

Mikko J. Anttonen

**EVALUATION OF BUSINESS MODEL TOOL
BENEFITS IN THE MANAGEMENT OF
DIGITALIZATION IN SMALL COMPANIES**



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ABSTRACT

Anttonen, Mikko J.

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Supervisors: Ojala, Arto; Tuunanen, Tuure

Digitalization is changing the business globally, and digital technologies affect the competitive forces that affect the company. However, digital technologies also support the adaptation and they are part of value capture and value proposition. Technology business benefits are evident, although, this requires good management of the technological capabilities and business-technology alignment. Finnish companies have excellent premises for digital business. However, application of technologies is challenging. Partly this is because lack management capabilities which affect many other things. Thus, tools that would support the management could help the companies in digitalization. Consequently, this study was set up to evaluate the potential of the business model tool to support the management of digitalization in small companies. Business model is a simplification of the how the company works, and the business model tool supports analysis, communication, and planning which are all required for managing the company strategically. On the other hand, the main problem the companies had in this study were the ability to plan the technology investments as part of the business and in the evaluation of the benefits. Thus, business model tool could support the companies with their challenges. Interestingly, it was also discovered that one major barrier of the digitalization was the lack of competitive pressure. All companies had developed basic repertoire of digital solutions, however, without long term planning and development of the capabilities, adaptation to changes, that in digital world can happen very suddenly, can be challenging.

Keywords: digital business, digitalization, digital technologies, business model, business model tool

TIIVISTELMÄ

Anttonen, Mikko J.

Liiketoimintamalli -työkalun mahdollisuuksien arviointi pienten yritysten digitalisaation johtamisessa

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Digitalisaatio on muuttanut liiketoimintaa maailmanlaajuisesti, ja digitaaliteknologiat vaikuttavat myös kilpailuvoimiin. Digitaaliteknologiat toisaalta myös tukevat yritysten sopeutumista, ja ne ovat osa arvon luonti ja arvolupausta. Teknologioiden hyöty liiketoiminnalle on todistettu, mutta hyötyjen saavuttaminen vaatii hyvää johtamista ja liiketoiminnan ja teknologioiden yhteensovittamista. Suomalaisten yritysten edellytykset digitaaliseen toimintaan ovat erinomaiset. Mahdollisuuksia ei kuitenkaan olet täysin hyödynnetty, ja tämä liittyy osaltaan johtamisen haasteisiin. Yrityksille voisikin olla hyöty erilaisista, johtamista tukevista työkaluista. Tässä tutkimuksessa selvitettiin yhden liiketoimintamalliin pohjaavan työkalun mahdollisuuksia tukea pienten yritysten digitalisaation johtamista. Liiketoimintamalli on yksinkertaistettu kuvaus yrityksen toiminnasta, ja työkalua puolestaan voidaan käyttää analysointiin, viestintään ja suunnitteluun. Tämän tutkimuksen päätuloksina havaittiin, että yritysten haasteet digitalisatiossa keskittyvät teknologioiden suunnitteluun osana liiketoimintaa ja niiden hyötyjen arviointiin. Työkalu voisikin siis tukea yrityksiä monella tavalla digitalisatiossa. Tutkimuksessa todettiin myös, että vaikka yritykset ovat luoneet hyvän digitaalisen perustan, eri suurimmalla osalla ollut selkeitä suunnitelmia kehittyä edelleen. Tämä taustalla oli hyvä liiketoiminnallinen tilanne, mikä pitkällä tähtäimellä voi johtaa ongelmiin. Digitaalisilla markkinoilla kilpailutilanne voi muuttua nopeasti, ja ilman pitkäjänteistä kehittämistä yrityksen kyky sopeutua muutoksiin ei välttämättä ole riittävällä tasolla.

Avainsanat: digitaalinen liiketoiminta, digitalisaatio, digitaaliteknologiat, liiketoimintamalli, liiketoimintamalli -työkalu

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1 INTRODUCTION

Digitalization is globally a very topical concept and refers to the general phenomenon, enabled by digital technologies that is changing the society at all levels. Similarly, *digital economy* refers to business enabled by digital technologies (Turban & Volonino, 2010, p. 4). In general, *digital technologies* include information, communication, and connectivity technologies, however, technological development is fast and it produces continuously new innovations that shape activities, products, and services (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013). Continuous technological development and global nature of competition in digital economy together with changing customer requirements sets pressure to companies keep up with this development. This requires change and the change has been referred with many terms. *Digitization* is used when specific activities and transformed into digital form, whereas or *digital transformation* refers to a more holistic change and, thus, in essence it means the same as digitalization (Berman, 2012; Parviainen, Kääriäinen, Tihinen, & Teppola, 2017).

The state of business digitalization in Finland has been described in many recent reports (Digibarometri, 2016; Digibarometri, 2017; Microsoft, 2017; PALTA, 2016; TIVIA, 2015; Yrittäjät, 2016). Many of these reports focus on small and medium sized enterprises (SME) which are also under the lens in this study. On a global scale, Finland has excellent premises for digital economy which means extensive technological infrastructure and customer readiness. However, companies have challenges in applying the potential of digital technologies in practice. (Digibarometri, 2017; TIVIA, 2015). Problems may be related with lack of technological understanding, business and technology capabilities and investments (TIVIA, 2015) together with negative attitudes (PALTA, 2016). In a report focusing on Finnish service sector companies, negative attitudes were found especially among the small sized companies (PALTA, 2016). However, problems are not only limited to small companies. According to a report by Microsoft (2017), of the companies in the Finnish top-100 group, only 15% had reached the level of global top performers in digital business.

Despite of the challenges with the digitalization in Finnish companies, the phenomenon is not something that companies have afford to ignore. Digitalization has been reported to be linked with many other benefits including growth of profitability and size, better customer service and development of business opportunities (PALTA, 2016; TIVA, 2015; Yrittäjät, 2016). Furthermore, it has been noted that the benefits of continuous development of digital technologies and their applications in companies or within an industry usually realize quite suddenly leaving those not aboard far behind in the competition (Hämäläinen, Maula, & Suominen, 2016, 22-23). Consequently, according to a report by The Boston Consulting Group (2016), keeping up with the development requires continuous development on the whole society level.

Digital business is not just doing things with the help of technology but creating new business models based on the possibilities created by them (Kane, Palmer, Phillips, Kiron & Buckley, 2015). In digitally mature companies, technology is integral part of organization strategy which requires understanding of technology business benefits from the bottom to the top (Kane, et al., 2015). However, this is not easy to achieve, and it has been recognized as a persistent, global concern (Luftman, Derksen, Dwivedi, Santana, Zahed, & Rigone, 2015).

In practice, management of digital business requires ability to align technology with business (Henderson & Venkatraman, 1993) which has been shown to have a positive impact on business (Gerow, Grover, Thatcher, & Roth, 2014). Furthermore, in the age of digital economy, all areas of business are strongly influenced by digital technologies and digital business strategy is needed to gain the full potential out of them (Bharadwaj et al., 2013). *Business model*, on the others hand, can be used as a tool for management to conceptualize and support the strategy implementation (Casadesus-Masanell & Ricart, 2010). Turban and Volonino (2010) have defined business model in the context of digital economy as follows:

A business model is a method for doing business by which a company can generate revenue to sustain itself. The model spells out how the company creates or adds value in terms of goods or services the company produces in the course of its operations. (Turban & Volonino, 2010, p. 9)

Practical applications, like the business model canvas by Osterwalder and Pigneur (2010) has been also been derived from the business model concept, and in this work referred as *business model tools*. Furthermore, many management methodologies have been developed for change, including digital transformation, in which the business model and business model tool sets the foundation for the work (Blank, 2013; Osterwalder & Pigneur 2010).

Given the significance of digitalization in business and the challenges in applying it in Finnish companies, studies are needed to address the problem. Different reports have extensively identified that companies in Finland, especially in the groups of SMEs have problems in applying digital technologies in practice. On the other hand, digitalization depends mainly from the ability to manage it correctly. Business model tool can help the management of business in many

ways. Although, business model has been widely investigated, even in the context of digital business, not many studies have not focused on business model as management tool. Consequently, in this study the aim is to evaluate if business model tool could support the management of digitalization.

Small companies service companies were selected as the target of the study since problems with digitalization are common especially in this sub-group among SMEs (PALTA, 2015; Yrittäjät, 2016). Narrowing down the target population of the study can also reduce the variation caused by external factor. This was further supported by selecting companies from the Central Finland area. Central Finland is one of the Finnish regionally administered areas which are responsible for example developing the markets and entrepreneurship. Thus businesses can be expected to be adapted to same type of markets. Furthermore, Central Finland was under the scope of the study due the requirement of regional impact of the universities by the Finnish government. Similarly, practical significance and studies concerning public interest has also been demanded by others (AIS, 2015; Luca, Agarwal, Clemons, El Sawy, & Weber, 2013). In conclusion, the main research question and supporting questions are:

Does business model tool benefit the management of digitalization small companies?

1. How do digital technologies support business and how they should be managed?
2. How digitalization is managed and what are the challenges?
3. What is digital business model tool and how does it support management digital business?

Answering these questions based partly on empirical work and partly literature analysis and the process is described in figure 1. The aim of empirical part of the research was in the understanding how digitalization was managed and what was challenging in it. The analysis of the selected companies was based on digitalization framework that was created based on literature review and qualitative research approach with semi-structured interviews was used. Following this, literature analysis was used to understand the possible benefits of the business model tool.

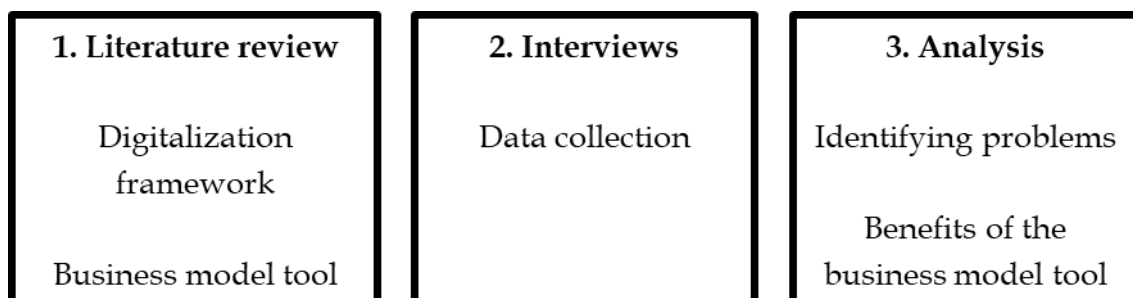


FIGURE 1 Phases of the study

Essentially this research is about supporting the use of digital technologies or generally information system is business. Thus, the research fits well to the information systems research tradition and especially to the research areas of information technology and organizations under which implication of technology on organizational level is examined in various contexts like on strategic level (Sidorova, Evangelopoulos, Valacich, & Ramakrishnan, 2008).

2 HOW DIGITAL TECHNOLOGIES SUPPORT BUSINESS AND CHALLENGES FACED BY FINNISH SME'S

Digital economy or digital business is more than just using digital technologies for specific functions. In this chapter the aim is to explain, what it means in practice i.e. the aim is to define digitalization in the context of business. In essence, digital business is a new way of doing things based on the possibilities provided by the technology. However, this requires technological fluency within a company from top to bottom and understanding of the mechanisms, how the full potential of technology business benefits is realized.

This chapter will answer the question: How do digital technologies support business and how they should be managed? Firstly, strategic level view of business together with ideas, how digital technologies are part of the strategy work are introduced. Next, management of business-technology alignment concept and practice are described. Finally, as summary, the main elements of digital business management are described, and the challenges faced by Finnish companies in managing digitalization.

2.1 How digital technologies support competitive advantage

Digital technologies can support companies to compete with their rivals. However, the full benefits of technologies can be gained when they are embedded in the strategy work. This subchapter takes a theoretical view on how technology supports competitive advantage. Largely, the discussion is based on the works by Michael Porter, whose ideas on strategy have been very influential around the world for decades and which have been used widely to support business model research. The chapter serves as the foundation for understanding the technology management issues which will follow in the next sub-chapter

2.1.1 Understanding the competitive environment is the first step in the strategy work

Strategic management is a large field of study and generally, strategic management is about planning organizational activities to achieve objectives based on external and internal factors (Nag, Hambrick, & Chen, 2007). The result of the work is *strategy* which can be understood as a plan, how a company aims to achieve its goals. Finally, the aim of the strategy is to build *competitive advantage*, which means advantage over rival companies in providing value for the customer (Turban & Volonino, 2010, 18).

Wide variety of environmental factors affect the strategy work (Turban & Volonino, 2010, 15-16), however, according to Michael Porter's *Five Competitive Forces Model* (Porter, 2008) those that have the most significant effect on profitability within an industry are: 1) threat of new competitor, 2) bargaining power of suppliers, 3) bargaining power of customers, 4) threat of substitute products, and 5) rival companies. The impact of the competitive forces varies depending on the industry and, consequently, strategy work is about finding a value position in which the forces are weakest and, thus, the profitability highest (Porter, 1996; Porter, 2008).

Digital technologies have changed the impact of the competitive forces (Porter, 2001). For example, e-commerce has increased the bargaining power of the customer due to wider, global options for shopping and the growth of the e-commerce strongly affects the other forces as well like lowering the entry barrier of new competitor to the markets. On the other hand, electronic platforms for building ecosystems of companies can have an opposite impact on the customer bargaining power. Unique value provided within the ecosystems build on the platform, like for example Apple smartphones, has increased the switching cost and lowered the bargaining power of the customer (Porter, 2001).

The analysis of the competitive forces is the starting point of strategy work (Porter, 2008). Since digital technologies have such a strong impact on these forces, technology understanding is required on the strategic management level (Porter, 1985; Porter, 2001). Furthermore, technology provides many tools to understand the competitive forces these better (Chen, Chiang, & Storey, 2012) which emphasizes the importance of technological fluency. However, the understanding of the environmental is just one part of the strategy work. Next subchapter continues with ideas on, how a company should respond to the external factor.

2.1.2 Internal factors should reflect the competitive environment

Understanding of the of competitive environment supports the planning and execution of the internal activities for highest profitability. According to Michael Porter (1996) this is about being different compared with your rivals and the essence of this is performing different activities and/or performing them differently and this is referred as *strategic positioning*. Porter's view on strategy is not the only one and other theories emphasize the significance of resources or ability

to create opportunities. However, according to Sambamurthy, Bharadwaj, and Grover (2003) all of them have their strengths and weaknesses when it comes to understanding the role of technology in building competitive advantage. Consequently, Porter's ideas were selected as the foundation of this study. The choice was also supported, firstly, by a large body of highly cited literature around the topic. Secondly, many other ideas about the technology business benefits that will be discussed later in this chapter are built on the same ideas. Similarly, the business model concept, discussed in the next chapter, builds also on these same ideas (Morris, Schindehutte, & Allen, 2005; Wirtz et al., 2016). Thus, good understanding of Porter's views is pivotal for this study.

Strategic positioning (figure 2) through the analysis of competitive forces help to find a profitable *value position* (Porter, 1996; Porter 2001). This means, creating a *value proposition* i.e. the full extent products and services provided a company, that attracts sufficient number of customers. However, the position needs to be secured from the competition and this requires being different to the competitors and/or doing different things. Secured position protects the company from the competitive forces and keeps the business profitable giving sustainable competitive advantage. The components of building the position include: 1) operational effectiveness, 2) trade-offs or focus, and 3) fit (Porter, 1996; Porter 2001).

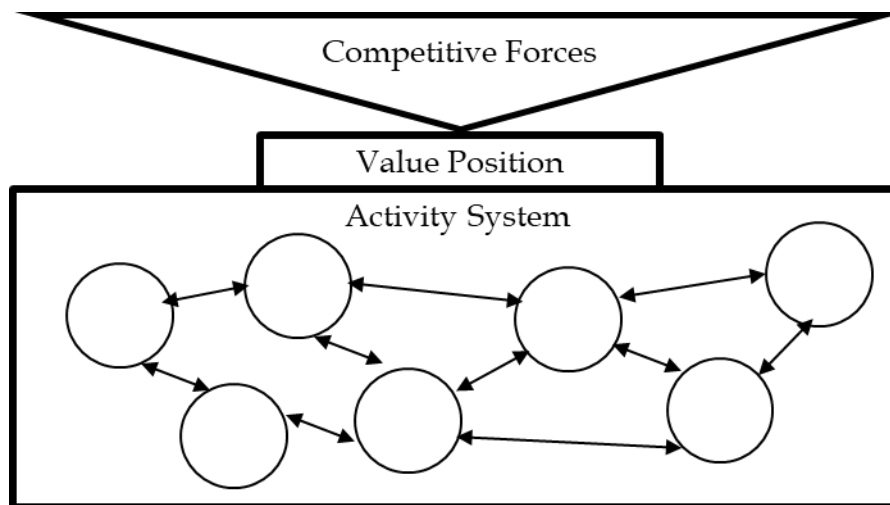


FIGURE 2 In strategic positioning the competitive forces are reflected by the internal activities.

The first component of positioning, *operational effectiveness* was a long time the spearhead of building the competitive advantage, however, is not anymore viable approach, alone in the competition against rivals (Porter, 1996). Operational effectiveness is required for productivity, quality and speed which are important in the competition but can be easily imitated. Consequently, competition based solely on developing this, eventually leads to a situation of diminishing returns. The benefits of operational effectiveness are best realized when it is embedded

within complex *activity system* i.e. network of activities that build the value proposition. The complexity of the activity system is founded on *focus* and *fit*. This means, firstly, that only the activities that support the value proposition are profitable. Secondly, the network of supporting activities creates a system effect that produces higher value. Complexity can be increased with layer of activities that build focus and fit which eventually makes the value position of a company harder to copy and supports the sustainable competitive advantage (Porter, 1996). Digital technologies can support the building of the value position in many ways, which emphasizes the importance of understanding them at the strategic management level (Porter, 1985; Porter, 2001) and next the discussion will continue with this topic.

2.1.3 How does technology support competitive advantage?

The foundation of applying digital technologies as strategic assets, is understanding of their benefits, which is why it has been studied a lot (Schryen, 2013). Numerous organizational factors have been identified to affect the realization of the technology benefits, and studies have produced variable results about the value of technology (Cao, 2010). However, the *productivity paradox* derived from these conflicting observations has been disproven. The paradox has been shown to be related with the complexity, how the benefits are realized and with lack of understanding about what should be measured and how. Consequently, when these issues are acknowledged, and applied in studies, technology benefits are evident (Gerow et al., 2014; Mithas, Tafti, Bardman, & God, 2012.). The ability to measure the technology benefits is important from the strategic point of view. Continuous development through strategic adaptations requires the ability to measure the benefits. Thus, holistic understanding about the mechanisms how technology supports business is required (Martinsons, Davison, & Tse, 1999.).

Digital technologies support strategic positioning as part of attractive value proposition and in the value creation. However, this requires *technological capabilities*, which can be widely understood as ability to use technology to resources to support business (Tan, Pan, Lu & Huang, 2015). On the other hand, this does not mean that technological capabilities as such are the determinants of competitive advantage, at least not on the long run, since they are widely available and do not protect companies from the competitive forces (Chae, Koh, & Prybutok, 2014). Instead, sustainable competitive advantage can be gained through *capability-building process* or *dynamic capabilities* (Sambamurthy et al., 2003), which means continuous development of capabilities and integration of them with other activities i.e. technology-business alignment. This is especially required in the turbulent environment of digital economy, and it helps the company to adapt by continuously developing its value position. The next sub-chapter continues explaining more about the management of technology-business alignment and, here, a model by Sambamurthy et al. (2003), that describes the connection between technological capabilities and competitive advantage is next presented.

The model is not the only one and for other similar models see for example the summary in Tan et al. (2013).

The model by Sambamurthy et al. (2003) answers, how digital technologies could support a company in the competition with other companies. The essence of the model is agility because the authors see that in digital economy the ability for continuous adaptation is pivotal. The model is built on views about strategy, entrepreneurship, and IT management. Competitive advantage of a company is described as the number and complexity of *competitive actions* which refers to new products, services, distribution channels, or market segmentations. At the core of the model lies three dynamic capabilities that provide flexibility (figure 3). These capabilities are based on organization IT competency and they are activated by strategy processes (Sambamurthy et al., 2003).

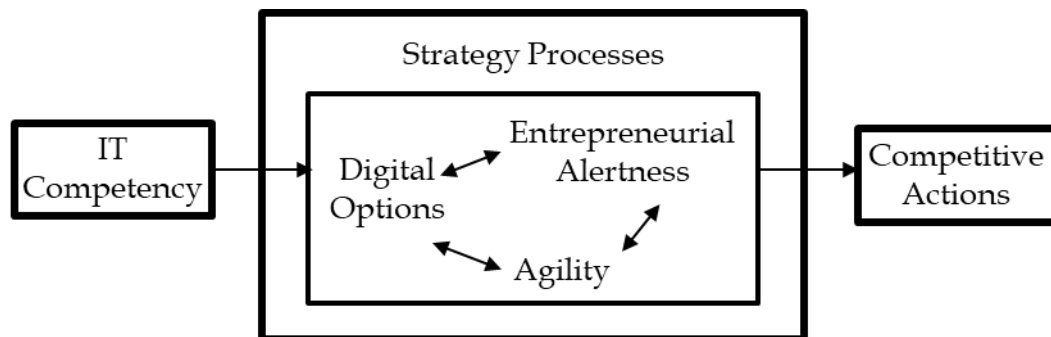


FIGURE 3 How technology could support competitive advantage.

IT competency refers to the company's technology resources and capabilities and important elements include IT investments, infrastructure quality, human capital, and partnerships (Sambamurthy et al., 2003). The effect of IT competency on performance as competitive actions is mediated through three dynamic capabilities which are all supported by various digital technologies. First, *agility* has three dimensions: 1) customer agility mean the co-operation with customers, 2) partnership agility is about gaining value from networking, and 3) operational agility means ability to redesign and create new processes in exploitation of opportunities. Second, *digital options* refer to how widely digitized processed are applied and quality of data collected form them together with availability and impact of digitized knowledge. Third, *entrepreneurial alertness* essential to active previous capabilities for innovation and competitive actions. It has two dimensions of which strategic foresight is about analysis of the environment and systemic insight is understanding interaction of digital options and agility with marketplace opportunities (Sambamurthy et al., 2003).

Digital technologies support competitive advantage when they are applied at whole company level starting from the strategy. The ideas presented here serve as the foundation for taking them into practice to support strategic positioning. However, success in practice depends also on the management, of which the next subchapter continues.

2.2 Digitalization requires management of business and technology alignment

The previous sub-chapter introduced the idea how digital technologies can benefit the business. However, achieving this is not straightforward. Many other factors, like organizational factors, IT adoption, or IT governance issues, interact with technology implementation and which might lead to variable results (Cao, 2010.). Further, the ability to manage technology properly, has been shown to relate with the performance of the company (Gerow et al., 2014). Consequently, technology management has been recognized globally as one of the main obstacles in achieving the technology benefits (Luftman et al., 2015). Thus, in this chapter, the focus will be in the management of technology. The inspection here starts with on the Strategic Alignment Model by Henderson and Venkatram (1993), which is then further complemented with the management ideas from later research building on that model.

2.2.1 Business and technology alignment model

The *Strategic Alignment Model* by Henderson and Venkatram (1993) repeats the same ideas as presented above while explaining the strategic positioning concept. Strategic Alignment Model was developed to address the problem of functional separation between business and technology to gain value from technology investments (Gerow et al., 2014). The model is not the only one addressing the idea of alignment, but it is one the most cited ones. The outlines of the Strategic Alignment Model are shown in figure 4. What is important in the model is that business and technology are both equally valued when searching for the value position. This does not mean that they are separate. It means that neither is subordinate to the other. Business and technology should reflect each other which leads to alignment. The *alignment* means understanding between business and technology and it has two components. Firstly, *fit* means that making strategic choices based on the competitive forces are matched with internal components. Secondly, *integration* means understanding of the impact and the requirements that business and technology set to each other at strategic and operations level. (Henderson & Venkatram, 1993; Chan & Reich, 2007.).

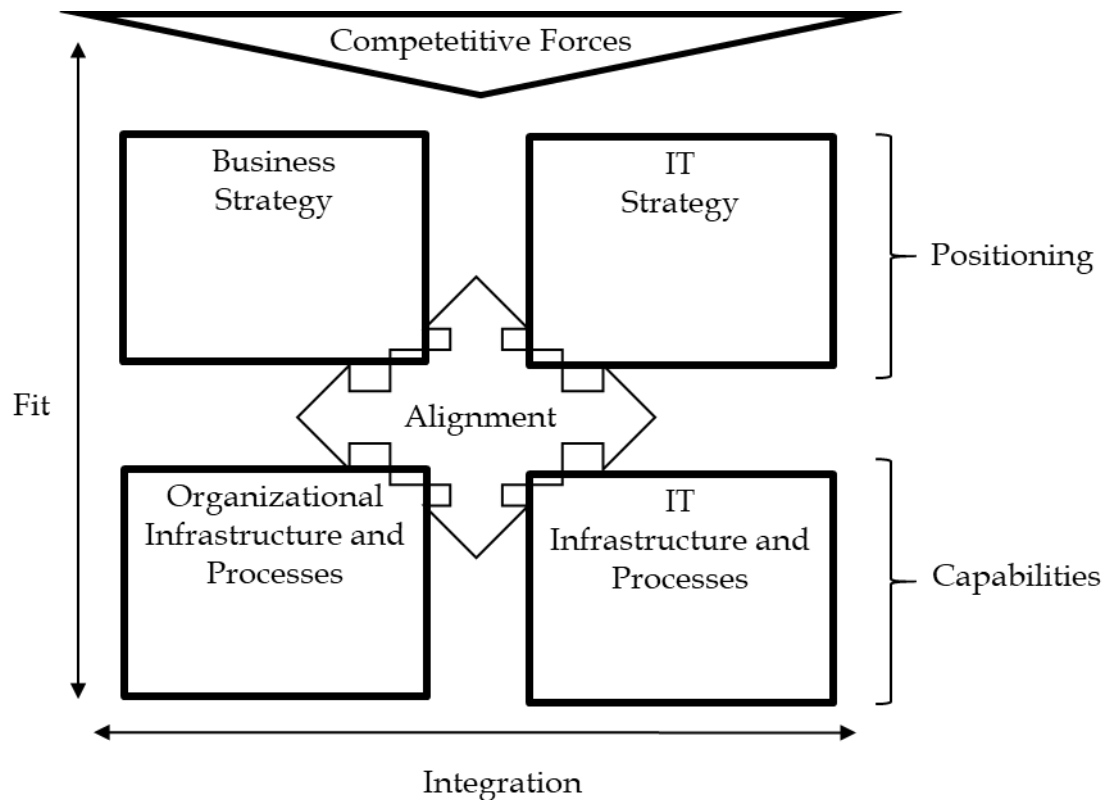


FIGURE 4 Outlines of the Strategic Alignment Model.

Competitive forces are in continuous movement, which is why the model also needs to be dynamic to address the continuous search of competitive position. As proposed by Sambamurthy et al. (2003), agility to respond to the changes depends on the capabilities. This is also recognized in the Strategic Alignment Model. According to the model, operational integration of business and technology capabilities support the continuous fitting process (Henderson & Venkatram, 1993). Further, the development of the capabilities is the basis for seizing new business opportunities (Chan & Reich, 2007).

The Strategic Alignment Model conceptualizes a managerial framework for finding the balance between business and technology, that can help to gain full technology business benefits. The model raises technology at level of business enabler and source of innovations (Henderson & Venkatram, 1993.). Alignment concept is widely studied, and different models clearly describe how benefits can be gained only through interplay between business and technology at different levels (Chan & Reich, 2007). Despite of this, technology often remain as a subordinate to the business serving as a supportive function (Bharadwaj et al., 2013). Many problems are related to insufficient understanding of technology at the strategy level and lack of capabilities in strategy work in general (Chan & Reich, 2007). Interestingly, alignment can be even taken too far, which can lead to a situation called the *alignment trap*. The trap is built by too specific allocation of technology solution for business needs, which eventually leads to complex architectures and maintenance cost over the benefits (Shpilberg, Berez, Puryear, & Shah,

2007). To avoid the problems, strategic level understanding of technology, good technology governance and managing capabilities are required (Bharadwaj et al., 2013; Mithas & Lucas, 2010; Shpilberg et al. 2007).

2.2.2 Strategic level management of the alignment

According to the Strategic Alignment Model, business strategy that is enabled and supported by technology can be achieved through *alignment perspectives* (Henderson & Venkatram, 1993). These perspectives have either business or IT strategy (figure 4) as their starting points. Fit and integration are pursued by working through the other domains of the model at different order. Perspectives are selected based on a specific situation, and what they give, is control over the many alignment dimensions and ability to execute the fit and integration in practice. For example, *competitive potential* perspective selects the possibilities of digital technologies and capabilities as starting point, after which the path proceeds from IT strategy to business strategy to business capabilities (Henderson & Venkatram, 1993.). However, Bharadwaj et al. (2013) argue that alignment thinking alone is not sufficient for full business-technology fusion and it is still susceptible to leaving the technology as supportive function. To avoid this problem, digital business strategy was introduced that supplement the original Strategic Alignment Model.

Bharadwaj et al. (2013, 472) define the *digital business strategy* as “organizational strategy formulated and executed by leveraging digital resources to create differential value”. It is not meant to be a part of the business strategy but to be the business strategy. Digital business strategy is built on new way of thinking and doing things, which requires digital fluency from top management and ability to communicate the strategy throughout the organization. CIO’s have a significant role in practice, but more importantly good communication between top management is necessary to integrate business and technology domain knowledge. Further, attitudes and cultural change requires good understanding of technology benefits, which mean understanding on how they are realized and how this is measured. Better understanding can be supported with formal and informal communication channels, training, teaching, or through partnerships. Digital environment also alters the pace of the strategy work and it must be more dynamic in adjusting the strategic position (Bharadwaj et al., 2013; Chan & Reich, 2007; Kane et al. 2015; Martinsons et al., 1999; Wu, Straub & Liang, 2015.).

Finally, strategic work fails if it is done in isolation from the rest of the organization, and it needs to be supported from the IT governance level (Wu et al., 2015). Otherwise, the strategy work might be misunderstood, and realization will fail (Arvidsson, Holmström & Lyytinen, 2014). Next, the discussion will focus on the arrangements and managerial activities at the operations level that will support the digital business strategy.

2.2.3 Operations level management of the alignment

What the needs to be done in practice, that would support the alignment of business and technology, in a way that leads to digital business strategy and developing as a digital company? One way of looking at the required operative managerial activities is by comparing companies at different level of digital maturity. In an extensive global study on business digitalization, digital business strategy was recognized as a strong indicator digital maturity, which is in line with the previous discussion (Kane et al. 2015). Other identified categories included cultural and leadership issues. Like at the top management level, digital fluency is required from the managers. This does not mean technology expertise per se, but expertise in understanding technology benefits and leading by example, which helps in attitude and cultural change. Digital fluency is further supported by organizing cross-functional interaction. This can be done by collaborative teams and communication channels, on-demand training, and creating possibilities to apply technology skill in practice. digitalization was also identified to increase complexity of activities. It would be tempting to control this by clear structures, however, functional separation can be an obstacle for interactive work. Instead, leaders should have sufficient skills to manage the complexity (Kane et al. 2015).

According to another view, business and technology alignment benefits depend on IT governance arrangements (Wu et al., 2015). IT governance is responsible for building the integrated capabilities that are foundation for the strategic level work and achieving the goals. Mechanisms that that were conducted from previous work, and verified in an empirical research, included decision making structures, formal processes, and communication approaches. *Decision making structures* emphasize defined roles and responsibilities, like management teams, which integrate decision making vertically and horizontally. Defining *formal processes* like decision making rights, organization policies and monitoring, support consistency, fit, and understanding of value realization. Finally, *communication approaches* mean interaction, communication support like appropriate channels, and shared learning which also link with the execution of other mechanisms (Wu et al., 2015).

Management activities that support alignment have also been described by Peppard (2007) and Chan and Reich (2007). Firstly, decision making structures are again seen important, however, there are many alternatives for this. Benefits depending on the situation can be achieved with centralized, decentralized and informal decision-making structures. For example, decentralized and informal structures can provide more flexibility, but they also increase complexity (Chan & Reich, 2007.). As discussed above, complexity might cause problems like the alignment trap. On the other hand, this can be controlled with good management and with solutions that support strategy guidance like policies and communication.

Collaboration between business and technology is also required. This requires removing any barriers between these two including attitudes or structural

and communication obstacles. Interaction requires also understanding of different views, which can be supported with necessary education (Chan & Reich, 2007). Similarly, Peppard (2007) emphasizes the role of interaction and knowledge sharing in gaining the technology business value, in which managements responsibility is work as enablers. Knowledge sharing is needed within the organization from top to bottom and it can also be achieved through outsourcing and partnerships. The foundation for this is *social capital* which builds on interaction through which knowledge of individuals is cumulated. Interaction can be enabled with structural, relational, and cognitive solutions. For example, solutions like new governance structures, mixed teams, co-location, and staff rotation join people from different functions. On the other hand, education builds common language and variable communication channels and informal relations support help people to understand and respect each other and the work they are doing. What knowledge sharing eventually produces, is capabilities, in which technology is combined with business (Peppard, 2007.).

Finally, organization culture has been identified as significant factor affecting technology business value. Culture includes assumptions, values, beliefs, and behavior (Cao, 2010). Changing the culture to support technology business value starts from the managements example. Business and technology management collaboration increases creditability of the message they are sending and, consequently, collaboration can spread across the company with support of actions and mechanisms described above (Chan & Reich, 2007.).

Technology business value is affected by many things. This requires control over them which, on the other hand, requires strategic and operational management capabilities. In addition, the dynamic nature of digital economy requires continuous adaptation, which is why good change management skills are required. Consequently, the next sub-chapter will continue the discussion from this point of view.

2.3 Managing digitalization as change process

Digital technologies develop fast and global nature of digital economy keeps the competitive forces in constant movement. digitalization or digital transformation concerns both the value proposition and operations in the companies and this is essentially about change (Berman, 2012). Change is an integral part of achieving technology benefits (Gregor, Martin, Fernandez, Stern, & Vitale, 2006) and on the other hand technology also supports the change (Sambmurthy et al., 2013). Further, the turbulent nature of digital economy, sets continuous pressure for development, which is why continuous and adaptive change process is required. Change requires the ability to take risks and this has also been identified as one of the major differences in companies at different level of digital maturity (Kane et al. 2015). Thus, change management should be integrated in managing the technology business value.

Good change management practices (Iveroth, 2010) overlap with management practices that have been discussed above and will not be repeated here. Instead, the focus will be in understanding the components and the process of change. First, it is important to understand what change is about. Many theories exist about organization change, and they provide different views for understanding and managing the change depending on the situation (Van de Ven, 1995). Characteristics of these theories include definitions about: 1) type of change process, 2) driver of change, 3) level of change or target of inspection, and 4) mode of change i.e. whether the change has prescribed long term goal or if it is more iterative and agile in nature (Van de Ven, 1995).

The focus in this thesis is strategic and operational management of digitalization under the pressure of competitive forces. *Teleological theory* of change explains that change of an entity is goal driven (Van de Ven, 1995). Achieving the goal follows the problem-solving process and it can be iterative, which supports the change of direction, if necessary. Further, the nature of the theory is to seek differentiation. Goals for the entity are set at high level and this work reflects the environment and internal capabilities. Although the goals are set at high level, the change requires interaction between member of the entity (Van de Ven, 1995). Based on what has been discussed earlier in this chapter, teleological approach could also be called strategic approach, and strategy driven approach is important in digitalization and in achieving the technology benefits (Bharadwaj et al., 2013; Kane et al., 2015). Thus, teleological theory fits well with digitalization will guide the further inspection here.

Driver of the change. Taking the teleological view on digitalization, the drivers of the change are the goals set based on the strategic analysis in which technology is considered through the alignment thinking. The many requirements for succeeding in the alignment and strategy work were described earlier. One important addition is the platform for change. Platform in this context refers to the foundation that the change is built on (Clegg, Kornberger & Pitsis, 2012, p. 367-369). The realization of the technology benefit requires many capabilities (Peppard, 2007; Sambmurthy et al., 2003), and these capabilities serve as the platform on which technology innovations can be realized (Kane et al., 2015). Capabilities can be internal or acquired through partnerships or outsourcing, however, building this platform takes time and change and, consequently, suitable change process.

Mode and process of the change. Teleological change seeks differentiation (Van de Ven, 1995). However, in digital business the development is fast and the state of being different can change quickly. Thus, continuous change is needed and, consequently, the timespan of the strategy work gets shorter. Teleological change is described as constructive instead of prescriptive which would be incremental building to achieve a specific goal on a long run. Constructive change is supported by iterative process which moves from goal setting to execution and evaluation after which necessary adjustments are made (Van de Ven, 1995). Iterative process supports gradual building of capabilities which widen the foundation for adopting new innovations and change of direction. This needs to be supported

by high internal and external awareness which highlight the significance of information management in digital business (Berman, 2012; Porter & Millar, 1985). Awareness refers to the entrepreneurial alertness in figure 3 (Sambamurthy et al., 2003) and can be supported by various business intelligence and analysis technologies and techniques (Chen et al., 2012). Further, practices that support interaction and possibilities for individuals at all levels and functions are needed to harness the awareness of the whole company and the many capabilities.

Levels of the change. Individuals have a significant role in the realization of the benefits from technological innovations. This relates for example 1) to understanding of the strategic purpose of them, 2) technology quality, and 3) cultural issues (Arvidsson, Holmström, & Lyytinen, 2014; Delone & McLean, 2003; Clegg et al., 2010, 376-379; Kane et al., 2015) which are all connected with the acceptance of technology (Karahanna, Straub, & Chervany, 1999; Venkatesh, Thong, & Xu, 2012). Although the teleological theory sees change at the whole organization level, it recognizes the significance of individuals in achieving the change and consensus among members of the organization about the change is required. Consensus can be achieved with a social process that drives understanding, learning, and participation (Van de Ven, 1995.). The technology management practices that were discussed in previous subchapter address well the many aspects of successful change management described for example by Iveroth (2010). These practices enable the understanding of technology and technology related change benefits at different levels of organization. However, if they are not considered, even a well-planned change might fail due to resistance (Arvidsson et al., 2014).

Teleological change components repeat the same elements that were earlier found to be important in digitalization. Thus, adopting the ideas of teleological change can help to manage the digitalization by guiding process and focus on correct elements that support the change.

2.4 Digitalization framework and challenges faced by the Finnish SMEs

In this final subchapter about the business digitalization, first, a summary of the previous discussion is presented. The summary identifies the high-level elements of digital business and shows the connections between them. This framework then helps to map the many challenges faced by the Finnish companies in digitalization with the management ideas presented earlier. Further, in the next chapter, the framework helps evaluate the possibilities of the business model tool in supporting digital business management.

2.4.1 Digital business summary

The digitalization framework derived from the ideas presented in this chapter is shown in figure 5. The figure shows important components of a building a digital organization and interactions that describe the phases of the digitalization process (A-C). What makes the framework digital is the foundation of integrated business-technology capabilities. From this foundation the technologies can be used to support all parts of the framework like it was described during the course of this chapter.

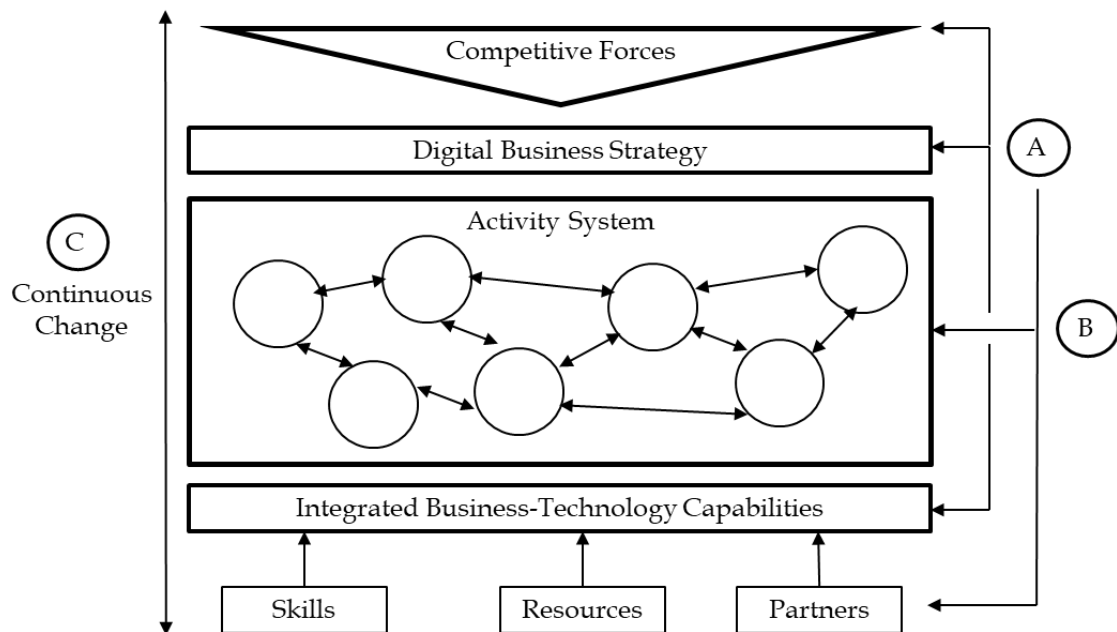


FIGURE 5 Digitalization framework.

A) Digitalization in this framework is driven by the strategy, and strategy work seeks for suitable strategic position in which the competitive forces are weakest and, thus, profitability highest. In addition to competitive forces, strategy work needs to consider capabilities which represent the ability of the company to respond the competitive forces. The capabilities include both business and technology capabilities and in digital business finding the profitable value position requires means to align them.

B) Next, strategic goals may require the development of new capabilities that can be achieved with investments in skills and resources or with partnering and outsourcing. Capabilities serve as the platform for activities, and strategy guides the focus, fit, and effectiveness requirement of the activity system.

C) Finally, the whole process needs to be seen as continuous activity. Company needs to embrace change and the process should be constructive, building gradually capabilities, which support further the ability to respond to environmental changes.

2.4.2 Challenges faced by Finnish SMEs in digitalization

The state of business digitalization in Finland has been described in many recent reports (Digibarometri, 2016; Digibarometri, 2017; Microsoft, 2017; PALTA, 2016; Solita, 2015; TIVIA, 2015; Yrittäjät, 2016). Many of these reports focus on small and medium sized enterprises (SME) of which the sub-group of small companies is under the lens in this study. On a global scale, Finland has excellent premises for digital economy which means extensive technological infrastructure and customer readiness. However, companies have challenges in applying this potential in practice. (Digibarometri, 2017; TIVIA, 2015). For example, problems in applying digital technologies to support business are quite evident in retail. The development of the e-commerce has made Finnish markets available for companies outside the country borders, and depending on the product group, up to 80% of customer traffic is directed to web shops outside Finland (Digibarometri, 2016). Next, the specific problems raised in the reports will be discussed.

Digital technologies have been applied in many ways to support business in Finnish small companies. In some companies, the whole idea of business is based on technologies while others use technologies just to support some areas of business (Yrittäjät, 2016.). Wide distribution in applying technologies have been suggested to be related with: 1) variation in knowledge about technology, 2) attitudes against it, and 3) willingness for technology investments (TIVIA, 2015; PALTA 2016; Yrittäjät, 2016). Most of those who believe in the possibilities of digital business, see digital technologies as a strategic asset, which is especially true in the group of growing companies (PALTA, 2015; Yrittäjät, 2016). Conversely, the opposite is true in recessive companies and, interestingly, negative attitudes are common in the group of small companies (PALTA, 2015; Yrittäjät, 2016).

Previous discussion in this chapter has shown the significance of strategic level work for achieving the technology business benefits. Further, the realization needs to be supported with management practices. Similarly, in a survey for small companies, understanding of technology possibilities and digital business in general at the top management level together with the ability to transfer this into investments were identified as success factor in digitalization (Yrittäjät, 2016). In another survey for different types of Finnish companies, good technology management was statistically significantly connected with all measured parameters describing success in digitalization (TIVIA, 2015). In addition, ability to see the business from the perspective of digital customer was considered important. Although these ideas are well in line with ideas from research as described before, only few companies possess these capabilities (Yrittäjät, 2016.). Generally, only about 50% of companies in Finland have strategic level technology plan and only 10-20% can be classified as highly capable in managing digitalization (TIVIA, 2015).

Regardless of the knowledge about digitalization requirements, leaders in retail see the digital business environment challenging, and the fast development of technology puts pressure on fast decision-making (Solita, 2015). However, the

management should also be able control the development on the long run regardless of high uncertainty of the future. To do this, good information management is required together with the ability to identify requirements for new capabilities (Solita, 2015). Strategic challenges are not only in the creation of it, but also in the implementation. Report on Finnish top 100 companies identified as one of the major problems the inability to communicate the strategy work clearly through the organization (Microsoft, 2017).

Surprisingly, many of the challenges faced by the Finnish companies correspond with those elements, that were described throughout this chapter, and summarized in figure 5. Thus, this chapter has given the foundation for understanding the problems. Furthermore, if companies want to develop digitally the direction seems clear. However, companies could also be supported on this road. Consequently, in the next chapter, business model concept is introduced as one alternative that could support the management of digitalization in the companies.

3 BUSINESS MODEL AS A MANAGEMENT TOOL

Business model concept has been developing starting from the 90's and both practitioner and researchers on various fields have been contributing to the work (Al-Debei & Avison, 2010). Today, business model is recognized as single unit of analysis, and it is commonly used as a concept that describes how a company makes money (Ovans, 2015). However, while some argue that the paradigm is still weak and commonly accepted in-depth understanding is missing (Zott et al., 2011), other see that common understanding is emerging (Wirtz et al., 2016).

In this chapter, the academic development and current understanding of the business model concept is first described. Next, a more practitioner-oriented view is taken to the business model and discussion will focus in in the application of business model as a management tool that could be used to support business digitalization.

3.1 The development of business model concept

Two recent reviews summarize the development of business model concept (Zott et al., 2011; Wirtz et al., 2016). Business model research started grow in the 1990's and has been cumulating especially from the beginning of this millennium both in science and on the practitioner's side. It has been speculated that the development of internet and raise of the business possibilities in the web-environment had a significant role in this development. Web provided a new way of doing business which required redefinition of business. Thus, in the beginning business model research was technology oriented. Since then other research areas emerged that took different views on business model (Zott et al., 2011; Wirtz et al., 2016).

Many of the business model studies refer to the Harvard Business Review article entitled "The Theory of the business" by Peter Drucker (1994) as the origin of the business model concept. Interestingly, this paper does not include the term business model, however, it describes ideas that are, after 20 years of research,

close to the current understanding of the business model. Central idea of the paper is that the key to success in business, or simply the way to make money, is not only in doing things correctly but doing the correct things, which are dictated by the environment or the markets. This is a question of “what to do” and the answer is explained by the proposed theory of business. The theory of business defines the main components of business and how to develop them (Drucker, 1994). Thus, the question to which business model answers is close to that of the strategy as defined by Porter (1996), which also is part of current understanding of the business model as explained later.

Between the work by Peter Drucker and today, research has taken many views to the business model. In their review, Zott et al. (2011) identify 3 different business model research traditions including 1) e-business, 2) strategy perspective, and 3) innovation and technology management. In another recent review, Wirtz et al. (2016) see that research has been more polarized between technology and strategy-oriented views, of which the first one was dominant in the early years of development, whereas the latter one has been adopted in more recent studies.

The raise of internet has been major driver of business model studies because advancements of information and communication technologies have supported totally new ways in doing business and providing value for customers (Zott et al., 2011). Consequently, the focus of e-business research tradition has been in the understanding of this change by categorizing established models, defining the generic elements of them, presenting them, and monetization of the activities. The strategy line of research, on the other hand, has been focusing in explaining company’s value creation, performance, and competitive advantage. Especially in digital business, value creation expands over the company’s borders and business model concept has been used to explain how value is created on networked markets. Further, business model as a method, that helps to build and use resources for value creation and capture, has been used to explain the competitive advantage and performance. Finally, in the area of innovation and technology management, topics include the commercialization of new technologies through implementing them within the business model and the relationship of business model and business development enabled by technology (Zott et al., 2011).

To summarize, there have been many views on the business model under various disciplines during the business model paradigm development. However, common understanding is emerging. Zott et al. (2011) conclude that business model is an established unit of analysis that provides a holistic view on company’s activities in value creation and capture that spans over the organization borders. Wirtz et al. (2016) take the conclusion further and proposes a synthesis of the business model components. Taken together, these conclusions form a quite detailed view on the business model of which the next subchapter continues.

3.2 Business model definition

The overview of the business model research history by Zott et al. (2011) pointed out, that various research traditions have provided different views on the concept and, that the terminology is inconsistent. For example, business model has been referred as a model, architecture, statement, representation, method or a pattern. In this study, business model is seen as a model and, next, the model components are defined to conceptualize it for practical use in business management.

One important driver for the raise of business model concept was the development of technology. New technological solutions allowed a more sophisticated analysis and modelling of business, which consequently enabled the planning and modelling of actual business models (Ovans, 2015). A model serves many purposes. Models can be used to understand the target of model better, for analysis purposes, design, implementation and communication. Models need to have a purpose, they are abstractions of the reality by the purpose, and they need some form of expression (Leppänen 2005 p. 280). One of the most thorough representation of the business model as a model is the one by Alexander Osterwalder (Osterwalder, 2004; Osterwalder et al. 2005). Although, this work is from the early phases of the business model development it represented a view that aligns well with the more recent propositions that summarize the development of the concept (Wirtz et al., 2016).

Osterwalder's (Osterwalder, 2004; Osterwalder et al. 2005) premise for the defining the business model as a model was to provide the management with a tool that helps them in decision making in a constantly changing environment. This requires a tool which it is possible to evaluate, measure, change and communicate the business logic. The result of the work is called *business model ontology* and it is defined as:

"A business model is a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm. Therefore we must consider which concepts and relationships allow a simplified description and representation of what value is provided to customers, how this is done and with which financial consequences." (Osterwalder et al., 2005, 3).

The philosophical meaning of *ontology* is to describe the nature and organization of reality. Consequently, the ontological view to business model is provided by conceptualizing the model components and building connections between them (Osterwalder, 2004, 42-44; Osterwalder et al., 2005). Business model ontology is based on management literature and Balanced Scorecard. Thus, it aims for a holistic view in managing business performance. From the model sources, four main areas of business model are derived, which are further split into nine components, that were extracted from business model literature (table 1). The nine main components can be further divided in sub-components to provide different levels of abstraction for different purposes (Osterwalder, 2004, 42-44; Osterwalder et al., 2005).

TABLE 1 Components of the business model ontology

Area	Description	Business model components	Description
Product	What does company provide to customers	Value proposition	What value is created
Customer interface	Target customer, distribution, and customer relations	Target customer	Segment definition
		Distribution channel	Distribution to customer
		Relationship	Links with customer
Infrastructure management	Infrastructure, logistics and partners	Value configuration	Activities and resources for value creation
		Core competency	Ability to create value
		Partner network	Cooperation in value creation
Financial aspects	Revenue model and cost structure	Cost structure	Costs to employed
		Revenue model	Income flows

Wirtz et al. (2016) focus in their business model review on the emerging common understanding of the business model concept. They acknowledge that the model by Osterwalder is one of the most conclusive ones, but their presentation is slightly different. There are two differences between these two presentations. Firstly, Wirtz et al (2016) claim that procurements should be included in the model since in the globalized world the procurements management is strongly connected with other components. Secondly, strategy is seen to be important part of the model which is understandable as it affects the model. However, these two represent different levels of management (Casadesus-Masanell & Ricart, 2010) and business model considers them in use without the need to include them as components. Finally, Wirtz et al. (2016) does not describe the connections between components at all, which is the major strength in Osterwalder's model and enables the use of business model ontology as modelling language (Osterwalder, 2004; Osterwalder et al., 2005).

As a summary, it can be said that business model is commonly seen as component-based description of company's activities and the Osterwalder's business model ontology is a good representation of it. The strength of the business model ontology is the detailed description of the components and their interactions which is lacking from many other proposed models. Next, the discussion continues with the use of business model as a management tool.

3.3 Business model as a management tool

According to the business model definition in previous subchapter, it is an abstraction of what a company does to make money. Since the company is guided by the strategy it can also be said that the business model is the reflection of strategy. In this subchapter, the aim is to describe how business model could support the management of digital business. The discussion will start with the relationship between strategy and business model. Next, the possibilities of business model to support change are discussed followed. Finally, two examples of management solutions that apply business model are introduced.

3.3.1 Business model helps to realize the strategy

The Theory of Business by Peter Drucker (1994) introduced the preliminary concept of what later became the business model. The ideas in the paper were close to Michael Porter's ideas about strategy (Porter, 1996), and during the early stages of business model development, especially in the context of emerging e-business, it was claimed that business model could replace strategy (Magretta, 2002). However, they are separate, though connected (Magretta, 2002; Porter, 2001; Zott et al. 2011).

The definition of the relationship between business model and strategy by Osterwalder et al. (2005) is a good representation of the current understanding, which also suggests aspects of using business model in practice:

“It is the translation of strategic issues, such as strategic positioning and strategic goals into a conceptual model that explicitly states how the business functions. The business model serves as a building plan that allows designing and realizing the business structure and systems that constitute the company's operational and physical form.” Osterwalder et al. (2005, 2).

Others share the view by Osterwalder. Zott et al., 2011 see the business model as an abstraction to visualize the strategy or the goal of the strategy. Further, Casadesus-Masanell and Ricart (2010) explain that the strategy is a plan of actions based on management choices. This plan is reflected in the activity system which describes and integrates the individual activities of a company and can be described by the business model. In other words, the creation of a strategy equals choosing the business model of the company. Finally, Casadesus-Masanell and Ricart (2010) explain that the tactics refers to the practical choices how the business model is deployed, which relates to operational management and the process of change.

There are many possible benefits in separating strategy, business model and tactics. For example, separation allows development on all levels together with clarity in communicating them. Thus, business model can be seen as an individual tool for the management and it can be used for example to test the viability of strategic ideas (Casadesus-Masanell and Ricart, 2010.). This idea was clearly

described in the entrepreneur's business model by Morris, Schindehutte, and Allen (2005). This model embeds the business model within a framework, that separates business model from decision-making. Decision-making, on the other hand, is divided between two separate layers that are placed above the model. The highest level sets the strategic rules, which guide business model components in a way that creates differentiation and, consequently, competitive advantage.

What business model brings to the strategy work is the ability conceptualize the current state and the target state. This supports the gap analysis and can support the planning of activities that help to achieve the goals. Furthermore, the business model conceptualizes the strategy in simplified form, which can make it easier to communicate through the whole organization.

3.3.2 Business model supports change management

In digital economy change is elemental part business, which is why it is important to understand business model management also from the change perspective. One area of business model research is *business model innovation* which can be understood as the re-invention of the business model to gain competitive advantage (Amitt & Zott, 2012). Thus, by definition, it is an alternative view for strategic change or a conceptualization of it. In the review by Zott et al. (2011) business model innovation is also linked with technology management which will be the focus here. The connection is that the value of innovations, regardless of the type, can best be harnessed by implementing them within the business model (Chesbrough, 2010). Obviously, small changes like digitization of some individual process components may not require business model level adjustments, however, what business model shows, is that different components of business are tightly interrelated. Thus, business model level inspection supports technology innovation management and business model change i.e. business model innovation.

Business model innovation has also been referred as the *dynamic view* as opposed to the static view which refers to the as-is state of the model (Wirtz et al., 2016). Dynamic view to the business model means understanding of the requirements of business model innovation. One part of this is the understanding of the business model concept and the other one is agile strategic management. Two examples enlighten the challenges and requirement of business model innovation quite well. The first one is from the digitalization newspaper business (Gynsel & Holm) and the other one is about the continuous business model development of a software company (Ojala 2016).

Günzel and Holm (2013) describe the digitalization of the newspaper business with an example from Denmark from business model innovation point of view. In the traditional newspaper business model, the paper serves as a platform that connects readers with advertisers and the publisher captures value from both. However, when internet became a free source of news, traditional newspapers lost customers. Newspapers tried to compete by transferring the existing

business model to the internet without charging the readers for the content. However, there were substitutes for the value proposition, and the newspaper platform did not attract anymore that well readers nor, consequently, the advertisers. Newspapers had lost the competitive advantage of their business model. Since then business models have as changed. Still, this is a good example how simple technological innovation needs to be considered on the whole business model level. Simple changes in one business model component might have significant effect on the other.

The next example of business model development in software company highlights the importance of being able to seize the opportunities when technological environment is changing rapidly and how business model helps to conceptualize this (Ojala, 2016). Thus, it relates well with the discussion in the previous chapter about the role of IT competency and dynamic capabilities in strategic decision making. What the study discovered was, firstly, that strategic choices need consider how the technology affects business model components. Secondly, development of IT capabilities supported competitive advantage through new competitive actions. Finally, the IT architecture or the platform development was vital for connecting with new partners and customer segments (Ojala, 2016).

The examples show that technological innovations require planning at the whole business model level i.e. strategy work and understanding the connection between different business model components (Chesbrough, 2010; Teece, 2010). This has been shown to be challenging especially in the digitally immature companies where the focus usually is on digitization of individual element without considering the whole business model or strategy (Kane et al., 2015). However, as it was discussed above, business model can support this.

3.3.3 Example solutions of the business model tool

Business model concept or business model tool can be found within different methodologies or procedures for managing and creating business. Gartner (2014) for example in their report entitled “Six Key Steps to Build a Successful Digital Business” list steps that help to build foundation, much like described in the previous chapter, for digital business. Steps include the creation of digital business strategy under which one element is building a business model that is fit for digital business. Similarly, Berman (2012) lists ability to deliver business model innovation as one of the essential capabilities in digital transformation or digitalization of business. Alexander Osterwalder’s work on business model has been a central element of this chapter. Next, two practitioner-oriented methodologies built on his work will be introduced.

Business Model Generation by Osterwalder and Pigneur (2010) describes the use of *Business Model Canvas* as the shared language for business model description and manipulation. Like the original business model ontology (Osterwalder 2004; Osterwalder et al., 2005), the Business Model Canvas has nine building blocks which create a blueprint for the strategy implementation. Business

Model Canvas is a business model tool for planning business activities and in their book Osterwalder and Pigneur (2010) instruct how these components are defined, give examples on how to connect the component, provide instructions for designing the business model, and help to link strategy with the business model. Next, the process is described briefly followed by another practitioners view for using business model canvas as a part of the Lean start-up methodology.

The business model design process in Osterwalder and Pigneur (2010, 244-259) provides a generic approach for business model work that can be modified for the specific needs of the company. The process is consisted of five phases: 1) mobilize, 2) understand, 3) design, 4) implement, and 5) manage. The process is not linear and especially understanding and design requires iterative work and finally management is much about continuous development. However, the process starts with mobilization which is basically project planning phase that focuses on the first three phases whereas implementation and management are considered later based on the achieved design. Once started the process moves to understanding phase where the goal is to analyze and understand the business environment and especially the customer. Design phase searches viable business model option based on analysis and different option can be tested and prototyped. Once a suitable design has been discovered a new plan for the implementation is required. Good plan helps to be prepared for various uncertainties and in communication. Finally, business model requires continuous management to keep it viable and optimally, this is considered by all employees in the company which is supported by the common understanding created by the formulated business model (Osterwalder & Pigneur, 2010, 244-259).

Lean start-up is another practitioners example of the business model use and despite of its name the methodology is applicable for new and established companies. In this methodology, the business model is in the epicenter and agile practices are utilized in the search of the viable business model. Business model canvas is used as a tool to create prototypes of the business model which are tested, and this work starts immediately without long development of fixed business plan. In this work, the business model is open to take new directions based on feedback which help to eliminate losses due to large investments in unsuccessful plans. Thus, the company is built iteratively together with the business model. (Blank, 2013.).

Business model has been developing for a long time as concept and as a practitioner-oriented tool. Here, some ideas of business model use in practice were introduced. In these examples and in the discussion during this chapter, the relationship between business model and digital business has not yet been discussed in detail. However, business model concept can support digitalization and digital business similarly as business in general. The last two chapters finalize the introduction by drawing together the ideas presented before about digitalization and business model, to summarize, how business model could support the digitalization of business.

3.4 Applicability of the business model ontology in digital business

Development of digital technologies and digitalization in general has impacted significantly the way business is done and the development keeps on moving forward. Thus, ability to adapt to these changes is required from the companies. However, many companies have been struggling with the change. The change requires not only the development of technological capabilities and digitization of individual activities but often also changes on whole company level. Consequently, tools that would support the change could be beneficial. Business model is a viable tool that helps to conceptualize the business and can support the management in many ways. However, in digital business digital business models are needed. Next, some examples of the digital business model are presented. Furthermore, applicability of the previously introduced business model ontology in digital business is discussed.

The digital business model by Weil and Woerner (2013) is one good example. The model depicts, how technologies and customers are important components in the value creation and value proposition (figure 6). At the center of the model is the customer experience component which emphasizes the role of the customer in digital business. Customer is not anymore just an outside target of the activities, but the customer is actively considered and heard in the business processes through the external part of the platform component. In addition, customers participate in the experience creation within the customer environment by interacting with other customers. The internal part of the platform components includes the business processes, that are supported by the customer data, and the technology infrastructure links company with its partners. The content component concerns the product and information related to the products (Weil and Woerner, 2013).

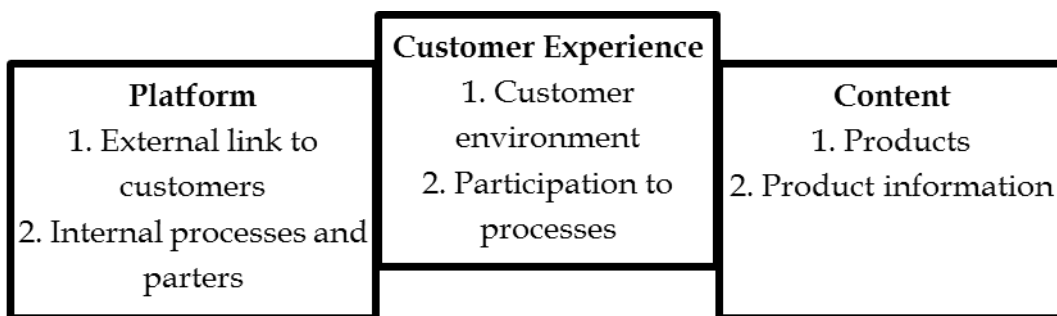


FIGURE 6 Example of a digital business model by Weil and Woerner (2013)

The platform is a central part of many digital businesses. The *platform* in the previous model (Weil and Woerner, 2013) refers to the internal integration of the processes but also to the concept of two-sided markets. *Two-sided or multisided*

markets are created and supported by online platforms like AliExpress and Amazon in which different companies and customers brought together in a mutually beneficial way. This is not just collaboration but in this network the actions of one create new opportunities for another creating a network effect (Rochet & Tirole, 2006; Tan, Pan, Lu & Huang, 2015.).

Keen and Williams (2013) take the platform concept further and claim that the networks of businesses is more important issue than the business model. They claim that in digital business value architectures matter the most. This refers to the concept of being able to adapt according changing environment and customer demands. However, this does not make business model obsolete. Instead, is just defines the position of business model differently. This difference is well described by Al-Debei and Avison (2010), who emphasizes that business model is not anymore fixed with the underlying processes. Instead, processes are constructed in way that they are able provide continuous business model innovation based in strategic goals (Al-Debei & Avison, 2010). Digital business strategy, on the other hand, is founded on the technology and business alignment, and as it was discussed in the previous chapter this work is supported by the business model concept as it has been described in this chapter. Consequently, *digital business model* can simply be defined as the business model of a digital company.

The business model ontology by Alexander Osterwalder was here selected as a good representation of the current understanding what business model. However, is it suitable also for digital business, or should some component be added? For example, digital elements like platforms are important part of digital business, however, they are only a way to interact with partners, gain resources and interact with customer. These, on the other hand, are all components of business model ontology. Moreover, business model just a high-level abstraction of business, not a detailed description of implementation that should describe everything. The, final argument of the applicability of the business model concept presented in this chapter is founded on link between strategy and the business model.

Business model is the reflection of the realized strategy and in successful digital business a digital business strategy is needed. The essence of digital business strategy is that technology is not separated as an individual function within the company and it is not be treated only as a resource. Instead, in digital business strategy, value should be created through the opportunities that digital technologies bring to the value creation. This leads to the realization that instead of trying to describe the significance of the technology in the model, it should be taken out of it. However, this does not mean physically but as in The Business Triangle (figure 7), that is adopted from works Osterwalder (Osterwalder et al., 2005).

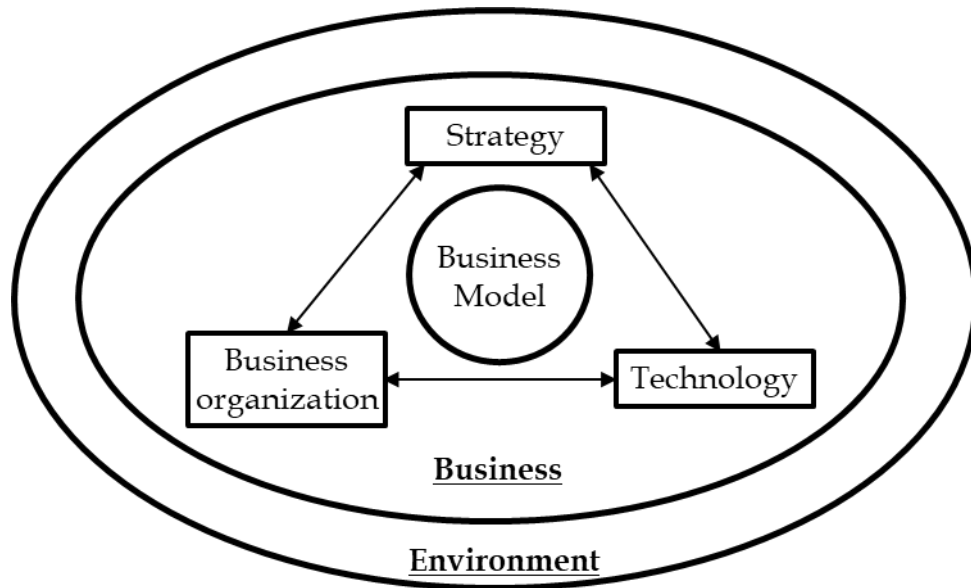


FIGURE 7 The Business Triangle by Osterwalder et al. (2015).

The triangle depicts the higher-level components through which business environment changes transferred to the business model. In the model technology is raised at the same level of inspection as strategy and business structure which refers to the operational effectiveness (Osterwalder et al., 2005). The triangle shows that Osterwalder has considered in business model ontology the technology in way that is in line with what has been presented in the introduction.

In conclusion, it can be said that business model ontology is suitable conceptualization of the business model to be used in the context of digital business. Consequently, the benefits of using business model tool to support management, and them methodologies that use business model are also applicable in digital business. Thus, it is possible to continue answering the question, how does business model tool support management digital business, in the discussion.

4 RESEARCH APPROACH

This study was set up to answer whether business model tool could benefit the management of business digitalization in small service companies selected from Central Finland area. Answering this question based partly on empirical work and partly literature analysis (figure 1). The aim of empirical part of the research was in the understanding how digitalization was managed and what was challenging in it. The analysis of the selected companies was based on digitalization framework that was created based on literature review and qualitative research approach with semi-structured interviews was used. Following this, literature analysis was used to understand the possible benefits of the business model tool. Next, the methodology is described in detail.

4.1 Theoretical framework

Formulation of the theoretical framework for the study was done by literature review. The literature review followed the principles set for masters' thesis level study by Okoli & Schabram (2010). Literature review was done prior to the experimental phase of the study (figure 1). The purpose of the work was to define a business digitalization framework, that is summarized in figure 5, and define the business model tool. Digitalization framework was then used as the foundation to analyze the management of digitalization in the companies. Firstly, surveys and reports describing business digitalization in Finland were searched from the websites of major consulting companies, organizations supporting business development, different news channels, and projects focusing on digitalization development. Material was widely available, and review focused on those describing SMEs and to those from the past 3 years to correctly describe the current state.

Secondly, after narrowing the problem to the technology management issues, literature review focused in searching text books and scientific material related to technology business support and management. Google Scholar was used

to search scientific material with terms digital strategy, IT/technology management, digitalization, and digitization. Material was selected based on search term relevancy ranking and citation amounts. After this first search phase, relevant papers were selected based on abstract evaluation. The final criteria for including material in the review was that it was published in peer review journals. Additional material was retrieved based on themes and references in selected material and screening papers citing the selected material. Additional material was evaluated with the same criteria described above.

Finally, Google Scholar was used the same way as described above to find material on business model. Firstly, search was targeted on review papers. Quantitatively, the business model research has been growing from the mid-90s and since then thousands of peer reviewed papers have been published with increasing pace together with even greater number of practitioner publications (Wirtz et al. 2016; Zott et al., 2011). Consequently, the search continued by following the relevant themes and references in the reviews by Wirtz et al. (2016) and Zott et al. (2011).

4.2 Data collection

In second phase of the study (figure 1), qualitative semi-structured interviews based on the digitalization framework were conducted. Qualitative research approach “is an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (Cresswell, 2014, 4). In other words, the aim of qualitative research is holistic understanding of the phenomenon in a real-life context from the study subject point of view (Erikson & Kovalainen, 2008, 4-6; Hirsjärvi, Remes, & Sajavaara, 161). The aim of the empirical part of this study was to gather information how digitalization is managed in the selected companies and what where the experiences of the study subjects in doing this in the context of business management in general. Thus, qualitative research approach was found to be suitable for the study. Next, the sampling, study subjects, interview data collection method, and data analysis process are described.

4.2.1 Sampling

In quantitative studies, sampling is crucial for the validity of the results. Sampling must represent the population that the hypotheses concern. In qualitative studies, the population concept can also support the validity of the results. Sampling within a defined population can reduce variation caused by external factors and, thus, it supports the within population validity of the results (Eisenhardt, 1989). In this study, the aim was to minimize variation by focusing on small service companies on the Central Finland area.

Partly the selection was done according to the *convenience sampling* principles. In convenience sampling, study subjects are chosen from those that are most available (Cooper & Schindler, 2014, 152). What this meant in this study that the focus of the study was partly determined by the willingness of the study subjects to participate the study. Furthermore, the companies were selected among those, that had been participating another study that focused supporting digitalization in Central Finland area. Furthermore, the problems in digitalization concern mainly implementing new technologies to support business (Digibarometri, 2017; TIVIA, 2015). Based on the previous study with these companies, it was known that they had applied digital technologies to support their business and they were not originally born as digital companies but developing as digital companies. Consequently, they all had experience in digitalization and managing it and, thus, suitable as study subjects. However, sampling was also based criteria that narrowed and defined the target population as explained in the introduction.

Five companies were selected to be interviewed for the study and the person of the company who was responsible of managing the digital was chosen to be interviewed. The persons were also the managers of the company or co-manager in case of one study subject. Thus, single person interview per company captured both the business and technology management views. According to Eisenhardt (1989) the sufficient number of cases for theory building is usually between 4 and 10. However, optimally in qualitative studies sampling should not be predetermined and sampling should continue until no new insights are produced within the scope of the study, although it is recognized that time and money are limiting factors (Eisenhardt, 1989). This study was not aiming to capture all the variation and insight of the phenomenon to build new theories (Gregor, 2006) and timeframe was limited. In addition, the analysis of the results demonstrated widely homogenous views among the interviewed companies. Thus, the sample size was considered to be suitable for the study.

4.2.2 Study subjects

Table 2 summarizes the basic information of the study subjects including information about the company and the interviewee. All the companies were about the same age, established 5 years ago and they all provided some type of service for private customers. Besides C2, whose customers and operations covered the whole Finland, all the companies were operating highly locally. When the interviewees were asked about the service they provide from the customer point of view, most of them were able to formulate a value proposition. However, C3 and C5 described only the tangible output of the company instead of demonstrating the ability to see the customers perspective. Further, C1 had not defined any specific customer group for the service. On the other hand, the health services provided by C1 and C4 are not very specific in terms of customer types but consumed by all types of people.

Companies C1-C3 were all run by single entrepreneur or a married couple whereas C4 and C5 gathered together several single entrepreneurs under an umbrella company. When asked about partnerships, none of the companies replied to have any. However, some were involved in activities that could be classified as partnerships. C1 was also working as a subcontractor within a larger company providing wider variety of health services. Thus, the companies were in a mutually beneficial relationship. C2 on the other hand was entering a platform that combines the sales of many similar service companies.

Besides C5, all the interviewees were in the managing position within their companies. However, in company C5, the interviewee was responsible for managing the digital component of the company, like all other interviewees within their companies. Thus, considering the aims of this study, they all were correct choices to be interviewed. Furthermore, all the interviewees expressed innate interest in digital technologies and developing them within their companies. All companies had also applied a variety of digital technologies to support their business and they all had continuously been developing this area since the establishment of the company.

To summarize, there were many similarities between the companies but also major differences. One main difference was the company size between C1-C3 and C4-C5. In addition, C2 was operating on a wider area than the others and, finally, in C5 the person responsible for technological issues was the primary manager of the company but co-managing it with others.

TABLE 2 Basic information of the companies

	C1	C2	C3	C4	C5
Established*	2012	2012	2013	2012	2013
Employees	1	1	2	10	8
Business area	health services	recreational services	recreational services	health services	lifestyle services
Value proposition	yes	yes	no	yes	no
Market area	local	Finland	local	local	mainly local
Main customer group	not defined	middle aged and young adults	seniors and enthusiasts	athletes and not defined	female between 20-50 years
Partnerships	another company	platform	none	none	none
Interviewee position	manager	manager	manager	CEO	co-manager

4.2.3 Interviews

Surveys are the dominant data collection technique in information system studies and can be used for qualitative data collection (Palvia et al., 2015), and *interviews* are another major data collection method in qualitative studies (Myer & Newman, 2007). Surveys use questionnaires, for example, with multiple choice or open-

ended questions and they have the possibility to collect data easily from wide group of subjects (Cooper & Schindler, 2014, 152-165). On the other hand, in interviews the researcher is in direct interaction with them in the data collection. In the interviews the researcher is in a direct contact with the research subjects which has many benefits goals. The main benefit is the ability to adapt the data collection depending on the subject, which support better understanding of the questions and the answers (Cooper & Schindler, 2014, 152-165; Hirsjärvi, Remes, & Sajavaara, 2009, 204-207). Since the variation of IT competencies in the companies was expected to high, the interview was a good choice for data collection.

There are also many alternatives of conducting interviews depending on goals. Erikson and Kovalainen (2008, 80) summarize the types of qualitative interviews as follows:

1. *Structured interviews* have predefined questions that are repeated similarly in all interviews
2. *Semi-structured interview* has predefined topics, issues, or themes and variation with the questions and order of them can vary between interviews.
3. *Unstructured interviews* can have a defined starting point, but they proceed freely.

Structured interviews give the most comparable results and are more suitable for unexperienced researchers. However, limitations include the lack of flexibility. Semi-structured interviews, on the other hand, provide more flexibility, which allows to follow unexpected directions in the interview, and gives more tools to support mutual understanding. Furthermore, this type of interview allows wider types of question (what and how) to understand the views of the interviewees. On the other hand, one limitation of the semi-structured interviews is that it requires more experience (Erikson & Kovalainen, 2008, 81-82). However, in this study the interview was based on well-defined concept, which helped to coordinate the interview and gave systematicity even without extensive experience. Thus, semi-structured interview type was selected.

Interviews conducted face-to-face support the interaction with the study subjects and separates them from surveys. However, there some are benefits of using new technological solutions for interviews. Phone interviews support better time management, and the interviewee can select most convenient time and place for interviews, which can also lower the social dissonance i.e. raise the comfortability of the situation in many ways (Myer & Newman, 2007). Furthermore, Sturges and Hanrahan (2004) suggest that phone interview can provide comparable results with those done face-to-face. Consequently, phone interview was chosen to be suitable for this study as they it removed the limitation of reaching companies around the Central Finland area.

The interview language was Finnish, and the structure and the questions were planned in that language. Appendix I presents original interview structure and appendix II a version translated in English. The interview reflects the themes

of the digitalization framework (figure 5) through which the digital business components and management were conceptualized. Thus, the questions were designed to reveal how digitalization was managed and what was challenging in it. Further, the questions followed the teleological view on change which was done to capture the change management capabilities in the companies.

Interviews were conducted during October 2017. The companies were contacted earlier about the willingness to participate the study, the aim of the interview was explained to them, and time for the interview was agreed based on the interviewee preferences. The lengths of the interviews were 41, 48, 28, 30 and 17 minutes for companies C1-C5 respectively. All the conversations were recorded using Call Recorder software by Appliqato for later extraction and analysis.

4.3 Data analysis

In the third phase of the study (figure 1) the data from the interviews was analyzed. Further, the business model definition was then used together with the results to evaluate the possible benefits of the business model tool to support management of digitalization. The digitalization framework (figure 5) and change issues were used to create interview themes and it was used also to structure the answers.

The data analysis followed the process described by Hirsjärvi et al. (2009, 221-230). First, the data was organized, checked and transcribed. This was done by anchoring the content of interview recordings to the interview frameworks. Since the interview type was semi-structured, the flow of the questions varied between interviews. In addition, there were some variation how the questions were answered. Consequently, answers to different parts of the analysis framework were found from different places of the recording and these places recorded. After the data was organized, it was evaluated if some part off data was missing. Most of the companies were not able to answer questions about tools that could support the management and those questions were omitted from the analysis. Thus, single interview was enough to capture answers to the planned themes. Finally, answers were transcribed and classified on an excel sheet based on the digitalization framework.

Second, the data was analyzed based principles of the digital framework brought up in the literature review. This was done by estimating from the answers the level or maturity of digitalization in the companies and by evaluating how the management had affected this. The goal was to identify how the management of digitalization could be supported. Furthermore, citations from the different interviews were selected to demonstrate the main results.

Final step in the analysis was the data interpretation. This was done by reflecting the analyzed management issues with the possibilities of the business model tool possibilities to support management of digitalization.

5 RESULTS

In this chapter, the results from the qualitative interviews are presented. The empirical part of the study was conducted to understand the digitalization and management of it in the subject companies. Based on these results, the applicability and possible benefits of the business model tool to support management of digital business then discussed in the next chapter.

5.1 Digitalization in the companies

Several questions were asked to understand better the culture, understanding, and capabilities related with digital technologies and digitalization. In addition to these, this subchapter will describe the state and development of digitalization in the companies.

5.1.1 Culture, understanding, and capabilities of technology in the companies

In general, all the interviewees had positive attitudes against digital technologies and saw them as an essential part of their business. Most of the said that they are actively following how technology related to their business is developing. The responded from C2 said that: "To my opinion, it does not matter in which business you are in, if you don't learn new and develop yourself, there is now hope in making it." On the other hand, companies were also clearly conservative in applying new technologies. This was summarized well by the responded from the company C3: "I definitely agree that you have to be continuously on the move and see how our customer behave in the net. However, we don't have to follow all the latest trends."

Many of the respondents said that they do not understand the technologies and they are not fluent with them. However, all of them had applied the technol-

ogies successfully in practice to support business either independently or together with a service provider. For example, the manager of company C2 said that: "I'm miserable in IT. I can't do anything." Despite of this, she was managing independently many different social media applications for marketing, sales, communication with the customers, and for managing the service product. Furthermore, the channels had gathered significant number of followers. Her marketing related posts gathered at highest tens of thousands of views. In other words, all the interviewees possessed capabilities to use and to plan the application of new technologies.

The culture within the company was in C1-C3 equal with the attitudes of the entrepreneur, however, in companies C4 and C5 there were more people involved. In C4, the culture on the whole company level was, according to the interviewee, also positive and technology adoption issues were considered in the management as described in the next subchapter. However, in company C5, where the interviewee was responsible of the digital issues but otherwise at an equal position with the others, there was difference between the attitudes and capabilities. The respondent oversaw digital issues since others did not although the marketing and sales of the company was mainly done through the internet. The interviewee suggested that this was probably because other employees were older and were not willing to learn new things. Apparently, the old age was associated by the respondent with more negative attitudes and lower capabilities.

How did the interviewees then see the digitalization? All the companies referred digitalization firstly as technologies and more specifically web related technologies:

"For me, it's mainly the net, and related to that, my web site and the booking system. Today, I think also new payment systems." C1

"Electronic solution that we have in use." C3

"All possible is moving on-line." C4

Interestingly, all the respondents felt the question first a bit difficult and they said that hadn't before really thought about the definition. Furthermore, technologies were mainly considered from the customer point of view. All the companies saw that the customers find the company in the web, and for service companies it is important to extend the service online. The online parts of the service for all included the marketing of the service and booking possibility. Finally, when asked about common technologies on back end side by name, some also included payment systems, financial systems, and communication systems into their digital repertoire.

5.1.2 Digitalization in practice

All the companies had had some technological solutions like web sites from the establishment of the company and they felt that web was the main channel for

reaching customers. All the companies had since the beginning been developing the digital services, and the solution that they mentioned in the context of digitalization included digital marketing and online booking. For marketing, many of the companies were using social media and based on Google searches some were using search engine marketing possibilities. Other solutions included online training, sales, and communication within the company in C5. Further, in C2 social media was used for communication with the clients, and sales. Finally, in C2 technology was mentioned to be important part of the service they provided.

The main benefits that the interviewees felt to gain from digital solutions was automatizations of different activities which led to saving time for other activities. For C2, web-based marketing was also considered to essential for being able to provide the service in whole Finland. Furthermore, other drivers for technology development were the perception and experience that the solutions are something that customers want.

Companies were also asked to evaluate if the technological development had increased the competition on their business area. Companies C1, C3, and C4 considered that their market area was very local and, thus, technology was not a significant factor affecting the competitive forces. However, C4 felt strongly that their technological capabilities were a significant competitive advantage. Similarly, the only company that operated on national markets, C2 felt that technology had increased the competition. Furthermore, in her response, the younger generation or millennials of entrepreneurs were seen more capable of applying technological innovation in the competition and, thus, having leverage over the non-millennials.

5.2 Management of the digitalization in the companies

This final part of the results focuses on the management of digitalization within the companies. As brought up in the introduction, the full benefits of digital technologies can be gained through implementing them in the strategy. This, on the other hand, requires alignment of business and technology which can be achieved with good management.

All the respondents saw the benefits of technologies from the customer point of view and many technologies were also used to make processes like sales more efficient. However, only 2 of the respondents (C2 and C4) saw technologies as significant part of competition against other companies. The CEO of the C4 replied that: "If you can manage the digital, it gives you clear competitive advantage." Furthermore, C4 had more developed and defined procedures for the management of technology than in other companies, in which intuitive approach was used.

Since the responses of C4 were significantly different from those by the others, next, the management views of C4 will be presented and then compared with those by the others. According to the C4, the main benefits of technology in the

competition was the ability to connect with the customers by digital marketing and sell the service with an online booking system. Technologies were also used as part of the service, internal communication, and book keeping. Digital technologies had been in use since the beginning of the of the company, and solutions had been developing since then. Important driver of the development had been the interest of the COE in digital technologies and according to him, the employees also shared the interest which supported the development and distribution of the responsibilities.

Interestingly, when asked if technology was considered at the strategic level in the company, the interviewee said that they do not do any strategic analysis related with technology. However, technology was seen provide strategic advantage and it was used for that. Furthermore, planning in the form of cost benefit analysis was said to be done before technological investment. However, besides the evaluation before investments, the company did not have specific methods to follow the benefits after the implementation and they were relying on subjective experience and customer feedback: "We ask and talk with our employees and customers if they have liked and approved the changes." In conclusion, the digitalization seemed to be mainly technology driven, although, there were much more strategic elements in the management compared with other companies.

It was recognized in the C4 that change itself is always a challenge, however, they had developed procedures for technology implementation and managing the change. People in the company had positive attitudes against technological development. Development was believed to be driven by the motivation of the employees and the employees of the company were doing the work together. Different people took responsibility of developing new ideas, and COE hold the responsibility to ensure proper implementation and adaptation. Despite of the fast technological development in general, C4 did not feel any pressure for continuous development and change within the company. On the other hand, they did not have long-term change plans for developing technology or technological capabilities.

In the other companies the digitalization was mainly about adopting individual technologies, and they were applied more intuitively than in C4. However, all understood that it is important focus on the solutions that are important to the customer and keep up with the development. In practice this meant that interesting new technologies, that for example others were using, were applied based on gut feeling. For example, C3 replied that: "we try new things and see how it works... we are in a close contact with our customers, and when we apply something new, we get very fast feedback." On the other hand, technologies were also applied to solve some specific problems like automating supportive functions and making management processes more efficient.

Challenges related with technology development included ability to evaluate benefits (mentioned by C1), lack of time (mentioned by C2 and C5), and ability to motivate others (mentioned by C5). However, none of the companies including C2 had thought about applying any tools to support development. Nei-

ther, could they imagine what kind of tool would be helpful for them. Interestingly, the major reason, mentioned all others but C4, for not having defined plans and procedures to develop digitalization, was that the business was good enough. Companies were in a situation that they had very high demand for their services as demonstrated by the reply from C2: "When you have enough job opportunities and sometimes you have to say that I don't have time to arrange this, I'm satisfied with those (referring to current technological applications)."

Besides C4, C5 was the only other company with more employees. In C5 the interviewee was responsible for the digital issues because others did not, and she was not in a managing position over the others. Consequently, company did not have any defined change management procedures and the application of new solutions and maintenance work was left for the interviewee. Others did not participate that much because lack of capabilities and motivation due to good business situation. However, company did have a backlog of ideas of new technologies that could be implemented when there was enough time.

5.3 Summary

To summarize the digitalization and management of it in the companies interviewed for this study, it can be said that all of them were developing as digital companies. Technological solutions were mainly related with interacting with the customers and customer needs influenced the development of new solutions. Technological development was mainly not managed strategically, and it was not systematic. Interestingly, motivation to do this was influenced by the lack of competitive pressure, and companies were satisfied with their situation. Consequently, the digitalization was more technology driven and individual technologies were tested intuitively. However, companies were quite conservative and carefully considered the benefits of the investments, although, none of the companies had any specific methods or tool for the evaluation or measuring the benefits. All the companies saw the importance of technology for business and the culture and attitudes were mainly positive. Management issues related with people management concerned only two companies that had more employees. Surprisingly, these two were quite the opposites of each other and there is apparently there can be large variation in attitudes, technological capabilities and management arrangements between companies.

6 DISCUSSION

This study was set up to answer the question: Does business model tool benefit the management of digitalization small companies? To answer this question, firstly, a literature review was done to formulate a framework for understanding what digitalization is. In addition, the current understanding of business model and the business model tool was introduced. Secondly, qualitative interviews were conducted to determine digitalization and management of it in the selected companies. Finally, in this chapter, the qualitative results will be discussed. The discussion will focus in understanding the barriers of digitalization, and how business model tool could help to overcome these.

6.1 Management of digitalization in the companies

This first subchapter focuses in discussing the digitalization and management of it in the study companies. The inspection is done through the digitalization framework that was presented in the introduction (figure 5) and by interpreting the results with the knowledge gathered from similar studies. The main topics will be strategic work and how it is affected by competitive forces, development of technological capabilities, development of digital solutions, and change. By understanding the current state and main challenges of developing further, it is possible, in the next subchapter, to proceed with the evaluation how could business model tool support management digital business.

6.1.1 Technology was not managed strategically

Strategy was defined as a plan that helps to achieve competitive advantage (Nag et al., 2007; Turban & Volonino, 2010, 18) and according to Porter (2008) the activities should focus in affecting the competitive forces. On the other hand, the understanding of the competitive forces, and especially the understanding how

digital technologies affect them, is the foundation for strategy work (Porter, 1996; Porter, 2008).

All the companies had developed their digital solutions to attract and interact with the clients better. However, only C4 had elements of digital strategy in their work and they were consciously using technology to gain competitive advantage. On the other hand, like in other companies, this work was more technology oriented. In other words, digitalization meant application of individual technologies for specific purposes. Thus, the market position created by this way could easily be copied and does not necessarily provide sustainable competitive advantage (Porter, 1996; Porter, 2001). This risk is emphasized by the fact that none of the companies were pursuing competitive advantage through the latest technological innovation. The choice of being cautious might be related with the fact that most of the interviewees were not that confident with their capabilities. However, willingness for risk taking can also be affected many other things like the pressure of competitive forces.

Although technological management had not reached the strategic level, there were elements and management practices that could drive the digital maturation further. However, some elements were also identified that could counteract this. The Strategic Alignment Model by Henderson and Venkatram (1993) was introduced as a way to combine the business and technology to harness the full benefits of the technology investments. Technological capabilities are one important premise for the model execution in practice (Kane et al., 2015; Peppard, 2007; Sambamurthy et al., 2003). In addition, it requires strategic level understanding of technology and strategy capabilities in general (Chan & Reich, 2007).

In all of the companies in this study, there clearly was a genuine interest in technologies and the current solutions demonstrate existing technological capabilities. All saw that technologies are a vital part of the business and they were actively developing technologies and capabilities. On the other hand, some answers suggested negligence in strategic work in general. Most of the companies saw that their business is good enough, which was seen as a reason not develop technologies and technology related practices.

Other important aspects of building strategic thinking and digital strategy include, firstly, the ability to measure the current state of the company and its environment. Secondly, companies need to base the plans on that analysis. Finally, the progress of the plans needs to be followed by measuring the outcomes (Porter 1996; Porter 2008; Sambamurthy et al., 2003).

In this study most of the companies said that the benefits of an investment were carefully considered beforehand. However, the companies did not have specific quantitative means for measuring the benefits of technology investments. Instead, companies relied on the customer feedback and gut feeling about the usefulness and benefits. Despite of the preliminary analysis, the lack of reliable follow up methods, it can be difficult to develop in the right direction (Martinsons et al, 1999).

Finally, risk taking ability and defined processes for implementation have identified as indicators of digital maturity and they are important elements for

achieving the technology benefits (Kane et al 2015; Sambamurthy et al, 2003). Company 4, that clearly indicated higher digital maturity compared with others, had the most developed processes in applying innovations, whereas others were experimenting based on gut feeling. On the other hand, companies were also quite conservative with the technologies. Experimentation did not cover latest innovation and they were following the experiences by other. Low level of risk-taking ability is understandable when there is no pressure to develop and when capabilities and reliance on those are still developing.

6.1.2 The companies were maturing as digital companies

The lack of digital business strategy and the way technologies were managed suggest early level of digital maturity (Kane et al. 2015). Despite the lack of digital business strategy, companies had technological capabilities and had applied many practices that support the development into more mature digital companies. Maturing as digital company and keeping up with the technological development requires change. The teleological change starts from the strategic goals (Van de Ven 1995). Thus, without strategic thinking it is hard to develop systematically. However, through experimentation with the technologies and learning, companies have the possibility to develop their technological capabilities to the level that supports strategic thinking. On the other hand, change does not happen without the will to change and the results suggest that this could be a major limiting factor.

Earlier in the introduction, the results from different surveys about the state of digitalization in Finnish companies were summarized (Digibarometri, 2016; Digibarometri, 2017; Microsoft, 2017; PALTA, 2016; Solita, 2015; TIVIA, 2015; Yrittäjät, 2016). Some of the problems with digitalization described in these reports were related with negative attitudes against technology. Furthermore, negative attitudes were according to PALTA (2015) and Yrittäjät (2016) common in the group of small companies. This was clearly not the case in this study. Companies had very positive attitudes against technology which can be one important factor that had been driving the technological development in them. This idea is also supported by a study from Italy. Weiss, Schade, Riedl, and Matt, (2016) found that the culture was one of most influential factors affecting the current state of digitalization in SMEs.

From the interview of company 4, it was clear that the company was moving forward and there was good consensus among the employees to develop further. However, in company 5, which was the other company besides company 4 with many employees, there was evident resistance to change. Resistance was partly due to culture that was likely influenced by the higher age of the employees and lack of technological experience due to that. The other reason for this was the lack of motivation due to good business. Interestingly, this was also a common theme in the answers by other companies. Despite that all companies saw technology as an important part of business, companies other than 4 did not feel any strong pressure to develop further due to good business. Apparently, there

was no competitors or at least they were experiencing demand higher than they could offer.

Porters' ideas about strategy starts from the competition. Companies are forced to make plans to secure their market position or otherwise they will lose their business to competitors (Porter, 1996; Porter, 2008.). However, if competitive forces are weak, and company is satisfied with the situation, there are no drivers for change. However, things can change, and technological changes tend to happen quickly (Hämäläinen et al., 2016, 22-23). Thus, slow development and leaving behind from the others can put the company in a difficult position on a long run as was brought up in a report by The Boston Consulting Group (2016). Next, the discussion will continue with this topic.

6.1.3 Drivers and barriers of the digital maturation

Many studies have investigated the drivers and barriers of digitalization. Weiss et al. (2016) investigated the effect of different factors on digitalization. Factors that contributed the most to the current state of digitalization and to the 5-year estimate, were number of accumulated innovation types and digital competencies. Similarly, in another study of the digitalization degree in German manufacturing SMEs, Bogner, Voelklein, Schroedel, and Franke (2016) reported as their main findings, that implementation of technologies leads to success but only if digitalization covers the whole value creation process and the company holds capabilities to do this. In other words, companies need to move forward and widen their capabilities and technology portfolio to be successful in digitalization. This requires long term planning, however, in this study, the strategic management of technology was found to be a challenge as in the report by TIVIA (2015).

Weiss et al. (2016) also reported that culture, business model and organization were related with factors that affected the state of digitalization in companies. In this study, the effects of culture were also quite visible and negative attitudes against technology clearly made the development more difficult. Further, the importance of business model type was demonstrated by all companies. As service companies, all companies of this study were required to adjust their business model component according to customer needs, and all interviewees saw that the ability to interact with the clients required the development digital solutions. Thus, like it was reported by Yrittäjät (2016), the requirements of the customers seemed to be a strong driver of digitalization.

Digitalization can also be affected by the environment of the company or the markets. A recent newspaper article in Helsingin Sanomat by Karla Kempas (11.8.2018) described the state of state of Finnish online grocery sales. Compared with the situation for example in France and UK, the sales is marginal in Finland. Scientist Mikko Hänninen, who had been investigating the state digitalization in retail, comment in the article, that this might be due to lack of competition. In other words, lack of competition or lack of pressure from the competitive forces has led to slower development of digital services. This is supported by the finding of Wesseling and Hekkert (2014), who reported of importance of competitive

forces on technological development. The forces that had previously been identified to be significant for technology development, were rivalry, dispersion which describes the variety of different types of organization working with the technology and presence of new entrants. In their own study, they used the development electric vehicles as an example. Interestingly, the study found that development is a consequence of many forces working together and not driven by a single force (Wesseling & Hekkert, 2014).

Besides the lack competitive forces, other barrier for innovation in SMEs have been identified. Interestingly, Madrid-Guijarro, Garcia, and Van Auken (2009) found that factors identified as barriers, affect differently depending on innovation type including process, product, and management innovation. Further, they demonstrated that management/employee resistance is not a very significant barrier, but cost is, and significance of cost is emphasized in small companies. Costs of the investments were brought up also in this study. All companies were careful when deciding about new technologies. The main issue was uncertainty of the benefits of the investments. Thus, the ability to evaluate better, how an investment benefits the business, would probably help the companies to overcome this barrier.

Other internal and external barriers that were discussed in the study by Madrid-Guijarro et al. (2009) included resistance by employees which depends on management, lack of supporting partnerships, lack of information, competitive forces which was discussed above, and lack of government support. Of these barriers, the lack of supporting partnerships could limit the development in the future. Partnerships have been shown to support technological innovation (Gnyawali & Park, 2009) and none of the companies replied to have any. However, based on other answers by the interviewee of the company 2, that company clearly had, and the company also had very functional solutions despite that the interviewee said that her capabilities are very limited. Similarly, the interviewee from company 5 speculated that an outsider could support the development of their technological solutions, although, this comment was also related with overcoming the resistance of other employees.

Technology and innovations can benefit business, however, innovation is not innately beneficial and depends on the context (Gerow et al., 2014; Rosenbusch, Brinckmann, Bausch 2011). Thus, it needs to be evaluated if a barrier of the development needs to be broken. For example, technology may support the strategy in the competition with the rivals, but if there aren't any, it's a waste of resources in the short run. On the other hand, technological development has moved the business from place to space and the secure position of local businesses may be at risk by the ability to reach clients all over the world. Like it was seen this study, entrepreneurs with transferrable services share the markets on wider geographical area. Further, online service products, like games, can be substitutes for local physical services. Finally, on the long run, gaining higher technological maturity which can support the company in the competition if situation changes, requires continuous development.

6.2 Benefit of the business model tool in the management of digitalization

In this sub-chapter the final step is taken to answer the main research question: Does business model tool benefit the management of digitalization small companies? The discussion will focus on how does business model tool support management of digital business and digitalization. First, it will be discussed what business model tool could provide for the management of digital business with an emphasis on those issues discovered in this study. Secondly, it will be discussed how it could help in process of digitalization or digital transformation.

6.2.1 Business model tool support management of digital business

Kane et al. (2015) emphasized that digitalization is not about focusing on technology but focusing on digital strategy. What this requires is business capabilities and ability to align technology with the business. In addition, strategy per se does not lead anywhere. Strategy needs to be executed and before that, it needs to be communicated and, more importantly, understood. All this can be challenging. For example, it was seen in the survey by The Harvard Business Review Analytic Services (2015), that without digitally capable management it is difficult to implement the strategy. How could business model tool then support this?

According to the different reports, discussed in the introduction (Digibarometri, 2016; Digibarometri, 2017; Microsoft, 2017; PALTA, 2016; Solita, 2015; TIVIA, 2015; Yrittäjät, 2016), some of the main problems in digitalization faced by Finnish companies included, firstly, the inability to utilize the technology resources due to attitudes, lack of capabilities, and willingness for investment. Secondly, lack of technological considerations at the strategy level. Thirdly, lack of capabilities in technology management. In this study, similar barriers were identified. In general, most of these issues can be gathered under the theme strategic management. It seems that this is partly because of lack of capabilities or tools to do this, but also lack of motivation because of good business. Thus, what is needed from the business model tool, is the ability to support strategy work itself, but also support for creating proper foundation for doing digital strategy i.e. creating business and technology alignment.

Considering above mentioned problems, business model tool has a lot of potential in supporting the companies. In masters' thesis by Mats Fridén and Markus Karlsson (2017) in Sweden, the benefits of business model canvas in the digital transformation of a single case company were investigated. Company representatives were introduced with the tool and the use experience was analyzed. Firstly, the tool was easy to adopt and understand at different levels of the company, even among people with less business management experience. Secondly, the tool helped to analyze the current state of the business and how digital solutions support the activities. On the other hand, the tool also helped to identify targets for development, including the required technology support. Finally, the

tool augmented organization-wide understanding of the business and integration, which is known to support strategy execution and alignment. The study by Fridén and Karlsson (2017) is a good demonstration of the use of business model tool and, next, a wider view of the business model tool benefits will be discussed.

Osterwalder et al. (2005) lists the following practical benefits in relation with the business model ontology: 1) Business models can be very complex and hard to understand at different levels of the company and among partners or stakeholders. Conceptualizing the business model and making it more tangible will support communication and understanding. 2) Once the business logic of a company is captured in model it becomes also easier to measure, observe and compare it for the purposes of development for example. 3) Business model concept makes it also easier to design, plan, change, and implement the business model by supporting decision making during these phases. 4) Business model can help to see future possibilities for the company which support readiness and innovation. Thus, like models in general business model tool helps to understand, analyze, develop, predict and communicate the target of the model.

Considering the above-mentioned benefits in the context of strategy, business model tool can be used in the strategy planning in many ways. Firstly, modelling the company with the business model tool supports strategy work by conceptualizing the as-is and to-be situations. This analysis reveals the gap between these two states and it helps to plan all the required changes i.e. strategic goals (Chesbrough, 2010, Teece, 2010).

Secondly, modelling the business with business model tool may help to evaluate how investments and changes affect the business. In small companies the costs were one important barrier for technological development (Madrid-Guijarro et al., 2009). Similarly, in the companies of this study, the benefits of technological investment were also carefully considered. Moreover, this was considered difficult, and methods for evaluation were lacking. Business model is a way to evaluate the effects, which can help to measure the cost-benefit ratio and to follow the realization of the goals once the investment has been made.

Thirdly, modelling can be used plan the implementation of the innovation in a way that is harder to copy by the competitors. When business model is considered as part of the implementation of the innovation, it might help to find ways to do things differently or doing different things (Chesbrough, 2010, Teece, 2010). Thus, innovation can support gaining sustainable competitive advantage like it was described by Porter (1996).

Finally, the creation of digital business strategy requires business and technology alignment, in which one key factor is understanding between these two domains (Peppard, 2007), and inability to communicate the strategy may lead to failures (Arvidson, et al. 2014). Business model conceptualizes the essential components of business and helps to understand the significance of underlying technologies, processes and activities. Thus, business model may be used as a common language in management that enables the required interaction both horizontally and vertically within the business, thus, creating the fit and integration required for technology and business alignment (Henderson & Venkatram, 1996).

Besides in planning, business model tool can support the management of strategy execution. Similarly, as in the strategy creation phase, business model can be used as a common language to communicate the goals of the strategy and point out the significance of individual activities for the realization of strategic goals. Fridén and Karlsson (2017) found in their masters' thesis that business model canvas helped people to understand each other, and it also augmented participation. In small companies, this is important if there are many employees with variable technological understanding like in the case of company 4. In addition, if the companies have partners that for example widen the base of technological capabilities, means to communicate understandably are needed.

Finally, business model could be used to support better adaptability of the company. Obviously, all the above-mentioned issues can support the change by making the culture more accepting against technology by conceptualizing the significance of technology-related changes and making the aim of the change understandable. In addition, as it was reported by Keen and Williams (2013) and Al-Debei and Avison (2010), business model is the realization of strategy that is enabled by the underlying resources and processes. Thus, business model planning can be used to reveal limiting factor in the flexibility of these resources and processes. In other words, business model thinking realizes the requirement of flexibility or agility in digital business. The application of new technologies may conflict with the current business model and if the company lacks the ability for change then it might not be possible to harness the full benefits of the technology. On the other hand, with the flexibility in company's processes and good understanding of the business model, change can become easier (Chesbrough, 2010; Sambamurthy et al., 2013; Teece, 2010).

6.2.2 Business model tool supports digitalization

Digitalization can quickly or on the long run change the company significantly. Although, business model is a good tool that supports the change through strategy and management, change is a process and also the process needs to be supported. In the master' thesis study by Fridén and Karlsson (2017), they reported as one of the business model canvas restrictions the lack the time dimension. Obviously, the time dimension could be achieved with series of consecutive business model views that describe different phases of the change. However, methodologies have also been built around the business model to support the change as a process.

Business model canvas is the practical application of the Osterwalder's business model ontology. Different steps of the methodology describe how business model tool is used to support the process of change (Osterwalder & Pigneur, 2010). Similarly, Lean start-up has already been mentioned as one of the practical business model application (Blank, 2005). Both these methods are generally applicable for change and they help the company to be more agile. In addition, technology component is embedded in them through the business model canvas, like it has been described in this work. Thus, they are applicable methodologies for

digitalization. Besides these, there are other published methodologies or frameworks for digitalization (e.g. De Reuver, Bouwman, & Haaker, 2013; Euchner and Ganguly, 2014; Parviainen, Kääriäinen, Tihinen, & Teppola, 2017). Next, examples are briefly introduced with focus on how business model tool is part of them or could support them.

Once the idea of the change has been formulated, different methods can be used for guiding the work. Garters (2014) "Six Key Steps to Build a Successful Digital Business" is a report that is often referred in practitioner-oriented writings. However, the steps mainly describe different components that are the foundation for the transformation and support the planning of the strategy. On the other hand, Parviainen et al., (2017), provide quite concrete steps for digital transformation based on data gathered from case companies and from other studies. The first steps are positioning and defining the goals, which in practice refers to the creation of the strategy as described above. According to Berman (2012), companies can proceed with the digitalization using different paths including, changing the value proposition, changing the operating model, or by changing both together. Whatever the choice is, business model tool can help to identify the components that needs to be changed and how the changes affect other components. Significance of this analysis was well demonstrated in the introduction by the example by Günzel and Holm (2013), who described the problems with the digitalization of the newspaper business. If the analysis is not done, the execution can be something that was not expected.

Analysis of the gap between current state and the goals then makes it possible to define the path for change. This part of the work helps to understand how the business model change is achieved and includes the analysis of components that needs to be changed, how they should be changed, what capabilities and resources the change requires, and in which order everything should be done. This phase is linked with the implementation and the change proceeds iteratively. Work items are implemented and validated consecutively, which allows the adjustments of the plans if necessary (Parviainen et al., 2017). Considering what has been described of business model tool possibilities previously, it would clearly benefit this method in different phases.

Like the previous method, business model roadmapping by De Reuver et al., (2013) describes a change methodology but uses the business model as the central concept. Similarly, business model innovation refers to a methodology in which the change process is bound to the business model. An example of business model innovation is provided by Euchner and Ganguly (2014) who describe the process of doing the change. However, despite of the different nomenclature they are not very different from the business model canvas, Lean start-up, or digital transformation introduced previously and they all share similar steps and workflow.

According to Chesbrough (2010) the value of innovations, regardless of the type, can best be harnessed by implementing them within the business model. Euchner and Ganguly (2014) agree with this, and, most importantly, business model innovation highlights that innovations require suitable business model to

be beneficial. Conversely, not all innovations are suitable for specific business models. Euchner and Ganguly (2014) describe the business model innovation steps from defining the value proposition and analysis of its requirement to gradual iterative implementation. The process steps aim to minimize the risk of going into wrong direction, and business model is the essence of the work by supporting analysis, planning and execution.

Finally, business model roadmapping is a methodology for transforming from one business model to another (De Reuver et al., 2013). Road mapping in general is a about setting a linear or branched path for change and it can retain single or multiple themes i.e. change items. However, the foundation is laid, as in the digital transformation, by defining the required changes and corresponding activities, resources, and capabilities for achieving the new business model. After this, the plan is translated into activities. Further, by defining the activities and their connection, the path is formulated (De Reuver et al., 2013). Again, business model tool provides many benefits like the conceptualization of business component for identification of what needs to be changed and what effects the changes have on other components.

In conclusion, different methodologies for change together with strategic capabilities provide sufficient tools for changing business. This includes digitalization which is a change process that considers the possibilities of different technologies. Business model can support this work on many areas including those that has been considered challenging in the digitalization of SME's.

7 CONCLUSIONS

The benefits of technology on business has been proven in many studies. However, as it has been brought up in this thesis, it requires good management to get those benefits. This study was set up to investigate whether business model tool could be help in managing the digitalization in small sized companies and the focus was set on service companies on the Central Finland area. The main research question was: Does business model tool benefit the management of digitalization small companies? The question was answered by, firstly, defining what is digital business, digitalization, and business model tool. Secondly, qualitative interviews were conducted to understand better the digitalization and management of it in the subject companies. Finally, data was compared with the possibilities of the business model as management tool to understand if the tool could help the companies with the challenges and barriers they are facing in digitalization. The results do indicate that business model tool could help the companies and, next, the main findings, implications, and limitations of the study will be concluded.

To summarize the digitalization and management of it in the companies interviewed for this study, it can be said that all of them were developing as digital companies. Technological development was mainly not managed strategically, and it was not systematic. Consequently, the digitalization was more technology driven and individual technologies were tested intuitively. However, companies were quite conservative and carefully considered the benefits of the investments, although, none of the companies had any specific methods or tool for the evaluation or measuring the benefits. All the companies saw the importance of technology for business and the culture and attitudes were mainly positive, however, there were also indication that it can be challenging to motive the whole company.

Digitally immature companies are usually technology driven and they lack systematicity and methods to take risk with new technologies. Consequently, the companies can be in a vulnerable situation if the competition gets harder. Intuitive and technology driven development usually leads to simple solution that competitors can easily copy and, thus, the competitive advantage gained from

those is not sustainable. Further, without developing agile technology solution and processes it can be difficult to respond to the fast changes in the environment.

Although negative attitudes against technology have been found common in the group of SMEs and especially among the small ones, it was not observed here. Companies that were interviewed for this study had all been developing their technological solutions since the beginning which was driven by the customer needs. Thus, companies seemed to be on a good development path of becoming digitally more mature. However, potential obstacles for the development were observed and these were much related with lack of strategic work in which business model tool can help in many ways.

The central benefits of the business model tool in strategy work include the conceptualization which supports communication and participation which are the foundation for business and technology alignment. In addition, the holistic view provided by the business model tools helps to understand the company as a whole and how different component are connected and affect each other. Consequently, this can lead to systematic and goal driven development of capabilities which build the adaptability of a company. In other words, business model tool can help to lay foundation for genuine digital business strategy. Furthermore, business model tool is important part of many change methodologies in which the properties of the tool support change.

The benefits of the business model tool correspond with the challenges in digitalization that were found in this study and by others. Thus, it can be concluded that business model tool could benefit the management of digitalization in small companies. Furthermore, this information for managing the digitalization is readily available for all interested managers. Thus, succeeding in digitalization and in gaining competitive advantage on digital markets depends much on the motivation in the companies to develop the business.

Interestingly, it was found the digitalization activities in the companies were strongly affected by the lack motivation due to good business. Most of the companies were operating locally and did not have competitive pressure or had higher customer demand than they could respond to. Other studies have demonstrated the negative effect of the lack of competitive forces, however, this has not been discussed in the reports of digitalization in Finnish companies. Since digitalization has the power of moving business from place to space, lack of development can lead to challenging situations on the long run.

The results of the study support the findings in many reports that describe the digitalization in Finnish companies. Results here give much more positive picture of the ability of companies to apply technologies, however, results also raise concerns about the competitiveness of the companies on the long run. Thus, studies that would focus in finding solutions for different barriers of digitalization could be valuable for supporting the competitive advantage of Finnish companies.

There is very limited number of studies that consider business model tool in the context of digitalization or digital transformation. Thus, this study is good

demonstration of its possibilities. Business model tool shows potential of supporting the management challenges of the companies, however, application of the tool should also be tested in practice.

The work described here is an information systems masters' thesis study. Thus, the scope of the work has been adjusted to fit that purpose and this should be understood when evaluating the significance of the results. Firstly, the core themes of the study were digitalization and business model. Both themes have been studied a lot and the magnitude of the published information is significantly high. Therefore, in this study, the foundation of the work was built on the main themes and most well-known studies including the works of Porter on strategy, strategic alignment model by Henderson and Venkatram, and business model ontology by Osterwalder. Thus, understanding of the results is limited to information provided by these sources. On the other hand, the foundation is based on widely accepted ideas which supports the creditability of the interpretations.

Secondly, only limited number of companies could be included in the study. The selected companies represented a group of companies that are small and local service companies. Furthermore, in all these companies the digitalization had clearly been considered from the beginning, and they were very technology positive. However, large percentage of the companies do not have technology positive culture and, consequently, the barriers they are facing can be very different. In addition, on different business areas, the main solutions of technology can be very different. In service, the front end side solution are important, but in manufacturing back end is emphasized. Thus, in manufacturing other supporting methodologies like business process management could be more suitable.

Thirdly, it is important to understand that the benefits of the business model tool in managing digitalization were not discovered empirically. The analysis is based on the possibilities of the business model compared with the challenges that the companies were facing with technologies. Thus, the practical applicability of the benefits has not been measured and further studies are needed to confirm the ideas presented here.

Finally, the correct methodology is pivotal for the validity of the results. Justification for the method selection was discussed when describing the methodology, however, it should be noted that the interviews were conducted by phone. Although, phone interview is one viable option and can provide benefits, it lacks the direct contact with the study subject and possibility to evaluate body language. Thus, it can be more difficult to evaluate if the questions are understood or not. Further, an important issue related with the methodology is the fact that the study was conducted with a single person with limited experience on qualitative studies. Thus, the analysis and the interpretation reflect the experience and knowledge of the author. On the other hand, the scope of the study considers this, and the results and discussion are well in line with what has been found in other studies. Regardless of the limitations, the results are well in line with those by others which supports the validity of the work.

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APPENDIX I: INTERVIEW STRUCTURE IN FINNISH

TAULUKKO A. Haastattelun osa 1: perustiedot yrityksestä.

Aihealueet	Tarkoitus	Pääkysymys	Tarkennuksia kysymykseen
Perustiedot	Kovariaatit tulosten vertailuun ja tulkin-taan	Toimiala? Asiakkaat? Toiminta-alue? Liikevaihto? Henkilömäärä? Kumppanit? Perustamisvuosi? Haastateltavan asema?	Arvolupaus B2B, B2C Suomi, kansainvälisyys Yksinyrittäjä / monta Rooli arvonluonnissa. Virallinen ja omin sa-noin.
Tavoitteet	Osaako viestiä sel-keästi yrityksen toi-minnasta ja asiakas-lähtöisyys	Mitä yrityksenne tekee asiakkaan näkökul-masta?	Missio, visio, strategia, liiketoimintamalli Arvolupaus Tuotteet tai palvelut
Digitalisaatio	Digitalisaatio yri-tyksessä	Mikä on digitaalitekno-logioiden merkitys yri-tyksen liiketoiminnalle?	Mikä sai digitalisoitu-maan Milloin digitalisaatio al-kanut Mitä teknologialla pyri-tään tekemään yri-tyksessä Missä liiketoiminnan osissa sovelletaan tekno-logiaa Mitä hyötyjä koettu Miten teknologia tukee toimialaa

TAULUKKO B. Haastattelun osa 2: yrityksen digitalisaatio ja sen johtaminen.

Digitalisaa- tio	Tarkoitus	Muutosvaihe	Pää- ja apukysymykset
A) Teknolo- gia osana strategista johtamista.	Nähdäänkö teknologia strategisen ta- son asiana. Miten tekno- logia hahmo- tetaan osana liiketoimin- taa.	Muutosta aja- vat tekijät.	<p>Miten teknologian hyödyntämistä suunnitellaan?</p> <p>Osaatteko arvioida miten teknologia lisää kilpailua? Osaatteko arvioida miten teknologia voisi auttaa kilpailussa? Miten arvioidaan teknologian soveltamisen edellytyksiä ja vaatimuksia määrittelyyn? Miten arvioitte/mittaatte teknologien hyötyjä osana liiketoimintaa? Tehdäänkö strategiatyötä yhdessä vai eristyksessä muusta organisaatiosta?</p> <p>Mitä haasteita näissä arvioinneissa on? Mitkä ovat olleet hyviä toimintatapoja? Mitä vaatimuksia olisi strategiatyötä tukevalle työkalulle?</p>
B) Strategian toteutuksen / teknolo- gian imple- mentaation johtaminen.	Onko ymmär- retty eri toimi- joiden rooli teknologian hyötyjen saa- vuttamisessa ja tapa johtaa sitä.	Muutoksen tasot / ryh- mät.	<p>Miten teknologian käyttöönotto toteutetaan?</p> <p>Kuinka yrityksen tavoitteista ja suunnitelmista viestitään? Miten teknologian rooli osana tavoitteita on kuvattu viestinnässä? Ymmärretäänkö yrityksen johdon asettamat tavoitteet teknologialle? Mitä muita toimenpiteitä pidätte tärkeinä suunnitelmien viemiseksi käytäntöön?</p> <p>Mitä haasteita viestinnässä on? Mitkä asiat ovat tukeneet viestintää? Mitä vaatimuksia olisi viestintää tukeville ratkaisuille?</p>
C) Kehitys- työn rytmi- tys.	Onko yritys sopeutunut digitaalitalou- den nopeam- paan rytmiin.	Tapa toteuttaa muutos. Muu- toksen mene- telmällisyys.	<p>Minkälainen näkemys on kehittymisestä digitaalisena yrityksenä?</p> <p>Koetaanko jatkuvalla muutoksella tarvetta? Miten hallitaan kyvykkyyksien (konstruktiivista) kasvua? Onko yrityksellä keinoja tehtyjen muutosten vaikutusten seuraamiseen?</p> <p>Mitä haasteita on muutosten hallinnassa? Mitkä asiat ovat tukeneet muutoksen hallintaa? Mitä vaatimuksia olisi muutosten hallintaa tukevalle työkalulle?</p>

APPENDIX I: INTERVIEW STRUCTURE IN ENGLISH

TABLE A. Interview part 1: basic information about the companies.

Theme	Purpose	Main question	Supporting questions
Basic information	Covariates for comparing the results	Business area? Customer groups? Market are? Turnover? Personnel? Partners? Established? Position of the interviewee?	Value proposition B2B, B2C Local, national Single or a group Role of them Officially and by own words
Goals	Ability to communicate the business goals and customer orientation	What do you do from the customers point of view?	Mission, vision, strategy, business model, value proposition, products, services
Digitalization	State of digitalization in the company.	What is the significance of digital technologies on your business?	What was the initial driver. When did digitalization start. What do you aim to do with your technological solutions and for what do you use them for. What are the benefits How does technology support your business area.

TABLE B. Interview part 2: digitalization and management of it in the companies.

Theme	Purpose	Change	Main and supporting questions
A) Strategic management of the technology	IS technology considered at the strategy level. How technology is seen as part of business	Drivers.	How the use of technologies is planned? Are you able to estimate is technology increases competition? Are you able to estimate how technology could help in the competition? How do you estimate the requirements of the use of technologies? How do you estimate the benefits of technologies? Does strategy work consider the whole organization (individuals, functions)? What has been challenging? What has enabled success? Would some type of tool help?
B) Management of the strategy / technology implementation	Has it been understood how different parties affect the ability to gain technology benefits	Levels of change.	How is technology implementation done? How do you communicate about the goals and plans? How do you describe the role of technology as part of the goals? Do employees understand the management requirements for the technologies? What else is considered important in the implementation? What challenges in the communication? What supports communication? What are the requirements for a tool that would support communication?
C) Rhythm of the development	Has the company adopted the faster pace of digital business	Change methods.	How do you see your development as a digital organization? Do you feel pressure for continuous development? How do you manage the development of capabilities? Do you have measured to follow the change? What are the challenges in change management? What supports change management? What would be the requirement for a tool that would support change management?