LAB University of Applied Sciences

Digitalization in Finnish Technology Non-native SMEs

Guidelines for SMEs in digital consulting provided by the DigiStep project

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Mariia Markova

Abstract

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Abstract

The transition to Industry 4.0 and emerging digitalization has changed the competitive landscape for all companies. Although European SMEs undertake active measures to implement digital tools to enhance their competitiveness, smaller SMEs with less than 50 employees and that do not have technology as the basis of the business tend to digitalize slower than bigger companies.

SMEs lead highly diverse types of activity. Their employees and managers belong to different age groups and possess various backgrounds, which causes different attitudes to digitalization and differentiated levels of awareness about its benefits. Moreover, SMEs are characterized by specific decision-making processes, limitations in financial and human resources, and a diversity of skills inside the companies.

The researcher evaluated the current state of digitalization in Finnish SMEs and reviewed and analyzed some existing approaches to digitalization. Then, following the qualitative methodology and induction as the approach to theory development, the researcher conducted a literature review and empirical research on the gaps and challenges that might be addressed by means of digital consulting services.

The guidelines that facilitate the digital consulting process for SMEs were produced as the outcome of the thesis. They are developed based on the data and criteria collected at the stage of empirical research.

Keywords

Digitalization, digital transformation, guideline, SMEs, digital consulting

Contents

List of abbreviations, concepts, and terms

DESI- Digital Economy and Society Index

DII- Digital Intensity Index

OECD- the Organization for Economic Cooperation and Development

SME- organizations with a number of employees under 250, turnover of no more than EUR 50 million, or a balance sheet total not exceeding EUR 43 million

1 Introduction

1.1 Research Background

The need for digital transformation has been dramatically impacted by the transition to Industry 4.0 and the consequences of the COVID-19 pandemic (Chavez, Hauge & Bellgran 2022; Strilets, Frolov, Datsenko, Tymoshenko & Yatsko 2022). Digital transformation is a continuous process and an essential consequence of technology development and its leverage for business needs. Technology implementation is critical in this process as it facilitates efficiency, business process optimization, and excellent customer experience provision. Nevertheless, digital transformation is not only the introduction of new technologies within the company but also a significant reform of the business as a whole. It requires a change in processes, approach, and mindset. (Eric Kimberling 2021.)

The fourth industrial revolution forced businesses to adopt digital transformation, which became a vital factor for survival in a market (Saldanha 2019, 7-9). Moreover, the COVID-19 pandemic has boosted the digitalization process and made companies adopt online business models, utilize digital tools, and people-develop digital skills. As a result, digital transformation has become a condition for successful business running and competitiveness in the post-pandemic era. (Eurofound 2021.)

Successful digital transformation dramatically depends on leveraging opportunities for digitalization and the ability to address the needs and expectations of the customers (Highsmith, Luu & Robinson 2019). Palparthy (2021) claims that digital transformation is not only the implementation of digital tools and the creation of a digital presence but a process that considers improving customer experience.

SMEs play a notable role as a backbone of domestic economies and are elements of meaningful processes supplying other businesses (Bokša, Saroch & Bokšova 2020). According to OECD (2022), in Finland, 99,1% of organizations that provide 57% of workplaces are represented by SMEs. However, due to financial limitations, lack of diversified knowledge, awareness of existing opportunities, and restricted technical and managerial capabilities, SMEs are adopting digitalization at a slower pace than larger enterprises. (OECD 2017, 9-14.)

Organizations classified as SMEs lead highly diverse types of activity. Their employees and managers belong to different age groups and possess various backgrounds, which causes different attitudes to digitalization and differentiated levels of awareness about its benefits. (OECD 2017, 9; OECD 2021a.)

According to OECD (2021a), the most challenging part of the digitalization process in SMEs is taking the first step towards it. Chavez et al. (2022) state that SMEs also need a more complex approach toward digitalization, which means they implement tools that conform to their level of competence and do not take into account further development and a need for technology interoperability.

1.2 Research Objectives

The SME digitalization process is supported by the governments of European countries (OECD 2021a). The researcher works under the supervision of the teacher employed in the project, which helps SMEs to manage their digital transformation challenges. According to the project experience, SMEs are characterized by insufficient preparation for a consistent digitalization process.

The study aims to provide structured guidelines that will be easy to comprehend and follow for companies with different theoretical backgrounds and competencies in terms of technology. The guidelines will be produced to improve the consulting process in the project the researcher cooperates with. Furthermore, the aim is to inspire SMEs to undertake the digitalization steps and guide them through the process.

The objectives of the thesis are to make an overview of the current state of digitalization of SMEs in Finland and explore the gaps and challenges that should be considered when providing guidelines. The thesis outcome is to provide guidelines that can be practically implemented in digital consulting for technology non-native SMEs in Finland. The guidelines aim to provide consistency in utilizing technology by SMEs and to enable improving their competitiveness.

1.3 Research Question

The research question clarifies the specific problem addressed in the research. How the research question is formulated determines the research process, including the choice of data sources, data collection and processing, research design, approach, and method. (Saunders, Lewis & Thornhill 2016, 42.)

According to the classification provided by Saunders et al. (2016, 43), the main research question of the current study is partly descriptive and exploratory. Therefore, the main research question is:

What guidelines can facilitate digital consulting for SMEs and improve the effectiveness of their digital transformation?

To support the research process, the set of sub-questions is formulated:

What is the current state of the digitalization of SMEs in Finland?

What are the challenges that prevent SMEs from successful digital transformation?

1.4 Delimitations and Limitations

Limitations are restrictive factors in a research process that arise due to research design, data collection process, access to data, schedule, and tools. Limitations affect the strengths of the study and provide the background for future research. (Jensen 2022.)

The growth of the number of self-employed people has been a trend in past years, and currently, 76,3% of Finnish SMEs are micro-organizations employing less than ten people (OECD 2022). However, one of the most considerable delimitations of the current study is that most reviewed articles and statistical materials do not consider micro companies with less than ten employees.

The research process is limited due to the fixed timeframe of the project it cooperates with. Other limitations of the current study are associated with data collection through semi-structured interviews. The lack of primary sources might affect the generalization of findings. In addition, the reliability of collected data may vary due to possible bias and misinterpretation of questions.

Delimitations relate to research restrictions in terms of scope (Jensen 2022). Therefore, the current study will mainly focus on digitalization in technology non-native SMEs in Finland. In the context of current research, to technology non-native companies refer the organizations that do not leverage technology as the basis of their business operations (Tzanakakis, 2021). Therefore, the empirical research will include micro companies as micro- and small enterprises apply for assistance to the project the researcher cooperates with.

1.5 Theoretical Framework

In applied sciences, the theory may be developed from both practice and theory. The role of the theoretical framework is to balance the practical and theoretical domains of the theory. (Swanson & Chermack 2013, 12.)

Digital transformation in many industries could have gone smoother than expected. Experts state that one of the reasons for that is putting more attention to the technology itself rather than the human component and business perspective. Without considering a human

perspective, digitalization will likely not bring the expected result and return on investments. (Tietoevry 2022.)

According to Chavez et al. (2022), most SMEs skip the planning stage of the transition toward the Industry 4.0 application, lacking theoretical background and preparation. Instead, due to the limited budgets and investments, most small companies implement single tools chosen according to competence and capacity and gain experience directly by doing and learning from their faults. Meanwhile, the restricted financial resources and their effective allocation require clear vision and road mapping.

Gay and Szostak (2019) note that most of the frameworks for strategic innovation are aimed at enterprises, while SMEs are considered a miniature version of a big company. Yet SMEs are unique in organizational structure, evolution, and decision-making process.

Projects that support SMEs on their digital transformation journey provide guidelines and recommendations (Apuadigiin 2022). Nevertheless, practice shows that approaches are not taken into action in SMEs in most cases as the guidelines and the ways of their presentation do not address the level of competency in terms of technology, peculiarities of the decision-making process in SMEs, and the diversity of attitudes toward the digitalization process. Schallmo, Williams and Tidd (2022, 2) note that, in general, such terms as "*digital transformation*" and "*Industry 4.0*" are comprehended by many companies as abstract.

The need for SMEs' adaptation to the new competitive landscape, enabled by digitalization, is illustrated by statistics that show that 26% of new European SMEs and 18% of mature ones are exposed to bankruptcy in a year. Yet the smaller the company is, the less it is leveraging digitalization. At the same time, according to the estimation provided by OECP, SMEs with less than 50 employees are at a 10% higher risk of bankruptcy than more prominent companies. (Strilets et al. 2022.)

Organizations that leverage digital technology in their operations prefer to rely on digitally enabled suppliers that support responsiveness and allow flexibility of business (ITIL 2020). Playing an important role in supply chain performance, SMEs need to catch up with this tendency (Bokša et al. 2020).

The thesis aims to research the attitudes of SMEs to digitalization and identify challenges and gaps in their digitalization process that can be addressed by improving guidelines. The paper aims to provide comprehensive guidelines for SMEs in Finland, addressing the current state, existing challenges, and gaps.

1.6 Conceptual Framework

The conceptual framework defines critical elements of the theory, demonstrates their connection, and specifies the environment for the functioning of the theoretical framework (Swanson & Chermack 2013, 44). The inductive approach creates the conceptual framework based on collected data. In contrast, in the deductive approach, the first framework is built and tested through data collection. (Saunders et al. 2016, 74, 145.)

The conceptual framework for the current research is presented in Figure 1.

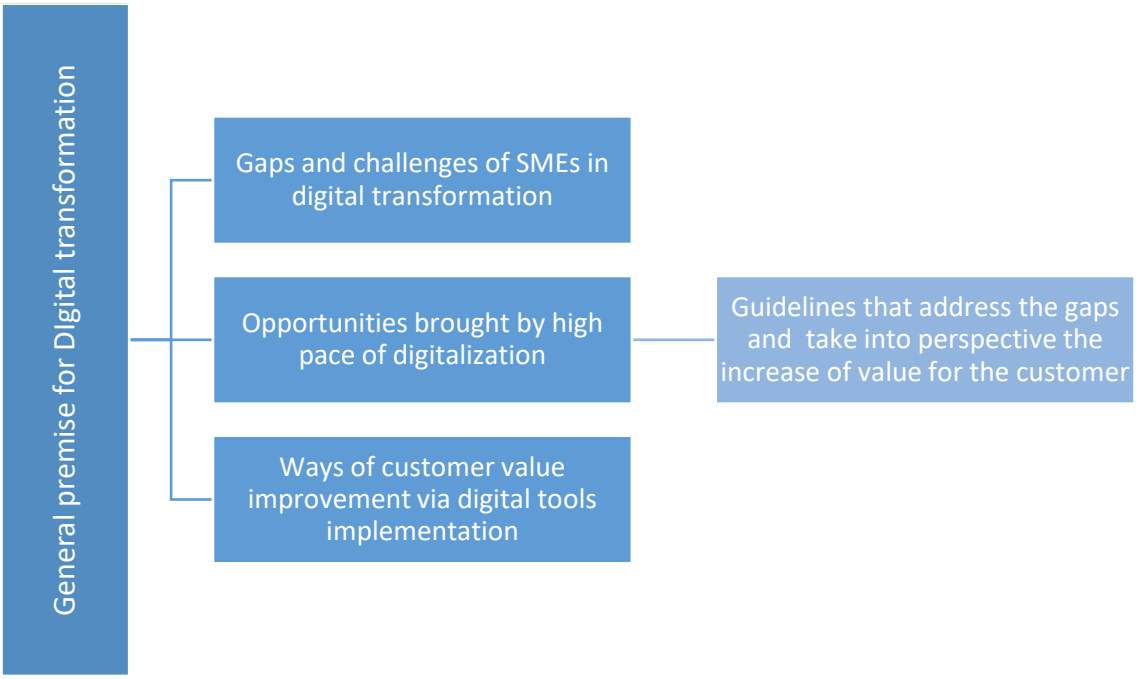

Figure 1. Conceptual framework for the development of digital transformation guidelines for SMEs

1.7 Methodology and Approach

Creating the research design as a general roadmap for finding the answers to research questions starts with determining the research methodology. Qualitative, quantitative, and mixed methods are defined depending on the type of analyzed data. (Saunders et al. 2016, 163-164.) For example, business and management-related studies treat two kinds of data and thus apply mixed methods (Saunders et al. 2016, 165). This paper will use a qualitative research method as the most appropriate.

Pragmatism will be chosen for this thesis as a research philosophy. Pragmatism considers the problems in their natural context and aims to provide research-based solutions for improving practices (Saunders et al. 2016, 137).

Induction, deduction, and abduction are the three main approaches to building theory. Deductive research progresses from creating a general hypothesis to testing its viability through specific cases. The inductive approach implements the reverse order of theory building. In the inductive approach, the research moves from a specific point to create a general idea. Then, it utilizes collected data to investigate the topic, define the scenarios and build a conceptual framework. (Saunders et al. 2016, 145-147.) Finally, the abductive approach is a mixture of the two approaches mentioned above (Suddaby 2006, according to Saunders et al. 2016, 148). It is used for theory development or transformation, considering new facts or circumstances, implementing existing knowledge, and collecting new data for theory viability testing (Saunders et al. 2016, 145).

The current research will use an inductive approach as more appropriate for understanding the reasons for the digitalization lagging of SMEs. The theory will evolve from the qualitative data collected. Saunders et al. (2016, 149) explain that the inductive approach is preferable for finding reasons for the phenomena, while deduction is more suitable for the phenomena description.

1.8 Data Collection

The sources of data are subdivided into three categories: primary, secondary, and tertiary sources. Researchers acquire primary data; secondary sources are collected or written by others. Finally, tertiary sources include materials that provide an overview of the topic based on secondary sources or put together the findings of previous research (Hoffmann 2017, 44-45).

The research processes commonly utilize both primary and secondary sources to provide an answer to the research question (Saunders et al. 2016, 318). Therefore, researchers in the business field are likely to utilize data collected from people in person, through the Internet, or through questionaries (Saunders et al. 2016, 220). Therefore, the current research will use primary, secondary, and tertiary sources.

The inductive approach to theory development requires a good understanding of the matter being studied and studies of literature about it (Saunders et al. 2016, 74). A literature review is an essential phase of the research cycle. It gives a broader perspective of the research problem. It ensures that the research study is based on existing findings and designed to contribute to further problem exploration and knowledge collection. (Creswell & Guetterman

2021, 32-33). A critical literature review of peer-reviewed articles, reports, and books will be used for current research.

Primary data will be acquired through semi-structured interviews with entrepreneurs and people responsible for business process optimization in technology non-native SMEs, mainly with less than 50 employees. According to the preliminary research, this group of companies experiences more digitalization-related challenges. Furthermore, the researcher collaborates with the project that provides digital consulting services for SMEs. Based on the estimations of the project manager, most of the client companies of the project fall into this group.

To prove the generalization of findings and get additional insights about the approach to digital consulting for SMEs, an independent expert, the CEO and founder of a company specializing in digital consulting for SMEs, will be interviewed. This will provide a broader perspective of the gaps and challenges that the thesis outcome can address.

Semi-structured interviews as a data collection technique are typical for obtaining qualitative data and consider a list of main questions prepared by the researcher. Nevertheless, the structure does not necessarily need to be identical for all interviews. The researcher implementing this technique can change the order of the questions, skip questions, or ask additional for clarification depending on the answers and the conversation course, yet keep the focus on the research topic. (Saunders et al. 2016, 391).

The main goal of primary data collection is to obtain valuable information about the gaps and challenges of the digitalization process in SMEs and to get insights to produce comprehensive research outcomes. In addition, semi-structured interviews allow a better understanding of the reasoning behind decision-making, approaches, and interviewees' points of view (Saunders et al. 2016, 394).

1.9 DigiStep

The research is conducted under the supervision of the expert employed in a DigiStep project. European Regional Development Fund supports the project. It aims to guide companies in Finland's Päijät-Häme region to implement digital solutions effectively and successfully. (LUT 2022.)

Figure 2. The project logo (LAB 2022)

The project aims to make consulting assistance from higher institutions more available to regional companies. At the same time, it seeks to develop a tool for observing the digital transformation impact. (LUT 2022.)

The project provides free assistance and support for companies in building their digital transformation roadmaps. DigiStep organizes workshops to provide guidelines for better aligning digital tools to the company's strategy. (LAB 2022.) The workshops aim to guide processes such as sales and marketing, managing customer relationships and projects, optimizing production processes, and financial management. Consulting provided by DigiStep comprises an assessment of the company's current state, reviewing and setting goals, and choosing suitable digital tools and support at the first stages of their implementation. (Liitodigi 2023.)

The workshops start with the preliminary mapping need of the company for digital tools. The process is facilitated by a digital tool and carried out before the live meeting. Later two intermediate sessions and one final consultation are provided. (Liitodigi 2023.)

According to the estimations of project leaders, among the clients of the DigiStep project prevail micro- and small enterprises with less than 50 employees. The level of digital maturity of the applicants for digital consulting services might be estimated as "beginner" according to the model of four levels of digital mastery (Figure 3). Thus, according to the estimations, the project clients mainly refer to the group of companies that leverage digitalization at the slowest pace.

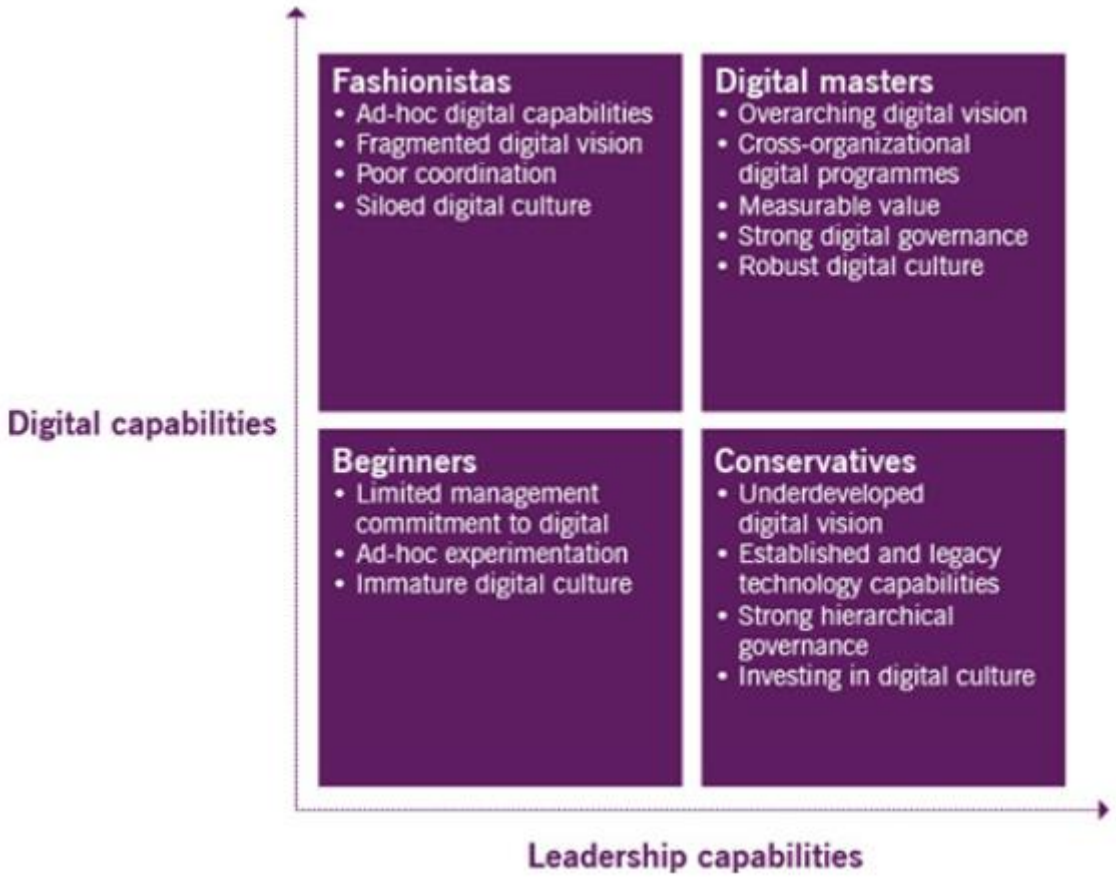

Figure 3. Four types of digital mastery (Westerman et al. (2014), according to ITIL 2020)

2 Digitalization in SMEs in Finland

2.1 Digital Transformation and Digitalization

Digitalization and digital transformation as terms are used as synonyms in many sources, although it is not absolutely correct (I-SCOOP 2017). Therefore, the clarification of these terms is provided in the following paragraphs.

The fourth industrial revolution drives digital transformation as a process. Therefore, a better understanding of digital transformation is given in light of ongoing and previous industrial revolutions that started transforming society and businesses in the 18th century (Figure 4). (Saldanha 2019, 4.)

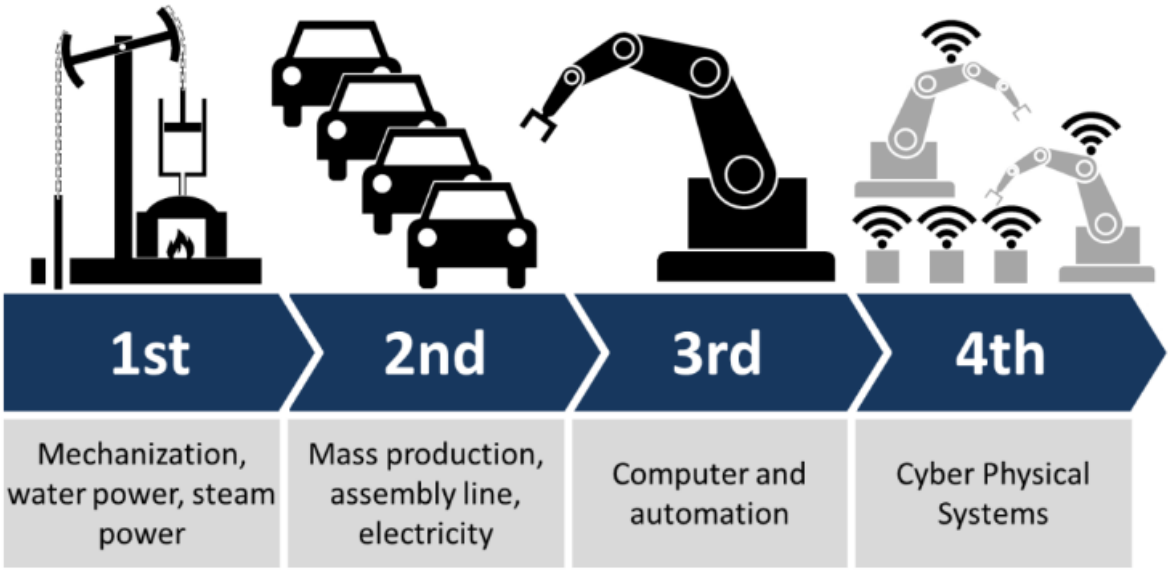

Figure 4. The industrial revolutions (All about lean 2022)

Digital transformation has a disruptive effect, pushing companies to significant changes and creating long-term competitive potential (Saldanha 2019, 7). Saldanha (2019) defines digital transformation as a process that supports the transition from the third industrial revolution to leveraging digital tools as the cornerstone of businesses. According to Tietoevry (2022), the fourth industrial revolution encourages companies to transform using data value.

According to I-SCOOP (2017), in terms of business, digitalization refers to using digitized data for making strategic decisions and improving and optimization of specific business processes. Saldanha (2019, 34) defines digitalization as the starting point and underpinning process of digital transformation when the company implements digital solutions and

explores opportunities for scalability but doesn't challenge the business model. Gobble (2018) agrees that digitalization pushes data-driven changes in organizations and may lead to digital transformation but argues that digitalization may change the business model too. Hervé, Schmitt and Baldegger (2020) clarify that impact of the digitalization on business models depends on whether a company's inner or outer processes are digitalized. A high level of digitalization at the external level might require significant changes in the company up to new business model adoption. (Bharadwaj et al., 2013; Pagani, 2013; Gray & Rumpe, 2015; Kane et al., 2015; Porter & Heppelmann, 2015; Ross et al., 2016; Schallmo et al., 2017; Sebastian et al., 2017; Autio et al., 2018; Aagaard et al., 2019; Kraus et al., 2019, according to Hervé et al. 2020). I-SCOOP (2017) adds that digitalization may bring new revenue streams and business opportunities.

Digitalization is defined as a condition of creating a digital business. Therefore, digital transformation comprises multiple aspects, including digital business. (Capgemini and MIT 2013, according to I-SCOOP 2017.) An example of a digital transformation framework is presented in Figure 5.

Figure 5. Digital transformation framework Capgemini and MIT 2013 (I-SCOOP 2017)

Despite differences in definitions and opinions on whether digitalization changes the business model, all the reviewed sources agree that digital transformation is a term that characterizes the process on a bigger scale than digitalization. Therefore, for the simplification

within the current study, the technology adoption process by SMEs can be called digitalization. However, in the context of the recent research, the difference between the terms “digitalization” and “digital transformation“ related to the company’s processes will neither facilitate the study nor affect its results.

2.2 Current State of digitalization of SMEs

2.2.1 Current State of SME Digitalization in Europe Compared to Enterprises

Digitalization in companies is accessed by the Digital Intensity Index (DII), obtained by investigating the level of Information and communication technology (ICT) and e-commerce implementation in companies. The levels of DII are described as “very low”, “low”, “high,” and “very high,” depending on the number of digital technologies and features leveraged in business (Table 1). (Eurostat 2022.)

Table 1. The conditions and features considered in DII calculating in 2021 (Adapted from Eurostat 2022)

	Conditions and features
1	Enterprises where more than 50% of the persons employed used computers with access to the Internet for business purposes
2	Have an ERP software package to share information between different functional areas
3	The maximum contracted download speed of the fastest fixed-line internet connection is at least 30 Mb/s
4	Enterprises where web sales were more than 1% of the total turnover and B2C web sales more than 10% of the web sales
5	Use any IoT
6	Use any social media.
7	Have CRM
8	Buy sophisticated or intermediate CC services (2021)

9	Use any AI technology.
10	Buy CC services used over the internet
11	Enterprises with e-commerce sales of at least 1% turnover
12	Use two or more social media.

Eurostat (2022) states that the number of companies with a basic level DII varies significantly between SMEs and enterprises. The research shows that 55% of European SMEs have reached the basic level of technology utilization, which means they are implementing 4-12 ICTs in their business activity. In comparison, the share of enterprises with the basic level of DII is 88%. The levels of DII estimated as very low and low characterize 45% and 34% of SMEs, respectively, and 3% of SMEs utilize technology at a very high level.

The more sophisticated technology is, the more significant the gap between SMEs and enterprises' adoption exists (OECD 2021a). According to OECD (2021a), SMEs primarily implement technology to enable e-commerce, provide a presence in social media, optimize invoicing administration, and interact with the government (Figure 6).

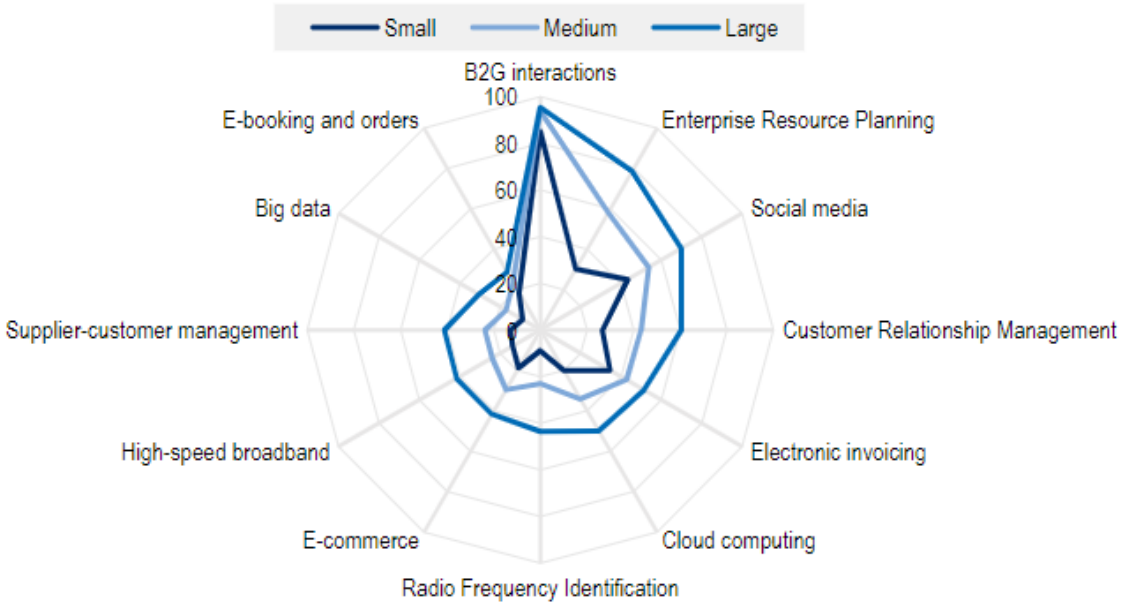

Figure 6. Diffusion rate, median OECD, based on country average percentages of enterprises using technology over 2015-18 (OECD 2021a)

According to the results of the empirical research, patterns in prioritizing the stages of digital transformation adoption by SMEs were defined. Most SMEs primarily leverage digital tools for infrastructure and internal process optimization, enhance employees with sufficient digital skills, and transform the company's culture. Meanwhile, external activities were less prone to digitalization, although they could have improved customer experience. (Hervé et al., 2020.)

2.2.2 Digitalization in Finnish SMEs

Finland follows Finland's Digital Compass as a systematic plan for digital transformation at the national level. This roadmap grids such domains as skills, secure and sustainable digital infrastructures, the digital transformation of businesses, and the digitalization of public services and has European Digital Compass as a basis with goals and topics specific to Finland (Valtioneuvosto 2022a.)

Concerning the balance of human capital, connectivity, integration of digital technology, and digital public services revealed in DESI, Finland is the leader in 27 European countries (Figure 7). The country possesses resources and capacity, and a clear vision for reinforcing its leading position in digitalization among European countries (Valtioneuvosto 2022a). Finland has reached the goal of having the 80% of the population with essential digital skills. The share of SMEs in Finland with basic DII is 82%, much higher than the European average- of 55%. (European Commission 2022.)

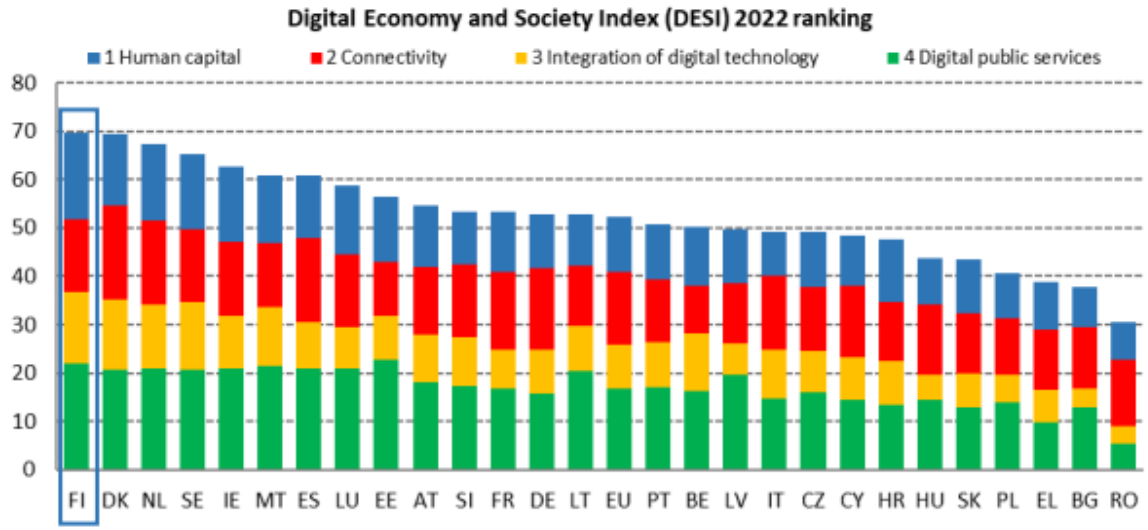

Figure 7. Digital Economy and Society Index 2022 ranking (European Commission 2022)

According to Tilastokeskus (2022), in the period 2018-2020, Finnish companies have been actively implementing innovations and digital solutions. For example, European Commission (2022) reports that 23% of Finnish SMEs leverage e-commerce, and 8% sell abroad online. Nevertheless, according to the OECD (2021b), the implementation of e-commerce by Finnish SMEs needs to be improved. The extent of leveraging digital tools in Finnish SMEs is illustrated in Figure 8.

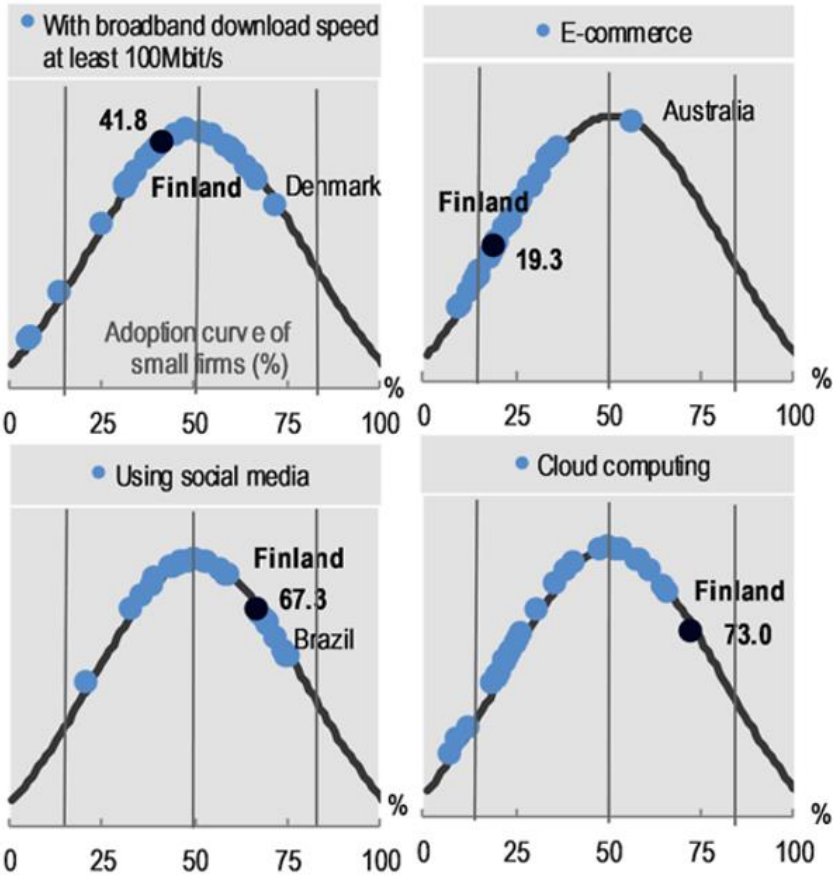

Figure 8. The Aspects of digital readiness in Finnish SMEs (adapted from OECD 2021b)

Although digitalization in companies with 10-49 employees has increased more compared to more prominent companies in 2018-2020, the SMEs with fewer employees leverage technology slower compared to bigger enterprises (Tilastokeskus 2022). A comparison of innovation activity in companies of different sizes is represented in Figure 9.

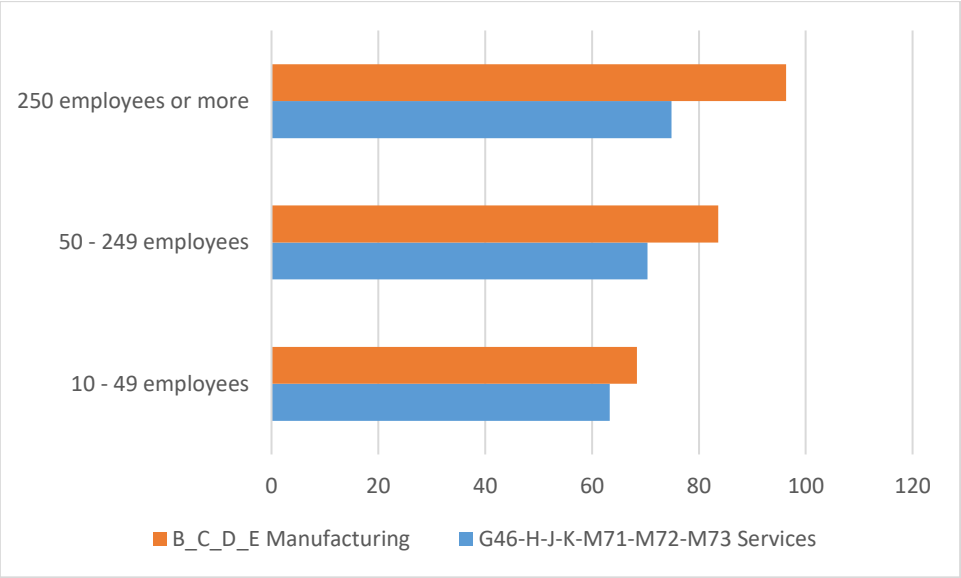

Figure 9. Innovation activity in manufacturing and services according to the company size 2018-2020, the share of companies, % (adapted from Tilastokeskus 2022)

Valtioneuvosto (2022b) notes that only 20% of Finnish SMEs consider climate change impact mitigation as a business opportunity and bringing additional value. Moreover, this is more typical for larger or oriented-to-growth SMEs. Enabling digitalization in SMEs, mainly through diversifying digital skills in society, is one of the challenges of the ongoing digital transformation process (Valtioneuvosto 2022a).

Despite the wide spread of basic digital skills among the Finnish population, the innovation skills and competencies need to be improved and represent a gap that might be an obstacle to adaptation to the post-pandemic market landscape (OECD 2021b). The level of innovation skills in Finland is shown in Figure 10.

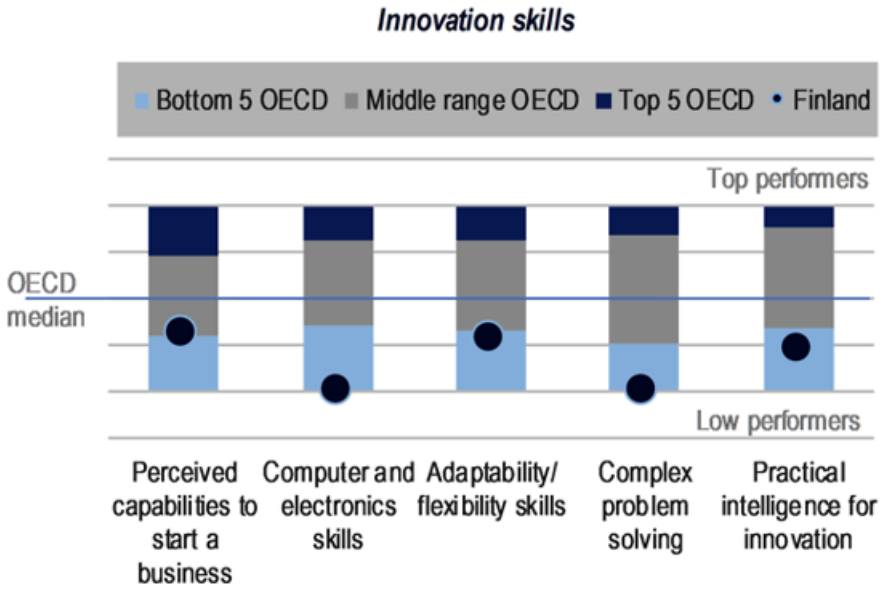

Figure 10. The level of innovation skills in Finland (OECD 2021b)

2.3 Digitalization-related Challenges and Gaps in SMEs

The transition towards Industry 4.0 components adoption requires considerable financial resources and expertise, which puts small- to medium-sized enterprises with restricted budgets, resources, and investment opportunities in unequal situations compared to enterprises. Moreover, it makes them experience difficulties surviving in a new market. (Chavez et al. 2021.)

Heilala, Helaakoski, Kuivanen, Kääriäinen and Saari (2020, 7) subdivide the factors that negatively affect the digitalization process of SMEs into three groups (Figure 11).

Figure 11. The classification of challenges and gaps of SMEs in the digitalization process (adapted from Heilala et al. 2020, 7)

The first group of factors is related to the general understanding of the digitalization process. It includes a lack of knowledge of the benefits, the manager's attitude to technology, and difficulties estimating new technology usage costs (Heilala et al. 2020, 7). In addition, Detchenique and Joffre (2012) emphasize that managers' beliefs and prejudice concerning change challenge the innovation process in the company (Gay and Szostak 2019).

The second group comprises factors caused by limited human resources and managerial capabilities. It includes restricted opportunities to get sufficient knowledge about digitalization opportunities, estimate costs and return on investments, make a purchase decision, and integrate new technology. (Heilala et al. 2020, 7.)

The third group of factors addresses the practical side of the digitalization process. It includes difficulties with the choice of tools and providers and the need for competencies to implement digitalization iteratively. (Heitala et al. 2020, 7.) Bharadwaj et al. (2013), Peppard and Ward (2016), Butschan et al. (2019), Dutta and Sarma (2020) agree that despite the awareness of the need for digital strategy, the digitalization process is often not aligned with the strategy and Initiatives do not follow a roadmap (Schallmo et al. 2022, 2).

Gay and Szostak (2019) note that the network of the leader influences strategic decision-making in SMEs, including family members, business partners, and employees. OECD (2017, 17) states that family companies possess managerial practices and administration that create obstacles to innovative changes.

SMEs track the changes in the business environment but tend to misinterpret their impact, react responsively, or provide a short-term solution. This happens due to limited resources and capabilities for information collection and leveraging it for strategic decision-making. (Gay & Szostak 2019.) According to OECD (2017), SMEs are also less successful in keeping updated about regulations than enterprises.

Every innovative change requires developing, exchanging, and distributing knowledge (Nelson & Writer 1982; Dosi 1988, according to Gay & Szostak 2019). Compared to enterprises, SMEs are less successful in innovating in a knowledge-based economy due to difficulties in finding suitable knowledge partners and networks (OECD 2017, 7; Gay & Szostak 2019). In addition, managerial practices and skills, insufficient for implementing the acquired knowledge within the organization, challenge the ability of SMEs to innovate (OECD 2017, 7).

Gay and Szostak (2019) point out that SMEs follow the principle of proximity in their decision-making, networking, resource mobilization, and development strategies. Following the proximity principle, SMEs tend to operate in a familiar environment that provides certainty

and risk minimization. Torres and Gueguen (2008) prove that the proximity principle is followed by SMEs in recruitment and search for financing when the leaders of SMEs start their search among their acquaints and network (Gay & Szostak 2019.) When it comes to international business, following the proximity principle, SMEs tend to search partners from the countries with a similar culture and legislation. Meanwhile, following the proximity principle is one of the reasons why some SME leaders avoid changes (Gay & Szostak 2019).

For firms that have been running their activity for a while, radical transformation can be a resource- and time-consuming. It motivates them to focus on internal process digital optimization. (Ross et al. 2016, according to Hervé et al. 2020.)

2.4 Reasons for SMEs to Adopt Digitalization

2.4.1 How Digital Disrupts Traditional Business Models from the Perspective of Porter's five forces

The Five Forces model, introduced by Michael Porter in 1979, is widely used in strategy development (Marburger 2016, 28). However, Evans (2017) emphasizes that digitalization has dramatically impacted all five forces. Thus, its impact should be reviewed differently when mastering a digital strategy.

The digital business might enable lower barriers to entering a market. New entrants might have more digitally advanced business models that can provide more value for the customers at a lower cost. On the other hand, the threat of substitutes has increased due to disruptive technologies, hybridization of products and services, and ease of switching to digitally enabled businesses. The suppliers are adapting to the new realities, and the rivalry has fiercened due to the opportunities provided by digital transformation. (Evans 2017.)

Evans (2017) defines the bargaining power of buyers as having the most substantial impact on the competitive landscape in the context of digitalization. Many companies took advantage of the situation and deployed new tools and digital solutions to satisfy the needs of businesses and society in new realities. (Eurofound 2021.) New digital tools for data collection and analytics made it possible to upgrade digital products to adjust them following the users' needs, thus providing more excellent value for the users and a better customer experience. This, in turn, leads to consumerization which takes place when users get high expectations of the product and get used to continuous service improvement. (Olson xvii, 2021).

According to ITIL (2020), the company does not necessarily need to become a digital organization with technology as a business basis. Yet to sustain the competition, the company must balance the technology and manual operations implemented.

2.4.2 Benefits of Digitalization in SMEs

A digitalization-enabled competitive environment requires adaptation through implementing more efficient business models, improved and cheaper business processes, optimized customer engagement, and minimization of the intermediary number (ITIL 2020). At the same time, digitalization can impact the business model by providing opportunities for cost optimization, changing existing business, or introducing new ways to bring customer value (Acciarini, Borelli, Capo, Cappa & Sarrocco 2022).

Most frameworks agree on the elements that constitute a business model (Eyquem 2017, according to Gay & Szostak 2019):

- value proposition
- complex measures and means of value creation and delivery
- revenue model and cash flows for value creation.

Schallmo et al. (2022, 17) define four groups of facilitators of business model transformation (Figure 12). First, digital data provides more effective and well-grounded decision-making and forecasting. Sestino et al. (2020) agree that leveraging such tools as big data and the Internet of Things enables analytics of customer behavior and positively impacts the competitiveness of the company (Strilets et al. 2022). Second, automation improves and expedites processes and mitigates errors and costs. Third, the tools that relate to customer access improve customer experience, impacting accessibility and trustfulness, thus creating better relations and enabling new services. (Schallmo et al. 2022, 17). For example, e-commerce significantly improves the performance of companies (Strilets et al., 2022). Fourth, connection improves networking opportunities and contributes to process improvement. (Schallmo et al., 17.) Oro (2018), Li et al. (2021), and Akhter et al. (2022) emphasize the significance of digital platforms for SMEs' business as they stimulate the innovation process by enabling the cooperation of different stakeholders (Strilets et al. 2022).

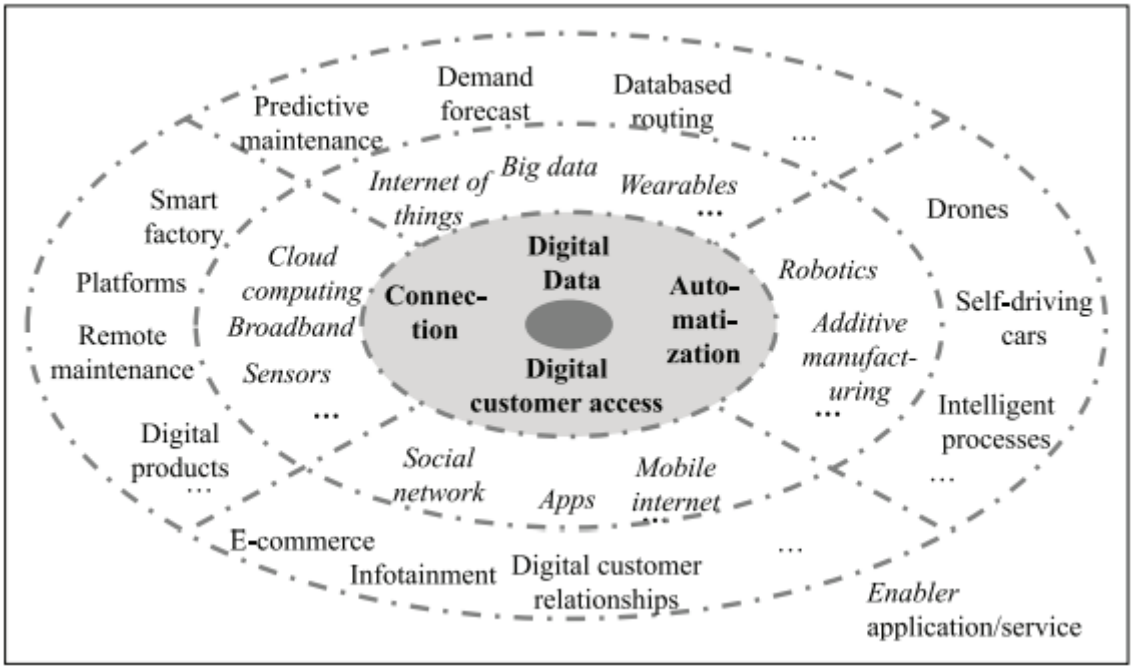

Figure 12. Digital radar of facilitators and applications (Bouée and Schaible, 2015, according to Schallmo 2022, 17)

Digital tools can improve the customer and market relevance of the organization, thus enabling companies to serve the customers in the best way, respond, and adjust to changing needs, expectations, and market realities or improve operational excellence (ITIL 2020). Digitalization enables SMEs to enhance their value proposition and connection to their customers in general. SMEs can leverage digital tools to get information about the needs and wants of customers to upgrade value propositions. Moreover, companies can use tools to implement e-commerce and provide digital presence and opportunities to be reached via digital means. (Gay & Szostak 2019; ITIL 2020.) Acciarini et al. (2022) add that digitalization can provide additional value to the customers, supply chain, and society by incorporating sustainability into the value proposition. Strilets et al. (2022) emphasize that adopting digital tools enables cross- and up-selling opportunities and improves the quality of customer services and customer experience, thus improving customer loyalty.

3 Examples of Existing Digitalization Approaches

3.1 Digitalization Framework Leveraging Disruptive Ideas

Saldanha (2019, 52) claims that when it comes to digital transformation, to minimize related risks, the actions should be taken iteratively, leveraging the feedback and experience from previous iterations (Figure 13). Only successful projects should be rolled out, while less successful ones should be killed.

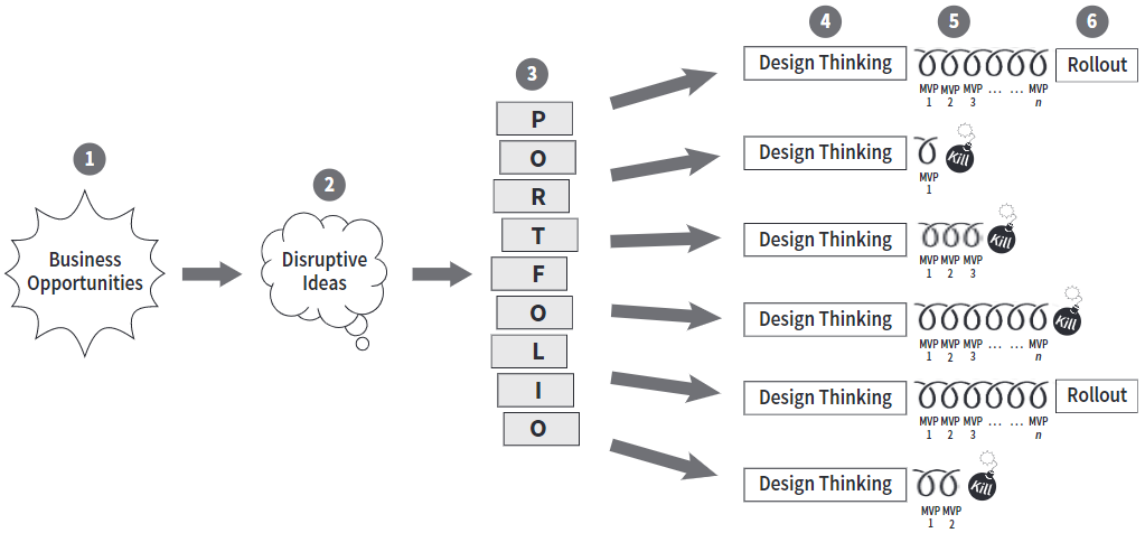

Figure 13. A framework combining iterative execution and a portfolio of projects (Saldanha 2019, 53)

Lang (2021) defines the criteria for the pilot projects to conform to the provision of success:

- quick wins
- scalability
- industry-specific focus
- concrete business purpose.

Compliance of the projects to the listed criteria will inspire the company to further digitalization adoption, demonstrate the benefits, resolve the business problem and contribute to a long-term opportunity to increase the revenue and delivered value (Lang 2021).

The presented framework is based on leveraging disruptive ideas that can be used for disruption on the ecosystem, industry, market, and organizational levels. The company may

either intentionally or unintentionally disrupt at any level or respond to disruption. (ITIL 2020.) The types of disruption are presented in Figure 14.

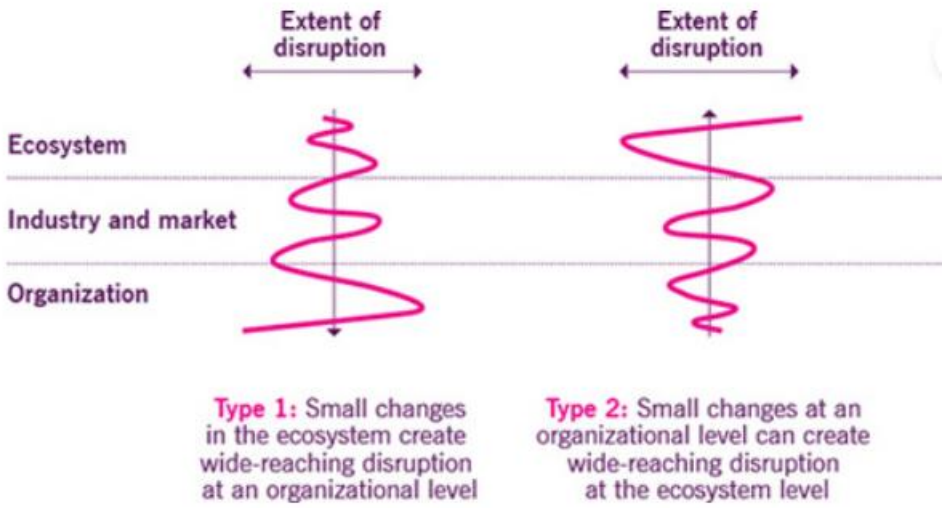

Figure 14. The types of disruption (ITIL 2020)

3.2 Meta-View of Holistic Digitalization

Schallmo et al. (2022) present four approaches for strategy-based digitalization that represent procedures and applied guidelines applicable in real business cases. According to Schallmo et al. (2022, 2), holistic digitalization can be approached from the perspective of digital strategy, digital transformation of business models, digital implementation, and digital maturity.

Approach to the development of a digital strategy

Schallmo et al. (2022, 12) describe the six-stage model for digital strategy development (Figure 15). Digital strategy is reviewed as a component of a business strategy that utilizes technology (ITIL 2020). First, implementing PESTEL and Porter's five forces frameworks for external strategic analysis consequently at macro- and micro-levels is recommended as a starting point for further scenario development for the period of about ten years. Scenarios are built considering the appropriate and significant previously defined factors and estimations of their future development (Cordon et al. 2016b; Hille et al. 2016, Kraewing 2017, according to Schallmo et al. 2022, 13). Next, the internal strategic analysis includes the digital maturity level assessment and potential discovery. The later stages involve identifying the fields for digital implementation, assessing various options, and choosing particular

measures and actions aligned with the company's mission and overall strategy that constitutes a digital strategy. (Schallmo et al. 2022, 12.)

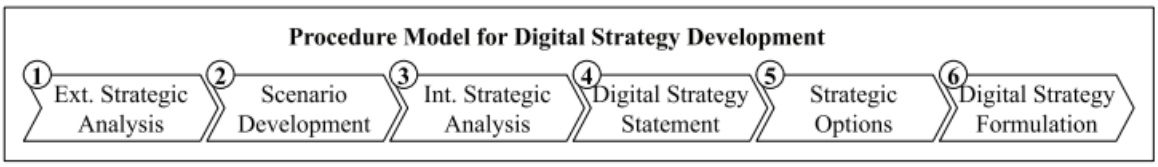

Figure 15. Procedure Model for Digital Strategy Development (Schallmo et al. 2019a, according to Schallmo et al. 2022, 12)

Approach to the digital transformation of business models

The procedure of digital transformation of business models offered by Schallmo et al. (2022, 16) comprises six stages. First, it enables the transition to a digital business model, considering a new approach to customer experience, value creation, and networking (Figure 16). The model implementation starts with assessing the company's digital reality by identifying the opportunities for improving value perceived by stakeholders and conformity to customer expectations and requirements. The later stages aim to set and prioritize objectives, define the tools and frameworks for digital transformation, and ensure that chosen business model design fits the current model and is suitable for fulfilling defined goals and customer requirements (Shallmo et al. 2022, 16).

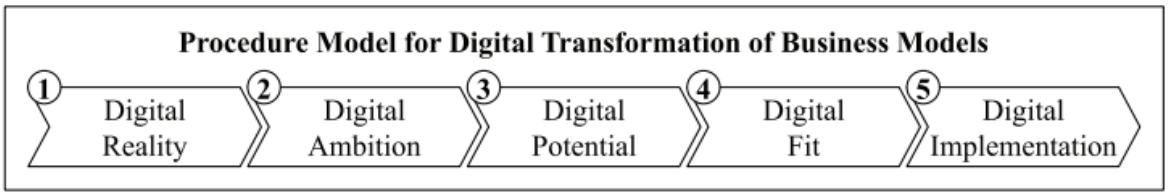

Figure 16. Procedure model for the digital transformation of business models (Schallmo, 2016, according to Schallmo et al. 2022, 16)

Approach to digital implementation

According to Schallmo et al. (2022, 18), the digital implementation procedure consists of five iterative steps (Figure 17). First, it begins with appointing initiatives based on analyzing processes, capabilities, and digital maturity. Then, in the following stages, the initiatives are

assessed in terms of timeframe, costs, and result and are categorized as, ”s*low”*, “*active*”, “*passive,*” and “*critical*” and included in visualization that represents the digital agenda. Finally, the implementation should be conducted iteratively with attention to the response of the customers to changes, measuring digital and operational success. The results are measured and compared to the goals set at the stage of building digital agenda. Defining the variation from the goal enables procedure adjustment. (Schallmo et al. 2022, 18-19.)

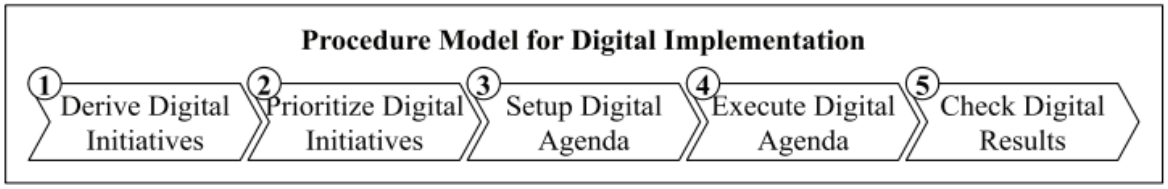

Figure 17. Procedure model for digital implementation (Schallmo & Williams 2020, according to Schallmo et al. 2022, 18)

Approach to digital maturity

The approach to digital maturity presented by Schallmo et al. (2022, 21) consists of three iterative stages (Figure 18). In the first stage, primary analysis is conducted, and the assessment review of components of strategy-oriented digitalization is done. The processes and efforts for building those components are evaluated separately from the components as results. For example, digital strategy and its procedure are analyzed separately. The evaluation scale is focused on the state of progress and initiative outcomes.

During the phase of in-depth analysis, the company evaluates, on a scale from one to four current state, potential, and relevancy not only of the digital initiatives but of all the accompanying processes, steps, and intermediate results, including strategy, vision, distribution of responsibilities, process ownership, roadmap. In addition, parameters may be evaluated in comparison to the competitors. Finally, the measurements define the initiatives for digital maturity improvement. (Schallmo et al. 2022, 22.)

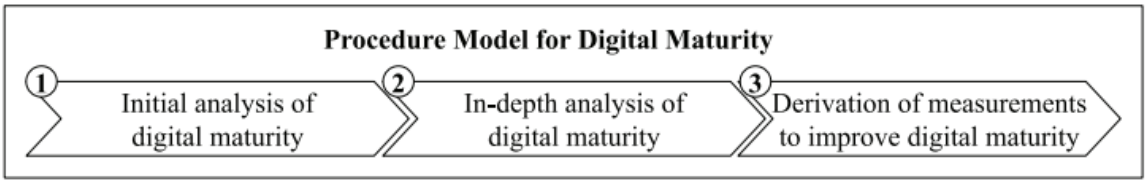

Figure 18. Procedure model for digital maturity (Schallmo & Williams 2021a, according to Schallmo et al. 2022, 21)

Combination of approaches

The approaches presented above can be implemented separately or as a complex approach due to the interdependency of models (Figure 19). The combination of procedures depends on the purpose and digital maturity state of the organization. (Schallmo et al. 2022, 22.)

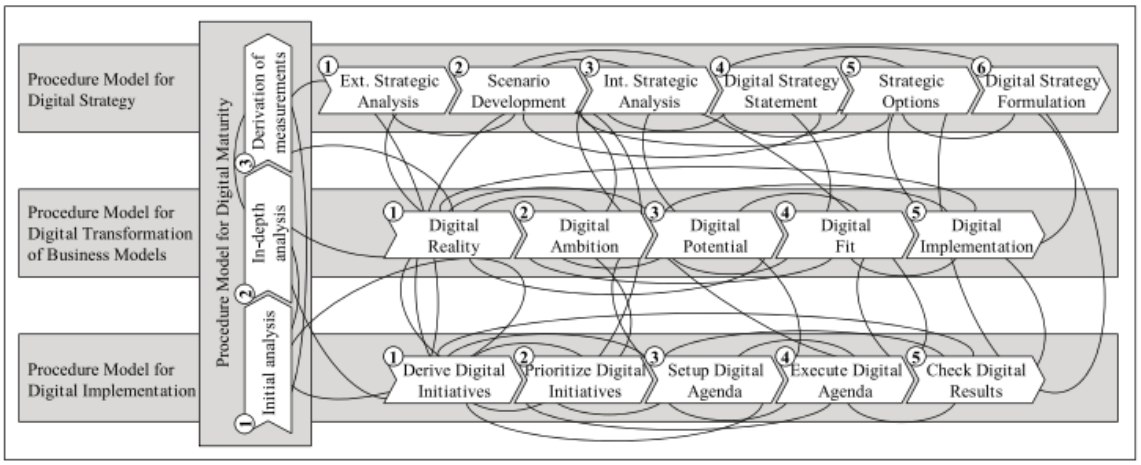

Figure 19. Combination of approaches in the meta-view of holistic digitalisation (Schallmo and Williams 2021, according to Schallmo et al. 2022, 23)

3.3 SME-oriented Framework and Tools

The framework introduced by ApuaDigiin (2020) project focuses on the digitalization process in SMEs (Heilala et al.2020, 10). As in previously reviewed frameworks in the current model digital transformation process is approached iteratively, and the phases may be implemented separately and subdivided into smaller steps (ApuaDigiin 2020).

According to ApuaDigiin (2020), positioning aims to create long- and short-term digital visions. According to ITIL (2020), vision might be an intention or ambition for solving a problem, service, or process improvement.

The positioning process includes assessing digital maturity, analyzing the strengths of the company, weaknesses, opportunities, and threats, and defining and prioritizing the areas of digitalization between optimization of internal and external processes or digital transformation of bigger scale like the change of business model. In addition, the ability of the

company to change might be estimated at the positioning stage. The iterative phases of current state estimation, road mapping, and implementation are described in Figure 20.

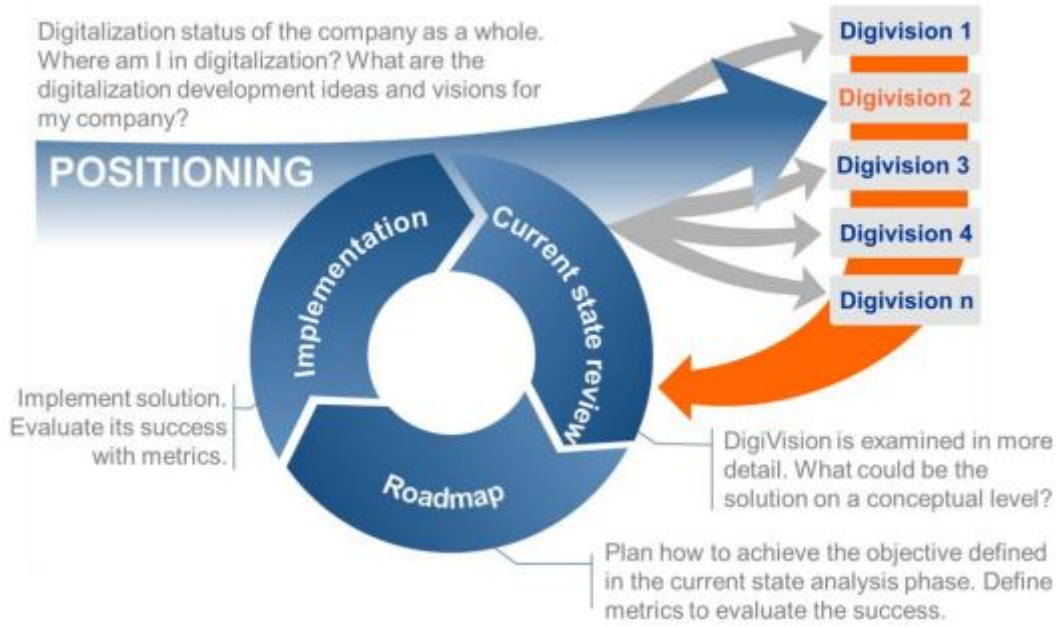

Figure 20. Digital transformation model presented by ApuaDigiin (Heilala et al. 2020)

3.4 Comparative Analysis of Reviewed Frameworks

The current paper has reviewed three approaches to the digitalization process. The first reviewed model, presented by Saldanha (2019, 53), aims to facilitate projects of a more significant scale, disruptive change, and digital transformation of enterprises. What is mentionable is that the approach does not comprise any maturity assessment stage. According to ITIL (2020), the maturity assessment and comparison to competitors are ineffective when the company intends to disrupt. Instead, it is helpful to assess resources and capabilities to determine if the company wants to repeat the successful steps made by other companies.

The approach introduced by Schallmo et al. (2022) is multipurpose and detailed. Therefore, it can be implemented for digitalization projects of different scales within organizations of various sizes. Moreover, it provides a rich theoretical background for consulting purposes. Still, it might be too complex for application in real life, especially by SMEs considering the gaps addressed in subchapter 2.3 of the current research.

Implementation of a single digital maturity model might be risky and ineffective. The risks are associated with taking too much time and choosing inappropriate parameters for goal achievement. (ITIL 2020.)

The framework introduced by ApuaDigiin (2020) is tailored for SMEs. Therefore, the digital transformation model is easy to comprehend. However, considering the gaps and challenges related to the diversity of skills and backgrounds of entrepreneurs in SMEs, and the lack of technology-related skills, the digital transformation model could have been presented in a less abstract and more simplified way.

Although the presented approaches have differences in the level of detail, complexity, and scale of change aimed, they outline similar stages of strategy and vision setting, current state analysis, and needs assessment. As a result, it enables the identification of pain points that require improvement, identifying ways and tools, processes and projects, prioritization, and implementation. In addition, despite the scale of change, all the approaches emphasize the need for a digital vision, a plan of action, iterative implementation, an ability to estimate the impact, and the need for continuous service improvement.

4 Empirical Research and Data Analysis

4.1 Data Collection

Following the current research design, semi-structured interviews were conducted to make empirical findings. Semi-structured interviews are among the most suitable methods for working with approaches (Schallmo et all. 2022, 8). Primary data collection aims to get insights for answering the research questions. Mainly it aims to reach a broader perspective of digitalization-related challenges and gaps in technology non-native SMEs that refer to the group that, according to the previous research, undertakes digitalization steps at the lowest pace. This, in turn, will help to understand how digital consulting for SMEs can be improved.

Two entrepreneurs and two top managers from Finnish SMEs, including micro-enterprises, were interviewed. Since two respondents belonged to the same company and were interviewed together, their answers will be reviewed as an outcome of a single interview. In addition, the CEO and founder of a company specializing in digital consulting for SMEs was interviewed for an independent expert opinion on the existing gaps. All the interviews were conducted face-to-face, and the record and field notes were made.

4.2 Report on Key Findings

This subchapter will represent the key findings collected by semi-structured interviews. The table presenting the key findings of the interview with SMEs shows the size of the companies according to the categories used at Finder.fi (Table 2).

Table 2. The presentation of key findings from the interviews with SME representatives

Interview	Company size	Date	Key findings
1	20-49	13.03.23	**Current state:** The company utilizes digital tools for bookkeeping and controlling contractors' obligations and liabilities. The company is not planning further digitalization now. **Gaps:** no gaps were identified, as the company is not planning to implement any new tools or provide a digital presence

			Requirements to guidelines: clear, comprehensive instructions formulated in clear words
2	1-4	13.03.23	**Current state:** The company is present in social media, utilizes programs and API for bookkeeping, and collaborates with a partner application for cost saving. **Gaps:** lack of information about life examples of digital tool implementation, insufficient information about the opportunities for collaboration with digital partner projects, and lack of networking for successful experience sharing. SMEs are unwilling to invest in solutions if the benefit is not obvious; they would want outsourced services to be available for a “trial period” at a lower budget to identify proper tools (digital marketing) **Requirements to guidelines:** easy formulations, live examples of implementation, clear benefit description and presentation
3	1-4	16.03.23	**Current state:** website, online marketing. **Gaps mentioned:** no resources for experiments, lack of information about the tools and ways of process improvement, difficulty in assessing the ROI of digital tools implementation, lack of competence, and difficulties in communicating with outsourced IT specialists. Digitalization is seen as a threat to SMEs, and previous negative experiences with e-commerce demotivate from its implementation. **Requirements to guidelines:** should be very practical, with no abstract ”modern” terms, easy to understand, and include solution mapping and ROI assessment.

Notably, during the interview processes with SME representatives, all the respondents needed clarification and an explanation of the digitalization concept. The companies primarily leverage compulsory digital tools for administrative purposes, optimization of bookkeeping, and marketing. Only respondent two had some vision concerning the digital tools that might be implemented and the understanding of the pain points of the business

that could be addressed with their usage. Yet he also mentioned the difficulties with choosing proper tools and the need for more decision-making resources.

All the respondents from SMEs emphasized that they are, to a great extent, focused on the main activity, and a consistent approach to improvement of their competitiveness and processes via leveraging digital tools remains out of focus. Moreover, most of the gaps and challenges reviewed in subchapter 2.3 were named as factors preventing the companies from more active digitalization. Among the listed factors were limited financial and human resources, lack of digital competence, and difficulties keeping updated about digital trends and tools. In addition, most respondents addressed the need for more networking and opportunities for experience sharing. Due to the abovementioned factors, many SMEs hesitate to implement digital tools because the result is only sometimes obvious, and the investments for running experiments are considerable.

Concerning digital consulting, the respondents agreed they would want to receive efficient guidelines that are easy to understand and implement. However, due to the implementation of complicated structures and definitions widely used among IT specialists and in digitalization-related publications, digitalization is precepted as something that more prominent companies deal with.

According to the independent expert opinion, consulting for SMEs differs from consulting services for more prominent companies. Due to the small diversification of skills, SMEs are characterized by a gap in knowledge and understanding of digitalization. Thus, the guidelines should be provided in the most straightforward form for better comprehension and implementation. The SMEs might hesitate to implement solutions due to a lack of understanding of work principles of tools or due to complicated approaches. The aim of consulting for SMEs is to provide tailored assistance and help to define the specific problem of the company and the easiest way to solve it.

5 Summary and Discussion

5.1 The Answers to Research Sub-Questions

The study aims to provide structured guidelines that will be easy to comprehend and followed by companies with different theoretical backgrounds and competencies in terms of technology. The objectives of the current research, reflected in research sub-questions, were to make an overview of the current state of digitalization of SMEs in Finland and explore the gaps and challenges that should be considered when providing guidelines for SMEs.

The answers to research sub-questions questions are provided in Table 3. In addition, the answer to the main research question will be provided further in this thesis.

Table 3. The answers to research questions

Research question	Conducted research	Answer
What is the current state of the digitalization of SMEs in Finland?	Literature review	Finland is the European leader in terms of the balance of human capital, connectivity, integration of digital technology, and digital public services, which enables a sufficient level of digitalization and innovation in Finnish SMEs. Yet, the level of digitalization, innovation activity and the pace of leveraging digital tools correlate with the size of companies. Consequently, micro and small companies face significant challenges that prevent them from digital transformation and result in digitalizing at a slower pace than more prominent companies.
What are the challenges that prevent SMEs from successful digital transformation?	Literature review; Semi-structured interviews with SME	Analysis of primary sources confirmed the findings of the literary review. Thus, it is reasonable to state that the first group of factors preventing successful digital transformation in SMEs is

	CEOs and managers; Semi-structured interview with the expert on digitalization in SMEs	conditioned by a limited understanding of the digitalization process, leaders' prejudice, and abstract perception of digitalization-related terms. The second group of factors is related to limited time and human and financial resources for making digitalization-related decisions and purchases. The third group of factors comprises the factors that impact the implementation stage. The companies lack consistency in approaching digital tool implementation and do not understand the importance of having a vision and a plan for digital implementation. The iterative nature of the process and the need for constant improvement are left out of focus.

5.2 The Answer to the Main Research Question and the Thesis Outcome

This subchapter will answer the main research question and provide the thesis outcome. The thesis outcome is to provide guidelines that can be practically implemented in the project the researcher cooperates with.

The answers to research sub-questions provided the baseline for the thesis outcome creation and criteria to be considered when providing guidelines. The guidelines are to empathize with the potential clients of the project and address their needs and challenges in digitalization. In addition, the guidelines aim to facilitate the digitalization process, provide consistency in utilizing technology by SMEs and consider improving the competitiveness of SMEs.

5.2.1 The Answer to the Main Research Question

Digital consulting can address the gaps and challenges regarding understanding, prejudice, and abstract comprehension of digitalization in SMEs. However, based on the literature

review and empirical research findings, the approach to digitalization and its presentation only sometimes addresses the listed factors. Cumbersome schemes and modern yet complicated terms do not support the digitalization process in micro and small enterprises as they require more time for understanding and interpretation.

The main research question was formulated: *What guidelines can facilitate digital consulting for SMEs and improve the effectiveness of their digital transformation?* The answer is provided based on the literature review and empirical research findings.

Findings of the literature review and the interviews show that SME leaders focus more on risk minimization, saving financial resources, return on investments, and the direct implementation stage. According to the empirical research findings, the approach to digitalization and its stages should be presented most straightforwardly to support more consistent and holistic digitalization practices in SMEs.

5.2.2 Guidelines for SMEs

Guidelines are produced by leveraging ITIIL frameworks, a design-thinking approach, as they aim to address the problems experienced by potential DigiStep project customers (ITIL 2020). The requirements concerning the guidelines implemented in digital consulting are collected from companies of the same size and similar level of maturity as the prevailing part of the clients of the DigiStep project.

Companies need to be more aware of the wide variety of digital tools or need help to define the exact problem or opportunity to target. Therefore, they hesitate to take steps in the implementation of digital tools. That is why it is essential to get digital consultancy services.

Publicly funded projects such as DigiStep allow SMEs to get assistance, guidance, and support in making steps toward digitalization. The professional experience of the project managers ensures a holistic and individual approach toward problem-solving and leveraging opportunities. Moreover, applying for consultancy services provides consistency in digital tool implementation and ensures an understanding of future actions that might be reasonable. Thus, consultancy services help SMEs make decisions about digital tool implementation more cost- and resource-efficiently.

Implementation of digital tools should be approached with consistency, considering the goals that the company sets, problems that it faces, and improvements it considers. Furthermore, considering the limited financial resources of SMEs, it is wise to plan future digital steps to ensure that tools will work together and provide sustainable results.

Choosing and implementing digital tools should follow a specific procedure to ensure the effectiveness and long-lasting benefits of digital tool implementation and further seamless improvements. The steps are illustrated in Figure 21.

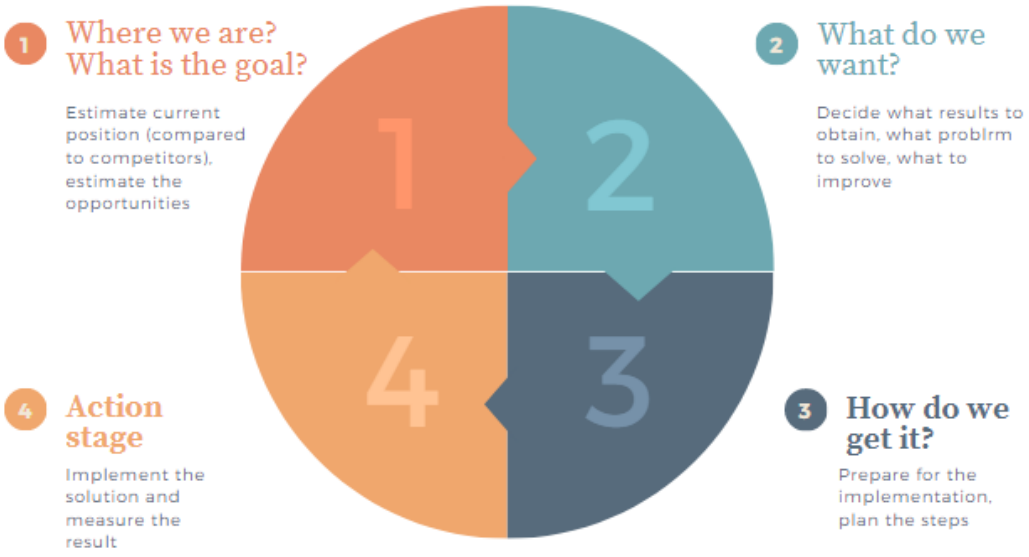

Figure 21. The steps of digital tool choosing and implementing

According to the current research, the maturity assessment stage is an essential part of the approaches to digitalization if the company is not planning disruptive changes. The DigiStep project requires customers to conduct the maturity assessment independently with provided tools. This is a preliminary action before the actual consulting. Therefore, it is preferable to complete the evaluation before defining the desired result – vision (ITIL 2020).

Defining the desired result of digital tool implementation is vital, whether it is a global change or solution for the problem, improvement of processes, saving costs, or gaining an ability to sustain the competition (ITIL 2020). Depending on the purpose, the company may choose tools to optimize internal or external processes to meet the goals, to use data analytics for better decision-making and improved customer experience.

It is essential to approach the customers considering their needs, expectations, and goals, means of interaction with the product or service. Thus, if relevant, it might be necessary to provide a digital presence, online communication, and e-commerce. In addition, digital tools enable getting valuable information about the customers by gathering feedback and statistics to improve customer relevance.

Implementing new tools should be accompanied by measuring the results and comparison to the goals that were set. To adjust to the modern market realities and stay competitive, it is essential to track the need for further improvements and repeat the process described above.

If multiple problems are detected and various tools for the implementation are chosen, the performance might be conducted sequentially at different times. This is described as an iterative approach.

5.3 Validity and Reliability

Validity and reliability are vital characteristics of the research quality. They ensure the consistency of the research method and the suitability of data obtained for analysis and logic of conclusions. (Middleton 2023.)

To ensure the reliability of the research, the data collection method was applied consistently. In addition, the questions were formulated similarly to the respondents from SMEs, with minor differences and comments when needed to provide the required level of understanding and question interpretation.

Assessment of the research validity might be approached by comparison of the research findings to the existing data (Middleton 2023). The empirical research findings are consistent with the results obtained from previous studies analyzed at the literature review stage.

The validity of the research was considered at the stage of research planning. Then, the semi-structured interviews were designed utilizing sampling methods suitable for the research purpose.

5.4 Suggestions for Further Research

The outcome of this thesis might be implemented in real life to facilitate digital consulting for SMEs. It is vital to evaluate the effectiveness of the guidelines in achieving the desired outcomes. Feedback from the project team on using the digital consulting guidelines might be collected. The level of SMEs' satisfaction with the comprehensiveness of the approach might be assessed. Therefore, the areas for further improvement might be identified.

It might be helpful to investigate the impact of comprehensive digital consulting guidelines on promoting knowledge transfer among the employees of SMEs. Therefore, it can provide a better understanding of how digital consulting can help SMEs improve their competitiveness and adapt to technological change in the long term.

References

Acciarini, C., Borelli, F., Capo, F., Cappa, F. & Sarrocco, C. 2022. Can Digitalization Favour the Emergence of Innovative and Sustainable Business Models? A Qualitative Exploration in the Automotive Sector. Journal of strategy and management, Vol.15 (3), 335-352. Retrieved on 20 January 2023. Limited availability at https://www-emerald-com.ezproxy.saimia.fi/insight/content/doi/10.1108/JSMA-02-2021-0033/full/html

All about Lean. 2022. The problem of Industry 4.0: Data!- Part 1. Retrieved on 15 Februar y 2023. Available at The Problem of Industry 4.0: Data! – Part 1 | AllAboutLean.com

Bokša, M., Šaroch, S., & Bokšová, J. 2020. Digitalization of SMEs. International advances in economic research, 2020 26.2, 175–177. Limited availability at https://lut.primo.exlibrisgroup.com/permalink/358FIN_LUT/vvk1gv/cdi_proquest_journals_2418452464

Chavez, Z., Hauge, J.B. & Bellgran, M. 2022. Industry 4.0, transition or addition in SMEs? A systematic literature review on digitalization for deviation management. The International Journal of Advanced Manufacturing Technology, 119.1-2, 57-76. Retrieved on 20 January 2023. Available at https://link.springer.com/article/10.1007/s00170-021-08253-2

Creswell, J.W. & Guetterman, T.C. 2021. Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research. Sixth edition. Harlow, England: Pearson.

Eurofound. 2021. COVID-19 and Digitalisation. Retrieved on 10 January 2023. Available at COVID-19 and digitalisation | Eurofound (europa.eu)

European Commission. 2022. Finland in the Digital Economy and Society Index. Retrieved on 23 January 2023. Available at https://digital-strategy.ec.europa.eu/en/policies/desi-finland

Eurostat. 2022. How Digitalised are EU Entreprises? Retrieved on 23 January 2023. Available at https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220826-1

Evans, N.D. 2017. Mastering digital business. E-book. BCS, The Chartered Institute for IT. Retrieved on 10 March 2023. Limited availability at https://learning.oreilly.com/library/view/mastering-digital-business/9781780173450/

Gay, C. & Szostak, B.L. 2019. Innovation and creativity in SMEs. E-book. Wiley-ISTE. Retrieved on 09 March 2023. Limited availability at https://learning.oreilly.com/library/view/innovation-and-creativity/9781786303172/

Gobble, M.M. 2018. Digitalization, Digitization, and Innovation. Research-Technology Management. 56-59. Available at DOI: 10.1080/08956308.2018.1471280

Heilala, J., Helaakoski, H., Kuivanen, R., Kääriäinen, J. & Saari, L. 2020. A review of digitalisation in the Finnish manufacturing SME companies. VTT Technical Research Centre of Finland. Retrieved on 2 February 2023. Available at https://cris.vtt.fi/ws/portalfiles/portal/42494175/Digitalisation_in_Finnish_manufacturing_SMEs_final.pdf

Hervé, A., Schmitt, C. & Baldegger, R. 2020. Internationalization and Digitalization: Applying digital technologies to the internationalization process of small and medium enterprises. Technology innovation management review. Vol.10 (7), p. 28-40

Highsmith, J., Luu, L. & Robinson, D. EDGE: Value-Driven Digital Transformation. E-book. Addison-Wesley Professional. Limited availability at EDGE: Value-Driven Digital Transformation (oreilly.com)

Hoffmann, J.P., 2017. Principles of Data Management and Presentation. California: University of California Press.

ITIL 4: Digital and IT Strategy. 2020. 1st edition. TSO. Limited availability at https://learning.oreilly.com/library/view/itil-4-digital/9780113316

I-SCOOP. 2017. Digitization, digitalization, digital and transformation: the differences. Retrieved on 10 February 2023. Available at Digitization, digitalization, digital and transformation: the differences (i-scoop.eu)

Jensen, D. 2022. Research Limitations vs Delimitations. Retrieved on 20 February 2023 Available at Research Limitations vs Research Delimitations - Grad Coach

Kimberling, E. 2021. Eric Kimberling – digital transformation. What is Digital Transformation? Here is everything you need to know. Retrieved on 26 January 2023. Available at https://www.youtube.com/watch?v=FjAq1xjBv_4

LAB UAS. 2022. Digital change with the help of the digiUP renewal model. Retrieved on 15 January 2023. Available at https://blogit.lab.fi/labfocus/digimuutosta-digiup-uudistumismallin-avulla

Lang, V. 2021. Digital Fluency: Understanding the Basics of Artificial Intelligence, Blockchain Technology, Quantum Computing, and Their Applications for Digital Transformation. E-book. Apress. Retrieved on 12 March 2023. Limited availability at https://learning.oreilly.com/library/view/digital-fluency-understanding/9781484267745/

Liiodigi. 2023. Knowledge. Retrieved on 10 January 2023. Available at https://liitodigi.fi/tietoa/

LUT. 2022. Ketterät Digistepit (Digistep). Retrieved on 04 January 2023. Available at https://www.lut.fi/fi/projektit/ketterat-digistepit-digistep

Marburger, D. 2016. How strong is your firm's competitive advantage? 2nd Edition. New York: Business Expert Press.

Middleton, F. 2023. Reliability vs. Validity in Research I Difference, Types and Examples. Retrieved on 02 April 2023. Available at Reliability vs. Validity in Research | Difference, Types and Examples (scribbr.com)

OECD. 2017. Enhancing the Contributions of SMEs in a Global and Digitalized Economy. Retrieved on 25 February 2023. Available at C-MIN-2017-8-EN.pdf (oecd.org)

OECD. 2021a. The Digital Transformation of SMEs, OECD Studies on SMEs and Entrepreneurship. OECD Publishing. Paris. Retrieved on 02 February 2023. Available at DOI https://doi.org/10.1787/bdb9256a-en.

OECD. 2021b. OECD SME and Entrepreneurship Outlook 2021. OECD Publishing. Paris. Retrieved on 25 March 2023. Available at DOI https://doi.org/10.1787/97a5bbfe-en

OECD. 2022. Financing SMEs and Entrepreneurs 2022: An OECD Scoreboard. OECD Publishing. Paris. Retrieved on 23 January 2023. Available at DOI https://doi.org/10.1787/e9073a0f-en.

Olson, T. 2021. Product-Led Organization: Drive Growth by Putting Product at the Center of Your Customer Experience. Heboken, New Jersey: Wiley.

Palparthy, P. 2021. Why Product Management is Key to Digital Transformation. Retrieved on 20 January 2023. Available at Why Product Management is Key to Digital Transformation (linkedin.com)

Saldanha, T. 2019. Why Digital Transformations Fail: The Surprising Disciplines of How to Take Off and Stay Ahead. E-book. Berrett-Koehler Publishers. Oakland. Limited availability at https://lut.primo.exlibrisgroup.com/discovery/fulldisplay?docid=alma991966398806254&context=L&vid=358FIN_LUT:LAB&lang=en&search_scope=LAB_CAMPUS_CDI&adaptor=Local%20Search%20Engine&tab=Everything&query=any,contains,why%20transformations%20fail&offset=0

Saunders, M., Lewis, P. & Thornhill, A. 2016. Research Methods for Business Students. 7th Edition. Essex: Pearson.

Schallmo, D., Williams, C.A. & Tidd, J. 2022. The art of holistic digitalization: a meta-view on strategy, transformation, implementation, and maturity. International Journal of Innovation Management, Vol. 26 (3), 34. Retrieved on 13 March 2023. Available at https://www.worldscientific.com/doi/pdf/10.1142/S1363919622400072

Strilets, V., Frolov, S., Datsenko, V., Tymoshenko, O. & Yatsko, M. 2022. State support for the digitalization of SMEs in European countries. Problems and Perspectives in Management, Vol. 20 (4), 290-305. Available at DOI:10.21511/ppm.20(4).2022.22

Swanson, R.A. & Chermack, T.J. 2013. Theory building in applied disciplines. Berrett-Koehler Publishers, Incorporated. ProQuest Ebook Central. Limited availability at https://ebookcentral.proquest.com/lib/lab-ebooks/detail.action?docID=1189357.

Tietoevry. 2022. How the Cognitive Enterprise helps you speed up your digital transformation. YouTube video. Retrieved on 20 February 2023. Available at https://youtu.be/TuA5PtIlsdY

Tilastokeskus. 2022. Innovaatiotoiminta yleistynyt kattamaan yhä suuremman osan yrityksistä. Retrieved on 20 February 2023. Available at https://www.stat.fi/julkaisu/cktwtofi84ix00b044msrf6r0

Tzanakakis, A. 2021. What is a Digital Nsative Business? Retrieved on 01 April 2024. Available at What is a Digital Native Business? (dotmodus.com)

Valtioneuvosto. 2022a. Government report on the digital compass sets the course for Finland's digital transformation. Retrieved on 20 March 2023. Available at https://valtioneuvosto.fi/en/-//10623/government-report-on-the-digital-compass-sets-the-course-for-finlands-digital-transformation

Valtioneuvosto. 2022b. SME barometer: SMEs' outlook remains positive with improved expectations of personnel growth. Retrieved on 20 March 2023. Available at https://valtioneuvosto.fi/en/-/1410877/sme-barometer-smes-outlook-remains-positive-with-improved-expectations-of-personnel-growth

Appendix 1. Approximate list of questions for the semi-structured interviews with SME managers

1. How many employees does the company have?
2. Does the company currently implement digital tools? What are they?
3. Were there any challenges in choosing and implementing digital tools?
4. What gaps and problems are most considerable in making steps towards digitalization?
5. Does the company have any plans or vision about implementing digital tools in the future?
6. Would the company like to apply for digital consultancy services?
7. What guidelines and digital consultancy services would be valuable for the company?

Appendix 2. Approximate list of questions for the semi-structured interview with an expert in digital consulting for SMEs

1. According to Your experience, is there a difference in digital consulting services for SMEs and larger enterprises?
2. Does implementing abstract terms make the consulting process more complicated?
3. What principles should be followed to make the guidelines for SMEs comprehensive?