

UNIVERSITY OF LJUBLJANA  
SCHOOL OF ECONOMICS AND BUSINESS

MASTER'S THESIS

**AN ANALYSIS OF DIGITAL TRANSFORMATION IN COMPANIES  
IN THE REPUBLIC OF NORTH MACEDONIA**

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## INTRODUCTION

Digital transformation has been an interesting topic over the past decade, given the fast development of technology used in the companies and increased globalization among companies. A particular field of interest is the development and analysis of this phenomenon in developing countries, such as North Macedonia. North Macedonia is a Western Balkan country, with fair data on digital. Digital transformation is a crucial change in companies, which not only influences the technology as main thought, but also influences the human effort and how this change is implemented in every company.

Digital technologies are enabling the change, step-by-step of the face of business operating and business processes. When we discuss business processes in line with digital transformation, we have to consider not only the technology, but also employees (human factor), since people have to implement these changes, therefore the human factor is as important as the digital factor. This change is constantly ongoing and is increasing faster than the pace of transformation in the organizations. They are constantly trying to keep up with the dynamic trends to adapt their business processes to the new changes. The ever-increasing innovation in technology makes this process even more demanding, especially when the changes need to be implemented in their existing business processes.

Digital transformation is currently the ultimate challenge in change management as well as in other fields. The first ones that go through change are the business processes, then followed by other parts of the company, including the employees. Change management during the shift is a crucial influence in business processes because it affects, not only industry structures or strategic positioning, but it also affects all levels of the organization. Companies' executives must constantly challenge their organizations to ensure that they can get maximum productivity and competitive advantage, all while delivering exceptional customer experience (Edmead, 2016).

It is also important to mention that digital transformation provides opportunities to create improved business models (Berman, 2012). Therefore, it is crucial that every part of the organization adapts to the digital changes that are ahead. Even though it may seem that only some parts of the companies have to adapt, it is not the case. During digital transformation, all of the organization's departments have to adapt to the changes, because the influence is in every part of it.

It is also important to know the environment in which these changes are happening, whether they are fully acceptive and supportive. With digital transformation business processes are changed, updated, reengineered, to be able to serve the company's needs. However, digital business transformation can only be successful if, besides changes in the business processes and adaptation, there is a well-founded strategy and leadership. Transformational changes are required to implement the digital transformation successfully in companies (Schwertner, 2017).

After the brief description of the topic, I can state why this topic is chosen, what are its goals and purpose. Namely, this topic was chosen because of its rapidly growing popularity among professionals and companies, and because of its influence over our environment. Today it is something that is inevitable and the path towards implementation seems particularly interesting.

The purpose of this Master Thesis is to show and describe the current state of digital transformation with all of its areas in North Macedonia, and to make recommendations for possible improvements. I strongly believe that this topic is crucial today and definitely requires more research into it. The planned accent of this topic is the influence to the business processes of the companies in the mentioned countries.

Goals of the thesis are:

- To show the state of digital transformation in companies in North Macedonia.
- To give recommendations for possible improvements.
- To enhance and present clearly the differences among the countries' degree of digital transformation, namely North Macedonia, Slovenia and other world countries.
- To show (if possible) the environment of development of these companies (North Macedonia and Slovenia).

The development of this thesis is intended to include extensive literature review regarding the topics of digitalization, digital transformation, digital business transformation, digital evolution of companies, etc. in combination with research data from already conducted researches with the intention of conducting my own research on the topic in the country of choice – North Macedonia, which included a questionnaire and interviews. The questionnaire was distributed to adequate people in companies, who are in managing positions or working in IT. During the development and writing of this Thesis, the structure was changed to be able to adapt to the new findings, both literature wise and research wise.

## **1 DIGITAL TRANSFORMATION**

Many definitions of the term “digital transformation” currently exist. This is a term that has been studied by many scholars and practitioners and its implementation and effect in companies is getting more widespread than ever. The effect of digital transformation on the business processes is a topic that is currently not a foreign one to many practitioners and executives. Nowadays companies' executives are educating themselves about the changes and are trying to be in pace with the change. In addition, there are many materials available for people that are interested in the topic.

There are many digital transformation definitions, which focus on adapting to get better customer experience, or how to help leadership, with a broad aspect, and from several



viewpoints, such as change in processes, change in value creation, and many others. Following is Table 1 with several definitions of digital transformation:

*Table 1: List of definitions of digital transformation*

(Kotarba, 2018)	The modification of business models which is resulting from the dynamic pace of technological progress that triggers changes in consumer and social behaviors
(Tolboom, 2016)	Digital transformation can be defined as a social, mobile, analytics or cloud induced change that significantly affects more dimensions on individual, firm, and/or societal level.
(Westermann, Calm�ejane, Bonnet, Ferraris & McAfee, 2011).	The use of technology to radically improve performance of enterprises, which brings with it many challenges that organizations have to consider more carefully than ever before
(White, 2012; Kane Palmer, Phillips, Kiron & Buckley, 2015; Sebastian et al., 2017; Singh & Hess, 2017)	The idea of a digital transformation arises from the blending of personal and corporate IT environments and encapsulates the transformational effect of new digital technologies such as social, mobile, analytics, cloud technology and the Internet of Things
(Gill, 2018)	The fundamental purpose of digital transformation is not to digitize an existing state but to re-imagine an entirely different business model that habitually places technology at its core.
(Gruman, 2016)	The application of digital technologies to fundamentally impact all aspects of business and society.

*Source: Own work.*

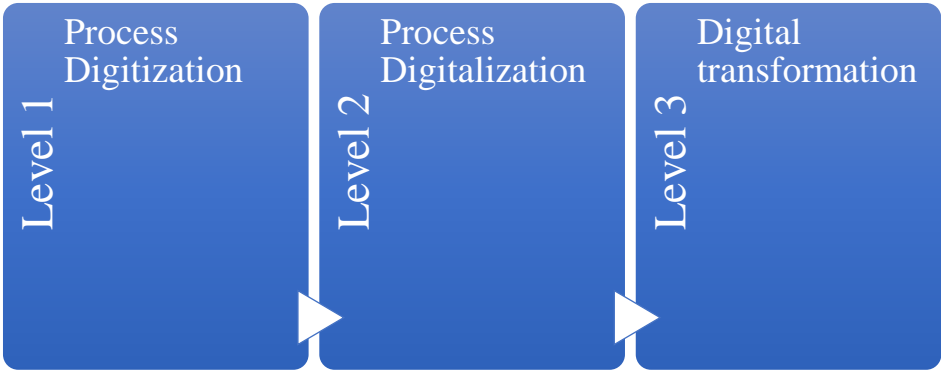
As an addition to the various definitions above, digital transformation can be summarized as a fundamental change in companies, allowing to completely renovating their processes and overall operations, allowing them to experiment with novelties in the environment, allowing them to change far beyond their strategies and IT departments, while embracing all of the benefits that the change beholds. If companies strategize wisely, they can use digital transformation to create the best version of their business processes and other operations.

The change, which companies go through during digital transformation, offers them a chance for redesigning their processes and delivers them new approaches of doing business and managing the changing business models. The external focus, such as technologies use, defocuses this change in companies from the crucial factor that keeps the operations within companies going, which is their business processes.

Many times, digital transformation of companies is confused with digitalization, which are two synonyms that are commonly combined. It not only influences the processes of a company, but it also influences the employees, leadership, operations, technology, even the environment of companies. It is a contagious influence that many want to follow.

Digitalization is a part of digital transformation, and is the last step before transforming. As a change in the process affects all private and public operations, as well as the internal and external workings of any operation. Digitalization is the major driving force behind sweeping large-scale transformations in a multitude of industries (Andersson, Movin, Mahrng, Teigland & Wennberg, 2018). On the other hand, digitization is the process of changing from analogue to digital form, thus it essentially refers to taking analogue information and encoding it into zeroes and ones, so that computers can store, process, and transmit such information. (Bloomberg, 2018). The change from digitization to digital transformation is a leveled process (Figure 1).

Figure 1: Levels of digital business transformation



Source: Robledo (2017).

From Figure 1, we can see the levels to digital transformation, starting from process digitization (transforming raw data into digital), to process digitalization (process of converting information into a digital) and in the end to digital transformation as a »final« result of transforming. The first level is applicable for companies which are starting the transformation process and are shifting their data and overall operations from raw to numeric. This is used from beginners to estimate the efficiency of their processes in a numeric way. The second level is applicable for companies which have digital data and processes, and are going a step further and applying digital technologies to their data and process operations. The third level is for companies which are digitally aware and are striving towards value creation with the help of digital technologies.

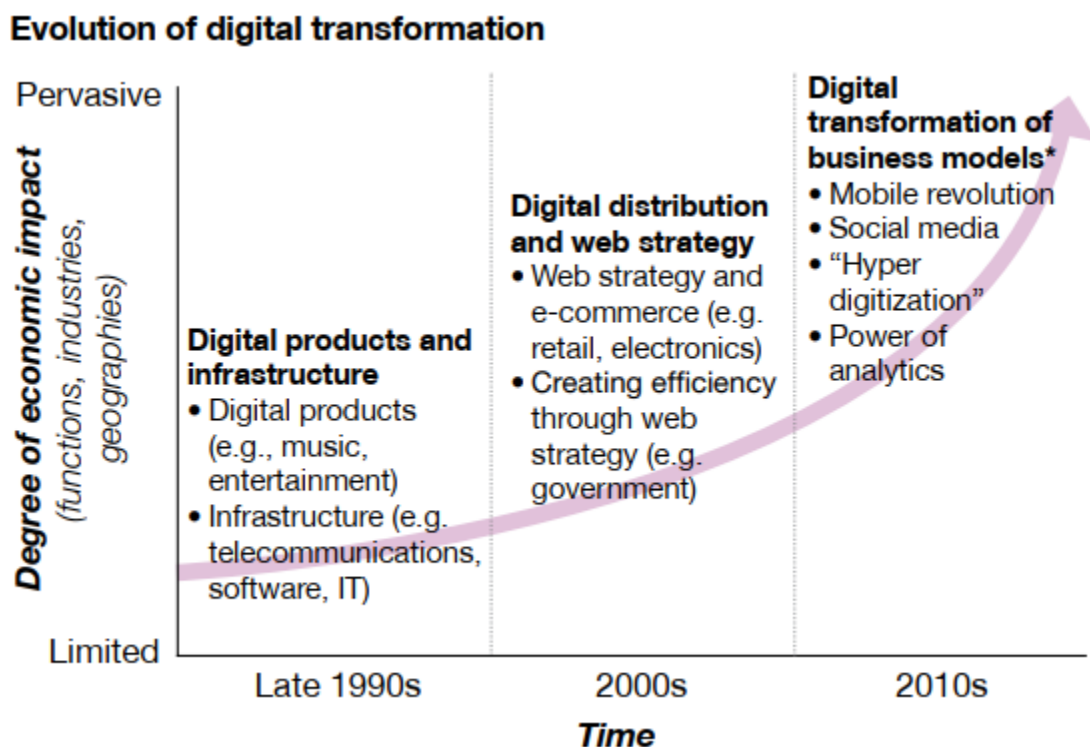
Companies today are becoming more and more innovative, competitive and implementing all the novelties needed to succeed in the competitive environment. Digital transformation not only offers change and improvement in the business processes, but it also offers change in the entire structure, starting from changes in its values, strategy, and creates a new supply of products and services (Robledo, 2017).

The phenomena of digital transformation seems like it is a relatively new concept, but it is not entirely. Following is a graph showing the time evolution of digital transformation in business processes and the phases from the start until current point in time, taken into

consideration the dimensions of economic impact and time. From it we can see how the processes in companies influenced by the gradual advancement in digital transformation have been developing through-out the years, from basic simplification of business to the last stage of completely intelligent business processes. Processes are emphasized because they “feel” the largest influence of digital transformation, and are the first ones that show its effects and success in implementation.

Digital transformation is affecting every part of the company. In addition, it represents a crucial influence inside and outside the companies. It offers many opportunities for gaining competitive advantage, improving company performance, optimizing the existing processes, improving employee experience inside of the company. According to Rybacki (2018), it must go beyond the one of onsite software and information storage to business apps that encompasses cloud, social, big data, and artificial intelligence. However, it should be implemented in the core of the company. He states that companies quickly realize the connection between business success and successful transformation. Even though many perceive it as a disruption, still it is rather an opportunity to get the company to the next stage. Following is Figure 2, showing the evolution of digital transformation.

Figure 2: Evolution of digital transformation



Source: Berman & Bell (2011).

According to Genzorova, Corejova and Stalmasekova (2019), the digital transformation brings innovations in all parts of the company and not only into delivering of the product. Thus, the companies are trying to rebuild a waterfall approach by using a certain digital

platform, hence they state that an important part of successful digitalization and then digital transformation is to use information technologies for turning services to be modularly and inherently easy to adapt to the building element.

As companies mature, the transformation effect matures. With the maturity of the companies, there is an adaptive phenomenon, which is a consequence of the experience the companies accumulate during the changes in their environment. According to a report made from Deloitte, companies that wish to survive in the digital world must learn to see, do, and deliver things differently (Ellerby & Anderson, 2018).

According to Mergel, Edelmann and Haug (2019), everything starts and finishes from the processes of the company, and digital transformation is largely felt in this area. This is also a reason why others perceive digital transformation as a way to rebuild business models following the needs of customers by using new technologies. They state that digital transformation can be emphasized as cultural, organizational, and relational change that is highlighted as separated outcome in order to differentiate better between different forms of outcomes. It is important to mention that they see it as an opportunity to control outcomes from within the company.

Digital transformation amongst all areas of influence has a significant impact on technology, and it exceeds creating new solutions. In this transition organizations must also re-examine established business models and processes in order to be able to drive innovation and improve results. It is the combined application of digital technologies and data processes which is needed to re-imagine the business for new growth. (Nguyen-Duy, 2018). While development of the businesses increases the efficiency of it, also it increases its vulnerability to attackers. Companies need to be very careful about their systems and the overall data in this transition because cyber attackers are waiting for the opportunity to make the most out of the lack of IT security in companies. This is why when it comes to digital transformation of companies, first matter of order should be how the company will protect its data.

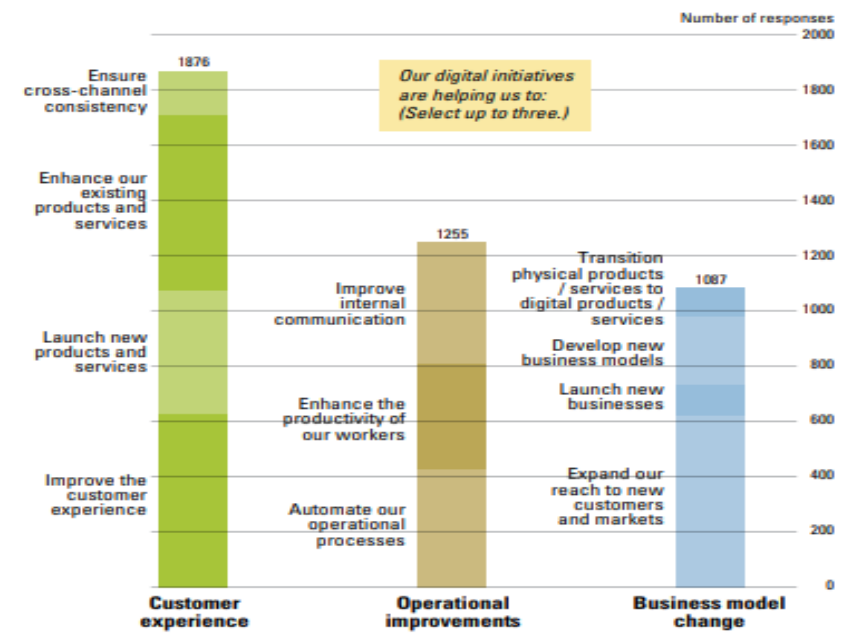
One of the many challenges that digital transformation delivers is Data security. According to Peter Bendor-Samuel (2018) from Everest Group, executives' mindset must approach digital transformation as a journey, rather than a task. He perceives this thinking pattern as fundamental to success during digital transformation. Unlike the transformation initiatives from the past, digital transformation is not a simple event that happens, but an ongoing journey. It can potentially continue indefinitely, maybe for three to five years, or even longer. According to him, the challenges for companies are the following (Bendor-Samuel, 2018):

- The combined nature of the changes can't be completely predicted in the start.
- It is hard to communicate the degree of change at the beginning, so it becomes a problem to build support for it and fund it.
- After implementing the required technology and learn to use it daily, companies need to adjust and then implement even more technology.
- As the technology is implemented, it necessitates collapsing the processes and organizations enabled by the technology.
- It involves changing the metrics that executives establish to drive company performance.
- It takes far longer to implement the changes than anyone wants to believe at the outset.

As a period with massive changes for every part of the company, adaptation is the key, and for adaptation and better acceptance of the challenges executives need to be very open-minded. According to Fitzgerald, Kruttschwitz, Bonnet and Welch (2018), the interrelated nature of the changes cannot be completely foreseen at the beginning, because it is difficult to communicate the degree of change at the outset, so it becomes difficult to build support for it and fund it. After implementing the technology and learning how to use it, companies find that they need to adjust the technology and then implement technology that is even more new. As the technology is implemented, it necessitates collapsing the processes and organizations enabled by the technology, thus it involves changing the metrics that executives establish to drive company performance. It takes far longer to implement the changes than anyone wants to believe at the outset (Fitzgerald, Kruttschwitz, Bonnet & Welch, 2018). They state that companies effectively manage digital technologies, and face their challenges with less complication because they are aware that with it they can gain better customer experiences, engaged operations and improved business processes. However, they emphasize that there is not only one factor that influences digital transformation, but there are many, such as lack of vision, sense of urgency, organizational culture, and other constraints, which can make the process even harder than it is.

They have made a research about the effect of digital transformation and the actual benefits that digital transformation has delivered to companies, which are shown in Figure 3. It is shown as a three – pillar process which is composed of Customer experience, Operational Improvements and Business Model Change. These are fields which are crucial during digital transformation, and are feeling the effect of it the most. The biggest focus is on improving customer experience, launch new product and services, followed by optimizing and improving every part of the overall operations, which will consequentially improve the business model and expand it to a new level.

Figure 3: What has digital done for us lately?



Source: Fitzgerald, Kruttschwitz, Bonnet & Welch (2018).

Figure 3 shows that companies mostly focus on improving productivity in all areas during digital transformation. The goal of executives is, always, to maximize productivity. Besides accepting, companies need to embrace the changes of digital transformation. Embracing them will help them move ahead with the environment.

### 1.1 Areas of digital transformation

Digital transformation is a complex and very broad matter to explain. Its influence and magnitude are such that it not only affects the companies, but also their environments. When discussing about digital transformation, its crucial areas are needed to be explained. It is important to say that as a change phenomena, it has many components which require the attention of the many, but there are some that stand out in every part of companies. Because of its scope, it may seem like something that is too broad to explain, but with some summing-up and explanations, it can be simplified. To assist in the explanation of the key areas of digital transformation there is a table below which is from the Massachusetts Institute of Technology (hereafter: MIT) research. The table is about acceptance of digital transformation into the companies. From it we can see what are, according to them, their biggest threats for successful implementation of digital transformation. Their answers help massively in the key areas' segregation for this thesis. Their answers are in Table 2.

*Table 2: What is the biggest threat facing your company as a result of digital trends?*

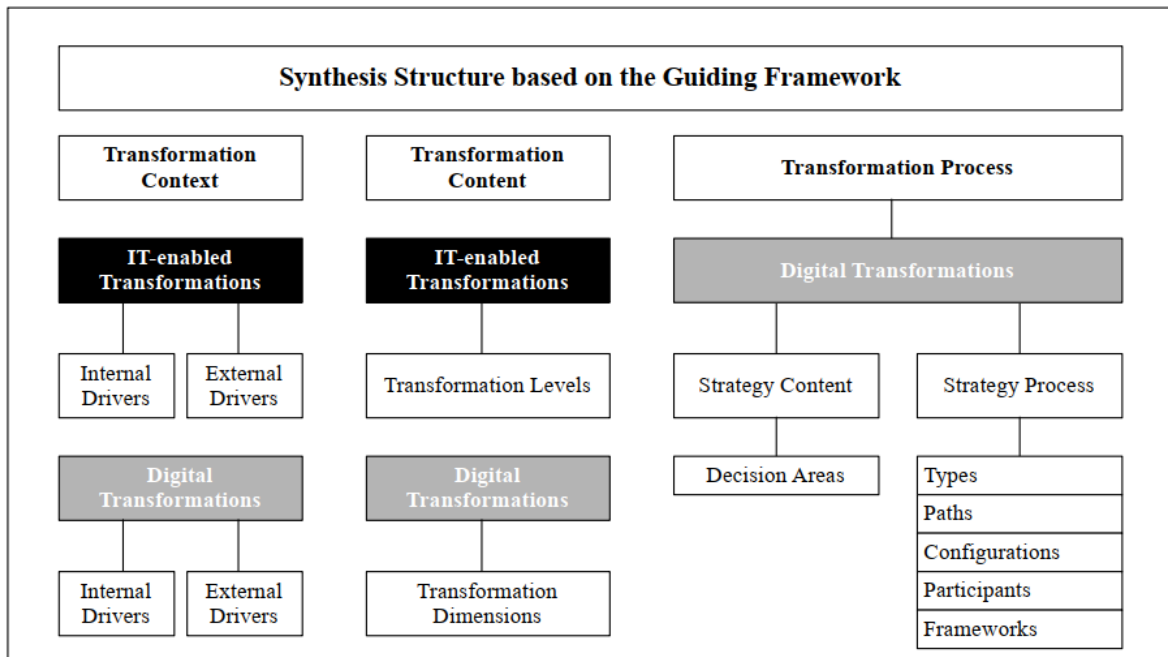
Internal Issues (lack of agility, complacency, inflexible future)	19%
Market Disruption (product obsolesce, lower barriers to entry)	17%
Competitive pressure (more intense competition, faster of new competitors)	16%
Security (security breaches, hacking, intellectual property theft)	14%
Talent (recruiting and developing talent to take advantage of the digital)	6%
Customer (customer base leaving, inability to generate awareness)	6%
Other (lack of resources, too much data, lack of strategic focus)	22%

*Source: Kane, Palmer, Phillips, Kiron & Buckley (2016).*

From Table 2 we can see that most of the examinees in Kane, Palmer, Phillips, Kiron and Buckley’s research from 2016 pointed out that the internal issues are the biggest threat for the arising digital trends, and third in line is Security, as companies are scared of breaches and other crime to their data. Moreover, others that hold the largest share of threats from digital trends are the strategic focus and strategy, the new incoming amount of data, etc. From the chosen opinions we can see that the environment during the change is important, but their focus lies more on internal issues rather than external, therefore the crucial areas described will be of “internal” nature.

In Figure 4 we can see the guiding framework of digital transformation from Ismail, Khater, and Zaki (2017) from their Cambridge Working Paper – Digital Business Transformation and Strategy is shown. With their framework I want to emphasize the importance of the factors of digital transformation, and how can we support their chosen components. Their framework is very detailed, and focused on both external and internal influences, which assists in understanding of the process as a whole unit, rather than partially. They show the process from perspectives of context, content and process, where is followed by internal and external drivers and transformation levels. In their framework they recognize transformation dimension and decision areas. Also, they define the strategy process based on types, paths, configurations, participants and frameworks. Their detailed model allows a complete picture of the digital transformation process. They start with the transformation content, context and process, which follows even further to internal and external drivers and transformation levels of each driver. This segmentation allows careful monitoring of each phase of the transformation process, allowing it to be measurable and improved later on. Their framework finishes with the external and internal driver into the transformation dimensions.

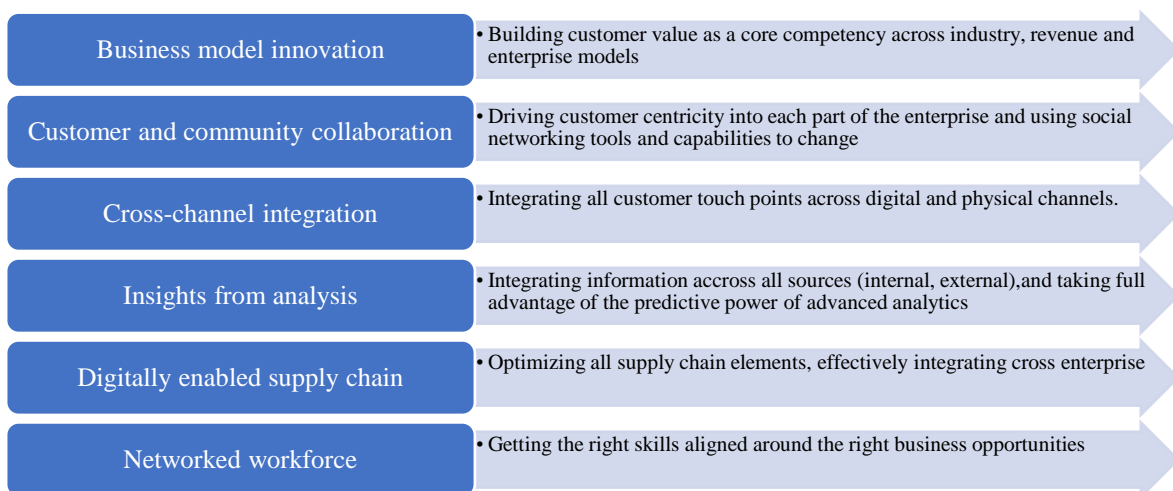
Figure 4: Guiding Framework of digital business transformation



Source: Ismail, Khater & Zaki (2017).

According to Berman and Bell (2011), digital transformation requires businesses that are aiming to generate new customer value propositions, or to transform their operating models in need to develop a new portfolio of capabilities for flexibility and responsiveness to fast-changing requirements (Berman & Bell, 2011). The capabilities are shown in Figure 5.

Figure 5: Digital transformation capabilities



Source: Berman & Bell (2011).



We can say that digital transformation is not only about innovation in the business models, but also innovations in the way of handling the overall business. Now businesses can develop individualized models to meet digital environment expectations. During the process all parts of the companies integrate, the data multiplies fast, the companies are more exposed to the environment than ever, the companies require adaptation.

All of the information above can be summarized and collected into several crucial areas of digital transformation. Each and every one of them is vitally important to the business and the transformation as a process which causes drastic change in companies' structures and operations. The chosen areas which I saw as crucial to cover in this Thesis, to be able to deliver the topic in greater detail, are as follows:

- IT Security;
- Business Process Transformation;
- Change Management;
- Strategic Planning and Analysis;
- Technological Development.

#### 1.1.1 IT Security

In a digital world, the classic, contained enterprise network no longer exists. For that reason, security must be embedded into all applications as the first line of defense (Somaini, 2017). And when it comes to IT protection, it needs to be applied to all fields, not only technology. Even though the technological change seems to make the business fragile in the period of transformation, it is not the spot that needs the biggest protection. IT security is needed in every part when the company is transitioning.

According to the company NTT Security (2017), ensuring that cyber risk management is part of your business resilience plan is not something that can be added after the harmful event, but it must be included from the outset, and implemented across the organization, from your technologies to your organization culture. The pressure in the digital economy is always to be on alert, offering a continuously available service to customers, which means that more than protecting the enterprise, the challenge now is to ensure its resilience and safety (NTT Security, 2017). IT security is crucially important, and if not taken seriously, it can be a costly mistake to make. Therefore, companies are constantly investing in protection of their technology and data, and are willing to do whatever it takes to ensure maximum safety, this is about the companies which are aware of the risks to digital exposure.

With the emergence of digital transformation, data security is required to be a priority as more transactions occur, digital wise. Much more consumer information is to be collected in the future, and data will be far more robust, therefore it needs to be properly protected. Because of this, the main challenges come from the increased risk of breach from attackers

which would want information from the companies. The more applications, data, and processes move into the digital environment, the more opportunities for hackers and other bad actors arise, and there are more potential points of entry, making it difficult for cyber security professionals to catch all vulnerabilities and keep track of all threats. Another threat is the massive potential for damage due to a data breach or hack. It is greater than it has ever been because data is extremely valuable to businesses today, and more devices are now internet-connected, meaning they could be hacked more easily. Also, digital capabilities and other technological improvements have increased the speed at which developers can create and update software and other IT technology, because of the rapid change it makes it more difficult to keep up with security processes (Matthews, 2019). IT security is a part of the company which requires the most attention from every part of it, thus the losses can be enormous.

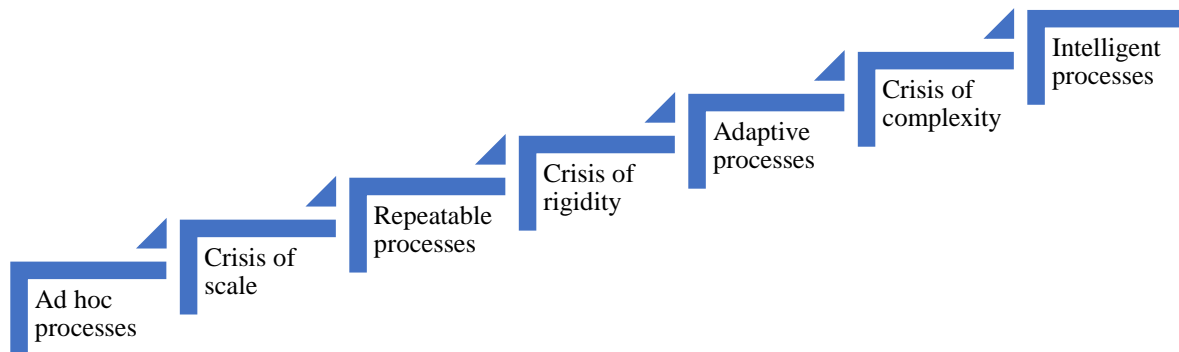
### 1.1.2 Business process transformation

Next component which is crucial in digital transformation is business process transformation. There are many articles which point out the drastic change business processes which occur as a result from digitalisation. Even though it seems that it is a new concept, it is not, because the the business processes have the biggest effect of digital transformation.

During this change, the clearest picture of the flaws in the current business model is shown. This is not about transforming the models, but to see them as one of the key components of digital transformation, in which digital technologies are used to transform them, not to create them from the start (Li, 2017).

With digital transformation, as mentioned previously, the emergence of intelligent business processes arises. This is due to the ongoing changes in the technology which is used, therefore the processes adapt to the changes. The intelligent processes are used to maximise efficiency of all the operations of the company, while minimising costs. Its development is shown in the Figure 6. This Figure is particularly interesting because it shows the transformation process as a multi-scaled path, allowing companies to explore deeper and through time find their optimal process model. Also, it shows how the development and upgrade of them was happening, and how did changing requirements over time influence the development of the processes. The evolution is particularly interesting to follow, because of the upgrade pattern it follows, from requirements of time – consuming processes, to complexity increase and the need of automatization.

Figure 6: Transformation of processes from ad-hoc to Intelligent



Source: Kokkinakos, Markaki, Koussouris & Psarras (2016).

Ad-hoc processes are »single-use« processes, which serve as a guiding point towards where our processes need to shift. Crisis of scale processes are the ones which are simply defined, but a good base for quality process design for process upgrades. Repeatable processes are more complex, adapted processes which are used for repeatable operations. Crisis of rigidity processes are complex processes, with advanced components for high efficiency of operation. This is a key turning point to complex and advanced processes. Adaptive processes are upgraded processes which can be used in many fields and operations in companies. Follow complex processes, which in this stage try to include as much elements as possible, to be able to deliver the best result. The last phase, the intelligent processes are the final phase of development, including all of the important elements from its predecessors for optimal operations performance.

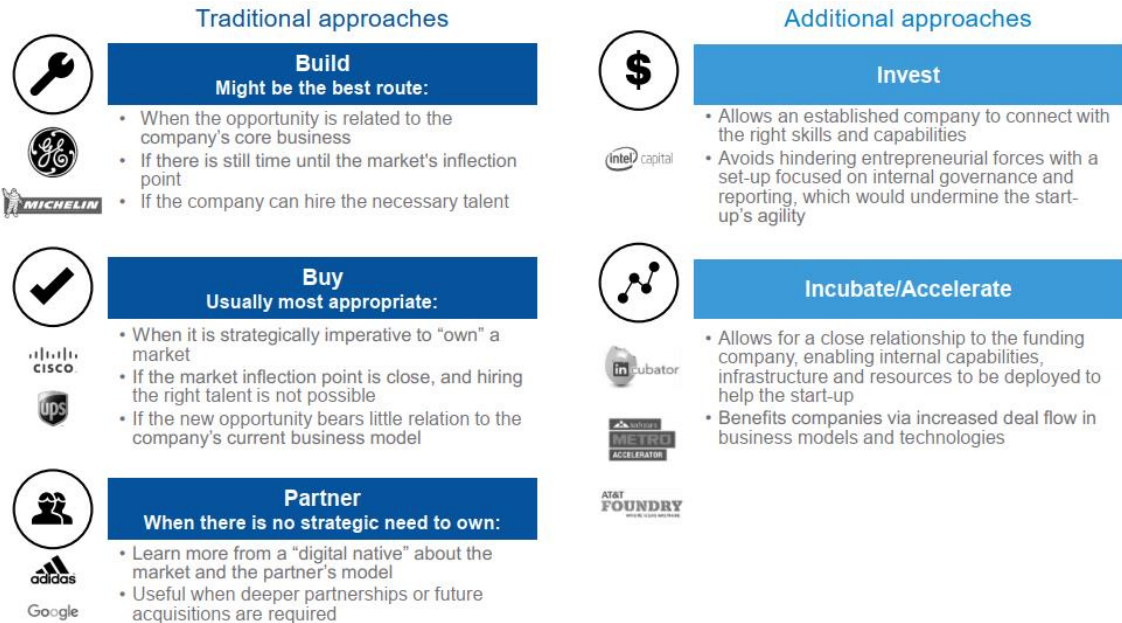
From Figure 6 we can also see that the path to creation of intelligent digital processes is complex, composed of several steps, but it is one of the consequences of digital transformation. Crucial enabler for all of the stages in this case is information technology, which is especially noticeable in the adaptive processes stage, while industrialization phase is in the repeatable processes. Digital capabilities then advance with the development of intelligent processes. Information technology dictates the complexity of transition of the company to the digital environment. Intelligent processes which arise from digital transformation are coming from ad-hoc processes as stage 1, then crisis of scale, followed by repeatable processes, and it continues ahead to develop to intelligent processes in the end. And it is subject to evolution, since this is a fast changing field.

On the other hand, the business model concept is useful for better understanding the business logic of a company by describing how value is created, delivered and captured (Osterwalder and Pigneur, 2010), and finally, it can be categorized as digital, if digital technologies trigger fundamental changes in these value dimensions (Veit et al., 2014) (Gerrit, Hanelt, Nickerson & Kolbe, 2017). But it is important to mention that digital business model and digital transformation are very different terms. The digital business

model can be / is a part of the digital transformation process. And it is a crucial one, because through the business models we can influence all of the operations in the company.

According to a research made for the World Economic Forum, for the Digital Transformation Initiative in 2015, business models need to be transformed with the use of two approaches. With this changes they realise that they have to fundamentally change their business processes. The approaches are explained in Figure 7.

Figure 7: Approaches of business process transformation during digital transformation



Source: World Economic Forum (2016).

Business processes during digital business transformation are key factors in the entire process. All changes in the organizations are felt and experienced through the processes; therefore, they need the biggest attention during the changes.

1.1.3 Change management

A following component in digital transformation is change management. This is because the transition which companies face can be hard to accept for the employees and company as a whole, and they need the time and resources to adapt. From many researchers and practitioners it is defined as the key to successful digital transformation. According to a McKinsey global survey, companies face different challenges today when implementing large-scale changes than they did in the previous years (Lindsay, Smith & Waugh, 2018). This means that companies would have more problems adapting, without the right strategy. This is why change management is one of the key components of digital transformation,

because companies need to pass this transitional period without too many distress and damage, to be able to operate efficiently, and need to be guided in the right way.

Following is Figure 8 representing three areas of change management. On it we can see that all of the factors are taken into consideration (technology and human). The figure tries to explain how all of the areas are interconnected and are dependent from one another. This also shows that successful change needs more than just rules and information, but methods and adaptation practices for maximal success.

*Figure 8: Different views of change management*

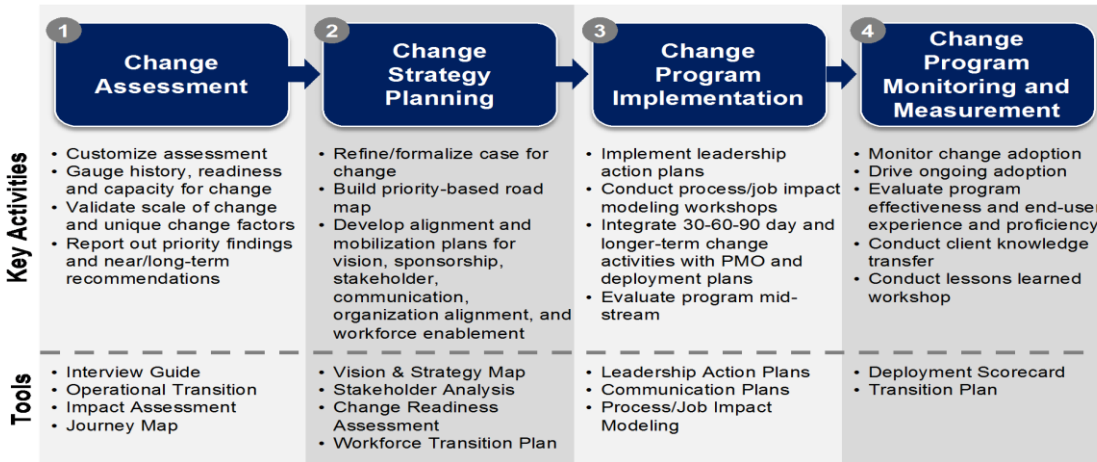


*Source: Chapman & Porter (2016).*

To be able to implement change better during digital transformation, certain steps need to be fulfilled. One change management approach for more successful implementation is in the figure below. From it we can see that, in our case, during digital transformation, companies need to focus on assesment of the curent situation, then followed by strategy planning, program implementation and then monitoring of results. This approach follows a step-by-step path which would result with successful implementation of the needed changes and adaptation to change. The process is composed by four steps, and it starts with assesment of the current position, followed by strategy planning (strategy adaptation and planning in all changes, regardless of the type of change, are crucial for companies), then followed by implementation of the new changes to the given situation, and finishing with monitoring and measurement. The process is presented graphically in Figure 9. The change management process shows the tools and key activities needed for successful adaptation of employees during times which require drastic change, such as digital transformation. Each of the steps deliberately explains how these activities and tools need to be managed for optimal acceptance and adaptation.

Figure 9: Change management approach

### Change management approach



Source: Basware (2018).

According to Andy Noronha, director of strategy at Cisco, the nature of digital business transformation is different from change management, because it combines high levels of scale, interdependence, and dynamism with the need to make fundamental changes to the entire organization in the service of a new strategic direction. Precisely because digital business transformation involves making big changes across multiple aspects of the business; conventional change management is ill-suited to fostering major changes in highly entangled organizations (Noronha, 2019). Change management can be seen rather as a part of the transformation, than as a similar or different phenomena. The whole point of transforming companies is to change them, fully or some parts of them.

#### 1.1.4 Strategic planning and analysis

Another key component is the strategic planning and analysis. This is crucial to mention because digital transformation is not only connected to business models or digitalisation, but it changes the entire structure of the company, and it is a change which requires careful strategic planning. Strategic planning can ensure that while going through digital transformation, the company will be able to adapt to the changes that are happening or going to happen in the future.

While many companies are experimenting with digital transformation, recent studies of success stories have shown that the enhanced competitive positioning of successful firms does not depend solely on the technologies they adopt, but, more importantly, builds on the strategies that their leaders deploy. Also digital transformation influences and assists the process of strategic planning and implementation.

Exploring digital business transformation from a strategic point of view should enhance companies and academics with valuable insights and aid leaders in grasping the developments and underlying strategic building-blocks of the transformation that they are attempting (Ismail, Khater & Zaki, 2017). Digital transformation strategies take on a different perspective and pursue different goals. Coming from a business-centric perspective, they focus on the transformation of products, processes, and organizational aspects owing to new technologies (Matt, Hess & Benlian, 2015).

Currently many materials exist to assist companies in making a “digital” strategy during the transformation process. The exploitation and integration of digital technologies often affects large parts of companies and even go beyond their borders, by impacting products, business processes, sales channels, and supply chains. Potential benefits of digitization are manifold and include increases in sales or productivity, innovations in value creation, which require a carefully made strategy (Matt, Hess & Benlian, 2015).

According to Hess, Matt, Benlian and Wiesboeck (2016), the purpose of the journey toward digital transformation is to reap the benefits of digital technologies, such as productivity improvements, cost reductions and innovation, and a clear strategy for deploying and exploiting digital technologies is crucial for future business success.

The research of MIT Sloan Management about the importance of digital transformation strategy and strategic planning shows that early-stage companies are falling into the trap of focusing on technology over strategy. Digital strategies at an early-stage entities have a decisively operational focus. Approximately 80% of respondents from these companies said that improving efficiency and customer experiences are objectives of their digital strategies. Only 52% say that transforming the business is on the digital docket. In maturing companies, on the other hand, digital technologies are more clearly being used to achieve strategic ends. Nearly 90% of respondents said that business transformation is a directive of their digital strategies. The importance that these organizations place on using digital technology to improve innovation and decision making also reflects a broad scope beyond the technologies themselves. In companies with low digital maturity, approximately 60% of respondents say that improving innovation and decision-making are digital strategy objectives. In digitally maturing organizations, nearly 90% of strategies focus on improving decisions and innovation (Kane Palmer, Phillips, Kiron & Buckley 2015).

Overall, many of the professionals in the field agree that strategic planning and analysis are the crucial part in digital transformation. They show how companies are prepared to accept the change and how prepared are they to adapt and implement.

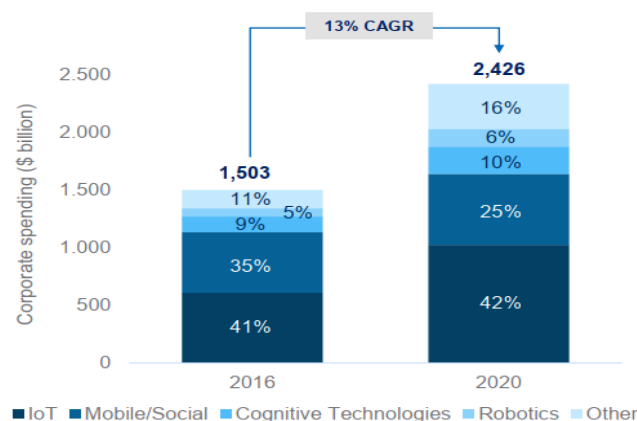
### 1.1.5 Technological Development

And last, but not least is the Technological Development. This is the broadest part of digital transformation, from many often confused as digital transformation, because of the influence of digitalization. Technology is the first indicator of the start of digital transformation. Technological development and digitalization are key part of the transformation process, and are the most important and widespread in this change. All of the important changes come from the technology used, and it is crucial whether is it up to date or not, and how far is the company digitalised. Also, the technology has massive impact of the business processes of the companies, thus it dictates the adoption process of the change inside. On the other hand, the economic, societal, and business implications of digitalization are contested and raise serious questions about the wider impact of digital transformation.

The IT world is rapidly developing, and it has massive influence on the phenomena of digital transformation. Business processes are under the greatest influence of technological development and digitalization. According to Westermann et al., despite the hype around innovative digital technologies, most companies still have a long way to go in their digital transformation journeys and companies in all industries and regions are experimenting with and benefiting from digital transformation’s influence on technology (Westermann, Camejane, Bonnet, Ferraris & McAfee, 2011).

Whether it is in the way individuals work and collaborate, the way business processes are executed within and across organizational boundaries, or in the way the company understands and services customers, digital technology provides a wealth of opportunity to those willing to change their businesses to take advantage of it. (Westermann, Camejane, Bonnet, Ferraris & McAfee, 2011). Therefore technology is crucial in the development, but not the only necessary element. Technology serves as the enabler of digital transformation, rarely as the deffiniator (McKeown, 2018).

*Figure 10: Corporate Spending on New Technologies (2016–2020)*



*Source: World Economic Forum (2016).*



According to a research made from the World Economic Forum about digital transformation, it says that spending on technology in the IT sector during the next four years is estimated to be around 14 percent. Figure 10 shows the share of estimated spending.

Nowadays companies are mainly turning towards technology and technological advancement when they originally think of digital transformation. Even though it is not the only influence, it is surely the most commonly thought for it, and the first that comes to mind when digital technologies come along. Even with technology today which is severely widespread all around us, companies are feeling it's effect even more. Still it is one of the most expensive components, but the first one to think about when time comes for adapting to the ongoing digital transformation.

## **1.2 Businesses' acceptance of digital transformation now**

From all of the areas named previously, we can see the biggest influences on digital transformation. Now we need to know how businesses adapt to this change and what measures are they taking to prevent too much damage. Several years have passed since the emerging of digital transformation; therefore, we can see how companies are adapting to the changes. Businesses see digital transformation as the realignment of or new investment in technology, and business models as effectively engaging digital customers at every touch point in the customer experience lifecycle (Kokkinakos, Markaki, Koussouris & Psarras, 2016).

According to Wassermann et al, the pressure points for change are increasing from many angles for businesses today. Globalization is dictating efficient integration of businesses, which can only be achieved through digital processes and collaborative tools. Employees and customers are starting to demand new ways of working. As competitors and new entrants make digitally enabled practices a reality in an industry, other firms will need to follow (Westermann, Camejane, Bonnet, Ferraris & McAfee, 2011).

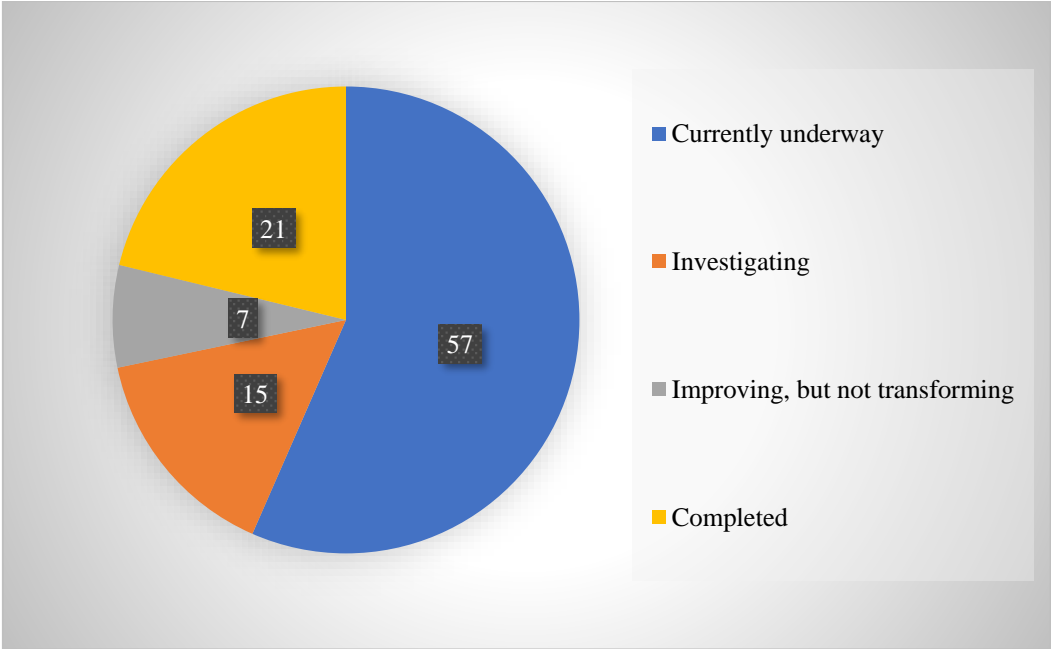
According to Cauldron and Van Petegem, many factors determine the success rate of adaptation to business transformation. They include age of the company, leadership, strategy, technology used, etc. Companies realize that they need to adapt to the change when they see that digital is disrupting their company and the industry in which it operates. At this phase companies reach the point where executives realize that a positive transformation cannot be made in the current form. The entire company needs to have big IT IQ (Caudron & Van Peteghem, 2016). Therefore, the big questions are, will the companies adapt, and how are they handling the changes?

Companies are now faced with a problem whether they invest resources in their existing technology and business strategies or look at current market trends. From all of the testimonials from company executives, it even seems like companies are forced do accept

this trend, since it is spread everywhere. A former Cisco Chief Executive Officer, John Chambers, gave a statement at a conference full of CEOs from around the world that 40% of the companies present at the conference at that time, would not be around in a meaningful way in 10 years, if they fail to execute or if they miss an opportunity in relation to transformation.

The ironic fact about this change is that technology is a part of the problem; however, it is also a part of the solution (Chambers, 2015). Figure 11 represents a graph from Schadler et. al.'s research, in which we see the share of companies' attitudes of their current digital transformation phase. Their focus for the segmentation into phases was on medium sized companies and large corporations.

Figure 11: Which of the following best describes your firm's digital transformation?



Source: Schadler et al. (2018).

According to their research, the majority of the companies claim that their companies are underway in the process of digital transformation, while following are the companies that claim that they have completed their transformation process. The examinees from the same research claimed that the biggest influence of digital transformation is on IT processes, and the most in the Utilities and telecommunications sector, even though on all of the sectors this result is the highest (Reference from Table 2 and 3). This means that companies feel the biggest influence from it on their processes, and they are a crucial component to describe in this change.

Table 3: Which of the following best describes your firm's digital transformation? (in %)

Influence of Digital transformation	Financial services and insurance	Manufacturing	Retail and wholesale	Utilities and telecommunications	Public sector and healthcare
Affected company field					
Marketing	34	32	43	19	21
Sales	31	32	46	31	12
Customer service	45	33	54	39	54
Product design and development	37	33	29	36	19
IT processes	62	52	50	64	52
Financial	47	24	23	38	34
Manufacturing	9	38	21	19	8
Supply chain	9	32	28	28	17

Source: Schadler et al. (2018).

Today many professional materials exist which help executives understand and accept the changes. The digitalization processes often causes radical new forms of business and industry change. In addition, now the employees can be educated too, since the digital is getting more and more popular at universities and schools as well as in companies.

According to multiple researches, companies are showing high levels of bureaucracy, risk-aversion, and slow technology adoption (2014 OECD Conference: Innovating the Public Sector: From Ideas to Impact) (Andersson, Movin, Mahring, Teigland & Wennberg, 2018). This makes it difficult for businesses to accept it. However, because it is spread everywhere and its influence is strong, businesses are working towards adapting and accepting the trend, and many researches prove that. Companies try to be as innovative as possible while adapting, to avoid the risk of failure and massive losses.

A research made by Harvard Business Review states that in 2019, the biggest threat of companies is digital transformation. It creates massive changes and massive costs along the way and mainly it is because most digital technologies provide possibilities for efficiency gains and customer intimacy, but if people lack the right mindset to change and the current organizational practices are flawed, it will simply magnify those flaws. (Tabrizi, Lam, Girard & Vernon, 2019). That is why companies' executives need to assess their overall businesses and business processes before investing in technology and other additions to the change. Digital transformation stays one of the top priorities for companies in the current year.

## 2 COUNTRIES DESCRIPTION

### 2.1 North Macedonia

North Macedonia is a country in the Balkan Peninsula, currently applying to enter the EU. According to the World Bank, an upper middle-income country has made great strides in reforming its economy over the last decade. More efforts are still needed to generate economic growth and improve living standards for all (The World Bank, 2018). Currently, there are over 10000 companies in the country, from micro companies to corporations. Unfortunately, there is very small amount of data about the digital transformation of businesses present for the country alone.

According to the State Statistical Office of Macedonia, the classification of the companies in the country is adjusted to OECD classifications, and the methodology is classified based on the definitions, classifications, and nomenclatures of the Regulative of the European Commission no. 995/2012. The table below shows the official classification of companies based by size, according to the Statistical Office of Macedonia and the Ministry of Economy:

*Table 4: Companies classification by size in North Macedonia*

Small companies	10-49 employees; Less or equal annual revenue of 2.000.000 EUR
Medium companies	50-249 employees; Less or equal annual revenue of 10.000.000 EUR
Large companies	More than 250 employees More annual revenue than 11.000.000 EUR

*Source: Statistical Office of Macedonia, Legislation for Business Entities (2014); Ministry of Economy (2004).*

According to the same source, currently there are over 10000 companies in the country, from which only 776 are middle-sized companies and 523 are large corporations (2017 Statistical Data).

The companies, which are part of the statistical research on the number and size of business units from the Statistical Office of Macedonia, are then classified into the following industries:

- Mining and quarrying.
- Manufacturing industry.
- Electricity, gas, steam and air conditioning supply.
- Water supply, sewage disposal, waste management and environmental remediation activities.

- Wholesale trade, except of motor vehicles and motorcycles.
- Transport and storage.
- Publishing.
- Telecommunications.
- Computer programming, consulting and related activities.
- Information service activities.
- Financial and insurance activities.
- Architectural activities and engineering; technical examination and analysis.

The share of middle sized and large companies by industries in the country, according to the Statistical Office of Macedonia is presented in Table 5.

*Table 5: Number of middle sized and large companies by industries in 2017*

	2017	
	11110 Number of enterprises	
	50-249 persons	250 persons and more
<b>B Mining and quarrying</b>	7	4
<b>C Manufacturing</b>	354	68
<b>D Electricity, gas, steam and air conditioning supply</b>	5	4
<b>E Water supply; sewerage, waste management and remediation activities</b>	28	10
<b>F Construction</b>	70	9
<b>G Wholesale and retail trade, repair of motor vehicles and motorcycles</b>	147	21
<b>H Transport and storage</b>	52	8
<b>I Accommodation and food service activities</b>	40	.
<b>J Information and communication</b>	39	5
<b>L Real estate activities</b>	5	1
<b>M Professional, scientific and technical activities</b>	13	2
<b>N Administrative and support service activities</b>	34	16

*Source: Statistical Office of North Macedonia (2018).*

From the table above we can see that the majority of middle sized companies are in the Manufacturing industry, followed by Wholesale and retail trade industry, and the same applies for large corporations as well, as it can be seen from the numbers above. On the other hand, from 11,110 enterprises, 794, or 7.15 percent are middle-sized companies, while 147 or 1.33 percent are large corporations.

For the country alone, there are almost no reports on the current state of digital transformation, but rather it is analyzed as a part of the Western Balkans region. According to a report made from Barbic et al. (2018) this region can be an important pillar of the overall transformative dynamic and currently it is lagging behind digital transformation in comparison to the EU average and most its member states (Barbic et al., 2018). Their research showed that the country has much to learn and implement, but the actual state and

how far the transformation process have reached, is not widely known yet, especially about the influence of it on the companies’ processes and overall operations.

In 2018 and 2019 in the country there were some events about gaining awareness of the digital transformation phenomena, such as the Digital Summit which happened in 2019 and MASIT conference which happened in 2018. At the conferences there were speakers from the country and abroad, speaking about the environment, the population and overall acceptance of digital transformation.

A study made from PwC in Albania, Kosovo and North Macedonia shows that in North Macedonia this is a topic which is lagging behind all other Balkan countries, but still ahead of Albania and Kosovo. Companies in the country are becoming more aware that the change is happening and the sooner they adapt, the lower the risks will be. The ecosystem of the country is shown in the table below. The study was focusing on the IT state in the country, from available technology in companies and individual households, to available educated staff and other variables which determine successful digital transformation. Western Balkan countries have so little data available on the topic that every research done in the field is maximum two years old. The descriptions of the companies' ecosystem is presented in Table 6.

*Table 6: Company Ecosystem in North Macedonia*

<b>Ecosystem Dimension</b>	<b>Challenge / Opportunity</b>	<b>Recommendation</b>
<b>1. Strategic Sectors</b>	Focus limited resource and funding on sector activity where Macedonia has a natural advantage and strategic interest - AgriTech - Energy & Renewables - Apparel & Fashion - Tourism	- Big Bets / National challenges that convene ecosystem participants in a concerted development effort - Links to investments into R&D, Incubation and Acceleration activity
<b>2. Policy and Regulatory environment</b>	Create incentives that foster R&D investment and reduce burdens for new businesses	- Ironing out of administrative processes - SEIS/EIS style tax provisions for investors - R&D tax credits - Grace period for startups
<b>3. Digital Skills &amp; Talent</b>	- Develop more and better skilled graduates - Encourage entrepreneurship as a career choice - Improve research collaboration	- Effective implementation of the ambitious Innovation Strategy 2016 - 2020 -Incubation programme at selected university departments

*Table continues*

Table 6: Company Ecosystem in North Macedonia (cont.)

Ecosystem Dimension	Challenge / Opportunity	Recommendation
<b>4. Start-up Initiatives</b>	Support start-ups in their early Initiatives that support start-ups in their early stages - Mentoring - Funding - Workspaces	- Overall well-connected life cycle support programmes from foundation to scaling. Coordination of donor grants - Angel / Seed Investor programme - Mentorship initiative, incl. with diaspora - Expansion of co-working offerings - Accelerator programme aligned with strategic sectors
<b>5. Scale-up</b>	Support initiatives for the growth and scaling phases	- Not a top priority at this maturity stage. - Connect with larger WB5 regional or international programmes
<b>6. Collaboration</b>	Develop closer ties between ecosystem, R&D facilities and private industry	- Pilot programmes for corporate challenges - PwC collider or TCUK challenges - Communication / education activity to raise awareness with business leaders -
<b>7. Profile</b>	Connecting and promoting the developing ecosystem, within Macedonia and internationally	- Ecosystem Map - Celebrating Role Models - PR/Media/TV campaign for entrepreneurship
<b>8. Ecosystem initiative</b>	Provide a voice for and coordinating entity that can orchestrate ecosystem development initiatives	- Support for the further development of Startup Macedonia or a similar organization

Source: PwC (2018).

## 2.2 Slovenia

Slovenia is part of the Balkan Peninsula, former Yugoslav Republic and a part of the European Union. According to the World Bank, Slovenia is a high-income country. It is strategically located on the crossroads between eastern and western Europe and it is endowed with highly skilled human capital. It ranks among the most successful transition economies and is perhaps the most developed EU accession country. Slovenia's high-income levels are partly a result of very high pre-transition standards of living, the highest

among all transition economies. Slovenia's relative prosperity has been a key factor in the country's strategic approach to reform, which is substantially different from other Central and Eastern European (CEE) countries (The World Bank Group, 2003).

In the country, according to the Statistical Office of Slovenia, in 2017 the number of medium-sized enterprises increased the most (by 2.8%), followed by large enterprises (by 2.1%). In 2017, large enterprises were the first in terms of the number of persons employed and the share of generated turnover. In these enterprises, the number of persons employed (by 4.0%) and turnover (by 18.8%) increased mostly over the previous year.

In Table 7, companies by size, persons employed, and annual turnover in 2017 are presented. We can see that most companies are micro enterprises, followed by small, then medium and large enterprises. Medium sized companies represent 1.07 percent, while large corporations are 0.18 percent from the total number of companies in the country.

*Table 7: Enterprises by size, persons employed and annual turnover in 2017*

**Enterprises, Slovenia**

	Enterprises		Persons employed		Turnover	
	2017	<u>2017</u> 2016	2017	<u>2017</u> 2016	2017	<u>2017</u> 2016
	number	index	number	index	mio EUR	index
<b>Total - enterprises</b>	<b>195,756</b>	<b>99.8</b>	<b>881,920</b>	<b>102.8</b>	<b>108,840</b>	<b>110.4</b>
Micro enterprises (0-9)	185,997	99.8	260,623	102.4	22,482	105.6
Small enterprises (10-49)	7,329	100.8	144,649	100.9	21,530	109.4
Medium enterprises (50-249)	2,084	102.8	205,910	102.9	26,125	104.4
Large enterprises (250+)	346	102.1	270,739	104.0	38,703	118.8

Footnote: because of rounding, the sum does not match the persons employed.

*Source: Statistical Office of Slovenia (2017).*

Regarding the companies' classification, according to Slovenian's Companies Act (ZGD-1), companies are classified by size based on number of employees and annual turnover:

*Table 8: Companies classification by size in Slovenia*

Micro company	Less than 10 employees, or revenue less than 700.000 EUR (previously 2.000.000 EUR)
Small company	From 10 to 49 employees, or revenue from 2.000.000 to 8.000.000 EUR (previously 8 800 000 EUR)
Middle-sized company	From 50 to 249 employees, or revenue from 8.000.000 to 40.000.000 EUR (previously 35.000.000 EUR)
Large company	More than 250 employees (revenue is not explicitly defined, should be more than 40.000.000 EUR)

*Source: Data (2015).*



According to the Statistical Office of Slovenia, in the country in 2017 there were 142574 companies, from which the majority was small companies, followed by medium sized companies and then large corporations. Unfortunately, the smallest number of companies in the country is of large corporations. Below is a Table 9 with the number of medium sized and large companies per legal structure for 2017. The companies in the table are classified based on organization and legal form, number of people employed, year, and measures for employment. This table is filtered to fulfill the requirements that need to be presented in this thesis.

*Table 9: Table of enterprises by organizational form, year, measures, and number of persons employed*

Enterprises by ORGANISATIONAL FORM, YEAR, MEASURES and NUMBER OF PERSONS EMPLOYED		
	2017	
	Number of enterprises	
	Medium enterprise (50-249)	Large enterprise (250+)
<b>Enterprises - total</b>	2084	346
<b>11 Legal persons, total</b>	2070	346
<b>111 Companies</b>	1204	251
<b>11101 Limited liability companies</b>	1068	168
<b>11102 General partnerships</b>	0	0
<b>11103 Joint stock companies and limited partnership joint stock companies</b>	136	80
<b>11104 Limited partnerships</b>	0	3
<b>112 Other legal persons</b>	866	95
<b>11201 State bodies and local communities</b>	67	30
<b>11203 Institutions</b>	735	57
<b>11204 Associations and federations of associations</b>	7	0
<b>11207 Co-operative societies</b>	21	0
<b>11208 Other forms of enterprises</b>	36	8
<b>12 Natural persons, total</b>	14	0
<b>121 Natural persons</b>	14	0
<b>12101 Individual private entrepreneurs</b>	14	0
<b>12102 Other natural persons</b>	0	0

*Source: Statistical Office of the Republic of Slovenia (2017).*

As contrary to North Macedonia, there are many sources of information about the state of digital transformation in the country, and all of the analysis out there is for the country alone. According to a report made from Barbić et al, Slovenia is digitally the most developed compared to other countries (Barbic et al., 2018). Their research, among the other countries' digital development, showed that the country has implemented many novelties, and has yet a lot to implement.

Digital transformation as a change has been highly accented in Slovenia, and there are many conferences and companies which provide materials and tutoring on the topic. According to a report made by the Ministry of Public Administration (2017), almost the entire system has been digitally transformed and changes are implemented everywhere, because the companies are developing and changing very fast, so they need to follow suit.

The same research states that the overall digital change of businesses and everyday living environment combined with the sharp increases in big data, where a growing number of devices that surround our environment communicate among themselves, as well as increasingly changing business models, present huge daily challenges which cannot be understood otherwise than as a beginning of a new radical change of all business and social systems (Digital Transformation in Slovenia, 2017).

Slovenia has the key competences and requisites for digital transformation. It has one of the most developed ICT sectors, achieving results better than expected in the field of e-commerce and use of cloud computing. The country is ranked seventh for digital transformation among European Union members according to its population skill levels. The Government of the Republic of Slovenia is the first to have certified the state as an accredited provider of cloud services (Gospodarska zbornica Slovenije, 2019).

For successful overall digital transformation, an important factor is the company ecosystem in Slovenia. The country's company ecosystem is highly developed and innovative. According to a report from ABC Accelerator, the Slovenian start-up ecosystem has consolidated in the past year, driven by private investments into Slovenian companies and professionalization of start-up world. On the other hand, according to Ms. Stojmenova, knowing modern digital tools and understanding the requirements of the environment are crucial for the digital transformation of the active work force population, apart from the companies. Slovenia cannot boast with a high level of digital skills because more than 20% of the Slovenian population does not have any digital skills, they do not use Internet, and almost half of the population has very low or only basic digital skills (Stojmenova, 2018).

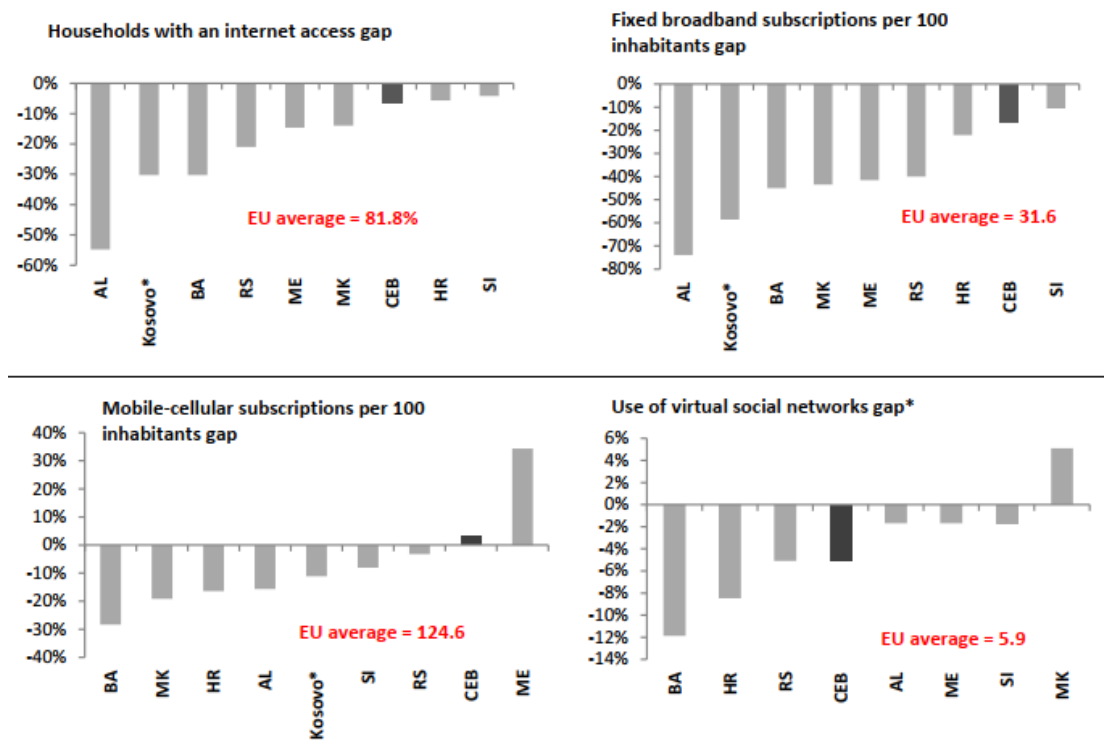
When compared to all other Balkan countries, it is important to mention that Slovenia is leading in the trend of digital transformation, even though it is lagging behind her EU peer countries. However, the climate in the country for overall development is strong and positive changes await.

### **2.3 State of digital transformation - North Macedonia and Slovenia – what do we know so far**

Even though the literature and the research done in the country are minor, there are still some sources, which can assist in the development of the analysis of the state. According to the research from Barbic et. al. made on all Western Balkan countries, due to the fact that digital transformation is reflected in different aspects and in a multitude of different variables that measure digital transformation, in this region Slovenia is digitally the most advanced economy, followed by Croatia, Montenegro, Serbia, North Macedonia, Bosnia and Herzegovina, Albania, and then Kosovo. According to the same research, beyond the economic effects of digital transformation, there are substantial benefits in the fields of governance, its social impact, as well as on regional cooperation and European integration (Barbic et al., 2018).

In all these fields, there are direct consequences of increased digital transformation, and despite reaping numerous benefits, the current state of digital transformation in the Western Balkans shows that the region lags considerably behind EU averages with respect to all key indicators of digital transformation (Barbic, et al., 2018). From Figure 12, we can see the gaps of digital transformation in each of the Western Balkans countries, to see where the problem in successful digital transformation adaptation lies in Macedonia, and how it differs from Slovenia and other Balkan countries.

Figure 12: Gaps to digital transformation in Macedonia in 2016



Source: Barbic et al. (2018).

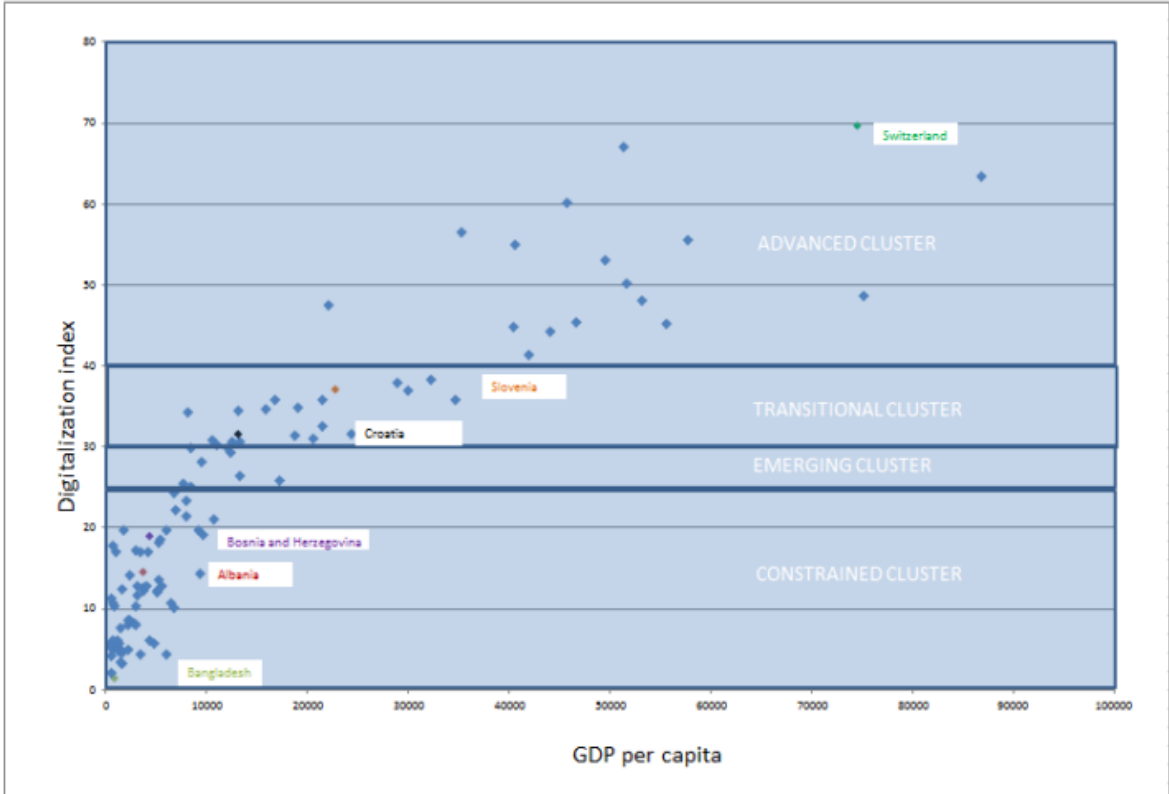
Abbreviations from Figure 12 are as following: AL- Albania, BA- Bosnia and Herzegovina, RS – Republic of Serbia, MK – North Macedonia (old code), CEB – Central Europe and Baltics, HR- Croatia, SI – Slovenia. In the figure, we can see comparison of the given countries with the EU averages (the darker bars).

We can carefully see that North Macedonia is in the middle of all countries, but too much below the EU average measures of each. In North Macedonia, the gap of mobile cellular subscriptions is almost -20 percent, the usage of virtual social networks gap is -6 percent, households with internet access gap is less than -10 percent and the gap of broadband subscriptions gap is around -20 percent. On the other hand, Slovenia’s gaps are much lower, thus the country is the leader in digital transformation in the region. This is important data because it shows how far the companies have reached with the actual presence of the components of digital transformation. This data shows that the companies

are still not fully implementing digital transformation because the population is not prepared technologically for the changes, and it takes longer to adapt.

From the same research from Barbic et al. (2018), we can see that the digitalization index for Slovenia is the highest, while North Macedonia is situated between Bosnia and Herzegovina and Croatia with regard to the digitalization index, even though this is not even marked in the graph below. The digitalization index shows that the country's companies are still far away from the optimal value (here the EU average digitalization index is included); therefore the digital transformation process takes longer to enforce completely. Companies in the countries, according to this data, are lagging behind other EU countries. The digitalization index in Barbic's research is created on the factor analysis of 16 crucial indicators. The biggest weight of the index is attached to capacity, use, and infrastructure reliability indicators, followed by affordability indicators. Digitalization indices are presented in Figure 13.

Figure 13: Digitalization index per capita in Western Balkan countries



Source: Barbic et al. (2018).

As the same study demonstrates, digital transformation, if managed and harnessed by the companies of the Western Balkans, has cascading effects that extend well beyond the narrow scope of the digital (Barbic et al., 2018).

According to the researchers Stancheva, Gigov and Popova (2017), who focused on the banking sector, banks are mainly large corporations, which again can be used as a template for the topic given. North Macedonia experiences relatively low level of readiness for significant development of the digital banking, and digital way of doing business overall, which in their case is limited on basic bank transactions. Such condition can be explained by the clients mistrust in e - services, lack of information for the digitalization's benefits, resistance for changing habits, etc. (Stancheva, Gigov & Popova, 2017). This is also the case because, according to them, digital transformation changes the effect of supply and demand, and the population currently is not completely ready for the shift, which consequently makes the change in the companies slower. In general, executives are scared of the changes; they are considering their environment and are carefully looking for a way to go through this process without too much damage.

At a conference about digital transformation in the country, Frank Zervos, which is a Sales Director in Oracle, stated that digital transformation is in every industry and that the challenges the companies are facing are to improve agility and innovation, to reduce cost and modernize IT, to reduce risk and to increase performance and business insights. He also stated that currently new principles and innovation in the field are needed, and the innovation is not only digital, but on multiple levels.

The focus of all the lecturers present at the digital transformation conference, held last year in Skopje, was to describe the phenomenon, and to make recommendations about the adaptation and the process of accepting it.

Even though the country actively explores the possibilities of digitalization, it seems that it is still demonstrating a low level of readiness for more significant development. Despite the wide utilization of the internet and digital technologies in the companies, yet, according to the multiple researches, companies are still limited to basic services, and their processes are still away from digitally optimized.

According to ICT consultant Ljubomir Trajkovski there are currently six barriers towards successful digital transformation of companies in North Macedonia (Trajkovski, 2018). Those are as follows:

- A change-resisting culture.
- Limited sharing and collaboration.
- The business is not ready.
- The Talent Gap.
- Current practices do not support the talent gap.
- Change issues.

At the MASIT conference in 2018, all of the participants agreed that digital transformation currently is a challenge and actions need to be taken for successful implementation. In addition, they all anticipated that it has biggest influence over the business processes and the employees.

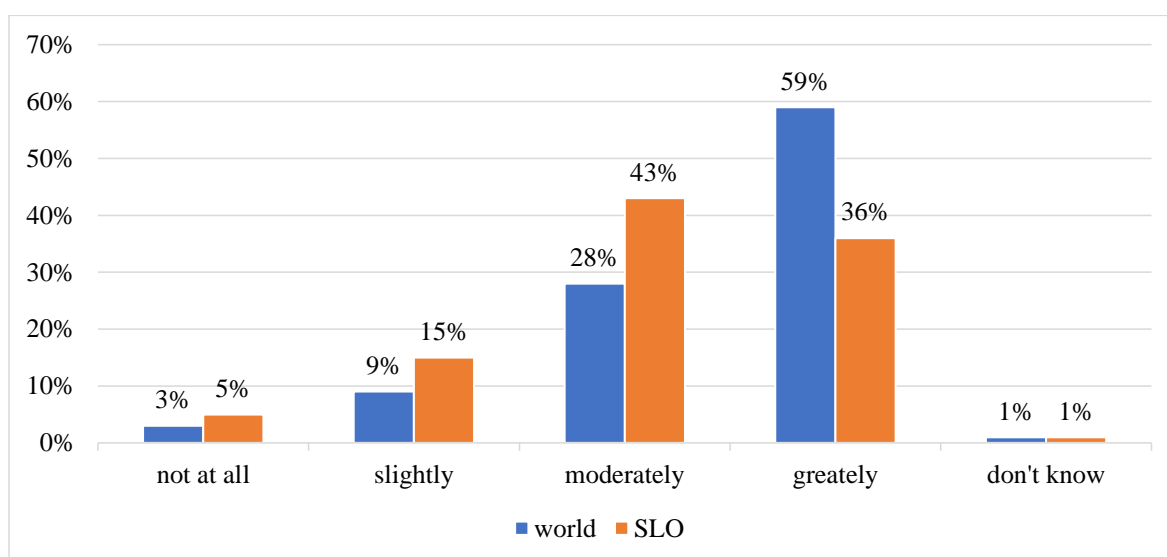
In this analysis of the companies in North Macedonia, it is important to mention that so far, researchers were focusing on the customers, as a main driving force in digital transformation and on the facts that everything is adapted to them. Now, we will try to shift all available data to be able to explain what happens in the companies during this change.

On the other hand, Slovenia is far more advanced when it comes to digital transformation. More research is done in the field, and companies have far more optimized processes. From all of the data above, Slovenia has higher digitalization index and higher usage of digital technologies, which translates to companies being more digitally perceptive to be able to respond to customer needs, and with that optimize their businesses. Companies' executives are more aware of the change and are able to adapt to the changes in an easier way.

According to the research made in Slovenia, by researchers Mojca Indihar Štemberger, Jure Erjavec, Anton Manfreda and Jurij Jaklič, in most companies there is a gap between digital transformation as a business initiative and the prominent technological role of informatics. With consequently the problem linking business challenges and opportunities offered by information technology (Indihar Štemberger, Erjavec, Manfreda & Jaklič, 2018). In their research, when they were analyzing the disruption of digital transformation in their environment, the majority of the examinees worldwide answered that it will greatly disrupt their environment.

While, the Slovenian examinees were expressing this disruption as a medium rather than large change, followed by the examined who thought that it would greatly disrupt the environment (36% of examinees). 15% thought that it will be a small influence (larger percent than the global result with 9% of the examinees), and 5% answered that their industry will not be disrupted by digitalization, while worldwide only 3% share the same opinion. A graphical representation of the results is in Figure 14. The results are separated in five groups, and scaled from best to worst option ( »not at all« to »greatly«) and a don't know option, trying to capture the attitudes of companies' executives in the best possible way.

Figure 14: To what extent will digitalization disrupt your industry?



Source: Indihar Štemberger, Erjavec, Manfreda & Jaklič (2018).

In the same research, they were analyzing the intention of digital transformation in companies in the country. They are deciding to accept and integrate digital transformation for various reasons for pursuing different goals. The majority of the respondents answered that they accept digital transformation for increasing the efficiency of doing business (78%), followed by the motivation to increase customer satisfaction (66%), and then the need to transform their business processes and models (59%).

The same research, now regarding the acceptance of digital transformation in the companies shows that poor half of companies (48%) think that digitization within their organization is relevant and is given sufficient resources, which is comparable with results from the research from Kane et al., where such companies are 44% (Kane et al., 2016). Then customer engagement follows, which was stated as more important for companies than digitization linking with suppliers. In addition, the worst prepared for successful digital transformation is the institutional environment, as the surveyed companies assessed. This includes legislation and the functioning of public administration. Regarding the role of informatics in companies, the research shows that the most common role of informatics is the security of the information system. The establishment of the operation of adequate infrastructure and the provision of support follows it to users (including education, assistance, and advice on the use of tools and information solution, data retrieval, troubleshooting ...) and the establishment of an appropriate infrastructure in the companies.

The research also covers organizational perspective of digital transformation and their acceptance of change. They examined whether the management in a particular company has enough knowledge and skills to manage the digital transformation, and whether the employees in the companies have enough knowledge and skills to carry out a digital transformation. According to their results, both the knowledge and the ability of the

management to conduct digital transformation is approximately the same amount, on a relatively low level. After all, only 32.5% of the surveyed companies agreed that their employees had sufficient knowledge, while 42.9% of the surveyed companies attributed the appropriate skills to the management.

Regarding digital maturity, the research shows that the majority of companies in Slovenia (42% of the examined companies) are in the group in development of digital potential. Then companies in the group in the beginning phase of transformation (38%) follow, and the smallest part (18%) are in the group of digitally mature companies. The shares in Slovenia compared with the world regarding this matter are similar. It is needed to mention that companies were sorted by the degree of investment in IT and technology, the position of IT staff in the companies and organizational culture.

Their research concludes that although digital transformation is based on the introduction and use of traditional and new information technologies, Slovenian companies are aware that digitization is actually a business transformation and that it must be a primary business initiative. In general, IT departments failed to take a major role in the renewal of information technology operations, but their role remains technological. This is indicated by the fact that the digitalization project in the companies is implemented by informatics staff, as well as by the fact that the information technology manager, in less than half of the enterprises, is responsible for the digital transformation, while IT employees are relatively rare initiators of business innovation. In addition, a typical computerization strategy is separate from the digitization strategy and the most common roles of IT are technologically clear.

The research shows how Slovenia stands with the companies worldwide, and it proves that the companies in the country are getting more aware of the changes and are willing to take the initiative to adapt to the changing environment.

### **3 RESEARCH**

#### **3.1 Description of research plan on the topic**

This topic so far has been massively discussed and researched. In addition, in the country which is described (North Macedonia) this has been a popular trend to pay attention to. To be able to cover this topic in full depth, the research has been done in the following way: firstly, relevant literature on the topic was found and written down, from which the key points were extracted. The intention is to show digital transformation from the viewpoint of the processes and as a change in companies' structure and operations. Then a questionnaire was prepared and was distributed among the key population for the research. There has been a previously prepared list of target companies, and additional ones were added. In addition, it was posted on social media for further attention to the target



audience. The types of companies were chosen regarding their type and size, in order to be able to show and reflect on the changes in the processes so far, and the change in general, and how they are adapting to the internal and external influences of this change.

### 3.2 Methodology

The aim of this Thesis is to show the state of the digital transformation in companies in North Macedonia in comparison with companies in Slovenia, with the assistance of multiple literature and research done in the field, followed by an interview with key people in selected companies, which work in very different fields. I see their opinions and experiences as key to delivering accurate answers about the state of digital transformation in each of the selected companies and the overall environment combined. Then the process is followed by an individual research made in 30 companies in different fields. The research was conducted with a pre-prepared questionnaire, which is covering the main goals of this thesis. The combination of data gathering is such because of the environment and mentality of the company owners and employees in the country and availability of accurate data in the field. The development of this Thesis is in the following order:

*Figure 15: Chart of execution of the Thesis*



*Source: Own work.*

Because there is almost no literature on the effect of digital transformation of the company's internal processes, this research serves as a contribution to the area. In addition, the materials used are adapted and interpreted carefully to match the purpose and goals of this Thesis. The questionnaire and interviews are meant to show the actual state and deliver useful and high-quality information on the topic, and are structured in such a way, to be able to deliver the best possible answer to the analysis.

The research was initially made for at least 70 responders, but the answer rate was quite fair, and much less than expected. In the time of distribution of the questionnaire, it was adapted several times due to the change of the official name of the country and to it, consequentially to different opinions and attitudes regarding the change. Since it is such a fresh and important change, many of the responders were sensitive to the nomenclature in the questionnaire for the country. The questionnaire was also distributed through the social media.

The interviews were made with directors of the selected companies. The companies were chosen for analysis because of their longevity in the market, field of operation and access

to reliable data on the process of digital transformation. The companies in their respective branches have been actively participating in the digitalized trend.

**3.3 Research results**

To be able to deliver this topic more accurately I have conducted a research among companies and individuals to find out more about the current state of digital transformation in the country. My research was conducted with 31 examinees, each of them working in different companies and fields. The responders industries are in the Table 10.

*Table 10: Shares of industries of examinees*

Industry	Share
IT	31.0
Other	17.2
Retail	13.8
Manufacturing	13.8
Construction	6.9
Art	6.9
Tourism	3.4
Professional scientific and technical activities	3.4
Education	3.4

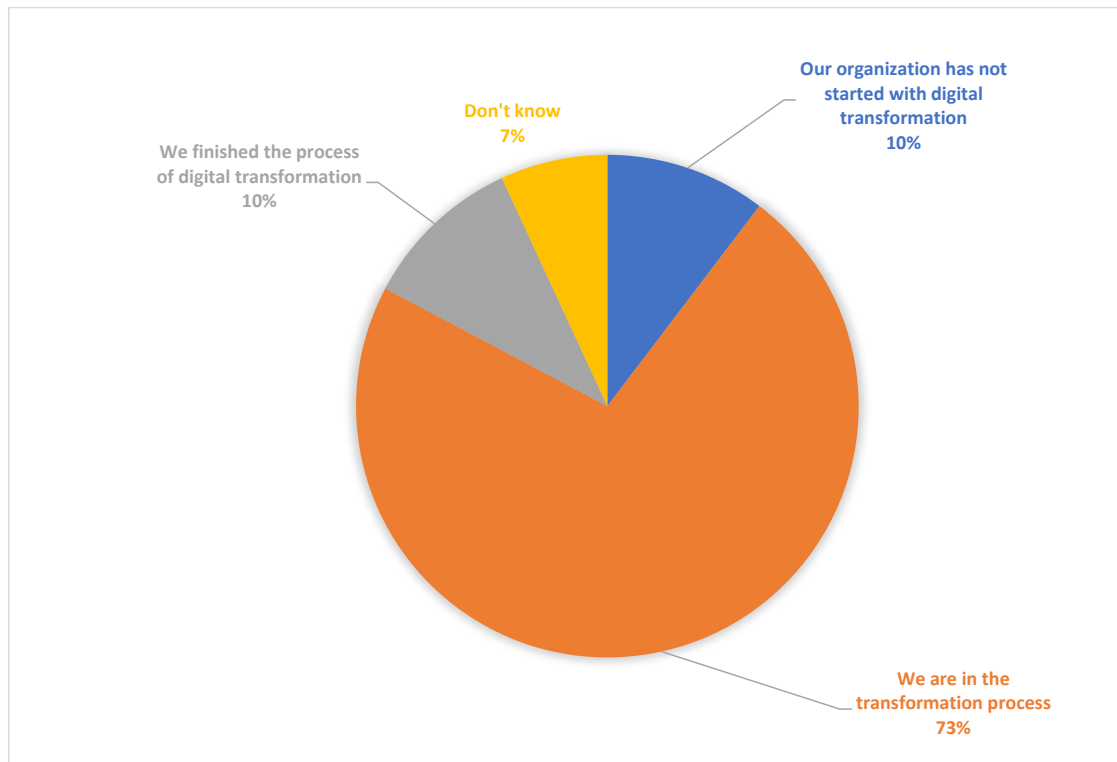
*Source: Own work.*

Regarding business orientation, the majority (42%) answered that are both in B2B and B2C, followed by B2B businesses (29 %). The majority of the respondents of the questionnaire were directors (36 %), followed by employees in other sectors (19 %).

When asked about the degree to which digital technologies will change their industry, 64.5% of the examinees answered that digital technologies will change their industry, and 23% said that there would be medium changes in their industries. Nevertheless, when asked if the employees in their companies are acceptive of digital transformation, the majority (48.4%) answered that they are neither acceptive nor not acceptive; while 35.5 % answered that, their employees are acceptive of digital transformation. In addition, when asked if they face difficulties while implementing digital transformation, the majority (45 %) answered that they do not, while 42% answered that they do. When asked about if their strategy was changed to adapt to digital transformation, the majority answered that it was (77.5%).

The examinees were further asked about the length of acceptance of digital transformation in their organization. The results are in the Figure 16.

Figure 16: How far do you think your organization has reached with regard to acceptance of digital transformation

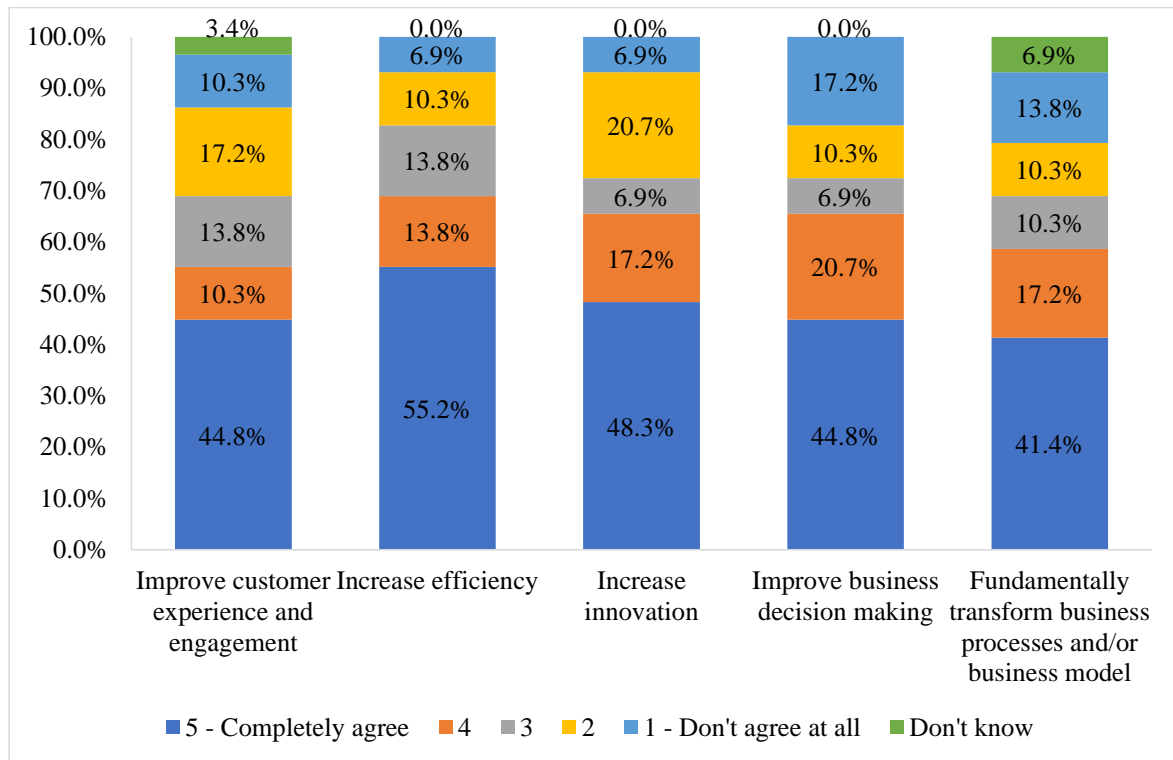


Source: Own work.

On the follow – up question regarding implemented technologies for digital transformation, the majority (71 %) answered that their organization have implemented new and modernized technology to better adapt to the changing environment. However, on the question whether their processes are properly adapted for digital transformation, the majority answered that they are not (42 %), while 36 % answered that they are. Interesting to see is that when the examinees were asked about the ownership of the optimal technology for digital transformation, the majority (52 %) answered that they do own it, while 32 % answered that they do not own it. The patterns of the examinees were in particular interesting to follow because it seems that they all have the technology for optimal digital transformation and thus improving business processes and overall efficiency, but somehow they do not seem to use or understand how to use it to maximize their benefit.

When asked about the goals of digital transformation in their companies, the answers are presented in Figure 17. The figure shows how much to they agree with the given goals on a scale from 1 to 5, 1 - don't agree at all, 5 – completely agree.

Figure 17: How much do you agree with the following goals for your organization regarding digital transformation



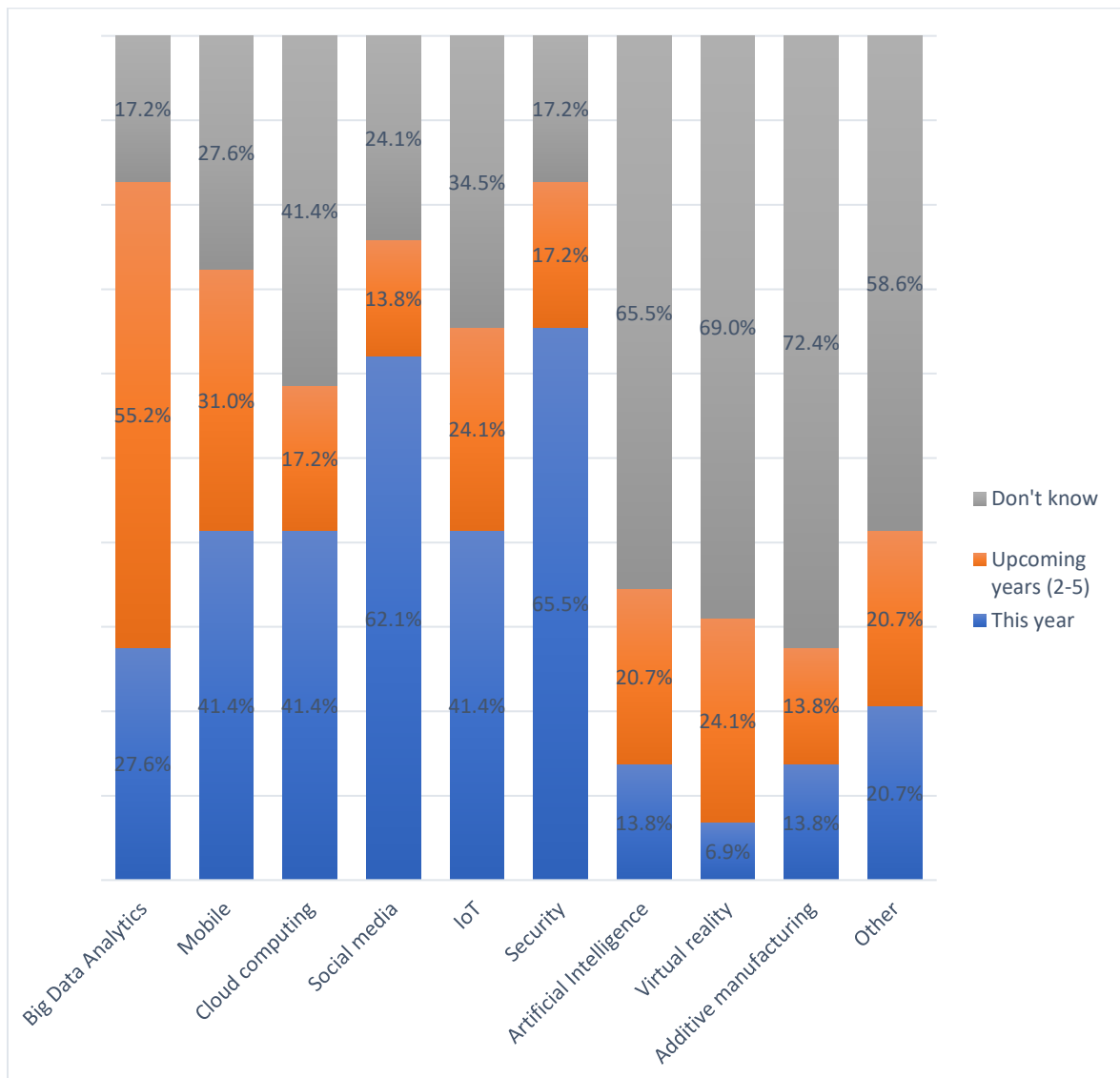
Source: Own work.

According to the answers, the majority see digital transformation as an opportunity to improve efficiency, then followed by improving innovativeness as a goal to pursue during digital transformation. From the graph we can also see that the examinees are somewhat agreeing with most of the given goals.

When discussing digital strategy and planning during digital transformation, the majority of the examinees (39 %) answered that their digital strategy is separate from their organizational strategy, while 23 % answered that their organizational strategy involves topics of digital transformation. 20 % answered that their organizational strategy includes digital transformation strategy and 20 % answered that it does not include topics from digital transformation. After, the importance of digital transformation strategy implementation was examined, and the research showed that 64.5 % of the examinees find it very important, while 30 % expressed themselves in the medium importance.

The results from the answers to the question about the fields of planned upcoming projects in the next two to five years are shown in the Figure 18. They had the option of choosing among several options on a variety of time frames, short – term and long – term. The answers are presented in percent.

Figure 18: In which field do you plan to develop a project in the next 2-5 years?



Source: Own work.

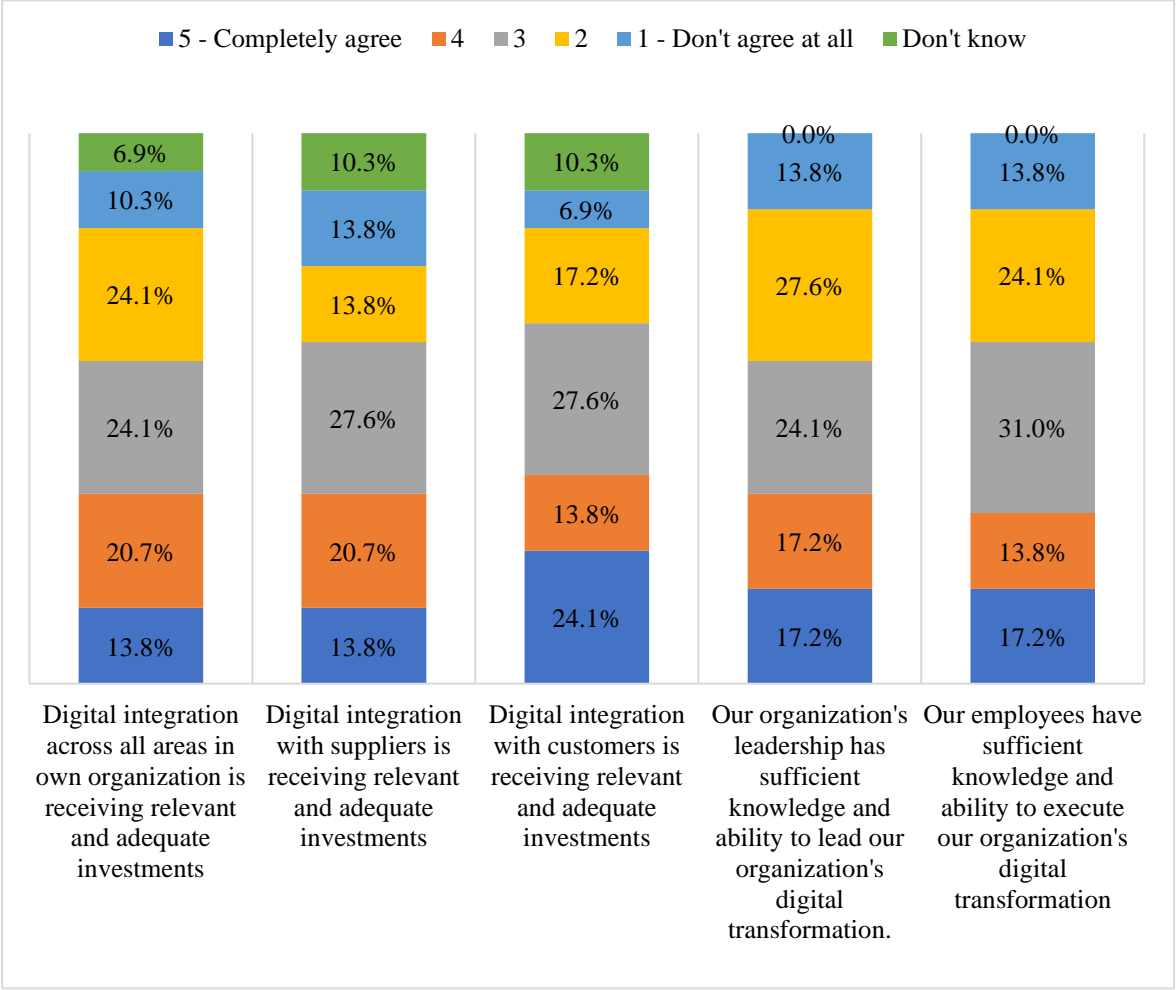
According to the results, the majority are planning safety projects in the upcoming year, then followed by social media and mobile technologies. Regarding projects in the next two to five years, the majority expressed planning these projects in the field of Big Data Analytics, followed by mobile and then Internet of Things projects. Regarding projects in the fields of cognitive technologies, VR and Additive Manufacturing, a small number of the examinees chose these fields for their upcoming projects, meaning that currently companies are not interested in these fields, as much as mobile technologies, and Big Data Analytics.

Regarding the preparation for digital transformation in their environment, the examinees stated that they receive the adaptive information mainly from their organization, then from

their suppliers and from their clients and competition. They all agreed that the least influence on their digital transformation comes from institutional bodies.

Digital integration is also an important part of digital transformation. When asked about the relationship between digital integration and internal and external environment, the respondents answered as in Figure 19:

Figure 19: To what extent do you agree with the following statements about digital integration



Source: Own work.

According to the results, the majority were hesitant among neither agreeing nor disagreeing that all areas of the organization is receiving relevant and adequate investments during digital integration. A similar opinion was shared on all questions about digital integration; the examinees neither agree nor disagree that most of the digital integration is within and outside of their organizations. The only statement that differs is that the organization’s leadership has sufficient knowledge and ability to lead during digital transformation. Namely, the majority disagreed with the statement, saying that the

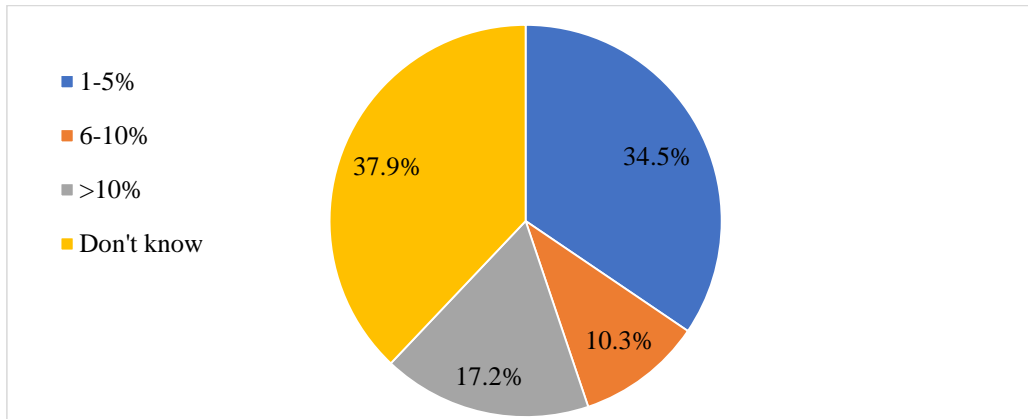
leadership in their organization is not prepared nor successfully adapting to digital transformation.

Digital innovation is also an important part of digital transformation. When asked about how their organization strengthens the possibilities for digital innovation, the majority (39 %) stated that it starts initially with development of the skills of current employees, followed by external relationships and other partnerships (26 %), while the rest had diverse answers, from hiring digital leaders to hiring new employees with digital talent.

When discussing digital transformation, it is crucial to analyze the possible barriers to successful transformation. The majority completely agrees that the biggest barrier is legacy systems. They completely disagree that a barrier is insufficient budget, integration with consumers and suppliers. In addition, they disagree that the lack of corporate vision for the digital is a barrier for them in their organizations. They all see their organizations as quickly adaptive to new environments, new technologies, fully integrated with buyers and suppliers, having the culture to take on risks and have adequate cooperation between their IT and business units. Nevertheless, when asked about creation of the vision for digital transformation, the majority (45 %) stated that their executive director is in charge for it, while 23 % stated that the IT director takes over the responsibility for creating vision for digital transformation. The rest stated other types of directors or employees to obtain the task. When asked about the highest ranked employee responsible for IT in their organizations, the majority stated that it is a person directly subordinated to the management (45 %), while 32 % said that it is a person who is a member of the management. The rest (22 %) stated that it is a person that is indirectly subordinated to the management. The examinees, when asked about the organization of IT within the company, the majority (36 %) stated that certain individuals are responsible for IT, while 29 % of the examinees stated that centralized separate organization unit handles it. The rest stated that other organization unit or no one is responsible for IT in their organization.

In digital transformation, the budget devoted to IT is crucial to analyze, because of the effect on the entire operation. Following is Figure 20, which is showing the opinions of the examinees regarding budget allocation for IT in their organizations.

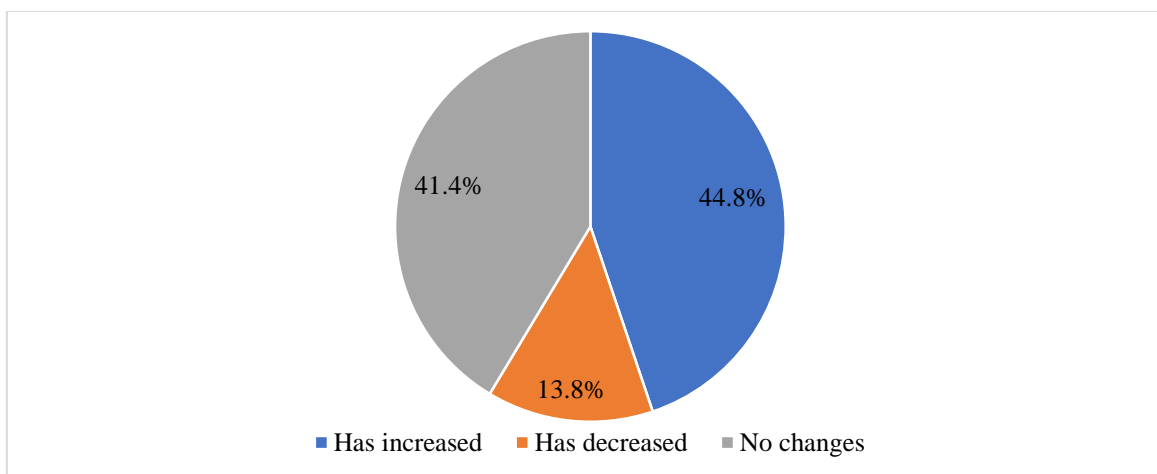
Figure 20: How many percent of the revenues of the organization were devoted to IT in the previous year?



Source: Own work.

According to the examinees, the majority does not know the amount allocated to IT, while 32, 3 % stated that 1–5 % of the revenues are allocated to IT. 16, 1 % stated that more than 10 % of the budget is allocated for IT. About the allocation of the divided budget, 26 %, stated that in their organization it is divided equally among operations and development, while 19, 4 percent stated that it is divided in different amounts between development and operations. Still, 36 % of the examinees refused to answer. However, the overlook is optimistic, because 44 % of the examinees stated that their budget for IT has increased since last year, while 42 % stated that there are no changes in the allocation of the IT budget from last year. Even though the majority stated that there are no changes in their budget when compared to last year, 84 % of the examinees stated that IT budget is important in their organization and has special value. Graphical representation of the changes of budget allocated towards IT is shown in Figure 21.

Figure 21: How did your IT budget changed compared to last year?

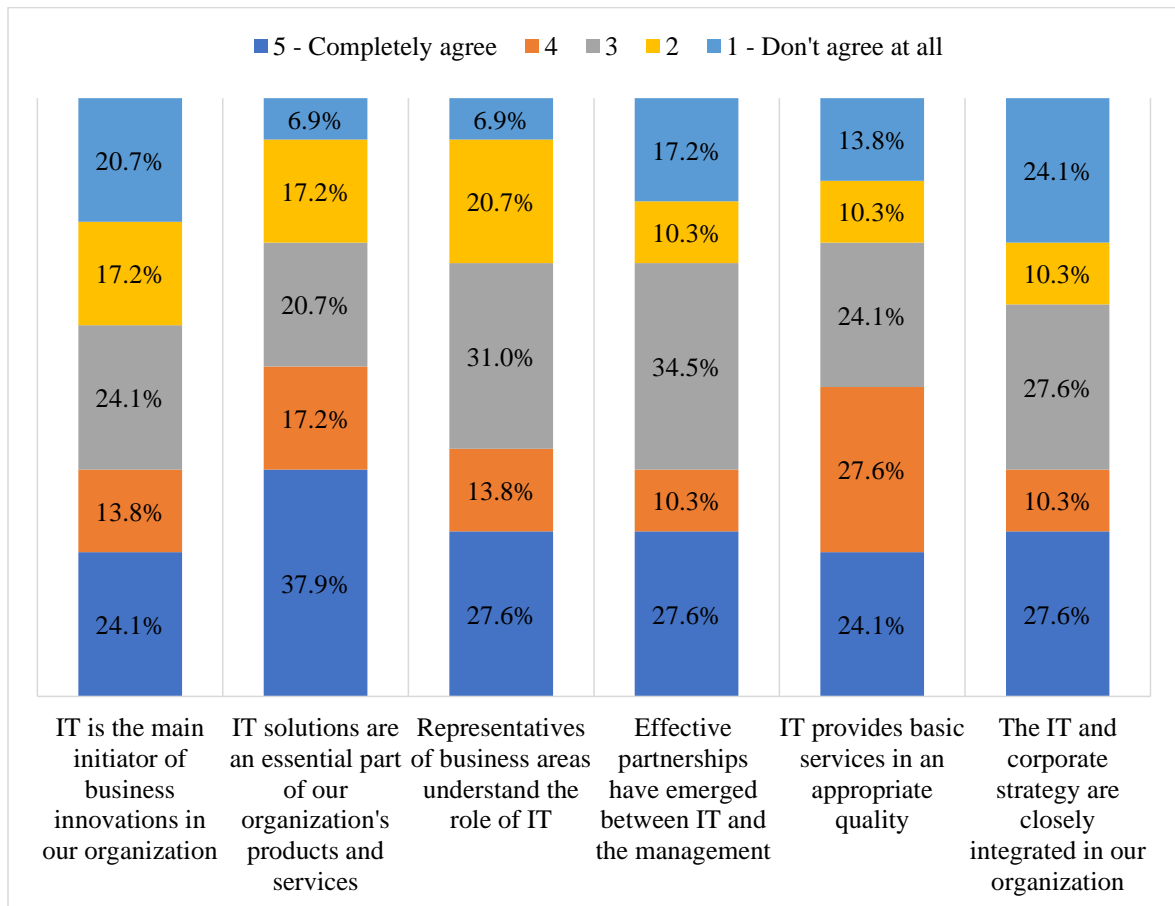


Source: Own work.



Regarding the role of IT, the majority of them completely agree that IT solutions are big and important part of the goods and services provided to their clients. However, a large number neither agrees nor disagrees that effective partnerships exist between IT and management and representatives of more areas understand the value of IT. The majority disagrees that IT and corporate strategies are integrated together in their organization. The majority also agrees that IT in their organization provides proper services with good quality. The results showing the role of IT are more deliberately presented in Figure 22.

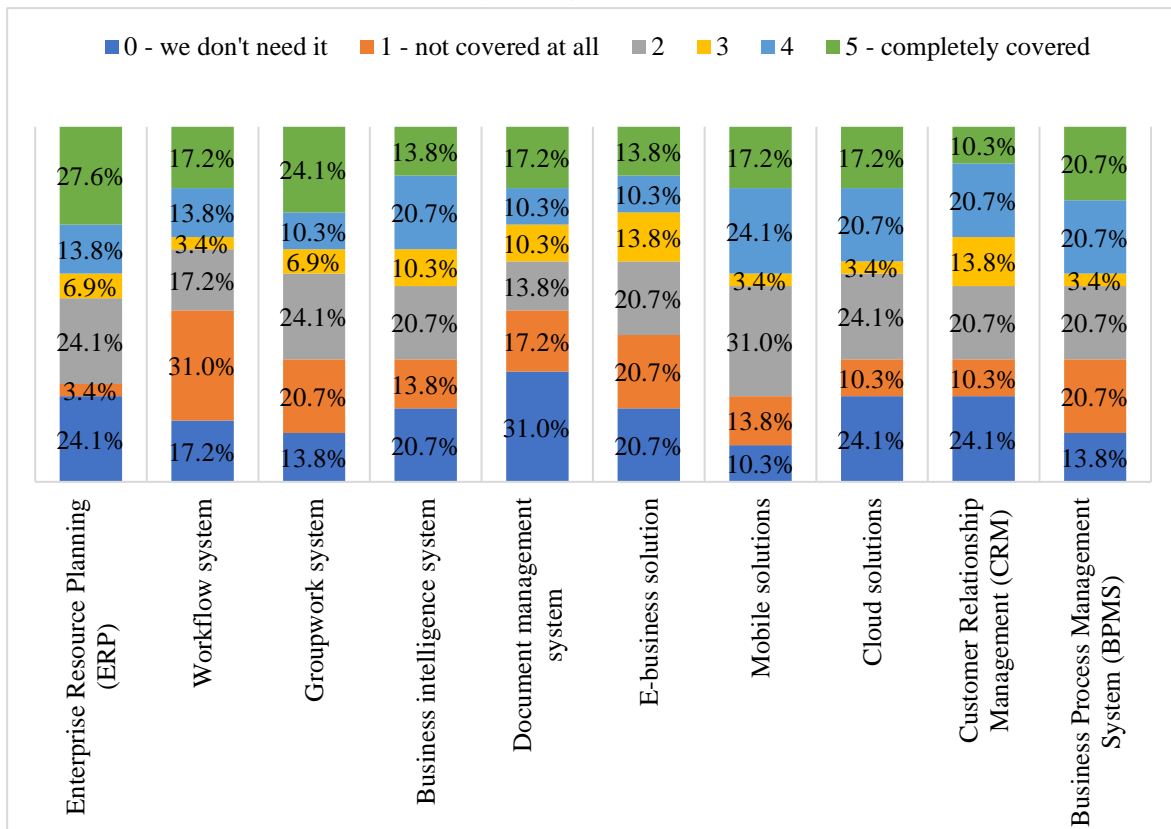
Figure 22: The role of IT in your organization



Source: Own work.

Further, in the questionnaire there was a question about the technology used in the organization. The majority expressed that they do not have covered ERP planning and Business Process management Systems, but agreed that have workflow systems to ease their processes. For the other solutions (group work system, document management, cloud services, mobile solution, etc ...) they stated that majority of them has it all covered (more or less). In Figure 23, there is a more detailed presentation of the results regarding the IT solutions implemented in the companies. There were multiple options offered for the examinees and they had the freedom of multiple valuable solutions.

Figure 23: What is the current amount of coverage of the following information technologies in your organization?



Source: Own work.

The research in the end was concluded with a question regarding IT projects. When the interviewees were asked what they started this year or are planning to start in the following years, majority of them (40 %) stated that they intend to start projects for improvement the areas of IT services management. 20% stated that they intend to have development projects in the field of project management and programming. About 20% stated that they intend to have projects in application integration.

### 3.4 Interviews

To be able to describe the phenomena of digital transformation in a wider specter I have chosen to interview heads of two companies in completely different fields of operation to describe their and their clients (because of the operating nature of the businesses) transition into it with greater detail. I strongly believe that their different opinions are a benefit to the overall research on the topic. The companies are chosen due to several factors such as longevity in their respective branches, access to real and accurate data, their respective operating environments. The first company analyzed is an intermediary distributor of dairy and meat products, and the second company is a digital marketing agency.

Firstly, there is a general description of the companies. The first company is a digital marketing agency, with ten permanently employed persons, and a varying number of

outsourced employees (this is dependent on the type of project). It serves a massive variety of clients from all industries and branches, from small companies to large enterprises, both home and abroad (some of its clients are BMB Logistics, Inex Gorica hotel, Pucko Petrol gas stations, etc ...). It has clients from Canada, Slovenia, Switzerland, etc. Besides the classical services, which a company of that type offers, it also offers IT and other solutions depending on client's needs (establishment of platforms, applications, etc...). To summarize, their field of operation is massive, and are spread all over the world. The owner constantly invests in novelties, and his attitude is that employees are his most prized possession; therefore, the largest investment is in his employees. The entire work process and workload is adapted to the employees, and they are constantly introduced with the novelties that arrive in the industry. On the other hand, the second company is a distributing intermediary for Veles and the area around the city. In the time and system we live in, this company is still thriving while the bigger ones are trying to succeed, because it is a very competitive market. The company cooperates mainly with food retailers. It is important to mention that food stores in North Macedonia are of a different type than in Slovenia, there are many brands that are familiar to one, or maybe two or three cities the most, and there are no brands as large as Spar, or Mercator. His company currently has two official employees, but, also as the previous one, outsources many times, depending on the demand at the time. The brands that his company represents are Dukat, Ljubljanske Mlekarne (Lactalis), Pivka, etc.). Because of his clients and the competitiveness of the branch his company is in, he has to comply and always to adapt to the new changes, because competition will take over his market. This company has been in the market for fifteen years.

Both interviews were made with company's executives, and they covered questions about their overall processes. They see digital transformation as a necessary process for every company and as a possibility to grow the business and explore new frontiers. They perceive it as a completely new way of value creation composed of many stages in the globalized world, implying new quality standards and simplifying the overall operations. Both of them see the digitalization and transformation process as a permanent and ongoing process, which needs to comply with current trends.

Even though both examinees have had similar answers to the majority of the research questions, one of them in particular, because he serves the digital world. He offers a perspective about the overall environment and an opinion on how other companies in different industries are affected by the changes. This is the reason why the answers differed to the question: how it will disrupt the business they are in. Namely, the digital marketing agency owner's answer was that he feels that digitalization is not a disruption but an opportunity for creating value, while the other company's owner believes that digitalization has already disrupted the industry in which the company operates. However, many novelties are ahead, and he believes that they need to make sure to have it all in the company. The same trend he noticed in his clients' behavior. Both agree that digitalization

nowadays is in every part of businesses, even though it is commonly known that it is only a technology-bond, they see it as an opportunity rather than a threat.

In the next part of the interviews, we talked about measurement of the progress of digital transformation in their companies. Both of them agreed that the progress is measured in the improved effectiveness of overall operations and adaptation to an advanced corporate communication with the clients. Digital transformation according to them is measured based on the value it creates in coordination with the technological advancement in their environment, based on the new implementations, which completely shift the business processes. In addition, both companies formally started the process with the implementation of Customer Relationship Management (hereafter: CRM) systems.

Additionally, they shared that the clients are in high demand of systems and other solutions to provide them easier adaptation and gaining maximum efficiency in their processes.

In the next part of the interviews they were focusing on upcoming digitalization projects, they were both accenting customer engagement projects and improvement of overall company operations. Regarding the goals they intend to achieve by digitalization, their opinions differed. The one answered that his company strives towards getting higher knowledge of the clients and achieving higher frontiers in the process of collaboration between the company and the clients, while the other stated the importance of simplification of the operating processes for him and his clients when asked about digitalization projects.

Because of the differences of their products, they both have different views. Yet, they are still striving towards the similar digital balance. Digital transformation has significantly affected their business processes, and shared that they see the changes in their clients' business processes as well. In addition, with it they noticed trend in increasing efficiency, increasing innovation, improving business decision-making, and significantly transforming business processes in their companies and in the companies of their clients.

According to the interviewees, acceptance and digital technology is a need that most companies in the country are aware of, and are asking for digital optimization from their suppliers as well, that is why they are acceptive of digital technologies because it helps them grow and evolve. The most important factor both executives mentioned in their companies and in the demand of their clients is the need for evolution during digital transformation.

## **4 DISCUSSION AND RECCOMENDATIONS**

### **4.1 Key findings from research**

The research of digital transformation in North Macedonia has given valuable insights about the actual state of the organizations in the country. Overall, it can be said that the environment is very optimistic, because companies are open to new solutions and are willing to adapt to the changes.

It was interesting to see that the majority of the responsible staff for digital transformation is executives, and then IT directors, while lower level employees have small influence in the implementation process. In addition, it is interesting to see that in the previous two to five years the companies in the country have become more open for the trends and are actively seeking for means to implement them in their everyday operations. Most of the help that the organizations acquire is from abroad, and new talents are hired to implement digital technologies into their processes more effectively.

However, process – wise, the executives and other employees do not seem to be enough educated about the importance of optimized processes and how digital transformation influence them, since the majority expressed that they do not have covered implementation of ERP or BPM processes in their organizations during this time. They are still looking for more simplified solutions and only larger companies have implemented such systems.

From all of the findings, it seems that all of the important components are unclear and that companies need some time to accept the new trends. Companies' executives are investing into materials and other assistance to help their employees adapt to the trend, because they seem to be having issues in accepting the changes, but are doing their best to adapt.

Barriers, however, are the limited resources of companies to invest or allocate to IT, and legal systems. It is interesting that when asked if the budget is an issue, they replied negative. However, later when asked about the amount of money spent on IT, the majority did not answer, or the second most common answer was from 1 to 5 percent. In addition, a barrier seems to be the limited exposure to new technologies.

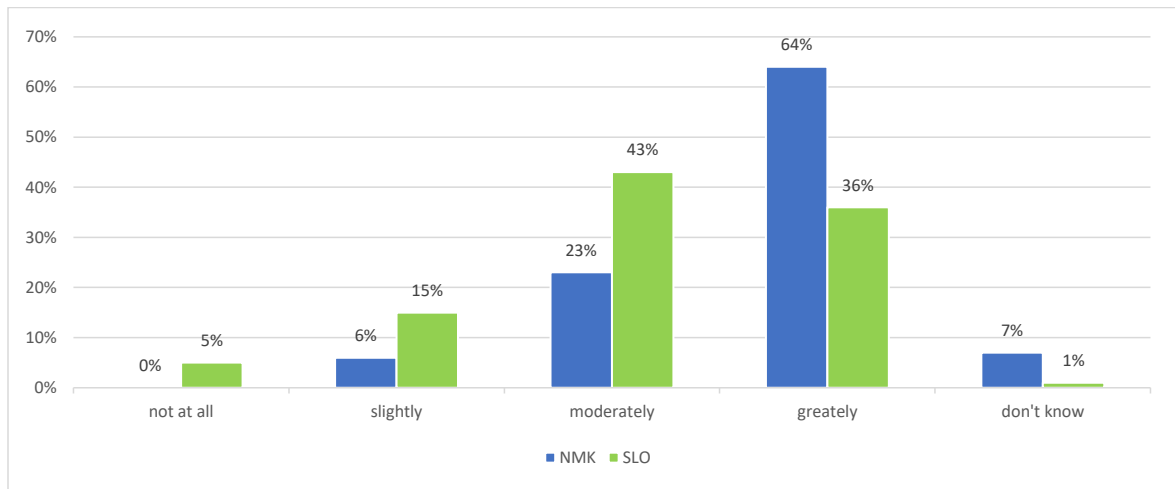
In the overall digital transformation, the role of IT has been perceived as the only factor contributing to it, according to the results, because in the research, everything was overlooked, and only IT related matters were deliberately explained and answered. Moreover, even though the companies in the country are going through (the majority) digital transformation, still it seems that the concept is difficult to grasp, because the reaction was confusing on the most of the concepts. It was stated as indifference among statements and other, which are important for any organization, regardless of its size.

It is also important to mention that researchers are starting to become more interested about digital transformation of the companies and overall state of IT and business processes in the country, therefore there are more and more materials available which explain all of the important points of the transformation. Companies are more and more encouraged to follow the global trends and they are making their best to adapt and implement all of the required changes in a way that maximizes their efficiency and customer satisfaction and involvedness.

Regarding the similarity with Slovenia and other world countries' companies, the companies are not that far behind from their peers, but have long road ahead. Their Slovenian peers are more open to change, according to the research, are aware of their position during the transition, and have larger access to technology and other benefits. In addition, the general system is more adapted to the companies and many resources are available. However, I found similarities in the actual approach of digital transforming and the solutions implemented during it. They all believe that the change will greatly disrupt the industry they are in, and they focus mainly on the technology adaptation. Both countries' companies are aware that digitization is actually a business transformation and that it must be a primary business initiative, and that the initiatives come from IT department. In addition, they are similar in the area of digital awareness of the employees, thus all digital initiatives and changes come from the management, and the employees are facing difficulties to adapt.

For Slovenian companies digital transformation is still a popular issue among managers and IT professionals, thus, it creates major challenges to established businesses in many industries and it is clearer that the biggest challenges for the companies lie in the transformation process. According to Slovenian researchers, only the perception of the current state seems acceptable, but the real situation is not as bright as it seems. In North Macedonia, most of the examinees stated that they are in the process, and were not so optimistic about the change, stating that they are not accepting nor declining the trend. However, in both countries there is a belief that digital transformation will disrupt the industries greatly. This means that in both countries executives and employees are aware of the trend and are preparing themselves for the changes. Countries are investing in proper education and tools for more efficient acceptance of the trend. Figure 24 follows, and is comparing opinions regarding disruption of the industries by digital transformation in both countries.

*Figure 24: Comparison of opinions regarding the degree of disruption during and from digital transformation*



*Source: Own work.*

In addition, both countries have similar goals, which they want to achieve with digital transformation, and research showed that they see improved efficiency as a key goal with which they agree the most. Furthermore, the opinions are similar, thus in both countries, the most important follow-up goals are to improve customer experience and to improve business decision making.

During the comparison of both countries' research, I have noticed that both of them have similar answers, despite expecting different answers as a result from the available resources online regarding the topic. In both countries, a similar portion of the budget is devoted to IT, (1 - 5 %), but regarding the increase, the opinions among countries differ, because the Slovenian research showed that it has increased, while their Macedonian peers stated that there are no changes in their IT budget allocation. However, both state that IT budget is very important in their organizations. Also, in both countries they declared that they have completely covered ERP systems, CRM systems and BI systems, and they don't need coverage on these fields, showing that North Macedonia is developing far more than anticipated, namely these are the parts for which they mostly "completely agree" that they have it all covered. From all of the information from Slovenia, it seems more optimistic regarding the adaptation process when compared to North Macedonian companies, because they seem very optimistic, but when asked about more details, the majority refused to answer. Regarding the upcoming projects, the results in both countries specified Security as a top priority for their companies, followed by social media and cloud projects.

To conclude, I can state that the results of both countries are excessively similar, showing that North Macedonia is not that far from Slovenia and the world. This can be because of the global reach of the companies and information available, allowing companies to be in line with world trends and not lagging behind as initially anticipated. The only missing part

was that in Slovenian companies are more open for collaboration from their Macedonian peers and are less prone to fall to political influences.

## **4.2 Recommendations**

It is optimistic to see that the companies in the country are trying their best to implement the latest trends in their everyday operations. However, a tough road is still ahead of them, since they are far away from their developed peers worldwide.

First thing to recommend would be for company executives to be more open to changes, and to try to interpret their openness to the employees. Change management is crucial during digital transformation and if they wish to pass the process with less damage they need to adapt more painlessly to them as employees, and to the overall processes they have. Employees are important also because, according to the research, they have been having difficulties adapting to the changes. Executives need to be more encouraged to hire external talent to implement all of the necessary changes, if they do not have the appropriate personnel to administer it all.

Second is the budget allocation. Even though the examinees in the research did not answer this question (the majority of them), the overall opinion is that there are small budgets allocated for IT, which should not be the case. Nowadays IT plays a massive role in overall operations and larger funds need to be allocated for this purpose.

My third recommendation would be to give more attention to the business processes and to strategic planning. Besides change, strategic planning and creating and implementing a digital transformation strategy is one of the key things to do while changing. Even though research showed that they are creating separate strategy, still, strategies regarding the digital and overall business strategies are separate and need to be combined for larger success.

Even though it seems that companies in North Macedonia have a lot to work on, they are striving towards improvement and are actively implementing world-accepted solutions into their processes while adapting the external environment. They have a lot to learn during the transition to the level of their country peers. It is important to mention that, they have passed a long way and are heading full steam towards the level of development of other worldwide companies.

## **CONCLUSION**

Digital transformation is a very interesting and challenging topic to describe and analyze, hence that companies face challenges daily, and changes are very frequent. Because of this, companies build the stamina needed to survive. This is especially the case for companies in developed countries, which have the resources to adapt without too much damage, while



developing countries survive this change harder. Because of the many reasons, North Macedonia is a particularly good example for analysis of the state, because it has many other factors to tackle besides the actual transformation.

The broadness of the field allowed me to present the data in an interesting way, because its broadness can contribute to better explanation and analysis in the field. All of the components are deliberately taken into account in every part of the explanation, therefore giving results that are more accurate.

Overall, the entire region differs, each country has its own benefits and weaknesses, and companies are following each other's example while integrating in the world environment. When we compare North Macedonia to Slovenia and to the rest of the world, the difference among them is clear even though the data shows much more similarities than initially anticipated. It is also important to mention that many factors contribute to Slovenian companies' development, as for worldwide companies as well, such as exposure to a larger market and more opportunities for locals as a part of the European Union. Companies in developed countries are more acceptive and adaptable, have better technology and software available, have more optimized processes and the overall infrastructure is able to adapt. Employees are more aware of change and consequentially are more adaptive, which is not the case in less developed countries. Less developed countries need to adjust to changes, which leads to losses.

It is important to mention that all companies, regardless of development level, during digital transformation focus on improvement of efficiency and customer satisfaction and involvement. In addition, for all of the companies it is important to optimize their daily operations without incurring damage as much as possible. They are still mostly focused on customer satisfaction, which is a crucial fact to know during digital transformation.

Digital transformation can show the strength and quality of companies' structures and strategies, as well as how they are prepared for unexpected events, which is very positive, especially in this globalized world, where companies know no boundaries. Especially in the globalized world in which companies operate, it is crucial to be adaptive, and ready to accept whatever comes your way, because changes have been happening, are happening, and are going to happen even more in the future. The research in the companies of both countries is a proof that the state of digital transformation is evolving at a speedy rate, and companies should be flexible, very open to changes, and adaptive to the ever-changing environment. The increased globalization and interconnectedness makes companies from different parts of the world equally developed, or striving to become that, because of the availability of resources in their global environment. Only sky is the limit for changes during digital transformation for companies in any country.

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## **APPENDICES**





## **Appendix 1: Slovenian summary of the Master's thesis.**

Digitalna transformacija je bila v zadnji dekadi zelo zanimiva tema za pogovor, še posebej zaradi hitrega razvoja tehnologije kot tudi povečane globalizacije med podjetji. Digitalne tehnologije omogočajo spremembe, korak za korakom izvajajo spremembo obratovanja poslovanja kot tudi poslovnih procesov. Ko razpravljamo o poslovnih procesih v skladu z digitalno transformacijo, moramo upoštevati ne samo tehnologijo, temveč tudi človeški faktor (zaposlene), saj morajo ljudje te spremembe izvajati. Zaradi tega je človeški faktor enako pomemben kot tehnologijo v procesu digitalne transformacije. Omenjene nenehne spremembe se gibajo z pospešujočo hitrostjo v primerjavi z hitrost transformacije v podjetjih. Nenehno poskušajo biti v koraku z dinamičnimi trendi, da bi svoje poslovne procese prilagodili novim spremembam. Vedno večje inovacije v tehnologiji pripomorejo k zviševanju stopnje zahtevnosti postopkov, še posebej ko je treba spremembe uvesti v obstoječih poslovnih procesov. Digitalna transformacija je ključna sprememba v podjetjih, katera ne samo da vpliva na tehnologijo, kot se je pretežno mislilo, ampak vpliva tudi na človeški napor in na to, kako se ta sprememba izvaja v vsakem podjetju. Med posebnimi področji zanimanja lahko vzamemo razvoj, kot tudi analizo tega fenomena v državah v razvoju, kot je Severna Makedonija. Severna Makedonija je država zahodnega Balkana, katera ima razumno količino digitalizirane podatke.

V celoti se vse regije razlikujejo med seboj, vsaka država ima svoje prednosti kot tudi slabosti. V tem procesu podjetja sledijo postopkom drugih podjetji in se poskušajo vklopiti v svetovno poslovno okolje. Če primerjamo Severno Makedonijo s Slovenijo kot tudi z vse ostale države, je razlika med njimi očitna, čeprav podatki prikazujejo veliko več podobnosti kot so sprva predvidevali. Pomembno je omeniti tudi da k razvoju slovenskih podjetji prispevajo veliko več dejavnikov, podobno velja tudi za podjetja na svetovni ravni. Kot primer lahko vzamemo izpostavljenost k večjemu trgu in še več priložnosti za podjetja ki so del Evropske Unije. Podjetja v razvitih državah so bolj sprejemljiva in prilagodljiva, imajo na voljo boljšo tehnologijo in programsko opremo, imajo bolj optimizirane procese in celotno infrastrukturo, da se lahko hitro prilagodijo novim spremembam, zaposleni se bolj zavedajo sprememb in so posledično bolj prilagodljivi, kar pa v državah v razvoju ne drži. Manj razvite države si vzamejo čas da se prilagodijo spremembam, kar naprej prinese izgube.

Pomembno je omeniti da vsi podjetji, ne glede na stopnjo razvoja, se med procesa digitalne transformacije osredotočijo na izboljšanje učinkovitosti procesa kot tudi zadovoljstvo in sodelovanje strank. Prav tako je za vsa podjetja pomembno, da čim bolj optimizirajo svoje vsakdanje operacije poslovanja, ne da bi pri tem nastala škoda.

## Appendix 2: Questionnaire in English.

### I. Company demographics

Number of employees in the last year:

1-49 (micro or small)

50-249 (medium)

250-1499 (large)

1500- (large+)

How did your revenue change compared to last year?

Decreased

Not changed (in between +/-)

Increased

Industry

- A Agriculture, forestry and fishing
- B Mining and quarrying
- C Manufacturing
- D Electricity, gas, steam and air conditioning supply
- E Water supply, sewerage, waste management and remediation activities
- F Construction
- G Wholesale and retail trade, repair of motor vehicles and motorcycles
- H Transportation and storage
- I Accommodation and food service activities
- J Information and communication
- K Financial and insurance activities
- L Real estate activities
- M Professional, scientific and technical activities
- N Administrative and support service activities
  
- O Public administration and defense, compulsory social security
- P Education
- Q Human health and social work activities
- R Arts, entertainment and recreation
- S Other service activities
- T Activities of households as employers, undifferentiated goods- and services-producing activities of households for own use
- U Activities of extraterritorial organizations and bodies

- Is your organization business-to-business (B2B) or business-to-consumer (B2C)?
  - Primarily B2B
  - Primarily B2C
  - Equally B2B and B2C
  
- Who is the main owner of the organization?
  - State owner
  - Municipality owner
  - Domestic private company or legal entity
  - Foreign private company or legal entity
  
- Your position in the organization:
  - IT executive
  - Business executive
  - IT manager
  - Business manager
  - IT employee
  - Non-IT employee
  - Other: \_\_\_\_\_

## II. Digital Transformation

- To what extent do you believe digital technologies will disrupt your industry?
  - Not at all
  - Small extent
  - Moderate extent
  - Great extent
  - Don't know
  
- Are your employees acceptive of digital transformation?
  - Not at all
  - Small extent
  - Moderate extent
  - Great extent
  - Don't know
  
- Do your employees and you encounter difficulties in the acceptance of digital transformation in your organization?
  - No
  - Yes
  - Don't know
  
- Has your company adapted the strategy while experiencing the changes from digital transformation?

- No
- Yes
- Don't know

- How far you think your organization is regarding the acceptance of digital transformation into your organization?

- Our organization has not started with digital transformation
- We are in the transformation process
- We have completed the transformation
- Don't know

- Do you think that your organization is up-to date regarding technology used in your everyday operations?

- No
- Yes
- Don't know

- Do you think that your business process are in optimal condition and are adapted to digital transformation?

- No
- Yes
- Don't know

- Do you think that your company owns the optimal technology for digital transformation?

- No
- Yes
- Don't know

- To what extent do you agree that the following are objective(s) of your organization's digital transformation?

	1 – Strongly disagree	2	3	4	5 – Strongly agree	Don't know
Improve customer experience and engagement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase efficiency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase innovation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve business decision making	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fundamentally transform business processes and/or business model	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Evaluate the relationship between business strategy and digital transformation

- Our organization doesn't address digital transformation questions
- Our organization creates digital transformation strategy, independent of the organizational strategy
- Our organizational strategy includes digital transformation topics
- Our IT strategy covers the questions of digital transformation but is not included in business strategy

- Evaluate the importance of digital strategy establishment in your organization:

- High importance
- Medium importance
- Low importance
- Not important
- Don't know

- In which fields are you planning to start a development project this year, or in the upcoming years (up to 2-5 years)?

	This year	Upcoming years (2-5)	Don't know
Advanced Analytics, including Big Data Analytics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cloud computing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social media	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet of Things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cognitive technologies (artificial intelligence)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Virtual/augmented reality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Additive manufacturing (3D printing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify) _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- Who is adequately preparing for disruptions projected to occur in my industry due to digital trends?

	1 – Strongly disagree	2	3	4	5 – Strongly agree	Don't know
My organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our suppliers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our competitors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our institutional environment (legislation, effectiveness of government and its role in business)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- To what extent do you agree with the following statements about digital integration?

	1 – Strongly disagree	2	3	4	5 – Strongly agree	Don't know
Digital integration across all areas in own organization is receiving relevant and adequate investments						
Digital integration with suppliers is receiving relevant and adequate investments						
Digital integration with customers is receiving relevant and adequate investments						
Our organization's leadership has sufficient knowledge and ability to lead our organization's digital transformation.						
Our employees have sufficient knowledge and ability to execute our organization's digital transformation.						

- How is your organization primarily strengthening digital innovation capabilities?

- Developing existing employees' digital capabilities
- Contractors and consultants

- External relationships (e.g. partnerships and other external collaboration)
- Recruiting employees with digital talent
- Recruiting leaders with digital talent
- Mergers and acquisitions
- Other (please specify)
- Don't know

- To what extent is each of the following a barrier to your organization's use of digital technologies?

	1 – Strongly disagree	2	3	4	5 – Strongly agree	Don't know
Legacy systems						
Change management capabilities						
Too many competing priorities						
Insufficient budget						
Lack of talent/skills required						
Inadequate collaboration between IT and lines of business						
Insufficient technical skills on the part of our technology staff						
Inability to work across silos						
Lack of corporate vision for digital						
Inability to experiment quickly						
Security concerns						
Risk-averse culture						
Integration with suppliers						
Integration with customers						
Institutional environment						
Other (please specify) _____						

- Who in your organization is primarily responsible for creating the vision for digital transformation?

- Chief executive officer
- Other C-Suite executive
- Head of R&D
- Head of IT
- Head of marketing

- Head of digitalization
- Other, please state \_\_\_\_\_
- No one
- Don't know

### **III. The role of IT**

- What is the position of the highest ranked employee responsible for IT?

- member of the top management (C-level)
- directly subordinated to the top management
- indirectly subordinated to the top management

- How is IT organized in your organization?

- Separate centralized organizational unit
- As a part of another organizational unit
- Individuals are responsible for IT
- No one is formally responsible for IT

- What are the percentages of the organization's net revenue dedicated to IT in the last year?

- < 1%
- 1-2%
- 2-3%
- 3-4%
- 4-5%
- 5-6%
- 6-7%
- 7-8%
- 9-10%
- > 10%

#### **How is the IT budget divided between operations and development?**

Operations: <10% - Development: >90%

Operations: 10-20% - Development: 80-90%

Operations: 20-30% - Development: 70-80%

Operations: 30-40% - Development: 60-70%

Operations: 40-50% - Development: 50-60%

Operations: 50-60% - Development: 40-50%



Operations: 60-70% - Development: 30-40%

Operations: 70-80% - Development: 20-30%

Operations: 80-90% - Development: 10-20%

Operations: >90% - Development:

Do not know/No answer

- How did the IT budget change to this year compared to the year before?

- Decreased
- Not changed (in between +/- )
- Increased

- Do you consider important the budget for IT in your organization?

- Yes
- No
- Maybe
- Don't know

- Please rate the statements below regarding your investments in IT in your organization!

	1 – Not at all	2	3	4	5 - Absolutely	Don't know
Eligibility of investments in IT is examined first before they are realized.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The correctness of decisions on investments in IT (economic viability of investments) is verified after the realization of investments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- Please rate the statements below regarding your organization!

	1 – Not at all	2	3	4	5 - Absolutely	Don't know
IT is the main initiator of business innovations in our organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IT solutions are an essential part of our organization's products and services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Representatives of business areas understand the role of IT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effective partnerships have emerged between IT and the management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IT provides basic services in an appropriate quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The IT and corporate strategy are closely integrated in our organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### IV. State of IT

- What is the current amount of coverage of the following information technologies in your organization?

	0 – we don't need it	1 – not covered at all	2	3	4	5 – perfectly covered
Enterprise Resource Planning (ERP)						
Workflow system						
Group work system						
Business intelligence system						
Document management system						
E-business solution						
Mobile solutions						
Cloud solutions						
Customer Relationship Management (CRM)						
Business Process Management System (BPMS)						

- What kind of IT management projects are you planning to or have you started this year?
  - Improvement of IT services management areas (e.g. improvement of existing or implementation of new ITIL processes)
  - Process improvement, process management (e.g. BPM/BPR, Lean IT)
  - Change in Operating model (e.g. outsourcing, insourcing, underpinning contracts)
  - IT security and risk management
  - Optimization of Operations (e.g. server virtualization, change in SLAs)
  - Improvement of project and program management (e.g. project efficiency monitoring, improvement of project specification)
  - Use of open source solutions
  - Application integration (including SOA)
  - Other: \_\_\_\_\_

### **Appendix 3: Interview questions.**

- Function in your organization
- What does digital transformation mean for you? How do you understand it?
- When (what) would (or will) mean that your company is "digitalized"? Do you see this as a project(s) or as a permanent process?
- How (would) you measure the progress in your company in the field of digital transformation?
- In your opinion, how will digitalization disrupt your industry?
- When did you start systematically / formally with digitalization your company and what was its development?
- In which area do you implement digitization projects and to what extent? Are they focused on customer engagement or on the digitalization of products/services?
- What are your goals that you want to achieve by the digitalization and to what extent do you digitalize customer engagement?
- To what extent do you digitalize your products and services (digitized solutions)?
- Does digitalization have a significant impact on your business models?
- Do you pursue the following goals through digitalization: Increasing efficiency, Increasing innovation, improving business decision-making, significantly transforming business processes
- How do you ensure the connectivity and transparency of your processes?
- Do you see your clients as digitally optimized?
- How do you see the acceptance of digital technologies and innovations in your environment?
- How do you think your clients are accepting digital technologies?
- How do you provide crucial information in your company? In your opinion, are they always available on time? Is the information correct?
- Where do digitalization initiatives come from?