and last step is to create new digital business capabilities. As in previous step mentioned, expertise is still lacking which opens the discussion of skillful staff. Traditional recruitment in the future will face changes. Ideas such as learning through networks and “work mashups” by applying digital business and digital technologies to the distribution of work and look at piloting new channels for finding, building and acquiring digital business capabilities. (Stamford 2014.)

The Gartner’s process provides a wide-angle view on digitalization as a strategic element in business. The steps highlight the fields where digital change is affecting the company’s and even field’s actions and how it may evolve in the next few decades. The following section will guide through the digitalization strategy formation. The steps are defined in the “Digitalization Strategy as a Story” attachment, which is the visual representation of the guide.

The “Digitalization Strategy as a Story” and “Digitalization Strategy Note Sheet” were presented to a handful of SMEs and network to gain views on the tools. The feedback was positive and the tools made strategy work attainable and realistic for a SME. The tools were recognized as valuable quality control measures of the strategy. The tools provide certainty that the strategy is comprehensive and planned in the needed depth. The mention on lack of resources and difficulty of following strategic plan in day-to-day activities were on the minds of especially entrepreneurs who work alone. The feedback was partly focused on a wish to have the tools in Finnish to further ease the process of strategy creation. Having the strategy process being done in one’s first language not only eases the process but also provides deeper insights to the strategy. It is recommended that the strategy is done in the company’s working language.

The feedback also included a further improvement of providing a possible timeframe on each of the steps. This would further lower the threshold of starting the strategy process and

prevent the strategy creation process of becoming an “eternity-project”. This feedback is aligned with the survey results that mention lack of time and human resources as one of the key reasons of not having a documented digitalization strategy. The suggestive timeframes are not included in the guide because it highly depends on the company’s current situation with strategy work in general, amount of staff, familiarity on the topic and other factors. It should be noted that digitalization strategy is done for a shorter timespan than business strategy because of the fast evolvement of technologies. Therefore, the creation process should not take more than one to two months depending on the previously mentioned variables.

4.3.1 Vision and mission

Digitalization strategy is a part of business strategy which takes note on the technological opportunities and aims to benefit from digitalization (Wallenius 2021). The creation of digitalization strategy starts with clarifying the company’s overall strategy and especially vision and mission. It is important to note what is the company’s current situation: who are the customers the company is serving and what is the company known for. Also, the digital situation and readiness is an important note; what digital tools are in use now, who uses them, what are the customer touch points and to whom those tools are aimed for. (Nieminen 2019.) Figure 3 represents the starting point of a strategy creation process.

The start of creating a digitalization strategy is a good point to reflect on the company’s mission; why do we exist as a company and what are we aiming to do? Next the company should also check up their vision; where do we aim to be within 2, 5 and even 10 years. When creating a digitalization strategy, it is important to clarify these plans especially on the 2- and 5-year span, since technological development is so rapid that 10+ year plans have a high risk of becoming obsolete.

FIGURE 3. First step of the process is to clarify the mission and vision. Users are the key on this step.

Business strategy's vision and mission are the basis of the processes that are partly or fully done with digital tools, and this can have an impact on the whole value chain. Digitalization may improve the processes or even create new business models and opportunities. As digital processes are often complex, each process and their sub-tasks may be something to improve or adapt. However, it is vital for the overall view to pinpoint the value of these processes and merge it with the business plan. It is also worth noting that some processes are linked with other actors outside of the company. Often business benefit can be created by for example optimizing the information flow or aligning the processes.

Digitalization can be approached with top down- or bottom up-method. In top down method the focus is on how can digitalization add to and optimize the business model and its implementation. In bottom up -approach focuses on how digitalization can optimize existing processes and how the available data and tools can be used in development. (Heberle et al. 2017, 1072-1073.)

Involving the company's staff in this business strategy clarifying step is important in order to carry out the digitalization strategy process with clear, shared goals in mind. Even though strategic decision making is usually an administrative task, it is good to note the staff's role in

it. Digitalization strategy is a very practical part of the strategy which involves and even changes the way people work in the company. It also demands wide understanding of the business' departments and technological solutions which is usually carried out by the staff. That is why early involvement is vital in successful digitalization strategy creation.

The aim of having a business or digitalization strategy is to pinpoint the objectives that are the most important to company's success and which are realistic to reach within given timeframe. It is easy to think of endless amounts of goals but it is not viable to try to reach them all. The purpose of digitalization strategy is to find the objectives that can be reached through digital solutions. This is step 2 of digitalization strategy creation. (Hokkanen 2020.) Supporting questions are given in figure 4.

On the first step "Vision and mission" you need to:

1. Clarify the company's mission and vision and business strategy.
2. Involve the staff and utilize available expertise within it
3. Decide on bottom up or top down approach; is the objective to sharpen the business model or create efficient technical processes
4. Pinpoint shared business goals

FIGURE 4. Supporting questions for Vision and mission step in Note Sheet.

4.3.2 Key development points

For a small or medium sized company, it is viable to have less than three development projects running simultaneously. This is why the common business goals recognized in step one need to be condensed into key development points. These development points need to be the ones where the administration considers to have the most business potential and where digitalization plays a key role in reaching the objective. As the development points are chosen, it is the time to evaluate them critically; is this development project viable and is it possible to reach the set objectives. (Hokkanen 2020.) Figure 5 acts as a reminder to condense the developments to maximum three. Figure 6 is the section of Digitalization Strategy Note Sheet and it is a visual reminder of the importance of pinpointing the key points and not aim to too large change process.

Heberle et al. (2017, 1071) used a Digital Maturity Model in their case study “Digitalization Canvas – Towards Identifying Digitalization Use Cases and Projects”. In their work they state few key questions “What to digitalize, which technologies to use? What to do first, how to do it and then how to proceed? Which changes in the organization are needed with respect to skills and roles?” In this case study they worked together with Södra Skog to clarify their vision and how to enhance their business with digitalization. They carried out the case study by conducting interviews with the company’s key players. The questions covered important views on creation of digitalization in general. The questions were as follows:

- Where do we stand in digitalization? How far have we come compared to others?
- Where do we have optimization potential?
- What has to be done to benefit from digitalization? In which order?
- Who can help us to implement the digitalization projects? (Heberle et al. 2017, 1071.)

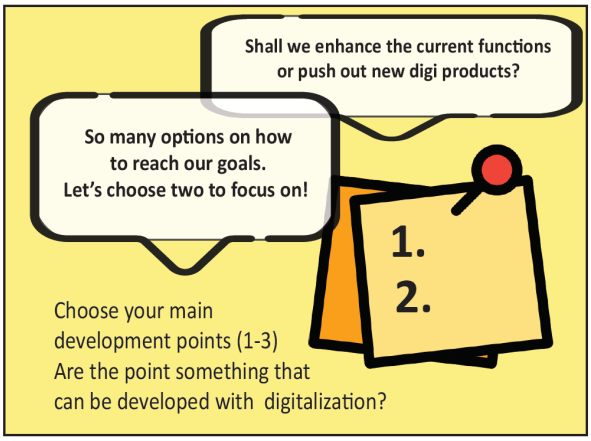


FIGURE 5. Choosing the development points may cause a lot of questions and discussion.

These questions cover similar topics to the survey done in this thesis. The questionnaire can be used as a tool to determine the current processes and their development points. Benchmarking of competitors and early adaptors of digital solutions are also efficient ways to recognize viable development points.

In Södra Skog's care about 50 ideas with different complexity were identified. They aimed to utilize the existing stepping stones in order to clarify their development processes rather than choosing overly complex development tasks. This reduces the risk of failure and monetary loss and also adds to motivation as it provides chance of quick wins. (Heberle et al. 2017, 1077-1078.)

On the second step "key development points" you need to:
1. Short-list the objectives
2. Review the current situation and objectives in technological viewpoint
3. Choose the development points that have potential to create competitive advantage and which are realistic to carry out within the company.

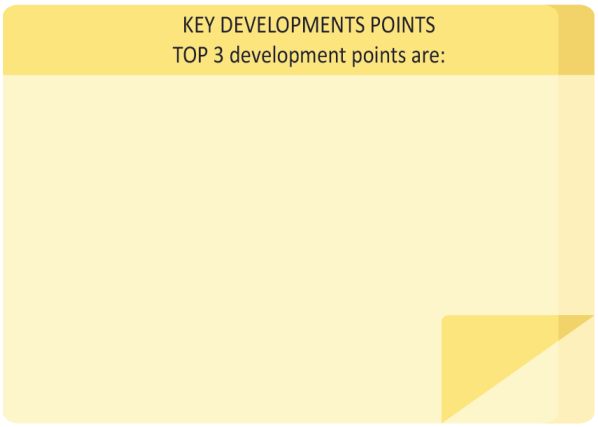


FIGURE 6. It is important to be able to describe the key development points shortly.

4.3.3 Involve your staff

Having the company's staff involved not only provides the strategy creation with broad, practical understanding of the needed actions and goals, but it also increases the sense of commitment within the staff. When the staff has been involved in the strategic planning they have ownership over the work and are more likely to show motivation to reach the shared goals. Friis et al has recognized three critical capabilities for the company to maintain continuous growth over time. These three capabilities are orientation towards experimenting with exploitation of new business opportunities, a balanced use of resources and developing and maintaining coherence between leadership, culture and employee commitment. These capabilities are the foundation of strategic actions. (Friis & Koch 2015, 125-128.)

Involving the human element, such as culture, taboos, willingness or fear of change and their willingness to innovate and take responsibility in change are the elements of strategy that provide deep insights and provide stability through-out the project as the general motivation and commitment is set in the beginning stages. (Friis & Koch 2015.) Figure 7 suggests to have low-hierarchy staff meetings to plan the strategic goals on a practical level.

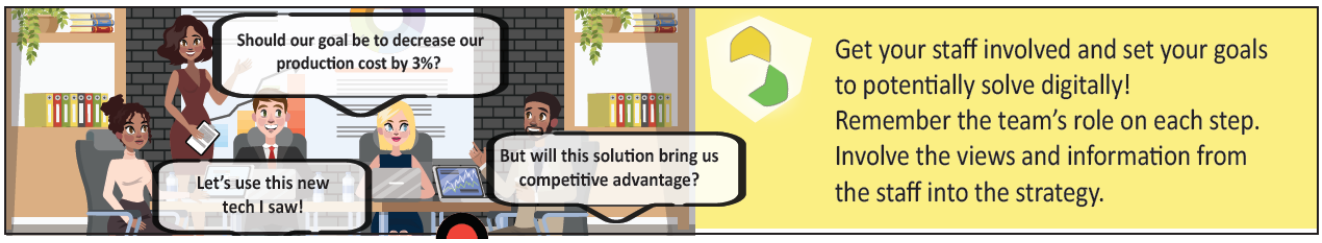


FIGURE 7. Make sure the goals are created in collaboration

The human resource, motivation and inspiration has a valuable role in the success of firstly recognizing the needs and secondly carrying out the digitalization strategy. It has been said that digitalization is a revolution of the world, business and ecosystems but it is fundamentally a social, humane revolution. (Matveeva, Sarapultseva & Nazarov 2019, 466.) As with any revolution, it does not come easy. As suggested in figure 8, workshops and other easily accessible digital and other communication outlets are key. Change of business model means a change in the daily work activities and even what kind of skills are needed. Long-term employee may even feel threatened by this change. Similarly, the company administration has to have their people, staff, suppliers and other collaboration members, to succeed.

Involving the staff to digital development work brings along the possible lack on digitalization skills and technology-related skill gaps within the workforce. As skill building is a broad human resource management issue, it cannot be ignored in digitalization strategy formation. One aspect of the problem is the identification of required digital competencies for future-proof business solutions. the International Telecommunication Union (ITU) has published a list of required digital skills to fill in the skill gap. However, some of these skills, such as cybersecurity and Internet of Things may not be familiar to the staff and it sets the question of needed training but also the realistic investment on this topic. Further on, this lack of skill may have an effect on which digital tools are chosen. If the tools are not used correctly or especially at all, the investment is not worthwhile. This can be solved by example by investing on system-spesific training, but this is an added needed resource. However, there is a need to bridge the digital competency gap. This gap will only be crossed if and when people embrace the digital culture. (Hoe 2019.)

On the step “Involve your staff” you need to
1. Gather multidisciplinary team to work on the strategy creation
2. Organize workshops or other means of getting the people involved and giving their views
3. Set out the plans for the full strategy creation and the team’s role on each step
4. Involve the views and information from the staff into the strategy

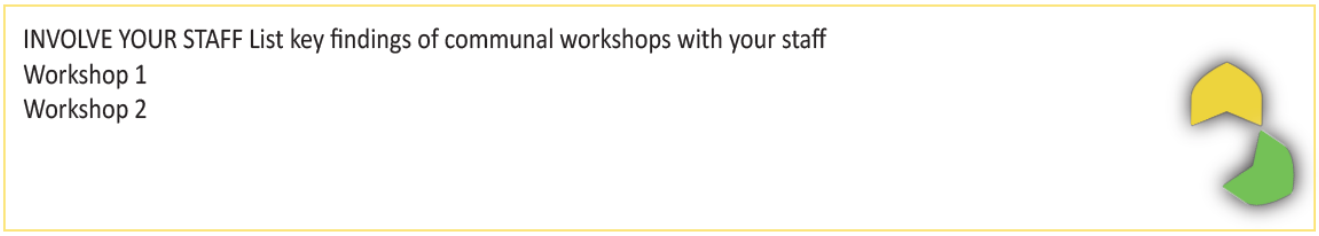


FIGURE 8. Workshops are one way of involving the staff

4.3.4 Create hypothesis and choose tools

As the objectives are set, usually the first hypothesis of potential outcome and way of solving the development question are also created. In digitalization strategy formation the technical solutions are usually brainstormed on side with business objectives. It is vital to create a hypothesis that is detailed enough to showcase the realistic potential of the project before decisions are made. (Hokkanen 2020.) It is common to fall in the spinning thoughts of technical solutions and their potential, demands and outcomes with forgetting the original plan. Data visualization can be done for example by using the model presented by Hokkanen in figure 9. Especially tech-driven individuals are eager to utilize technology's full features, but similarly, in a traditional atmosphere, it might happen that even viable technical solutions are discarded because it feels like a extra load. The hypothesis done at this point should rule out these subjective tendencies and form a realistic view on what technologies are viable and what objectives are not something that can be enhanced digitally.

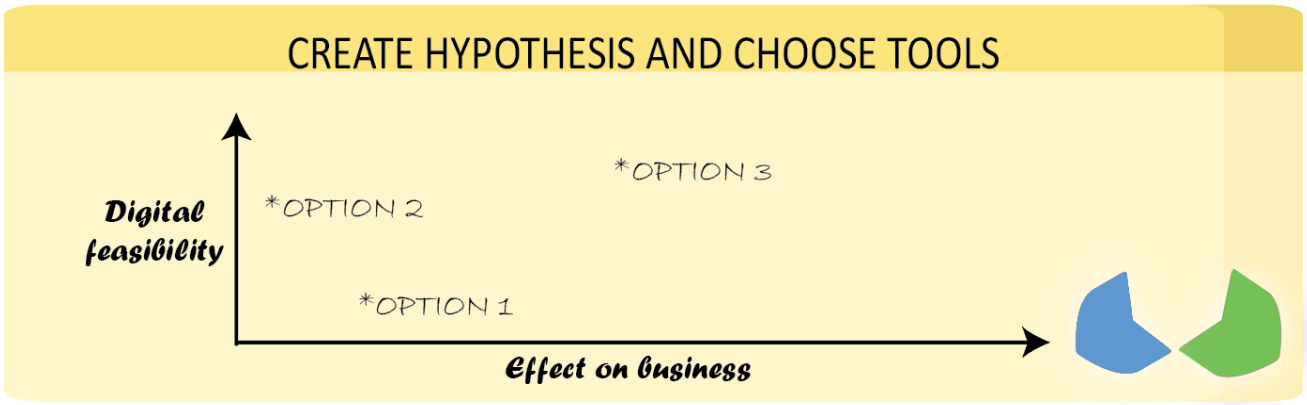


FIGURE 9: Solution viability can be evaluated with a two-axis model (adapted from Hokkanen 2020.)

In hypothesis creation it is again vital to involve the staff and possibly other experts on the fields of both ICT and business. Experience and knowledge are key in creating realistic hypothesis; how much different digital solutions cost, how much upkeep they require and who does it, who uses the system. Nowadays businesses and individuals use multitude of digital services, so is this new one necessary and will it integrate with existing ones. Important topic is to find out what the solution can and cannot do, if it is enough to solve the development question and lastly if the end users are willing to use the system. If not, why? If yes, what added value it provides? If this hypothesis stage reveals issues, it is not unlikely to even cancel the development project and go back to step two.

Heberle et al. (2017) used a prioritized project portfolio as a tool of choosing the development points and creating the hypothesis for them. The portfolio included the estimated business value of the project, which is evaluated as high, medium or low. The business value may be estimated as precisely as possible but often times exact value estimation is challenging. High-level estimation still provides priorities. When the process evolves to execution and for example purchase decisions, it is vital to calculate the business benefit in more detail.

Second estimation is on the amount of work, effort or resources spent on the project. This estimation should be done at least on high, medium or low -scale but as the project furthers more detailed calculations should be carried out. Available resources for the project are calculated case-by-case since for example entrepreneur working alone has very different situation to large company’s resources and similarly profit expectations. The complexity and risk of the project and outside factors such as supplier’s data management could increase the extend of the project as a whole. (Heberle et al. 2017, 1080-1081.)

In conjunction with estimating the needed resources and cost, the used tools and technologies need to be chosen. The tools should align with the strategic plan and the budget of the project. When choosing the tools, it is needed to utilize expert help, however using consultancy services or especially service provider’s help, may result in biased results. The tools used in the project need to have the needed features for now but also for the future. For example, amount of data processed by the system may increase the price but if the capacity is not enough, it may cause the project to even fail. On the other hand, excessive features and capacity may increase the price unnecessarily. The minimum needed calculations are listed in figure 10.

The amount of work regarding the integrations and initiation of using the system should be accounted for; does the company have skillful staff for this task or does the work need to be bought from the service provider and are all integrations possible. When clarifying the needed integrations, one must take in to account the supplier's and other partners systems, as mentioned on the second step. The longevity of the system that adds value if one can be certain of the functionality long-term. However, changing the systems may cause high cost. In the early stages of the project lowering risk by making short-term purchases is a safe option. Even then, future plans should be noted.

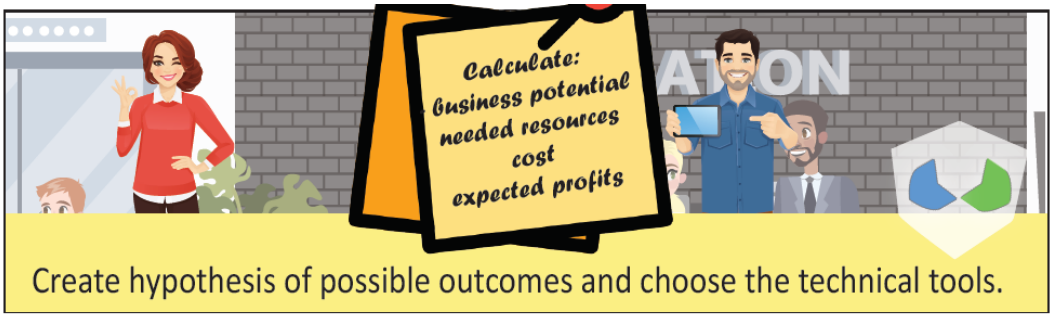


FIGURE 10. Hypothesis includes profitability calculations.

On this step "Create hypothesis and choose tools" you need to:

1. Create a realistic hypothesis of your development project's results and process
2. Calculate the potential business benefit
3. Calculate the needed resources and cost of the project
4. Prioritize the development projects
5. Choose the tools that are viable for the project

4.3.5 Merge your development points to your business strategy

At this point the development points are chosen. These are the points that can be developed by using digital solutions and the ratio between needed resources and expected outcomes are aligned. The integration and cost of new system were noted in previous step project-wise but on this step, it is time to merge the project as part of the company's technical and business infrastructure. This can be done by viewing the different users such as customer, supplier, company's departments and creating a service path with these factors.

The existing systems should be mentioned in this service path. The system's data, integrations and co-operative points need to be explained at this point. (Hokkanen 2020.) This stage is important also later in time of purchases where the company needs to provide the ICT-supplier with the specification of requirements. As this work goes forward, the role of possible ICT-team becomes more important. This stage will pinpoint possible faults and issues with the plan before actual purchases are made or excessive resources used. (Hokkanen 2020.) This step involves all the parts of digitalization strategy metamodel (FIGURE 11).

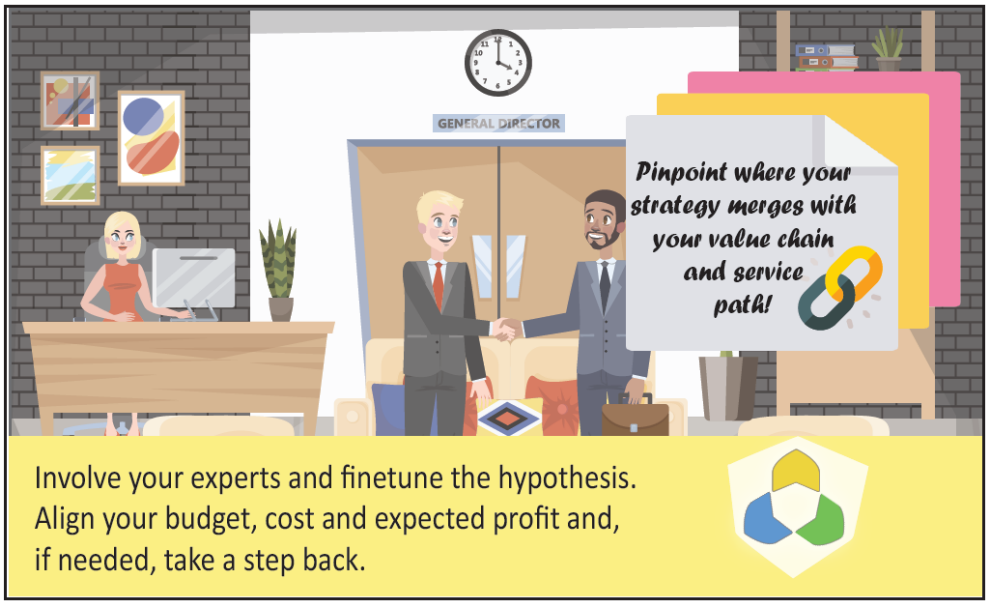


FIGURE 11. Align hypothesis and value chain.

In the Södra Skog's case the interviews clarified the touchpoints between business and digitalization. They found that opening data via mobile services would improve their customer's experience but requires better data management routines in a particular context and an improved access to data and functions for the different stakeholders. They noted a potential to be smarter, cheaper and faster in their operations than before by automating their business processes. This required them to integrate various ICT-systems and train their staff to the new way of working. In this case they found both top down and bottom up approach cases in their digitalization strategy.

On this step "Merge your development points to your business strategy" you should:

1. View the development points as part of your service path and overall business. This can be done in parallel line visualization suggested in figure 12.
2. Involve the needed experts, such as ICT-department
3. Check for inconsistencies, mistakes and faults with the project plan
4. Prepare the development hypothesis, needed resources and align it with expected outcome

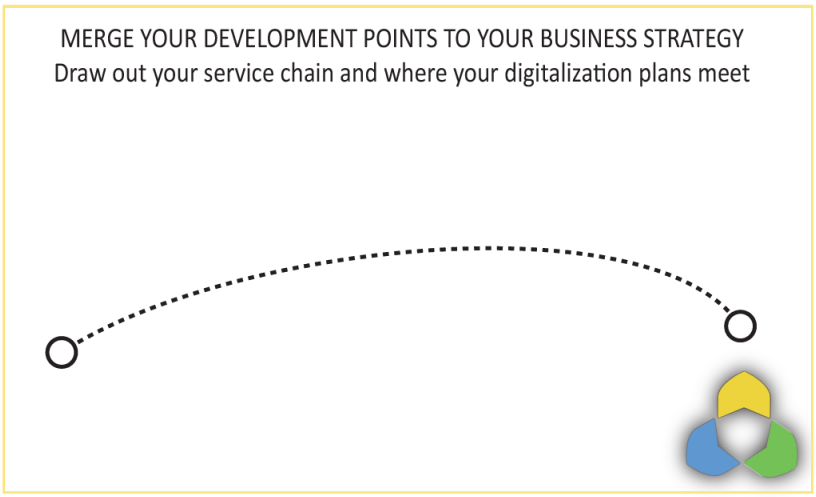


FIGURE 12. Value and service chain can be visualized as parallel lines.

4.3.6 Tactics and actions

When the development project's outcomes and needed resources are researched and the development points appear to be worth executing, it is time to form tactic to reach the desired outcome. Tactics include the activities done in the departments of the company. In a small company this means the action plan that points out the order of activities to be able to succeed in the project. It might be needed to create separate plans for different departments but in all cases the departments need to work together according to the service path created in the previous step. Even if separate plans are made, they need to line up with the business and digitalization strategies. (Wallenius 2021.)

The action plan should involve the elements of the strategy. The activities or focus points may differ according to the element. The plan is usually highly interconnected where one part needs to be in a certain stage to be possible to go on in another department. The activities by the people directly involved with the strategy work, but also the departments affected by the

strategy should assign responsible persons who are informed and capable to advance the cause, as mentioned in figure 13. As follows are a few examples of how the digitalization strategy may evolve to actions regarding different elements.

In digital customer service questions such as how the service will change, how the change is made, how the digital service points are introduced to customers and what changes are required in workstations and marketing material are worth considering. In digital marketing the viewpoints are for example: what are the suitable marketing channels, what needs to be communicated to public and how and what is the process of marketing campaigns and content creation. Digital human resource management arises questions such as how the work tools, recruitment, systems and ways of working in general will change, who presents the new way of working to staff and how the staff will stay involved in the digitalization process.

If the development project involves a creation of a brand-new product or service, the previous service path -task should follow along to the company's product development process as well. (Wallenius 2021.)

On this step "Tactics and actions" you should:
1. Create a practical plan of actions for the near future and extend of the project. The plan differs according to the elements and viewpoints
2. Assign responsibilities and timeframe for the activities
3. Make sure the actions align with each other and the strategy

FIGURE 13. Use a timeframe which is handleable. All tasks should have a responsible person.

4.3.7 Set your measurables and follow up

The tactics and action plans provide a practical view on the meters suitable for the project. The person responsible of the actions should be able to give measurables that will show the progress of the work. The meters can also bring possible bottle necks or systemic faults visible to be improved up on. (Pillkahn 2008, 65.) Meters need to be measurable and realistic so the company can follow up on the possible successes or failures of the project. Measuring the project variables with practical numerical measures will decrease the chances of the project getting stuck still or not delivering the expected results. Setting the meters is vital since it steers the way the project staff behaves.

Latest at this point, it is vital to realize that strategic development is not only financial or even operational process but it is strongly tied to the social and human tendencies. The humane notes are mentioned also in figure 14. The resistance that comes with change is worth noting when preparing for the project and setting the meters. Setting meters that showcase the social, cultural change and commitment carry value that can affect the business even longer than mere business tactics. (Pillkahn 2008, 296.)

FIGURE 14. Align your measurables with the business goals together with the responsible personnel.

Follow-up meetings where these meters are inspected and the actors are given a stage to present their thoughts, pros and cons of the project and most importantly the results are a practical way to keep up the development work. The purpose of the follow-ups needs to be on common discussion, taking the needed decisions on changing the plans and place to create further plans. Even though the digitalization strategy should be editable over time, these follow-ups are important part in the process. Agreeing on the follow-ups will give the plan a practical twist and motivates the staff to do the activities agreed and reach the objectives. Again, staff should provide their view on realistic timetable and measurables, with the help of business strategy, mission and vision.

Even with the follow-ups agreed, the communication channel throughout the project is needed. The team members can bring up their successes and chances of failure at an early stage. The plans should be edited as the process goes forward. Open, low-hierarchy communication is key to success as in all projects.

On this step of “Set your meters and follow up” you need to:
1. Discuss with the project team and set measurables and targets
2. Make sure your measurables are both practical and can pinpoint possible faults in the systems, plan and other similar cases

3. Provide the team with open, low-hierarchy communication channel
4. Agree on follow-up dates

4.3.8 How to communicate about the strategic choices

The previous steps have involved most of the company's staff but if the company is a medium or larger enterprise, they likely have a team focused on this development project. Even then the whole company needed to be brought up to date with the business strategy and in required extend, digitalization strategy. Digitalization strategy usually brings along practical changes in the way of working but on a strategic level the competitive advantage is presented.

The strategic communication can be divided into internal and external communication where the internal audience is the team executing the actions and external is the other groups such as co-operative partners and even customers. The external groups are communicated about the strategy on needed level and depth whereas internal groups should have a deep understanding on their role and value on the strategic process.

FIGURE 15. Choose the suitable template.

In addition to meetings and event where the strategy is introduced, the strategy should be available to staff at all the times. The strategies are the backbone of activities so they can be reviewed as needed. If new staff is recruited, the communication of strategy should be part of

the introduction period. Editable strategy templates are widely available online. The challenge is to find a template which is suitable for your specific needs and can be shared in suitable ways (FIGURE 15). Even though visual strategy templates are commonly preferred, it might require some specific ICT-skills which may deter some staff members from using it when needed to full extent. Accessibility in a broad perspective is noted in figure 16.

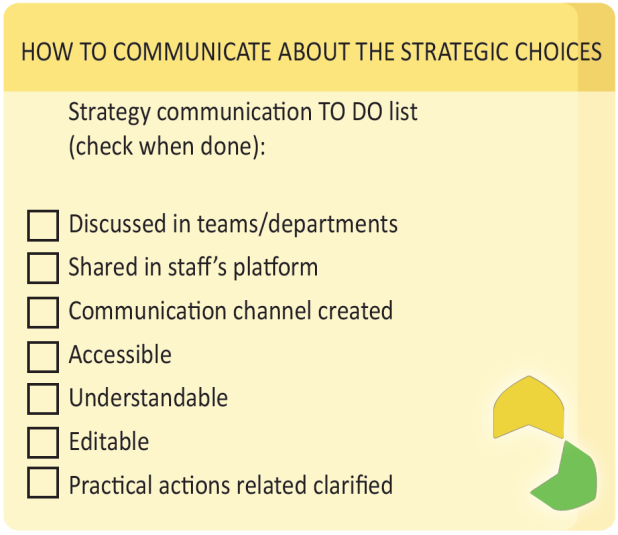


FIGURE 16. TO DO -list for communication and choosing of template

4.3.9 Editability of the digitalization strategy

On this step of the process, you need to clarify who can make decisions on changing the strategy. Strategic changes may result from for example change in business objectives, business growth, investments or down-sizing. A new technology may emerge or the price lower, which provides more business potential than previously was available. Other examples are cases where the strategic development points turn out to not be suitable for the business, he risks are becoming likely to override the chances of success and the resources are not enough to realize the strategic plans. (Prosci Inc. 2021)

The process of changing the strategy involves the open communication channel set up on previous step and discussions with the staff, suppliers and other stakeholders to keep up with the project. If the discussions point out a silent signal that may have tremendous affects on the project, it should be considered and solutions to possible issues planned beforehand. This requires the team to communicate on all levels. By choosing the communication channels that support open conversation this behavior can be supported. However, key is that everyone in the team, including the management, has the needed communication skills;

ability to tell their view clearly, active listening skills, asking open-ended questions and recognizing different ways of communication. (McKay 2019.)

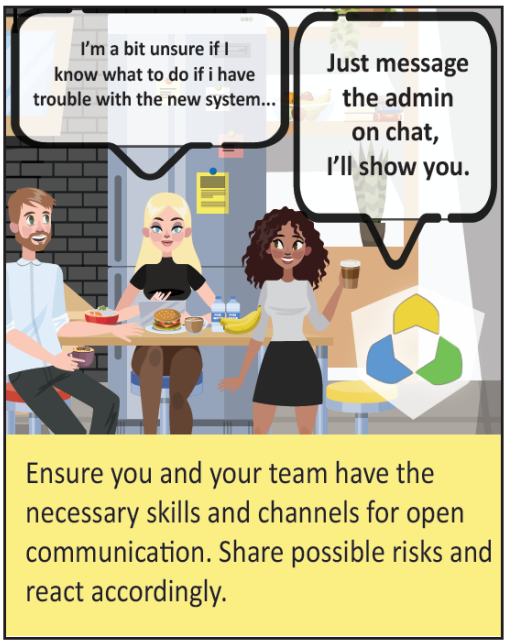


FIGURE 17. Changes in work spark discussion and insecurity. Ensure that communication is open.

This open communication is the basis of agile strategy development. As the need for strategy edits emerge they are taken to the appropriate team members. The decision of changes in strategy is done together with the staff to ensure the previous steps are done in needed extend in the change process. Figure 17 represents the possible insecurities and the positive communication that is aimed for in strategy work.

On this step “Editability of the digitalization strategy” you need to:

1. Ensure you and your team have the skills and channels for open communication (Figure 18)
2. Create a system for editing the strategy if a need emerges
3. Communicate to the team that changes are possible and pointing out unrecognized risks is encouraged

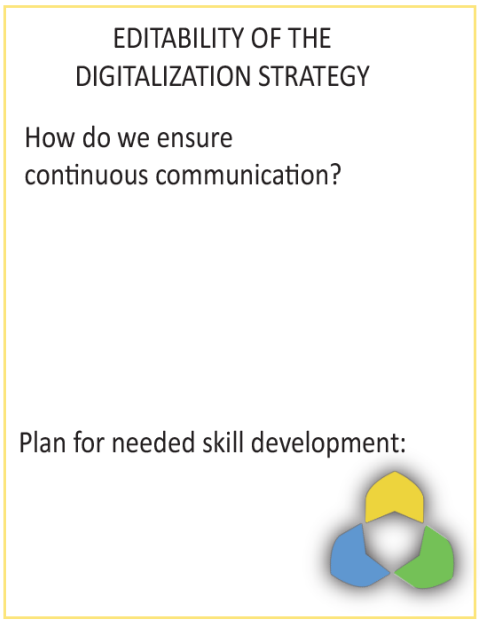


FIGURE 18. Create practical plan for communication and skill development.

4.4 The fifth discipline advantage as a tool of learning

This section 4.4 is fully based on the work of Hoe (2019). The fifth discipline advantage focuses on the learning and skill building in an organization. The main idea of the learning organization is to involve many departments of the organization in order to gain a coherent big picture of the company for business growth. It is associated with personal mastery, mental models, shared vision, team learning and system thinking. These refer to enhancing personal skills, sharing them in group to gain team intelligence, the basic assumptions the company holds and understanding these sections to solve complex problems. This framework has been evolved and enhanced later on, and one of these updated frameworks is the fifth discipline. This system-based thinking is formed with structure, behaviors and events. (Hoe 2019.)

The structure of the company leads to certain behaviors which leads to certain events. Therefore, the best way to influence events is to change the system. The aim of the framework is to involve feedback that is triggered by actions and through the feedback the processes are balanced and reinforced. The loop of reinforcement becomes a system component that causes continuous stream of actions and feedback to shape the further actions. (Hoe 2019.)

The framework of learning and creating the development culture in an organization is further supported by articulating the digital transformation narrative in four disciplines. The first discipline is that there is a need to ensure the availability of digital competence. The skill gaps ought to be addressed in a personal level (personal mastery) in order to have an environment of digital growth. The company's responsibility is to provide the opportunities of this personal growth that in return adds to the competitive advantage. The second discipline describes how the digital transformation challenges the existing assumptions and beliefs. Mental models need to be revised and renewed to adopt the change digitalization strategy brings along. Thirdly the opportunities and challenges of digitalization need to align with the company's overall business, so called "big picture". This discipline's related activities are defined in the section "4.3.5 Merge your development points to your business strategy". The last discipline points out the value of diverse team work within the organization to create digital solutions. (Hoe 2019.) This is also a topic mentioned in most of the steps of digitalization strategy creation.

The fifth discipline advantage -framework provides a systemic understanding to cultural and personal change. These topics play a key role in the success of digitalization strategy since the strategy can only be a success if it is executed by a motivated and skillful team.

4.5 Strategic alignment

Alignment can be defined as "the degree to which the needs, demands, goals, objectives, and/or structures of one component are consistent with the needs, demands, goals, objectives, and/or structures of another component". Gerow, Grover, Thatcher and Roth researched the relationship between IT-business strategic alignment and company performance. The failure to align could result in wasted resources and failed IT project leading to negative financial and organizational outcomes. The possible conflict between the strategy and performance, called an alignment paradox was caused of alignment dimensions (intellectual, operational, and cross-domain) and performance types (financial performance, productivity, and customer benefit) deferring from one another. Successful strategic alignment is partly recognized to add value to the business but theoretical research has

shown this to partly be due to enthusiasm and other activities in the company that further support business success. (Gerow, Grover, Thatcher & Roth 2014.)

Companies where strategy is aligned with the other business activities, IT-solutions are most often used effectively and a substantial, sustainable advantage is created through digitalization. On the contrary, some research has shown that aligned companies do not report improvement or even decline in performance. It is suggested that alignment has led to stagnation, inflexibility and competitive disadvantage. The tight link between IT and business may cause a rigid structure which does not leave room for innovation and agile testing needed in the ever-changing environment. The processes between IT and business may be time-consuming and strict which has a negative impact on the company. (Gerow et al. 2014.)

Henfridsson and Bygstad suggests in their research that strategic alignment has a positive affect on tying together the different departments of the company. This research also points out relationship between scalability and alignment. As the digital project is on the beginning phases it is worth-while to start with a small case or test, but if the project is successful it can be scaled to broad use. Scalability and alignment are both important when introducing the new solution to stakeholders who have varying needs. The alignment within the company and with stakeholders plays an important role in having the potential solution carried out throughout the company. (Henfridsson & Bygstad 2013.)

Strategic alignment within the company and with the stakeholders is a topic worth noting when creating the digitalization strategy. As involving the departments and people of different skillset is a key part of strategic planning, strategic alignment is a natural part of the process. As the research pointed out, it is not risk-free but needs to be done in care to avoid rigid systems that stop innovation and agile development.

4.6 Updating a digitalization strategy

Digitalization as a fast-paced phenomenon is a catalyst for continuous change which means the digitalization strategy needs to be editable and updated. Digital technologies were expected to cause a collective large-scale transformation across industries but it has shown to not happen in such a way. Even though productivity of work in Finland has increased by

22% in a decade, manufacturing industries have only grown by four percent. ICT-field has grown by 38% but even company-level differences are large. Digital solutions, their price and usability have widely improved over the last decade which makes a digital transformation possible on fields that were previously lacking on it. (Ailisto & Hiekkanen 2021.) The development of digital systems provides increasing amount of companies with options to enhance their business. If digitalization strategy is already set in place, the same effect is valid, and the strategy needs to be critically viewed to find these formative sectors.

In the research of Hänninen, Smedlund and Mitronen (2017) digitalization in retailing and specifically multi-sided platforms as drivers for digital change was presented. The findings of this research are examples of how digital transformation has changed the business. These examples are related to the fast-paced change that opens new possibilities in business. Hänninen et al studied Alibaba Group, Amazon.com, eBay and Rakuten Group. The global competition and broad availability of data required an insight to new business models. The research points out the multiple types of digital platforms and potential business models regarding them. The platform economy transforms the transaction logic from traditional settings to a hierarchical chain coordination model. As the role of supplier in the chain model evolves, so does the value creation as a whole. This ecosystem approach changes retail business but it has not diminished the value of traditional retail as well. (Hänninen, Smedlund & Mitronen 2017, 159-160.)

Krasyuk, Medvedeva, Baharev and Chargaziya (2019, 1-2) recognizes increased competition, higher effectiveness of retail and struggle for buyers as the three driving factors in retail. Technological systems are often used throughout the sales process from product development to receipt printing. Krasuyk et al. raises the network around retail as the modern ecosystem that provides with wide variety of goods and quality retail services. The main driving factors in innovation development of retail are business consolidation, level of innovation development in the country and in the world, competitive situation, investment climate state, institutional and legislative regulation, culture of consumption. Utilizing development strategies and strategic alignment company acquires basic strategic directions to offer value and servicing customers through introduction of organizational, marketing, informational, technological innovations.

The key question in strategy work is how to create sustainable strategy that holds it value over time. However, digitalization puts traditional strategic thinking of up to a decade-long strategy to test and demands an agile approach. Therefore, the question is no longer how to make a strategy that is valid for its intended lifetime but rather how to set the strategic frame that leaves room for innovation, rapid change and agile activities. It is this frame that needs to be rethought after every few years, rather than the tactics and actions that mold within the strategic frame and the collective global environment.

5 RESEARCH: DIGITALIZATION STRATEGIES IN SMES IN CENTRAL OSTROBOTHNIA

The research was done to showcase the current situation of digital expertise and to what extend it is noted as a tool of strategic growth. The results of this research act as the foundation of the guide for SMEs. The results are considered in the practical step-by-step guide. The guide focuses on the topics that appeared challenging according to the survey.

The research question was: What is the current state of digitalization strategy expertise in Central-Ostrobothnia area and what topics need to be addressed in the guide? This question was formatted based on the needs of Centria University of Applied Sciences research and development department digitalization team. The research aims to provide support and views on future development in the field of digitalization. Strategic viewpoint provides with a professional, sustainable manner of conducting digitalization projects in the company and in a network.

5.1 Research method

The research was conducted as a questionnaire that was provided as an open online survey in Finnish. All the questions of the questionnaire are presented in APPENDIX 3. Answers were gathered in about two-month time period in autumn 2019. The questionnaire was sent to Centria R&D's existing customer companies and shared in social media via LinkedIn and local Facebook groups. The questionnaire has 33 questions that are divided in to five parts. The segments are based on Jack. E. Earner's My Little Book of Strategy (2014). The parts are future, strategy, organization, customer and competition. These five parts together represent the strategy as a whole. In addition to the substance questions, basic company information was gathered in the first questions as well as general information about the respondent's and their company's IT skills. Personal skills may have an effect on the understanding and knowledge of company's digitalization situation. The questionnaire included multiple choice questions with written options and 1-10 rating. Also, respondents could comment freely in one question ("Comments and thoughts about the survey?") and add text to some multiple-choice questions.

Before the questions, the main terms are explained to responders. The terms are strategy, digitalization and digitalization strategy. The definitions for this survey were as follows:

Strategy = Plan entity that recognizes company's current status, changes in operating environment and changes in customers' needs in near future. Based on these, company's objectives are set for specific time period (about five years) and action guidelines to reach these goals are decided. Action guidelines are divided in to processes and projects, and their progression is monitored through the strategy period.

Digitalization = In this thesis digitalization and digital services means all software, hardware and procedures that utilizes IT-solutions. Parts of digitalization are for example online services, social media, enterprise resource planning software, cloud services and devices (for example mobile devices, sensors).

Digitalization strategy = Part of strategy that focuses especially on digital solutions as growth factor for business.

The explanations of most important terms were given to ensure that everyone understands the basis of the study similarly since these terms can be understood in different ways in different companies and by people with different level of previous knowledge on the subject.

In order to provide the companies a comprehensive view and guide book of digitalization strategy the questionnaire covers the strategy from the five perspectives according Earner. This manner of approach provides the research understanding of current situation in all the perspectives, prepares the respondents to understand and develop their strategy comprehensively and provides vital information to create the guide book in a way that adds value to local companies.

The objective of the survey was to gather understanding of current digitalization strategy situation of local companies in a reliable way and considering that companies may not actively work on their digitalization strategy but they may still have operations that can be regarded as digitalization operations. The objective is to provide companies a useful guide book that they can follow if they are in the beginning stages of their digitalization process or already advanced. The topic is two sided since in one-way digitalization operations in general

lay the foundation and skillset to be able to create business advantage through digital solutions but at the same time strategy work is required to be able to do digitalization decisions and operations in a predicted, monitored and controlled way. Companies may face a situation where they are eager to use digital solutions but the decisions and processes are handled in a fast and unplanned way. This may lead to disappointments when the results of digital solutions are not measured or the process is not tuned for the company's needs, which may even lead to business loss.

5.2 Research results

The survey had 28 respondents that were mostly (43%) from micro companies of 1-2 employees, 25% of respondents had 2-10 members of staff and 18% had 10-50 people working the company. Rest of the respondents had over 150 members of staff. The questionnaire was divided into sections that cover the strategic digitalization in many viewpoints.

The topics also cover the theme in a way that opens the respondents thinking of the term "digitalization strategy" broader than the fact if they have an actual copy of digitalization strategy. When creating this survey, the fact was considered that many companies are using digital solutions strategically without naming these activities as such. The following chapters cover the main findings on each topic, which are basic information, future, strategy, organization, customer and competition.

5.2.1 Basic information on the respondent and their represented company

Background information was gathered in order to find similarities and differences in companies in different stages of company's evaluation. This section also discusses the respondents' personal skills and knowledge on the topic since that may have significant effect on the results, where someone who is not familiar with IT-solutions may find the digitalization strategy difficult or faulty and on the contrary experienced person may have a deeper understanding of the overall IT-situation and may find the development needs to be elsewhere.

The company's year of founding was asked in order to find out if new or old companies are more advanced in digitalization strategy work. About half of the respondents represented companies that were founded after year 2000. Companies started before 1980s represented about 20% of the responses. When asked about the sector of operations, the answers were divided between 11 fields. Most responses (18%) were from wholesale and retail. All of the following sectors represented a 10% share of the responses: industry, building, administrative and support services and other services. The vast majority of 82% of respondents were in administrative position in the company, 11% were in middle management and 7% employees. This is explained by the responding companies having a small number of employees. Similarly, 61% of the strategic and digitalization responsibility is on the administration.

The next segment addressed the current IT skills of the respondent and the company. This information is valuable in evaluating the relation between the respondent and the company's ability to communicate their digitalization processes to their employees who may not be advanced in using these solutions. This is especially the case when the respondent is a staff member whose work is not directly related to digitalization strategy. However even the people responsible of digitalization may have lack of IT skills which will affect their ability to do digitalization strategy work.

First the respondent was asked to evaluate their general IT skills in a scale of 0-10, where 0 stands for no skills and 10 stands for excellent skills. This question was especially important since the responsibility of strategic work is heavily focused on the entrepreneur themselves or only one to two key staff members. Therefore, their IT-skills set the foundation of the company's IT readiness as well. The lowest given grade was 3 and highest was 10. Average of all was 7.39 and most common grade was 7 (25% of all responds). Next the respondent evaluated their IT skills especially regarding their professional field. Similarly, to previous question the average was 7.11 with the majority evaluating their skills with grade 7. The lowest grade was 2 and highest 10, which goes to show that professional systems are harder to grasp on than private, consumer-oriented systems.

The respondents evaluated the general quality of the company's IT solutions. Out of all the responds 68% gave a grade of 7 or 8. Lowest grade was 2 and no one gave their company's solution 9 or 10. When asked how important role digitalization plays in respondents

everyday-work, majority of 36% answered “10 – very important, I could not work without digital systems”. The average grade was 7,86 and responds ranged from 3 to 10. In consideration to company’s current IT solution’s durability in future the grade 0 meant “our systems will be completely out of date” and grade 10 meant “Systems are widely ready for future needs”. Most responds were between 4 to 7 with 7 being the most common (32%). The average was 5,71 which is the lowest average in this segment. This result represents the need for modern skills and strategy on digitalization in order to plan and react to digital change. Over half of the respondents believe digitalization will have a key role in the company’s business in the next five years. 14% of respondents state that digitalization will not be key in future business and 4% did not know. Third of respondents answered the role to very likely or maybe be important in their business. Most respondents have considered digitalization’s requirements in their strategy in some extent, 77% have considered it vastly or partly and 21% a little.

When asked about how much the company’s representatives follow the digital development and utilize the solutions in the business 75% of the respondents follow the field and utilize often or sometimes. No respondents stated they would not follow digitalization field at all.

5.2.2 Future

This section covers the company’s future plans regarding digitalization. The questionnaire leads the respondent to this topic by mentioning that strategy is the company’s plan for the following years. Digitalization is a megatrend that will push companies to develop fast in the coming years. As the company is creating their strategy, it is important to note the effects of mega trends.

When asked if digitalization will be in key position in the company’s business activities in the future over half of the respondent’s stated definitely (53.57%). The responses of this question are visualized in figure 19. Responses “Highly likely”, “maybe” and “no” all had 14% of the responses. Therefore almost 70% of the respondents saw digital solutions to be definitely or highly likely part of their business. When asked if the requirements of digitalization are already noted in the company’s strategy 42.86% of the respondent’s stated it is noted to some extent. One third responded that it is noted extensively and 21.43% said it is noted a little. No one responded it to not be noted at all.

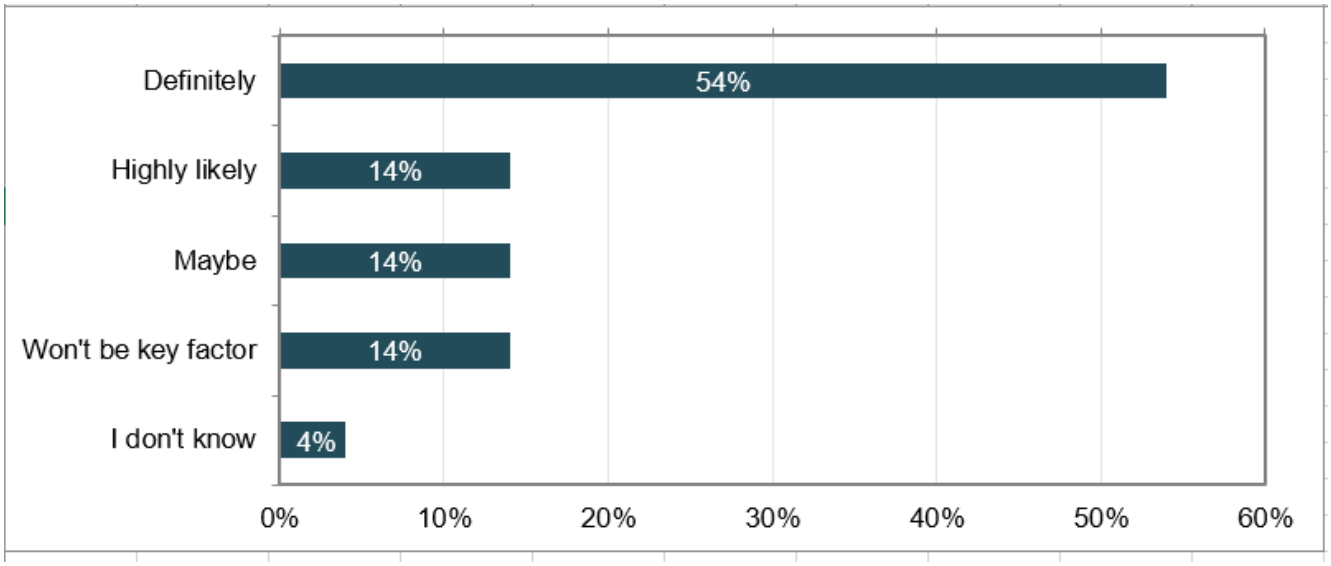


FIGURE 19. Vast majority recognizes digitalization to be part of their business in the future.

When asked if the company is following the changes and news of digitalization field and utilizing these solutions 75% stated they follow and utilize the changes often or sometimes. No one stated they would not follow at all, and even following the news only a little got less than 4% of responses. The responses were similar when asked if the future requirements are considered when making IT-system purchases in the company. 82% of the respondents told they consider this broadly or to some extent. These results represent that companies are aware and willing to act to stay on top of digital changes now and in the future. Even if digitalization is not mentioned in a strategic documentation, it is part of most businesses and its value is noted broadly.

5.2.3 Digitalization as a part of business strategy

Strategic planning and strategy documentation differ highly in different fields and companies. This section aims to find the different ways of doing digitalization strategy work even when it is not documented. Especially in small companies it is common to not have documented strategy since the responsibility of development is on few staff members. Documentation is done when the company grows and it is valuable to be able to present broad company information to new staff. However, having a documented, up-to-date strategy will help the company to focus, grow and create their tactics according to the plan. Therefore, this thesis will provide support on creating the documentation of digitalization strategy.

Most of the respondents (71%) state that they have a general strategy documentation that is available for everyone in the company, 18% do not have this documentation and 11% do not know if they have it. This question was asked to find out if the companies document their strategies in general. If the overall strategy is not written and updated, it is not likely to have a digitalization strategy either, since it is part of the general business strategy. According to these responses it seems that most respondents have some strategy work done and documented. However, the strategy does not include digitalization strategy since more than half of the respondents told they do not have digitalization strategy which is available for whole staff. One third of the respondents have digitalization strategy and 14% of the respondents did not know.

Next question is about having plans related to digitalization for the next few years. The aim of the question was to find out if digitalization is considered in the business planning even if it is not part of the strategy work. As digitalization is part of most individuals and businesses day-to-day life, it is important to note that these plans could be created and carried out without the link to business strategy. Half of the respondents stated that they have made plans related to digitalization, 43% have not. This result shows that digitalization plans are made without including them in the strategy. This response goes hand in hand with the fact that 53% of the respondents state they are doing strategy work related to digitalization but they do not have a documented digitalization strategy. Fourteen percent of the respondents have an up-to-date digitalization strategy, and 4% have it but it is not updated. It is positive that companies are actively working on digital development. Including this work in to strategy could support this by attaching these activities in to business goals in a concrete manner.

When asked about having and creating a digitalization strategy 32% state that it is important to have this strategy but creating it is difficult and 29% state that keeping it up-to-date demands too much resources. One fourth of the responses stated that they have the strategy and it is updated. This ties in with the previous result of only one third having a digitalization strategy. It seems that the main reasons for not having this strategy, even though it is recognized to be important, is that it is time- and resource-consuming and the people do not have the skills and knowledge of creating it in an efficient way. The figure 20 represents the views on digitalization strategy creation.

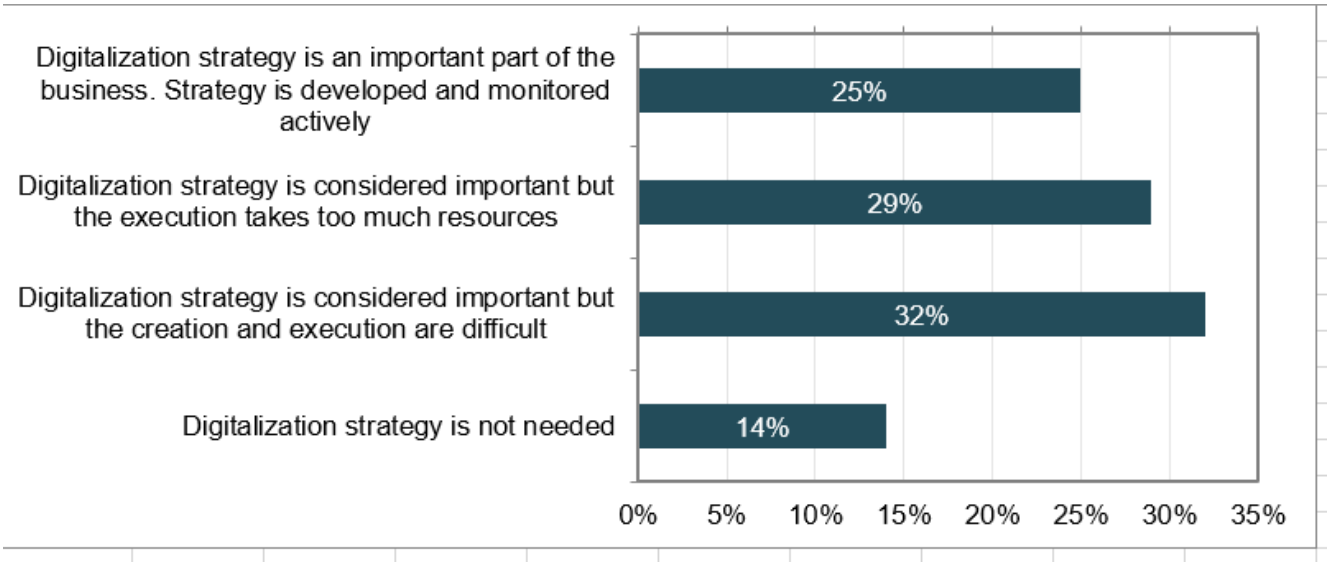


FIGURE 20. Only 14% of companies think digitalization strategy is not needed.

In the next question respondents chose which statements are valid for them. The aim was to get broad understanding in the different viewpoints of digitalization and why certain activities are done or not done. The statements related to importance of digitalization strategy, its relation to business and digitalization as a whole. Digitalization was seen as a positive chance to develop business (57%) and it makes routine work easier and releases time for key tasks (54%). Sometimes IT-solutions may also be hindrance, since 18% state that using IT-software slows the work down. Almost 40% of the respondents state there is not enough time and resources to create the strategy. Generally, the statements with negative connotations to digitalization were not chosen often by the respondents, and digitalization was seen as a positive but resource-demanding part of the business.

5.2.4 Organization

Strategy will not be successful without having people behind it. This part of the survey touches up on the internal processes related to digitalization strategy. Firstly, the survey discussed how new IT-solutions are taken into use in the company; if it is agile and fluent, demands lots of work but goes fine, is difficult and inefficient or almost impossible. The vast majority of 65% responded it to be demanding but that it works in the end. Fourteen percent thought it is agile and fluent and 7% thought it is difficult. No one stated the process to be almost impossible. The demand on resources is visualized in figure 21. The result is similar

to previous question that stated digitalization is seen as something that demands resources but is useful when it is up and running.

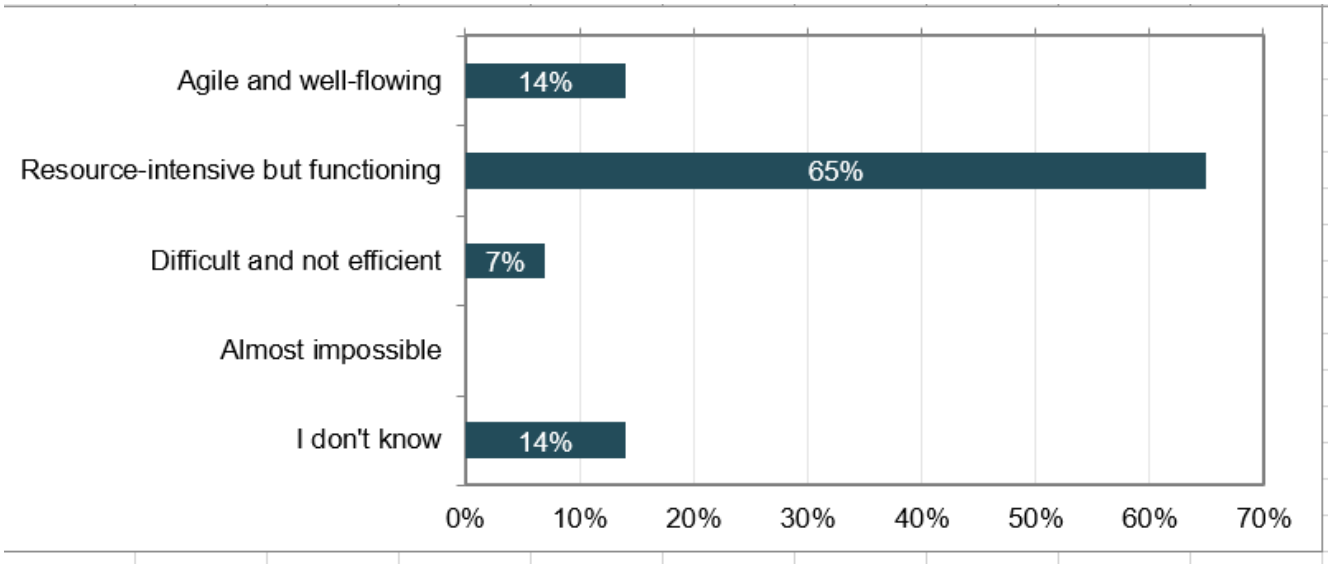


FIGURE 21. Majority of the respondents think strategic work requires a lot of resources.

To ensure the new IT-solution becomes part of the companies' daily activities and the initiation process goes smoothly, it is vital that the organization's staff takes part in the process. Positively, 46% of the staff is involved in the process of choosing, initializing and implementing the IT-solution always and 39% sometimes. One respondent stated they are not involved at all. This result could partly be because of the small amount of staff where it is natural for everyone to be involved, however also large companies state they involve staff broadly in their IT-processes.

As we look into the process in strategic viewpoint, different staff members, departments and activities play a role in finding the overall best solution for digitalization as a process. When asked if the staff is widely taking along the strategic planning process, the responses were split across all options; 39% stated the administration and management creates the strategy but staff comes along in implementing it, 29% stated creating the strategy is always a shared task and 25% stated that staff is only involved a little or not at all since strategy work is an administrative task. Seven percent did not know the answer.

In regards to staff's ability to affect and develop the company's digital solutions, it was asked if staff members are able to develop the company's digital activities and means. The answers

were given on a range of 0 to 10 where 0 means there is no way of doing this and 10 means that staff can bring up and execute digital trials or activities in order to develop the company as a whole. Most commonly this was rated between 5-8 where most common response was 6. The median was 7 and average was 6.77. Answers 2-4 were all given by only one respondent. This means that staff has somewhat good chances of developing digital practices in the companies. It is valuable to give staff members opportunity to develop their work since it not only improves happiness and wellbeing at work but also provides deep, practical understanding on the task at hand and the digital solutions that are needed in that task.

Lastly the survey asked about how much willingness or opposition the company faces when bringing in new things, such as digital solutions. This question was asked in order to find out how easy or difficult it is change business activities when the world around us is changing rapidly. Having all staff members on board during these changes is crucial in order to be successful. This question was also answered on a range of 0-10 (0=strong opposition, 10=changes are done smoothly) where, as previously, the most common answer was 6. However, the standard deviation was a little lower (1.81, whereas in previous question of ability to carry out trials and practices it was 2.12). Over 20% of the respondents chose options 9 and 10 and no one chose less than 3 which means most of the companies are quite ready and willing to carry out change. This represents that digitalization is accepted as part of business development is welcomed not only by the administration but the whole staff. In general business strategic viewpoint this is important, since change cannot be done properly without the involvement of all.

5.2.5 Competition

Strategy considers outside effects, trends, changes and competition. This part of the survey aimed to reflect on the relation between competition and digitalization strategy. The figure 22 represents the fact that most respondents have not done research on their field's digitalization. However, most companies have familiarized themselves with their customer's behaviors online as shown in figure 23. Most companies (72%) have not done research on their field's digitalization in general. Fourteen percent have done it and same number of respondents did not know if it is done. Next the respondents evaluated if their represented company was ahead (10) or behind (0) in digital solutions compared to their competitors in a

scale of 0 to 10. Almost half (43%) chose options 6 or 7 and 21% chose options 9 or 10. This means most companies feel they are on a similar level or little bit ahead of the competition, 21% are clearly ahead of their competitors.

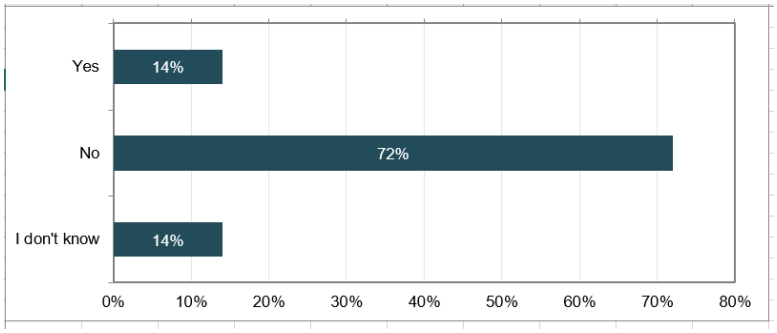


FIGURE 22. Most companies did not do research on their field's digitalization opportunities

When asked if they have gained competitive advantage through digitalization most common responses were 5 and 8. In this question 0 stands for no competitive advantage, 5 means company is in the competition but does not stand out because of digitalization and 10 means noticeable competitive advantage. The average was 6.04. This could mean that companies are often using similar digital solutions as their competitors but have not taken the role of an innovator in their field and change their business in a way that creates them clear differentiation in competition. It is worthwhile to note that this survey may be answered by people who are interested in the topic of digitalization and are therefore more eager to develop their business in this manner than others. This is the case in this whole survey but may be especially noted in this question.

Digitalization have made many businesses possible that did not even exists only a decade, or even a year ago. Digital services such as Netflix and Über have emerged in the digital era and taken over video rentals and taxi poles around the world. The respondents were asked to evaluate the chances of a brand-new digital service emerging and what kind of a risk this poses in the following five years. Almost half of the respondents (46%) stated they have prepared for the future but it feels uncertain, 25% state they have prepared well and the chances of being swiped out of competition is minimal and 11% feel that new digital service emerging to the market is a high risk. The question of predicting the future is difficult and 18% responded that they do not know.

5.2.6 Customers

As the business goes digital, the purchase path often turns digital as well. That is why it is vital to note how the customers take the digital change and if they are able and willing to follow the digital path, or if they can even find it. The last part of the survey reflects the customers' viewpoint. Firstly, 32% of the respondents stated that digital communication is their main path of sales, 21% sell via phone and 11% in a brick and mortar store. Most commonly (36%) the sales are done through some other method, such as visits to customers, in networks, by sales staff or all of the above. This question had a multitude of different answers which goes to show how complex and diverse the sales paths are nowadays.

As customers are divided in to multiple paths and sales are one in many media, it is important to know the customers skills and wants related to how they want the sale path to go. Next question was if the company has evaluated their customers' digital service usage, such as social media usage, readiness to buy online, online payment and gathering and comparing information in order to make purchase decision. The evaluation was done by about half of the respondents, where 14% did not know if it is done. 67.86% of the respondents told they have reacted to their customers digital habits, for example by using social media, by offering multitude of communication mediums, creating integrations and using electric sales systems. Half of the respondents have also noted their customers' habits and needs when developing new services. This is done for example through analysis, test sales, digital sales and following trends.

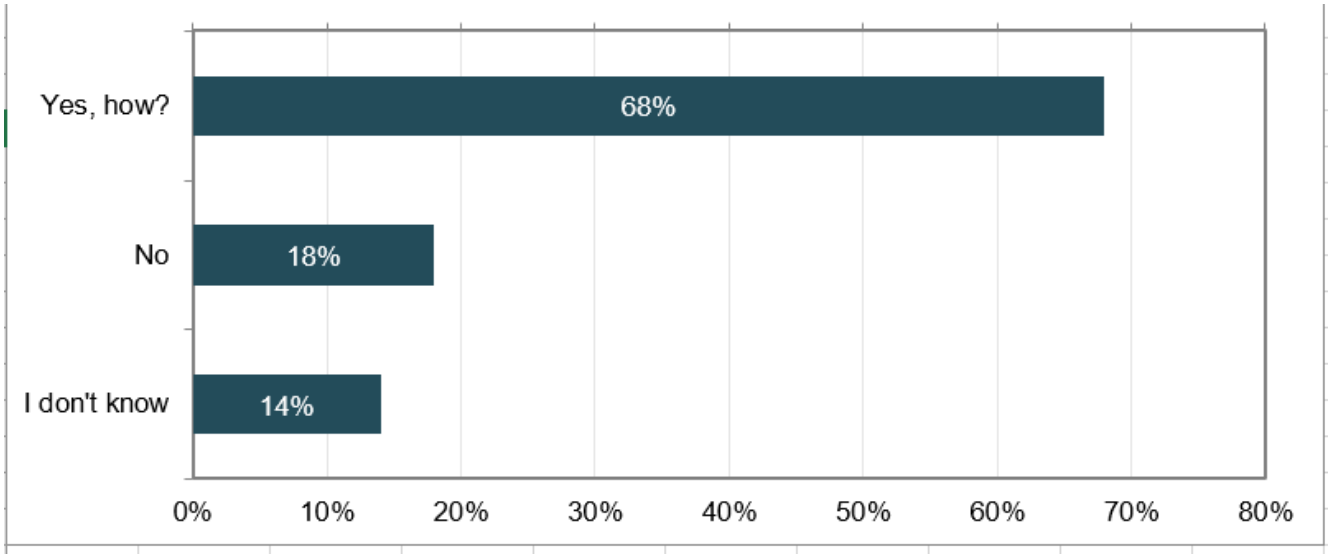


FIGURE 23. Half of the respondents have familiarized themselves with their customers' behavior.

Lastly respondents were able to give a free commentary on the topic of digitalization strategy. The responses mentioned how digitalization takes a lot of time and money which makes it hard to stay afloat especially in an industry that is diminishing. Time is not only used in on-boarding of the IT-solutions but it is hard to even find the right solutions as they emerge so fast. One respondent mentioned how it is important to secure your own business but at the same time digitalization makes business global and open, where value is created in many networks. The balance of openness and security is a challenge.

The results of this survey are regarded in the practical advice and strategy creation process which is defined in this thesis. The results of this survey mainly highlighted the lack in tools and resources available to conduct controlled digitalization strategy process. The digitalization strategy creation process and the related documents aim to provide practical step-by-step process which is practical and realistic to follow and recreate in a SME.

5.3 Research results as the foundation of strategy guide

This research was done to pinpoint the local needs and challenges of digitalization strategy creation process. The thesis section 4 Digitalization Strategy is based on the information gathered in the research survey. The key findings were that the general attitude towards digitalization is positive but the available resources are minimal. This means the digitalization strategy creation should be a straight-forward and tightly tied to the company's operational activities.

Ritter and Pedersen (2020, 181) bring forward the challenge of definitions in digital transformation and its research. There is a challenge in the fundamental conceptualizing of digitalization and digitization, digitization capacity and evolving field of digitalization. Digitization and digitalization pose a very different framework on business model development, where digitization merely streamlines existing processes and digitalization enables changes in business model itself.

As the research field is struggling with the concepts of digitalization, it is only understandable that the field appears complex to SMEs. The storytelling tools of this thesis are aimed to rationalize the topic and issues mentioned in the survey to reach practical understanding in SMEs.

6 CONCLUSIONS

The most common issue with creating a digitalization strategy among the SMEs in Central Ostrobothnia, Finland was the lack of resources, namely time. Another common theme was that strategy and strategic choices are made out of personal experience, feeling and memory rather than by using a documented strategy. In one perspective, this represents a sense of agility which is valuable in digitalization but is not usually connected with strategy. If the digital choices and even purchases are done without strategic planning, it may lead to many short projects that do not show practical business benefits.

Personal interests and previous knowledge possibly play a significant role in the attitudes towards digitalization. Whereas some companies are even started as fully digital, traditional fields may find digitalization as something to catch up on or even as an extra work in hopes of prolonging the future of the business. The willingness to adopt new ways of working is affected by the previous experiences and expectations of the matter. If digital solutions and technologies are familiar, it is faster and smoother to start using them than if it is completely new. Person may also feel that the stakes are too high to start “practicing digitalization” at the business’ cost.

An overarching theme of this thesis and the documents Digitalization Strategy as a Story and Digitalization Strategy Note Sheet is the people who are creating, using and being affected by the strategy. As described in the previous chapter, the key drivers of digitalization in an individual SME are the skills and personal work habits within the company and its ecosystem. Technical solutions are highly developed and further their usability and other features continuously. However, the technology is not used if it is not recognized as a source of value by the company’s stakeholders. The willingness to push the company forward with digitalization is the most important feature. Secondly, the resources that are available to do this shift. This thesis aims to simplify the process into “bite-size” pieces that are not far from the daily business perspective. Even though scientific knowledge on technologies themselves is widely available, it is not the key to finding the resources to actually go forward with digital strategic changes in a company.

This thesis was executed during the time of the global COVID-19 pandemic. The data was collected before the pandemic started and since then the world, business and digitalization has taken huge leaps of development. The guide for creating digitalization strategy was written during the pandemic. This huge change in global environment and business definitely has a significant, unexpected role in the making of this thesis. For future research, it would be fruitful to study how the current situation of companies' digitalization strategy work and readiness has changed over the year 2020. As digital sales have increased drastically, companies are readier than ever before to go digital. However, this pandemic was only one example of a global crisis; how will companies be ready in the future, for the unknown. Maybe the pandemic has thought everyone one important thing in strategy work; prepare for the unexpected.

Even though the pandemic pushed companies to make rapid changes in their business just to stay afloat, it is wise to think about the strategic point of view in digitalization. One could wonder if the pandemic actually increased companies' digitalization skills in a strategic way or was it only a quick response to crisis? As it is completely understandable that at the moment of struggle the main focus is on bringing the next month's bread on the table, in a long run, I hope this shared crisis can lead to strategic solutions that serve the companies for a long time.

REFERENCES

Ailisto, H. & Hiekkanen, K. 2021. *Digitalisaatio ei lisännyt tuottavuutta odotetusti - tutkijat esittävät ratkaisuja tuottavuuden nostoon.* Aalto-yliopisto. Available at: https://www.aalto.fi/fi/uutiset/digitalisaatio-ei-lisannyt-tuottavuutta-odotetusti-tutkijat-esittavat-ratkaisuja. Accessed 16.4.2021.

Kowalkowski, C., Sklyar, A., Sörhammar, D. & Tronvoll B. 2019. Resource integration through digitalisation: a service ecosystem perspective*. Journal of Marketing Managemen*t, 35:11–12, 974–991, DOI: 10.1080/0267257X.2019.1600572

Andrews, E. 2019. *Who Invented the Internet?* A&E Television Networks, LLC. Available at: https://www.history.com/news/who-invented-the-internet. Accessed 14.3.2021.

Boston Consulting Group. 2020. *Digital transformation*. Boston Consulting Group. Available at: https://www.bcg.com/capabilities/digital-technology-data/digital-transformation/overview. Accessed 3.12.2020.

Bouwman, H., Shahrokh, N. & Reuvera, M. 2019. Digitalization, business models, and SMEs: How do business model innovation practices improve performance of digitalizing SMEs? *Telecommunications Policy,* Volume 43, Issue 9. Available at: https://www.sciencedirect.com/science/article/pii/S0308596117304238?casa_token=0zhd6b0ebKIAAAAA:-HIdRRwkaKKyNyZlN0uOAF16dIRxobUyp4468B0D4lb38hsS0HaG_1Yk3PtmgDqpAh8zS-waO3g. Accessed 14.3.2021.

Centria-ammattikorkeakoulu 2020a. *Centria-ammattikorkeakoulun organisaatio.* Available at: https://web.centria.fi/esittely/organisaatio. Accessed 24.11.2020.

Centria-ammattikorkeakoulu 2020b. *Hakeminen Centriaan keväällä 2021.* Available at: https://web.centria.fi/hakijalle/kevaalla-haussa-olevat-koulutukset. Accessed 24.11.2020.

Centria-ammattikorkeakoulu 2020c. *Centria-ammattikorkeakoulun profiloituminen.* Available at: https://web.centria.fi/esittely/profiloituminen. Accessed 24.11.2020.

Centria-ammattikorkeakoulu 2020d. *Mikä ihmeen TKI?* Available at: https://tki.centria.fi/tki-toiminta/visio-ja-missio. Accessed 24.11.2020.

Clark, T., Evans, A., Sammut, P. & Willans, J. 2015. Applied Metamodelling: A Foundation for Language Driven Development (Third Edition). Available at: https://www.researchgate.net/publication/244418460_Applied_Metamodelling_A_Foundation_for_Language_Driven_Development_Third_Edition. Accessed 25.2.2021.

Dufva, M. 2020. *Megatrendit 2020*. Sitran selvityksiä 162. Sitra. Available at: https://media.sitra.fi/2019/12/15143428/megatrendit-2020.pdf. Accessed 2.4.2021.

Earner, J. E. 2014. *My Little Book of Strategy.* Helsinki*:* Alma Talent.

Emerson, M. & Sztipanovits, J. 2006. *Techniques for Metamodel Composition.* OOPSLA - 6th Workshop on Domain Specific Modeling.

Emmerich, M., Giotis A., Özdemir, M., Bäckm T. & Giannakoglou, K. 2002. *Metamodel—Assisted Evolution Strategies.* Lecture Notes in Computer Science, vol 2439. Available at: https://doi.org/10.1007/3-540-45712-7_35. Accessed 17.4.2021.

Friis, O. & Koch C. 2015. Strategy innovation with employee involvement. *International Journal of Globalisation and Small Business*. Available at: https://www.researchgate.net/publication/282828393_Strategy_innovation_with_employee_involvement. Accessed 17.4.2021.

Gerow, J. E., Grover, V., Thatcher, J. & Roth, P. L. 2014. Looking Toward the Future of IT–Business Strategic Alignment through the Past: A Meta-Analysis*. MIS Quarterly 38 (*4), 1159 –-186. Available at: https://www.jstor.org/stable/26627966. Accessed 13.4.2021.

Genova, G. 2009. *Modeling and metamodeling in Model Driven Development*
What is a metamodel: the OMG's metamodeling infrastructure. Knowledge Reuse Group Universidad Carlos III de Madrid. Available at: http://www.ie.inf.uc3m.es/ggenova/warsaw/part3.pdf. Accessed 12.4.2021.

Hajkowicz, S. 2015. *Global Megatrends: Seven Patterns of Change Shaping Our Future.* CSIRO Publishing.

Heberle, A., Löwe, W. & Gustafsson, A. 2017. Digitalization Canvas – Towards Identifying Digitalization Use Cases and Projects*. Journal of Universal Computer Science*, vol. 23(11), 1070–1097. Available at: http://www.jucs.org/jucs_23_11/digitalization_canvas_towards_identifying/jucs_23_11_1070_1097_heberle.pdf. Accessed 13.3.2021.

Henfridsson, O. & Bygstad, B. 2013. The Generative Mechanisms of Digital Infrastructure Evolution*. MIS Quarterly 37 (*3), 907–31. Available at: http://www.jstor.org/stable/43826006. Accessed 15.3.2021.

Hoe, S. L. 2019. *Digitalization in practice: the fifth discipline advantage.* Institute of Systems Science, National University of Singapore, Singapore. Available at: https://www.emerald.com/insight/content/doi/10.1108/TLO-09-2019-0137/full/pdf?casa_token=vwM1qjmjo-gAAAAA:FsGXohvySxgSNbHaZQ0yYqW5eAddXCG4NZhYPs6HgC9MH3Q-f1XLkJzFmy6sejmdXmyFWvyTENi3tJB_7GciKOFLLx6IMM7hVqbTlQLxH-8V7jjqdh8. Accessed 15.3.2021

Hokkanen, S. 2020. Digistrategia on tiekartta bisnestavoitteiden täyttymiseen. Crasman. Available at: https://www.crasman.fi/blogi/digistrategia-on-tiekartta-bisnestavoitteiden-tayttymiseen. Accessed 15.4.2021.

Hänninen, M., Smedlund, A. & Mitronen, L. 2017. Digitalization in retailing: multi-sided platforms as drivers of industry transformation. *Baltic Journal of Management*. Available at:

https://www.emerald.com/insight/content/doi/10.1108/BJM-04-2017-0109/full/html?casa_token=Azxw3UKiFNQAAAAA:t6rBdOSq73k32dI7jFz1mlj2R3t-rXhHoPHqGOXBD6DsmH5wM1qUbY9UDPrUX_M0B3jpWWX_rl06x8ArQTXUd2G_MX7V8-W57Ll3TOW2pBYT7auS3uYn. Accessed 13.3.2021.

i-Scoop. *Digitization, digitalization and digital transformation: the differences.* Available at: https://www.i-scoop.eu/digital-transformation/digitization-digitalization-digital-transformation-disruption/. Accessed 7.3.2021.

Kirkpatrick, D. 2016. *Google: 53% of mobile users abandon sites that take over 3 seconds to load*. Marketing Dive. Available at: https://www.marketingdive.com/news/google-53-of-mobile-users-abandon-sites-that-take-over-3-seconds-to-load/426070/. Accessed 3.3.2021.

Kleinaltenkamp M., Roderick, J., Brodie, P., Frow, Huges, T., Peters, D. L. & Woratschek, H. 2012. *Resource Integration*. Marketing Department, Freie Universität Berlin, Germany. Available at: https://journals.sagepub.com/doi/full/10.1177/1470593111429512. Accessed 12.3.2021.

Krasyuk, I., Medvedeva, Y., Baharev, V. & Chargaziya, G. 2019. *Evolution of strategies of retail and technological systems under broad digitalization conditions*. IOP Conf. Series: Materials Science and Engineering 49. Available at: https://iopscience.iop.org/article/10.1088/1757-899X/497/1/012124/pdf. Accessed 7.3.2021.

Lusch, R. F. & Nambisan, S. 2015. Service Innovation: A Service-Dominant Logic. *Perspective.MIS Quarterly*, vol. 39 (1), 155–176. *JSTOR*. Available at: www.jstor.org/stable/26628345. Accessed 3.2.2021.

Matveeva, A. I., Sarapultseva, A. V. & Nazarov, A. D. 2019. Analysis of spiritual socialization and personal adaptation in the period of digitalization of the economy. *Proceedings of the 1st International Scientific Conference "Modern Management Trends and the Digital Economy: from Regional Development to Global Economic Growth" MTDE 2019*. Atlantis Press. Available at: https://www.atlantis-press.com/proceedings/mtde-19/125908872. Accessed 23.2.2021.

McKay, M. 2019. *Effective Business Communication Skills.* Chron. Hearst Newspapers, LLC. Available at: https://smallbusiness.chron.com/business-communication-building-critical-skills-3166.html. Accessed 13.4.2021.

Ndung'u, N. & Signe, L. 2020. *The Fourth Industrial Revolution and digitization will transform Africa into a global powerhouse.* The Brookings Institution. Available at: https://www.brookings.edu/research/the-fourth-industrial-revolution-and-digitization-will-transform-africa-into-a-global-powerhouse/. Accessed 14.3.2021.

Nieminen, H. 2019. *Miten luoda yksinkertainen ja toimiva digistrategia?* Embu Solutions Oy. Available at: https://embusolutions.fi/miten-luoda-yksinkertainen-ja-toimiva-digistrategia/. Accessed 24.3.2020.

Parviainen, P., Tihinen, M., Kääriäinen, J. & Teppola, S. 2017. Tackling the digitalization challenge: how to benefit from digitalization in practice. *International Journal of Information Systems and Project Management*, vol. 5, no. 1, pp. 63–77. Available at: http://www.sciencesphere.org/ijispm/archive/ijispm-0501.pdf#page=67. Accessed 23.2.2021.

Pillkahn, U. 2008. *Using Trends and Scenarios as Tools for Strategy Development: Shaping the Future of Your Enterprise.* USA: John Wiley & Sons.

Prosci Inc. 2021. *Why You Need A Change Management Strategy.* Available at: https://www.prosci.com/resources/articles/change-management-strategy. Accessed 17.4.2021.

Rachinger, M., Rauter, R., Müller, C., Vorraber, W. & Schirgi, E. 2019. Digitalization and its influence on business model innovation*. Journal of Manufacturing Technology Management*, Vol. 30 No. 8, pp. 1143–1160. Available at: https://doi.org/10.1108/JMTM-01-2018-0020. Accessed 22.2.2021.

Ritter, T. & Pedersen, C. L. 2020. *Digitization capability and the digitalization of business models in business-to-business firms: Past, present, and future.* Industrial Marketing Management. Available at: https://reader.elsevier.com/reader/sd/pii/S0019850119300999?token=80D377D0E0FFA46CA7BA8B8C33F648EF5CF45E6B063ED0FB4351E0E9E5A71C7AE6EF4DE57A87CDEC36833E9AA4E8E010&originRegion=eu-west-1&originCreation=20210420071747. Accessed 1.2.2021.

Rius, A. 2014. *Why Internal Storytelling Is Key to Your Company's Content Strategy.* Relevance. Available at: https://www.relevance.com/why-internal-storytelling-is-key-to-your-companys-content-strategy/. Accessed 7.3.2021.

Roberts, G. 2016. *Schaeffler develops digitalisation strategy with IBM.* Aroq Limited, United Kingdom, Bromsgrove. Available at: https://search.proquest.com/wire-feeds/schaeffler-develops-digitalisation-strategy-with/docview/1827429016/se-2?accountid=10007. Accessed 13.2.2021.

Sestino, A., Prete, M. I., Piper, L. & Gianluigi, G. 2020. Internet of Things and Big Data as enablers for business digitalization strategies. *Science Direct Technovation*. Volume 98, December 2020, 102173. Available at: https://www.sciencedirect.com/science/article/pii/S0166497220300456?casa_token=cWBuoPBUf5IAAAAA:xd04MeV2Z5G8gMrhZZzf0lLK-N_g0Nuoq57onfd4H3p0KHtKeO8lXiHJsfYQc5w6NaMmqBqjWl8 Accessed 14.3.2021.

Stamford C. 2014. *Gartner Identifies Six Key Steps to Build a Successful Digital Business.* Gartner Inc. Available at: https://www.gartner.com/en/newsroom/press-releases/2014-05-21-gartner-identifies-six-key-steps-to-build-a-successful-digital-business. Accessed 3.3.2021.

Stiller, C. 2018. *Siemens Keynote - Digitalization strategies for enterprises.* Siemens. Available at: https://www.youtube.com/watch?v=kRPMeySmC80. Accessed 16.4.2021.

Wallenius, N. 2021. *Näin laadit digistrategian.* Wallenius Consulting. Available at: https://niklaswallenius.fi/nain-laaditaan-digistrategia/. Accessed 3.3.2021.

Zheng, D. 2020. *The 15 Second Rule: 3 Reasons Why Users Leave a Website*. The Daily Egg. Available at: https://www.crazyegg.com/blog/why-users-leave-a-website/. Accessed 4.3.2021.