The Digital Mindset

A theoretical discussion

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Abstract

Purpose: The purpose of this thesis is to open up a discussion about the digital mindset. It explores existing theories in related fields and tries to build up a theoretical framework for the digital mindset. The main characteristics of the digital mindset will be presented and the whole discussion will be tied to managers. The thesis will try to draw attention to the effects of the digital revolution on the managerial mindset and it will propose a possible way to research it.

Methodology: This thesis is built on secondary data. However it proposes a research approach suitable for the digital mindset. This is qualitative, semi-structured interviews. The interviews can give an understanding of the digital mindset by investigating managers who work in a digital environment. Based on the interviews an online questionnaire can be designed in order to deepen the understanding of the digital mindset on a broader level.

Findings: The findings of the thesis conceptualise the term "digital mindset". They suggest that after the digital revolution there was a shift in the business mindset from the transactional mindset to the digital mindset. Based on the gathered information the characteristics of a manager with a digital mindset can be presented. A manager with a digital mindset is curious about digital technology and is always up-to date with the latest innovations. Moreover a manager who possesses the digital mindset uses digital technology for educational, professional and leisure purposes. It can be concluded that a manager with a digital mindset has excessive knowledge about digital technology and he/she uses this technology to an extent.

Research limitation: the research in this thesis is limited to a proposal for operationalizing the analytical framework. This is due to the fact that the theoretical considerations about the digital mindset are very limited in the current literature so it was decided that a strong theoretical foundation for the concept of digital mindset is necessary in order to be able to move on to actual research. This is why this thesis emphasises theory.

Implications: The implications of this thesis can be significant for managers and companies. The existence of the digital mindset is apparent. Managers have to take into consideration the digital technology when thinking about the future of their company and have to train themselves to become digital leaders as adopting digital technology will become necessary for the survival of the company.

Originality/value: The thesis contributes to the discussion about digital mindset by addressing the question of how can be the digital mindset understood. Furthermore, the thesis presents the characteristics of the digital mindset which present the term in a new way.

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"The world as we have created it is a process of our thinking. It cannot be changed without changing our thinking."

~Albert Einstein~

1. Introduction

The 21st century is different from the previous ones in many ways Digital technology is growing at never seen rates and in a way or another everyone becomes part of the change. As Douglas Rushkoff (2013) puts it: "The future--which used to be a destination that we marched toward--has arrived" and bought new changes with itself. These changes are happening not only on a personal level but on a business level too because technologies often progress hand in hand with institutional changes (Freeman, 1986). Rushkoff (2013) talks about this as follows:

"Living in the digital media environment changes a whole lot more than the technologies through which we do business. It has changed our relationship to time—and this is having profound effects on our businesses, our economy, and our customers."

The industrial age arrived to an end, its "running out of steam" and with the new age come new changes (Perez, 2002). All these changes started with the latest revolution, the digital revolution. The first part of this chapter examines in detail "this bringer of new"- the digital revolution, and the changes it brought with itself. The second part of the chapter focuses on the company in the digital age. It will discuss what made the company successful before and after the digital revolution. The next part of the chapter will talk about the managers as the ones at the base of the company, as the ones whose digital involvement can make a previously profitable company go bankrupt. This part will discuss their mindset and will arise a few crucial questions from the point of view of this thesis. The last part of this chapter will form the base of this thesis by containing the problem formulation.

1.1 The Digital Age

Everything started on an ordinary looking day, on the 15th of November, 1971 in Santa Clara California. It was a small event considering the other big happenings of the year but the launch of Intel's first microprocessor has changed the world (Perez, 2002). This was the first commercially available microprocessor and its launch marked the start of the boom of the personal computer market (Intel Timeline: A history of innovation, 2013). Since then more and more computers are sold every year.

From the launch of the first microprocessor in 1971 technology came a long way. At the beginning having one desktop computer per household was a big deal. According to Arbitron and Edison Research in 1012, only in the U.S the average number of working desktop computers per household was 1.8 (almost two!). The good, old, in many ways comfortable, analogue life seems to be replaced by a new, digital one. In the business world, the previous eras' physical processes are getting replaced by the new era's digital processes. Companies have to adapt to this change but in many cases they don't have enough knowledge about the transformation process (Huizing, 2002). This transformation process is called digitalisation and is defined as a process which turns the physical into digital (Ivang, 2008). The digital is entering every aspect of life, but what exactly is digital technology? The next subchapter will focus on this question

1.1.1 Digital technology and being digital

The beginning of digital technology is marked by the release of the first microprocessor by Intel in 1971 (Perez, 2002). Digital technology handles the information in numeric form. Digital simply means "made up of numbers" (Woodford, 2007). Digital technology uses a binary system. This means that it uses only 0 and 1 when coding the information. The question naturally arises: Why is the digital technology better than the previous, analogue technology? While by using analogue technology the information varies continuously, changing in a smooth way, digital technology splits the information into chunks and stores it as separate sets of numbers (Woodford, 2007).

As a conclusion it can be said that both analogue and digital signals are used to transmit information. The information, such as audio or video, is transformed into electric signals. In one of his videos, Michio Kaku (2011), a theoretical physicist at the City University of New York, explains the advantage of the digital technology very well. He says that an analogue signal can break the information up, into every number between zero and one, whereas the digital signal can only break the information up into zeros and one. Kaku (2011) adds that the analogue signal is much richer than the digital one but the digital signal has a huge advantage. This is the ability to copy the digital signal without errors as many times as one desires while being able to also manipulate it. Copying the analogue signal is like making a Xerox, then a Xerox of a Xerox and so on. After a definite number of Xeroxes has been taken the paper comes out almost white. The information will be lost. This is not the case of the digital signal, and this is what makes the digital signal and technology much more efficient and more and more widespread.

Digital technology is not equal however with being digital. All the digital technologies are very significant parts of "the digital" but being digital contains another part, and this is digital behaviour. Being surrounded with digital technology does not mean in itself that someone is "digital". The person has to have a certain behaviour and way of thinking in order to become a "digital individual".

If the “digital” is getting more and more widespread since the introduction of the first microprocessor, the question naturally arises: Can we talk about a digital revolution? The next subchapter will take a closer look on the digital revolution.

1.1.2 The digital revolution

Perez (2002) defines revolutions as “Schumpeterian gales of creative destruction” which bring fundamental change in power or organisational structure by introducing new inputs, products and industries, one or more new infrastructures and new ways in transporting goods, people, information and alternative source of energy. Revolutions usually take place in a relatively short time. These changes go down to the root of society and modify the social structure. The evolution of technology is a fast process, especially in recent years. The change from analogue to digital technology is almost complete now and this implies a significant change in the life of societies. The above mentioned information suggests that the digital revolution is more than a simple concept. In order to shed a better light on the digital revolution it is necessary to examine the previous big turnovers of history.

The digital revolution is not unique in a sense, that during the course of history there were four major “revolutions” before the digital one. Figure 1 illustrates these “revolutions” and their timelines. The technological revolutions run through a long period of time and also the time between the invention of the new technology and its recognition by the industry is sometimes significant. The similarities between these technological revolutions can also be observed in figure 1.

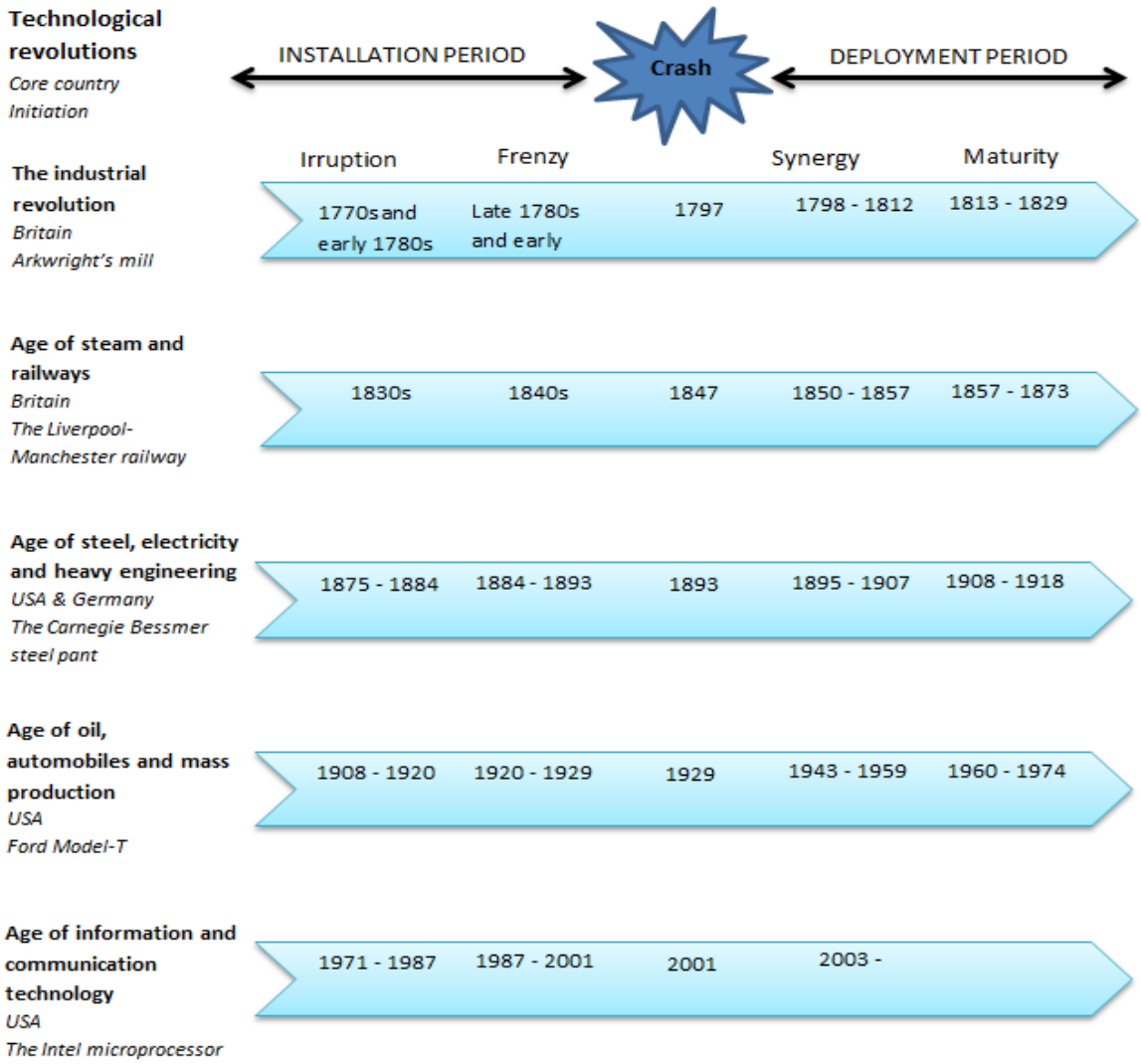

Figure 1: Technological revolutions, own creation based on Perez (2002) and Jelassi and Enders (2005)

During the industrial revolution the manufacturing processes has changed. Many hand production methods were substituted by machines, machine tools were developed, and the use of steam power got widespread. This opened the way for the second big "revolution" which led to the rapid extension of roads, bridges, ports and canals. The third revolution changed the economy of the whole world with transcontinental trade and travel by rail and steamship together with international telegraphs and electricity. The forth turnover revolutionised transportation with the automobiles (Perez, 2002). There is something common in all these revolutions and this is the fact that they all led to a massive replacement of one technology with another. Perez (2002) further argues that:

> "Each involved profound changes in people, organizations and skills in a sort of habit-breaking hurricane. Each led to an explosive period in the financial markets."

A similarity can be observed between the four major technological revolutions and the digital one. They all went through a development during the years, starting with irruption. In the case of the digital revolution the irruption was Intel's microprocessor which enabled the manufacturing of computers which size and price made it possible for households and companies to own one. However computers became really widespread once the Internet came into the picture. The origins of the internet go back to 1969 and the Arpanet, the first network which made the communication

between two computers possible over a network. The internet was not commercialised until 1995 (Ryan, 2010). After this year the internet started to boom with more and more websites appearing. Perez (2002) calls this the frenzy stage. The crash was in 2001 when the dotcom bubble started to burst. This led to incredible amounts of losses for many investors, hundreds of companies collapsed. The stock market, known as NASDAQ which registered a large number of tech companies was heavily affected by the collapse of the bubble and hit the bottom in October 2002 (Ryan, 2010). Both Perez (2002) and Jelassi and Enders (2005) argue that the digital revolution is currently in the synergy phase. This means that digital technology is entering every aspects of life, from society to economy. This indicates that the digital revolution is not just a fancy term but its reality. It brought with itself the wind of change which slowly but surely touches everything and everyone from the little schoolgirl to the multinational organisation. The digital revolution opened the door for something new which radically changed people and their lives. But these changes also affect the business world and that is why they have to be discussed from the point of view of the company. The next subchapter will review what made a company successful in the pre-digital era and what makes it successful in the digital age. Moreover it will reflect on managers as digital leaders and their role in the company's success.

1.2 The Company in the digital age

Every company has access to technology. It is their own choice to use it or not, and they can decide what they are using it for. The company as a whole enters a new era, the era of the digital. The company had and still has to go through some changes in order to be successful in this new era. But why is this happening? The reason lies in the structure of the company, because every company at their bases have people, more exactly they have managers. The manager at the foundations of the company is the one who, first has to integrate technology in his/her own life in order to later introduce it in the company's life (Brynjolfsson, 2000). But not every manager integrates technology in their lives at the same rate. There are people who feel very comfortable around technology while others don't trust it at all. Some consider it very important to integrate technology in the life of the company while others think that the time spent on social networks or blogs is just a waste of time and resources. Anyway, the manager is, who with the choices he/she makes, determines the success of the company (Bessen, 1999). In order to understand the digital revolution's impact on company success it is very important to determine what makes a company successful.

1.2.1 The recipe for company success - then and now

Every company aims to be successful. It is not an easy task but it determines the company's existence. But what makes a company successful? There is no universal recipe which "bakes" a successful company. Success is different in the case of every company. However a significant change in the receipt of success can be observed before and after the digital revolution due to radical technological changes. According to Utterback (1994) this is not unprecedented as business history offers many examples of industries where radical technologies emerged and then overwhelmed the previously established and used technologies. Examples of such industries are: lighting, photography, steel, and telecommunications. In each case some firms adopted the new technologies and based their business model and production on them while some other firms choose to use the older technologies. In every case some firms were more successful than others and this is due to the adaptation of modern technology (Srinivasan, Lilien & Rangaswamy, 2002).

If a company wants to be successful in today's economic environment then it is necessary to adopt the new digital technologies. This happens because digital technology no longer belongs to the high-technology sector and also diverse consumer products have the digital technology at their core (Srinivasan, Lilien & Rangaswamy, 2002). There are various factors that can influence company adoption of new technologies. Some of these are company size, culture, differentiation and managerial attitudes to technology. The adoption process however is not easy for many companies as there is a significant difference in the mindset of the era of the mass production and mass markets and the mindset of the digital age. Utterback (1994) points out that the main obstacle which stands in the way of the adoption of new technologies is the fact that most firms and their technology are often stuck in a relatively static stage of development while new technologies require a dynamic and fluid stage. The organisational structure can be another obstacle because companies are structured in the image of their technologies and processes. Many companies are quite bureaucratic; they enjoy economies of scale, have a lot of investments in inflexible systems and are likely led by career managers (Utterback, 1994). However if a company want to be successful in the digital age it has to acquire some organisational flexibility and entrepreneurial spirit.

Srinivasan, Lilien and Rangaswamy (2002) identify a main key for company success in the digital age. They call it technological opportunism and define it as: "a sense-and-respond capability of firms with respect to new technologies, as an important determinant of radical technology adoption." (Srinivasan, Lilien & Rangaswamy, 2002). Technological opportunism has two components: technology-sensing capability and technology-response capability.

Technology-sensing capability is the company's ability to acquire knowledge about and understand the technological innovations in its business environment. A company which has this ability will always look for information about technological opportunities and possible threats. The organisation has to develop a system and an infrastructure which will help them to understand the information they get about new technologies. Among the methods which managers use to understand the implications of new technologies are: periodic reviews, team meetings, scenario planning or systematic modelling of technology developments (Srinivasan, Lilien & Rangaswamy, 2002).

Technology-response capability is the company's willingness and ability to react to technological changes in their business environment. This ability is necessary because even if companies are able to detect the technological changes they might still be unwilling or unable to react to these (Srinivasan, Lilien & Rangaswamy, 2002).

The above mentioned two abilities are important to have in today's technological environment for a number of reasons. First of all technological changes are the principal drivers for competition destroying monopolies. They can create new industries, render products or make markets obsolete. A new technology can easily become a competitive advantage but it can as easily destroy a company which fails to adopt it. Second, the in-house technological developments are very often completed by additional technologies from inside and outside the industry. Last but not least, it is very hard to foretell if a technological innovation is going to succeed commercially or not. This is why sometimes companies protect their position with alternative technologies to guard against technological lockout (Srinivasan, Lilien & Rangaswamy, 2002).

Both Utterback (1994) and Srinivasan, Lilien and Rangaswamy (2002) highlight the importance of the managers when they talk about company success. Utterback (1994) writes about this as follows:

> "Clearly technology is not the key in and of itself. Market conditions are an equally powerful influence. And while technology and markets are important, their importance must be understood in conjunction with the human factors determining organisational competence or core capabilities."

Modern managers have to develop a broad vision of the future and they have to nourish those organisational capabilities which will carry them forward successfully. This is the ultimate managerial challenge (Utterback, 1994).

As it was argued above, in the digital age it is no longer viable for a company to exist only off-line. An on-line presence is required if the company wants to be successful. According to Rogers (2012) digital competencies are no longer a nice-to-have. They are a must-have. He further states that:

> "Every business today is shifting from a world of mass markets and mass production, to a world of customer networks that are interconnected, dynamic, and powerful. Whether you are running a pizza chain, a political campaign, or a personal finance service, you need to understand your customer network's behaviour, and you need to come up with new ways to add value for them in your products, services, and marketing. Rather than marketing by yell and sell to anyone who'll listen, you need to help your customers become your biggest champions, and the biggest drivers of your business. Their voice is louder now than ever."

The managers were key figures in company success in the age of mass production and mass markets too but their role and their way of thinking has become even more significant in the digital age. What is relevant form the point of view of this study is the fact that some of the current, but mainly the future managers of the company are very familiar with digital technology; they are keen and eager to use and integrate it in their work-life. This opens new opportunities for the company but also holds some challenges too. This is all the result of the digital revolution. The digital revolution created new winners and new losers on the market and if a company wants to belong among the winners its managers need certain digital skills and competencies. The managers have to become digital leaders. The next subchapter will take under investigation the managers as digital leaders and it will also discuss the digital skills which are necessary to be possessed by these leaders.

1.2.2 The managers in the digital age and the birth of a new mindset

According to Arsenault (2004) the current leadership of the company is mainly formed of managers who are not that familiar with digital technology. As a conclusion the current leadership style will not be appropriate in the digital era, because those people who are "digitally fluent" will bring with themselves different values, norms and behaviours. This is true for current and future managers equally because they will be the ones who will make the change happen on a company level. They are the ones who have to lead their companies through a process of digital transformation and by doing so becoming digital leaders themselves. What differentiates the digital leader from a common manager? The answer is simple. The digital leader has certain digital skills and competencies and they are not afraid to use digital technology such as: social media, mobility and analytics in the benefit of their companies (Bonnet, 2013). Digital leaders are a necessity in today's economic

environment as the digital revolution has created a whole new playground with different rules which then created new winners and new losers.

In 2010 CapGemini Consulting and the MIT centre for Digital Business conducted a research examining more than 400 companies worldwide and they found out that digital leaders are a key factor in company success, because their capability and ability to decide which technological innovation to adopt and when to adopt them can make the company's profit rise beyond never seen levels. According to Wilson (2004) there are four key structural changes reshaping the leadership in the digital age: rapid and far reaching technological changes, especially the digitalisation of information and communications technology; accelerated globalization; a shift toward knowledge as the central factor of production; and more distributed, less hierarchical organizational forms with greatly accelerated movement within and across organizations and sectors. Thanks to these changes digital leaders need to acquire different combinations of skills, attitudes, knowledge and their professional and personal experiences. Digital leaders need to have attributes appropriate for the digital age. Digital leaders have to be flexible and adaptable; they have to possess wide intellectual curiosity and a hunger for new knowledge. They have to possess true passion for what they do but they also have to look at things from a different angle and they have to be comfortable with uncertainty (Wilson, 2004). What do managers need in order to fit this description? What can help these managers to leave the "physical" of previous ages behind and turn to the "digital" of the new age? Isn't there a certain mindset which can help the managers become the digital leaders so much needed? Perhaps the digital mindset is the answer for all these questions.

In order to acquire this new kind of mindset and fit the description the digital leaders have to poses certain digital competencies. The next part will discuss these competencies in detail.

1.2.2.1 Must-have digital competencies

First and foremost it is very important to define what digital competencies are. "Digital competence" is a recent term and a basic definition describes it as technology related skills (Ilomäki, Kantosalo, Lakkala, 2011). The term was officially introduced by the European Commission, where Ferrari (2012) defined it as:

> "Digital competence is the set of knowledge, skills, attitudes (thus including abilities, strategies, values and awareness) that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socialising, consuming, and empowerment."

Thanks to the rapid spreading of digital technology in everyday life every individual needs to acquire some digital competences. Van Deuersen and van Dijk (2009) propose four sets of internet skills which every individual should possess. These are: the operational internet skills, the formal internet skills, the information internet skills and the strategic internet skills (for a detailed description of the skills please see Chapter 3.2.1.).

Every current and future manager needs to acquire these skills in order to be a new kind of leader in a new environment. It is clear now that there is a transition from the physical to the digital in the business world in recent years. In today's society everyone has to possess at least some of the digital

skills described by van Deuerse and van Dijk, in order to be a full member of society. The digital technology is changing the "habits of mind" and this is exactly what this thesis is interested in. If the way managers think changes then their way of acting and their attitudes will change too. Does this mean that we can talk about a universal mindset? Maybe the digital mindset will answer this question too.

In order to get closer to the answer first it is necessary to talk about what mindset means and how can it be defined. This is with what the next part is concerned with.

1.2.2.2 Mindset

According to Dweck (2007) a mindset is a set of assumptions, methods or notations held by one or more people, or by a group of people. In other words a mindset is a set of beliefs, a way of thinking. The term comes from cognitive psychology, where its focus is on people from the point of view of information and information processing. Human beings have limited capability to absorb and process information. Mindsets help to filter what one absorbs and how he/she interprets it. Mindsets are not stable; they are changing over time as a result of new observations and experiences (Dweck, 2007). Bellin and Pham (2007) argue that mindset is important from the point of view of the company because over time, a mindset can help the company to develop its own way, its own unique approach to solving problems and making decisions. Moreover this unique way creates a common identity which can be codified and shared with new employees.

The literature mentions many kinds of mindset. Dweck (2007) talks about fixed and growth mindsets, but there are also environmental mindsets, political mindsets or closer to the field of economics: global mindset or marketing mindset. Every era has its own mindset so it is natural that in the digital age a new kind of mindset is emerging, namely the digital mindset. The topic of the digital mindset will be further discussed in the third chapter, entitled "Theoretical considerations".

1.3 Problem formulation

The digital revolution is happening now, creating new opportunities and demands on the markets. It is unavoidable for a company to go on-line in today's economical state because the digital revolution is reshaping not only the individual but the company life too. As it was argued earlier in order for a company to have digital presence the people at the base of the company, the managers have to have a certain mindset, let's call it the digital mindset. This mindset has to be different from the mindsets of the previous eras, the managers have to acquire new skills and attitudes and most importantly have to become more comfortable in the vicinity of uncertainty. But if this mindset exists, how can it be understood? This is a central issue of this thesis.

Entering the digital age can be problematic. Digitalisation can not only have fruitful consequences but it can also go horribly wrong. In a society where are so many books read, movies watched and pictures taken big brands, like Kodak, Polaroid, Blockbuster or Borders are fighting for survival or phasing out. Why is this happening? They should be more successful than ever and still something is missing. But one does not need to go as far as those big brands. A simple look around in the Danish society can also give valuable examples. Systems like POLSAG or the Rejsekort system can be mentioned here. POLSAG is an integrated IT system for police which started in 2006. It was estimated to cost 21 million euros and to be finished by 2009. In 2012 the whole project was abandoned at a total cost of 65 million euros. The Rejsekort system was introduced in order to

eliminate paper tickets and replace them with digital cards. However this system costs 25 million euros more per year than the paper tickets. The project will end up with a total extra cost of 365 million euros (Kamp, 2012)

These examples show that digitalisation is not an easy and simple process at all. Many projects are started and abandoned after spending a lot of money. These examples show that the companies and governments are trying to adapt to the new age but digitalisation does not equal success automatically. But why do some people succeed while others fail? The answer lies in the digital mindset and its understanding. Understanding this interesting area can help managers and companies with non-digital mindsets to develop one and can also help managers and companies with digital mindset to further perfect their strategies.

As it can be seen talking about the digital mindset is relevant. However there have been very few studies or researches done in this area so far but in order to be successful both managers and companies will have to make an effort to change their mental approach and this is why researchers will have to focus more and more on this area.

The digital age transforms the simple user into a value creator within context. The online experience is not a two-way dialog anymore. Creation is fast, fluid and disruptive. As Johnson (2011) said:

> "We live our lives in a perpetual state of beta. Social technological advancement is therefore, in ways not possible before now, enabling us to become a value creator within context. It is an environment where personal and professional participation culminate in a reconnection to what is timely, relevant, and authentic. "

This thesis focuses on the managers in the digital age. It would like to examine if managers possess this digital mindset or not. As it was mentioned before, there are very few studies concerning the digital mindset. Studies which do exist talk about the digital mindset from the point of view of intercultural communication (Noma & Crossman, 2012), and they discuss what kind of weapon is technology in the hands of the company. Those studies which attempt to measure digital skills are usually limited in their definition and have a small sample size. These mainly use surveys which measure skills indirectly and use self-evaluation. Very little scientific research has been actually focusing on the digital skills of the population on a bigger scale. Disciplines that have more profoundly investigated digital literacy or skills are library research, computer science and educational science (van Deuersen & van Dijk, 2009).

As it can be seen the amount of researches on a general level are very limited. No researches have been done so far which focuses on current and/or future managers and their digital mindsets, which is why this thesis attempts to do so. This thesis focuses on understanding the digital mindset through examining the construct of current and future managers' mindset.

The problem formulation of this thesis looks like it follows:
How can be the digital mindset understood from a managerial point of view and what would be a possible way to measure and analyse it?

This problem can be divided in two sub-questions. These are:

1. How can the concept of digital mindset be understood?
2. How would it be possible to measure the digital mindset?

The thesis will try to answer these questions by proposing a theoretical and an analytical framework. The next chapter will be concerned with the methodology this thesis uses.

2. Methodology

The methodology chapter is important because it provides an explanation of various concepts, theories, frameworks and methods of data collection and analysis. Methodology is important from the point of view of the researcher because it helps to arrive to valid and logical conclusions. Without a well specified methodology it is impossible to make valid observations and findings (Kuada, 2011).

This thesis is a purely theoretical discussion about the digital mindset but it proposes a possible way to research this topic. This chapter will present the paradigmatic position and methodological considerations of the thesis. First it will define the paradigm and its content. This is necessary in order to get a better understanding of main elements in the thesis. After this, the research design will be presented which is the “action plan” of the thesis. It will provide a possible sequence of activities which will strongly connect to the problem formulation presented in the previous chapter. A possible approach which could be used in the case of this project will also be presented. Further this chapter will present the methods and techniques which could be used in collecting and analysing the data.

2.1 Paradigm

Different world views have different impact on the research because they imply different foundations of knowledge about the social world. The modern usage of the term paradigm is attributed to Kuhn and dates back to 1970. He argued that every field of research is characterized by a set of common understanding of what kind of phenomenon is being studied, the kind of questions that are useful to ask about the specific phenomenon, how the research should be structured in order to answer the research questions and how the result should be interpreted. He also states that successive waves of thoughts re-frame ideas and thus participate deeply in the progress of science (Kuada, 2011). Bryman and Bell (2007) define paradigm as follows:

> "A paradigm is a cluster of beliefs which dictates for scientists in a particular discipline what should be studied, how research should be done and how results should be interpreted."

It can be stated that paradigm has a huge influence on the results of the research. According to Kuada (2011) most scholars define paradigms in terms of four sets of assumptions: ontological assumptions, epistemological assumption, methodological assumptions and assumptions about human nature.

Ontology describes "the nature of what the researcher seeks to know something about" (Kuada, 2011). In other words it is the essence of the phenomenon under investigation. Most scholars see the social world from two broad perspectives. The social world is either real and external to an individual or every individual creates his/her own social world. So ontology also describes how the researcher sees the relationship between human beings and the environment. This is the researcher's view of ***human nature*** (Bryman, 2008). This is concerned with the nature of human behaviour, if it is voluntary or deterministic, i.e. if human beings have a free will or their behaviour is determined by the environment (Burell and Morgan, 1979).

Epistemology describes the nature of knowledge and the means of knowing. In other words this term describes "how we know what we know". Some scholars believe that the "truth" about a social world can be known even if the researcher is just an external observer while others maintain that the social world can only be understood if the researcher is an active part of it (Bryman, 2008).

Kuada (2011) describes ***methodology*** as *"the reasons underlying the choice and use of specific methods in the research process".* In other words this describes the way of gaining the desired knowledge. Methodology is the strategy guiding the entire research .

Based on these assumptions two research approaches have been accepted in social science. These are the objective and subjective research approaches. The next subchapter describes these approaches in more detail and will define the paradigmatic position of the research.

2.1.1 The objectivist-subjectivist approach

As it was mentioned before, in social science there are two ways to approach a research. These are the objective and subjective approaches. The differences between the two approaches, on every level, are shown in the table below:

Dimensions	The objectivist approach	The subjectivist approach
Ontology	Realism	Nominalism
Epistemology	Positivism	Anti-positivism
Human nature	Determinism	Voluntarism
Methodology	Nomothetic	Idiographic

Table 1: Differences between the objectivist and subjectivist approaches, adopted from Burell and Morgan (1979).

On one hand, realism assumes that the social world is real and external to the individual. On the other hand nominalism assumes that the individual is the one who constructs reality by interacting with other individuals (Burell and Morgan, 1979).

Positivism suggests that the research can be conducted objectively by an external researcher. It suggests that the whole can be understood if the researcher studies the constituent parts of a social phenomenon by looking for regularities and casual relationships to understand and predict the social world. Anti-positivism assumes that the social word can only be understood from the point of view of the individuals directly involved in the social activities under investigation (Burell and Morgan, 1979).

In Burell and Morgan (1979) viewpoint determinism sees the individual as an entity determined by the environment and situation he is in. Voluntarism assumes that the individual has free will and as such is capable to influence his own environment and situation.

The nomothetic approach favours studies with systematic approach and techniques such as survey methods. The idiographic approach sees reality in terms of symbols and ideas. It emphasizes the everyday flow of life of those investigated and the importance of the researcher getting “inside the situation” (Burell and Morgan, 1979).

To best way to approach the research questions presented in the previous chapter would be the subjectivist approach. According to the subjectivist approach the individual is the one who, by interacting with other individuals, creates reality. From the point of view of the digital mindset this means that the managers by interacting with each other and with other individuals in their environment construct the reality. This is why the managers are the ones who need to be understood. The digital mindset can only be understood if the managers are examined. This is supported on an epistemological level by the views of anti-positivism. Moreover the researcher cannot be just an external observer. He/she has to interact with the managers to gain a deeper understanding of the examined phenomenon, in this case the digital mindset. On the level of the human nature voluntarism assumes that the individual has free will. This means that the managers are capable of influencing their environments and situation. From the point of view of the digital technology this means that managers are the ones who decide if they want to adopt the digital technology or not. It is their own free will to integrate the new technologies in the life of their companies. This desire to use new technologies however might be highly influenced by the digital mindset. A manager who possesses the digital mindset might integrate easier the new technologies in the life of the company than a manager who does not have this mindset. As it was mentioned earlier the researcher has to get “inside the situation”. This is why semi-structured interviews are proposed as a method for researching the digital mindset. By using semi-structured interviews it will be possible to gain an insight into the everyday flow of life of the managers thus it would help to understand the digital mindset better.

A very similar approach to the objectivist one is Abnor and Bjerke's (2009) actor approach. According to the actor approach reality is the product of interacting individuals over a period of time. As a result reality is socially constructed. This approach accentuates concepts such as subjectivity, individual and interaction. Similarly to the subjectivist approach, the actor approach also sees reality as an interaction between the individuals who have free will. It claims that the action of the social actors produce results over which they may reflect and which guide their subsequent action. The actions, counteractions, reflections and thoughts combine to influence the on-going process of the actors' social development (Abnor and Bjerke, 2009). From the point of view of the current thesis this means that managers possessing free will interact socially and create reality. The digital mindset is a result of this interaction so talking to or interviewing the managers will help to understand the digital mindset as it can only be understood from the point of view of the actors involved in the creation of reality. The actions of the managers, i.e. implementing the digital technology or not in the life of the company will influence their future moves and will contribute to the success of the company. What the actor approach adds is the fact that researchers who see the world from this approach use research methods like hermeneutics and symbolic interactionism (Kuada, 2011). Hermeneutics is the art and science of text interpretation. Commonly it is the interpretation of written text. Hermeneutics includes the entire framework of interpretive process, encompassing written, verbal and non-verbal communication (Bauman, 2010). This is important from the point of view of the proposed research method because interviews result in transcripts and hermeneutics could be used in order to subtract the necessary information from the transcripts. It is implied that during interviews dialogue constitutes a very important tool. According to the actor approach dialogue is characterised by the interplay between "talking" and "listening" which takes place on equal terms for the participants (Kuada, 2011).

This thesis chose to follow the subjectivist approach. This choice influenced the way hoe the phenomenon of the digital mindset was approached. This thesis is to understand the digital mindset and not to quantify it so the choice of the subjectivist approach was apparent. Moreover the digital mindset can only be understood from the point of view of the individuals, in this case the managers, who possesses it. Thus the phenomenon of the digital mindset will be examined from the managers' points of view that are seen as individual with free will, who by interacting with each other create reality. The digital mindset can be understood better if the whole phenomenon is examined not only it constituent parts. This is another influence of the subjectivist approach on this thesis. Furthermore the interviews, which are proposed in this thesis for a better understanding of the digital mindset, require the researcher to interact with the researched individuals. This further justifies the choice of the subjectivist approach which implies that the researcher cannot be an outside observer if he really wants to understand the research phenomenon. Additionally the subjectivist approach emphasises the importance of the personal voice (Holden, 2007) which this thesis also does by basing the understanding of the digital mindset on the personal experiences and impressions of the managers.

2.2 Research methods

This research proposes the qualitative research method for dealing with the digital mindset. This subchapter will discuss the chosen method and why is this choice appropriate when researching the digital mindset.

Qualitative methods are defined by Strauss and Corbin (1998) as "any type of research that produces findings not arrived at by statistical procedures or other means of quantification". These methods include ethnography, participant observation, in-depth interviewing and conversational interviewing. Qualitative research emphasizes cases and context. They present "authentic interpretations that are sensitive to specific socio-historical context" (Neuman, 2006). A key advantage of qualitative methods is that participant are often interviewed and observed in their natural surroundings. In this way they may be able to more accurately answer the questions. Qualitative methods provide a first-hand look at the settings for the researcher and they also make it possible for participants to raise topic previously not anticipated by the researcher (Kuada, 2011). The qualitative research process is proposed for researching the digital mindset because this method provides a better understanding of the respondents which is necessary when researching a topic like this. Statistical result, though very useful, would not allow the understanding of the respondents as deep as the qualitative method would. The qualitative method provides an inside view which the statistical analysis cannot provide but which is very important in the understanding of the digital mindset.

In his Conceptual-Inductive model Eneroth (1988) offers guidelines about how to do qualitative research. According to him qualitative research can be divided in five steps. This is illustrated in figure 2.

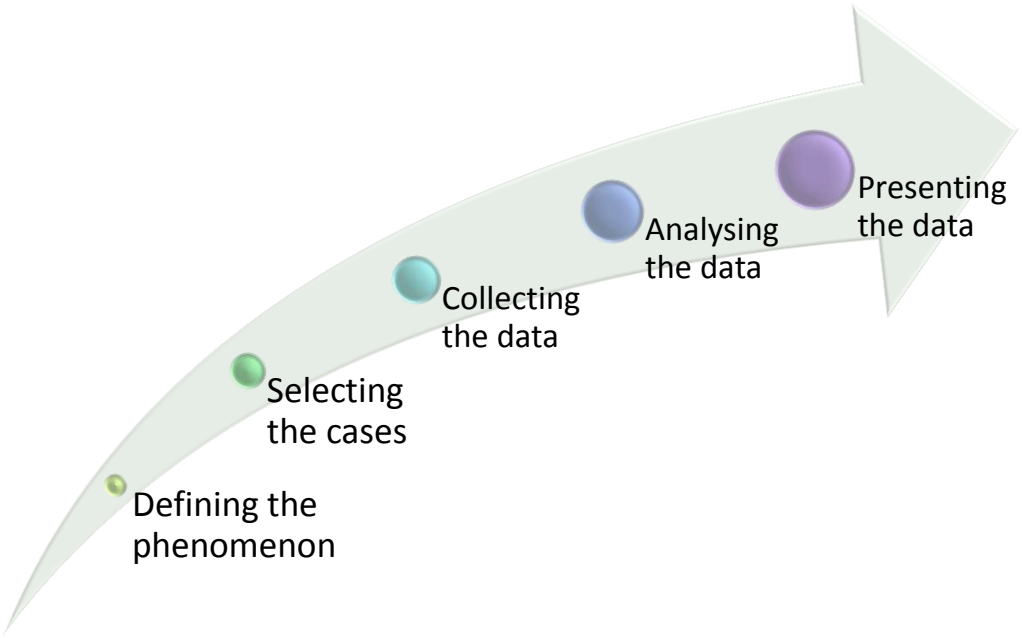

Figure 2: Qualitative research process (Eneroth, 1988)

The first step is about defining the phenomenon which is intended to be studied. In this part the study has to be limited to a certain type of phenomenon are to some specific elements of the phenomenon (Eneroth, 1988). In the case of this thesis the phenomenon which is being studied is the mindset of the managers in the digital age. To be more exact, the main purpose of the thesis is to understand the digital mindset of the managers.

The second step is selecting the cases which would form the empirical foundation of the study. It is impossible the take into consideration every possible example thus a selection process is necessary.

According to Eneroth (1988) the choice has to be rather strategic than statistical. It has to include cases which will shed light on various aspects of the research question.

The third step is data collection. It is crucial to collect as many data as possible. However it is preferable to collect different types of data relevant to the research questions. The goal of the collection is to discover as many qualities as possible (Eneroth, 1988). In order to do so in the case of this thesis qualitative interviews have been proposed. These will be described further in this chapter.

The fourth step is data analysis. In order to analyse the data a method for how to perceive the data has to be selected. This is why a theoretical perspective on the data is indispensable (Eneroth, 1988). After analysing the data there is nothing else left but to present it. The data has to be presented in a way that it gives an idea about the phenomenon under investigation. First of all the data has to be summarized in a number of qualities with certain aspects. After this these qualities have to be organized into a concept about the phenomenon (Eneroth, 1988).

2.3 Research design

After defining the paradigmatic positioning of the research and talking about the research method it is necessary to talk about research design because the research design is moulded by the method. According to Bryman and Bell (2007) the research design is important because it provides the framework for the collection and analysis of data. The research design is a plan which indicates in what way the research will be executed in order to answer the research questions. The research design is both challenging and essential because qualitative research usually is not pre-emptive. This means that whatever the study and whatever the method the indications of form, quantity, and scope must be obtained from the question, from the chosen method, from the selected topic and goals, and also from the data (Richards, 2009). The main point of the next subchapter is to define this strategic framework.

There are three different types of research purposes: exploratory, explanatory and descriptive. ***Exploratory*** research investigates an area where little is known. It explains a problem which was not clearly defined yet. ***Explanatory*** research, as the name suggests, tries to explain the nature of the relationships between two or more aspects of a situation or phenomenon. ***Descriptive*** research is aiming to describe a problem. Characteristics about the population or phenomenon being studied are described with this research method (Kothari, 1985). The purpose of descriptive research is to illustrate a description of different characteristics of one observable fact or population.

This thesis focuses on the digital mindset, the characteristics of managers having this digital mindset and tries to examine its impact on company success. Taking into consideration the three research purposes it can be concluded that this project is mainly exploratory as it submerges into an area where little is known and very few researches has been done before. The project can also be considered as descriptive because it tries to shed light on the characteristics of the people with digital mindset. Moreover it also has some theories at its base which will be described in the next chapter.

This thesis will try to conceptualise the term “digital mindset”. In order to do so, it builds on existing theories in the field of digital competencies. With this said it can be stated that this thesis follows the deductive approach. This means that the starting point will be relevant theories which will lead to a general understanding of the phenomenon under investigation and will try to confirm it in

particular cases. In a deductive study hypothesis are formed based on the theory. After this an observation is made in order to confirm or reject the hypothesis. Due to time limitations this thesis will not present a concrete research but it will suggest a way to research the digital mindset (Bryman, 2008). The figure below illustrates the differences between the deductive and inductive research method.

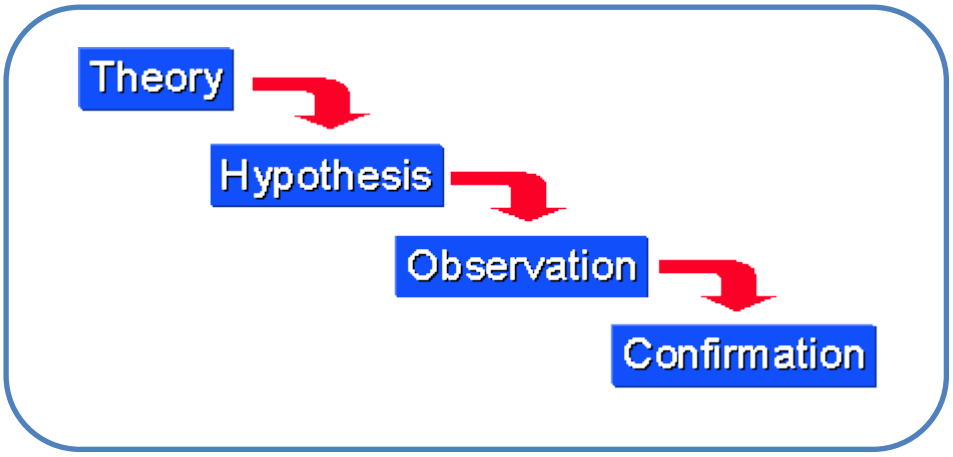

Figure 3: Deductive vs. Inductive research approach (Bryman, 2008)

This project does not test any particular theories. However it can be stated that it uses a deductive method because it follows a "top-down" pattern by examining existing theories and then finding an answer for the questions formulated in the previous chapter. Having this in mind the conceptual approach of this project looks like it follows:

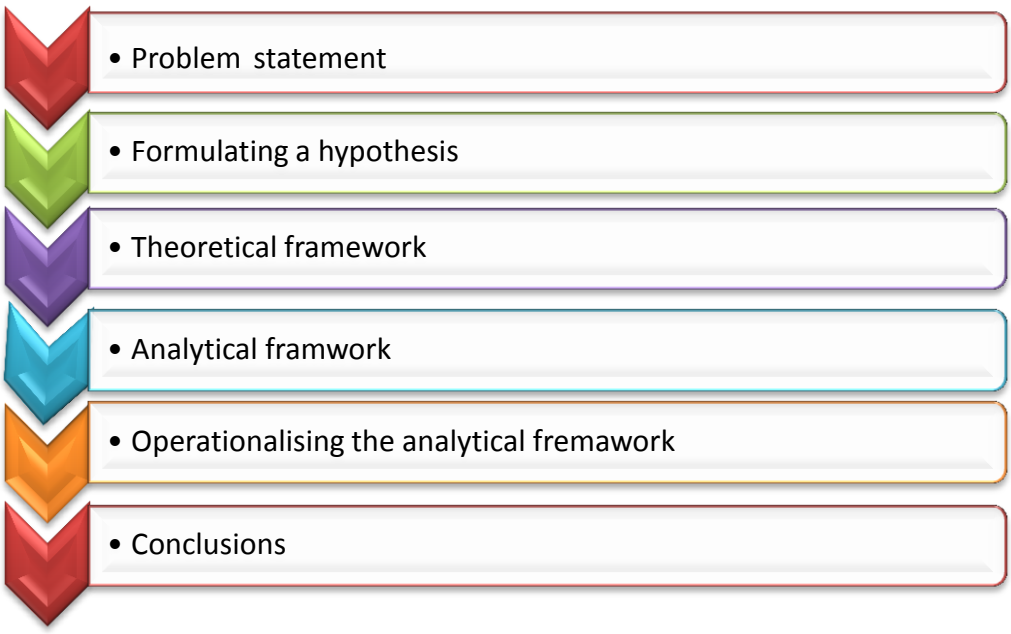

Figure 4: Research approach of the project, Own figure.

The research design which this thesis proposes is phenomenology. Phenomenology is rooted in philosophy and using this strategy the researcher aims at understanding a subject's or subjects' "reality" (Leedy, 1997). The emphasis is on the individual, in the case of this thesis, on the few

selected managers, and their perception on reality in the way they construct it. According to Kvale (2008) phenomenology studies the structure and the variations of the structure. It helps in the clarification of the appearance and the manner in which it appears. It looks beyond initial appearances and this allows the researcher to focus on common life experiences (Jones, 2001).

Phenomenology places this thesis in the subjective paradigm because it shares some similarities with the paradigm. Phenomenology reduces the external world to the personal consciousness and similar to the subjectivist paradigm, it rejects the independent existence of an object in the external world (Kvale, 2008). Phenomenology is concerned with the study of the experience of the individual. In relation to the present thesis, phenomenology will help to understand the digital mindset from the point of view of a few selected managers. An often used method with phenomenological research is the interview (Kvale, 2008). This thesis proposes qualitative interviews to gather in-depth information about the phenomenon under investigation, the digital mindset. The interviews would allow seeing the digital mindset through the eyes of the interviewed managers thus a deeper understanding of the phenomenon can be reached. For more details on qualitative interviews please see chapter: 3.7.1.

This thesis uses hermeneutics to deal with the vast amount of secondary data collected. Hermeneutics is the process of the creation of interpretive understanding (Boell & Cecez-Kecmanovic, 2010). To understand a paper it has to be viewed in the context of other papers from the literature. However the understanding of the literature is highly influence by every paper which was read and interpreted. Hermeneutics is concerned with this relationship of how understanding the parts can lead to the understanding of the whole and vice versa. This movement, back and forth between the parts and the whole, is described by the hermeneutic circle. Boell and Cecez-Kecmanovic (2010) write about the hermeneutic circle as follows:

> "In accordance with the hermeneutic circle, understanding of the meaning and importance of individual texts depends on the understanding of the whole body of relevant literature which in turn is built up through the understanding of individual texts. Undertaking a survey of relevant literature can therefore be described by the hermeneutic circle."

The term originates from Martin Heidegger who uses it to envision a whole in terms of a reality that is built up by its parts. The modern understanding of the hermeneutic cycle is accredited to Gadamer who sees it as an iterative process through which a new understanding of a whole reality is developed by examining the parts (Shklar, 2004). Critiques however argued that usually there is not a closed and known whole which is in opposition with the idea of a circle (Shaklar, 2004). For this reason the hermeneutic spiral was suggested as an alternative. The spiral has a starting point and it leads to the understanding of the whole by examining the parts which create it. However the spiral is not closed and as a result there is always place for new parts and new understandings (Boell & Cecez-Kecmanovic, 2010).

This thesis followed the hermeneutical spiral in a sense that it started the examination of the digital mindset by examining its parts. All the articles which have been read and interpreted during this process lead to an understanding of the digital mindset. However this understanding is not finalised and the hermeneutical spiral lives space for further researches and understanding on the topic of the digital mindset.

2.6 Quality standards: Trustworthiness and Authenticity

According to Kuada (2011), qualitative studies are usually evaluated on the basis of trustworthiness and authenticity.

Trustworthiness is defined by credibility, transferability, dependability and confirmability. *Credibility* examines the extent to which the chosen procedures in conducting the qualitative investigation have been followed. This usually means that the transcripts of the interviews have to be sent back to the respondents so they can validate it. This is known as "respondent validation". *Transferability* requires a detailed description of the context in which the project has been conducted. This is important in order for future research to be able to confirm the viability of the results in other contexts as well. *Dependability* calls for a detailed record of all phases of the research process. This will show that the study have been done in the prescribed manner. Dependability reinforces credibility and transferability. *Confirmability* needs the researcher to demonstrate that he/she acted in good faith during the whole research (Bryman, 2008).

The credibility of this thesis was assured by making sure that all the secondary data, which was used during the writing of this project, was carefully checked and examined to test their authenticity and reliability. Transferability was secured by giving a detailed description of the context in which the thesis was written. This means that the digital revolution was presented in detail in order to get an understanding of the context of this thesis. Dependability was ensured by describing the hermeneutic process used in the collection and interpretation of the secondary data. The whole thesis was done in order to get a better understanding of the digital mindset and help managers to use this mindset in favour of their companies.

Authenticity connects to the extent to which the investigations are fair. This means that the research has to include all the relevant people and their viewpoints. Moreover the research has to improve understanding of the social phenomenon and it also have to provide opportunity for the involved people to improve their insight into their own situation (Kuada, 2011).

The theoretical framework presented in this thesis is based on the relevant theory in similar fields. It tries to incorporate as many viewpoints as possible and build the theoretical framework on these. The thesis suggests qualitative semi-structured interviews in order for operationalizing the analytical framework. The interviews will include as many relevant people as possible and the results of the interviews will be presented and explained to the participants and advices will be given to them in order to help them to improve the situation in which they are currently in.

3. Theoretical consideration

In social science, "theory" is defined as a series of statements or generalisations which are systematic, and inter-related. They explain and/or anticipate developments in a specific context or phenomenon (Kuada, 2011). Theories are important in the research project because they allow the researchers to connect the issues they are investigating to the existing body of knowledge in the area. It also helps the researcher to make sense of the investigated phenomenon by providing the language, the concepts and the assumptions (Kuada, 2011).

From the point of view of the thesis this means that this chapter will discuss the relevant theories towards the research questions. It will present a general understanding of the digital mindset and will link it with other, already existing theories. This chapter will also provide the language base used in relation with digital technology. The chapter will discuss the current theories on mindset and the digital mindset. It will also present the theory on digital competencies. The first part of this chapter will familiarize the reader with the concept of the digital mindset. By presenting the theories about digital competencies it will become possible to understand what digital skills are necessary in order to be successful in a digitalised society. There will also be a discussion about the relation of the digital skills and the current managers. The information about digital mindset will be deepened as a contrast between digital and non-digital mindset will be made. This will allow emphasizing the characteristics of both mindsets. All this theory will lead to the proposition of an analytical framework and the chapter will close with the operationalization of this framework.

3.1 Mindset

In order to understand the meaning of digital mindset first it is necessary to clarify the term "mindset" itself. A brief presentation of mindset was done in the introduction chapter. In the opinion of the writer of this thesis, there is a very important aspect of mindset, and this is the fact that it is not enough to have a certain way of thinking, one has to act accordingly. In order to get a complete definition of mindset the above mentioned fact has to be included. Based on Dweck's (2007) definition and the above mentioned information this thesis defines mindset as follows:

> ***A mindset is a set of knowledge structures, based on experience, which are shared between a group of people who not only possess this common way of thinking but also act accordingly in the process of absorbing and processing information.***

In other words mindset is a mental attitude or disposition that predetermines a person's responses and interpretations of a situation. The mindset is not unchangeable. It can be changed in order to serve the person's needs (Dweck 2007). It has been observed that a very simple belief about one's self guides and permeates nearly every part of a person's life. This belief can limit a person's potential but it can also enable success. A mindset influences self-awareness, self-esteem, creativity, ability to face challenges, resilience to setbacks, levels of depression, and the tendency to stereotype, among other things (Dweck, 2007). To put it in a different way, it can be said that the mindset defines who a person is in his/her everyday life.

Mindset is basically a way of thinking, and how people make sense of something. However it is not enough to see the mindset on a cognitive level. Possessing a certain mindset also means acting accordingly. Thus a mindset has two main parts: a cognitive part and an action part. As it was mentioned before, the term "mindset" has its roots in cognitive psychology but nowadays it is gaining ground in organisation and strategic management theory. A person's present mindset is protected by filters. These filter help to be selective in what can one absorb and how to interpret it. This is important because humans have a limited ability to absorb and process information. Because of this limitation individuals are constantly challenged by complexity, ambiguity and dynamism of the information environment in around them. The mindset is a product of one's experiences. New absorptions and experience shape and change the mindset (Gupta & Govindarajan, 2002).

Dweck (2007) distinguished between two types of mindsets: the fixed mindset and the growth mindset. A person with a fixed mindset believes that his/her qualities are carved in stone. They believe that characteristics such as intelligence, personality, creativity are fixed traits and they cannot be developed. Someone with a fixed mindset always feels the urgency to prove himself/herself. These types of individuals see criticism as an attack on their character and they try to avoid it. On the other hand a person with a growth mindset believes that with effort all the basic qualities can be improved. They believe that people differ a great deal in talents, creativity, interests, and temperament but with experience and application everyone can change and grow. Growth mindset encouraged learning and effort. In the eyes of a person with growth mindset criticism is valuable and openly embraced. The growth mindset makes the person, who possesses it, to stick with the set goals, especially when things are not going well (Dweck, 2007). It can be said that someone with a growth mindset will always be curious about his/her environment and will

constantly seek possibilities to improve his/her situation. In the meantime, someone with a fixed mindset will stick with the old and well known because they are familiar and do not represent any challenges.

There is no doubt that there are people with both growth and fixed mindsets living in today's society. But today's society is going through a very important process, the process of digitalisation. The growth and fixed mindsets live in a digital world, surrounded with digital technology. If we add "digitalisation" to Dweck's (2007) description of the two mindsets the growth mindset will be transformed into the digital mindset and the fixed mindset will be transformed into the non-digital mindset. This means that someone with the digital mindset is always curious about digital technology and will try to use it to improve his/her situation. The digital mindset will embrace the challenges which the digital technology possesses because these challenges are seen as possibilities to become better and stronger. Someone with the digital mindset feels comfortable around digital technology, has a lot of information about it and is capable of integrating this knowledge, and the digital technology itself in his/her life. On the other hand the non-digital mindset will not possess the same curiosity towards digital technology. This mindset will try to avoid the digital technology as much as possible because it interferes with the well-known and proposes some challenges which might end in failure, and this is unbearable for the non-digital mindset. On the other hand someone with a non-digital mindset feels uncomfortable around digital technology, has minimum knowledge about it and uses it only to an extent to which its usage is absolutely necessary.

According to cognitive psychology mindsets exists in the form of knowledge structures. The two primary attributes of any knowledge structure are differentiation and integration. Differentiation refers to the narrowness and the breadth of knowledge while integration refers to the extent to which a person can integrate different knowledge elements. Integration is a critical attribute of mindsets. A person with high differentiation and high integration is someone who is open to various opinions, cannot be easily influenced by these opinions and is able to construct an integrated perspective based on the different opinions (Gupta & Govindarajan, 2002).

This implies that differentiation and integration are important parts of the digital mindset too. In this case differentiation refers to the breadth of knowledge an individual has about digital technology while integration refers to how well the individual can integrate these knowledge elements in his/her life. The theory from cognitive psychology goes only this far, however this thesis goes one step further because it defines mindset as not only the set of knowledge but also as the act of using this knowledge.

As this thesis defines mindset not only on a cognitive level but on an action level too, this second level also has to be discussed. It is not enough to possess a certain way of thinking to be considered as part of a mindset, it is also important to act according to this. In relation to the digital mindset this means that a person who only possess knowledge about digital technology but never or rarely uses it cannot be considered as part of the digital mindset because mindset was defined not only as knowledge but also as acting according to this knowledge. Usage however is optional for every individual. Based on the knowledge everyone can decide that a certain digital technology will help to improve his/her life or not.

Highlights

The essence of this subchapter is the mindset. Here mindset was defined as a set of knowledge structures which predetermines how will a person respond, react and act in a certain situation. It can be observed that every **mindset** has two main components: a **cognitive component** and an **action component**.

In cognitive psychology, from where the term "mindset" comes, there is a differentiation between the **growth and fixed mindsets**. The growth mindset is a mindset which believes in development and challenges whereas a fixed mindset prefers the old and well-known. If these two types of the mindset are replanted in the soil of digitalisation the fixed mindset becomes the **non-digital mindset** and the growth mindset becomes the **digital mindset**.

There is two very important part of a mindset and these are **differentiation** and **integration**. These are part of the cognitive component as they both refer to knowledge. Differentiation is the breadth of knowledge while integration is the level to which a person manages to integrate this knowledge in his/her life.

The **action component** has two possibilities: actual **usage** of the digital technology or its **rejection**. Both are based on the cognitive component and the knowledge it contains.

This subchapter has a detailed discussion about mindset itself and the next subchapter will bring into this discussion the "digital" and will define the digital mindset.

3.1.1 The definition of the digital mindset

The term "digital mindset" is a complex one and it arose because of changes in the environment which led to changes in the individual's behaviour. These changes are due to digital technology and the digital revolution. The way how individuals approach a problem has changed significantly as they rely more and more on technology. And this undeniably changed the way people think and act.

In order to define digital mindset fist it has to become clear what does "digital" mean. Most of the definitions which can be found about "digital" equal the term with digital technology. In the opinion of the writer of this thesis however this is not an accurate definition as digital technology is only one part of the "digital". The other part is behaviour. Being surrounded by digital technology changes the values and norms which are accepted by society and important for the individual. Digital technology significantly changed life itself and by doing so it changed the behaviour of the individuals thus they became digital. As a conclusion it can be said that "digital" is digital technology and its effects on the behaviour of society and of the individual.

Based on the above mentioned information this thesis defines the digital mindset as follows:

> ***The digital mindset is a set of mental knowledge-experience structures which are formed due to living in a digitalised society and which are recognised and used by an individual in order to become successful in the digital environment.***

The digital mindset is very different from the traditional transactional mindset which dominated the business world so far (Rammal, 2012). The transactional mindset was dominant in the pre-digital revolution era but together with the digital revolution this mindset also changed. The transactional

mindset is not the same as the non-digital mindset but it can be viewed as the predecessor of the non-digital mindset. The difference however is that the transactional mindset did not get in touch with digital technology because it was predominant in an era when digital technology was not widespread. In opposition with the transactional mindset the digital mindset is open, chaotic and evolving. The transactional mindset is closed, selective and episodic using a linear thought process and has a mechanistic perspective. The digital mindset can be best described as a quantum world where multiple connections and interactions have infinite unobservable impact. With a digital mindset people and organisations constantly experiment, innovate, learn and optimise. The organisation needs to develop new values, structure and culture because the digital world blossoms in entrepreneurial spirit and values (Rammal, 2012).

Highlights

This part defined the **digital mindset** as a set of mental-knowledge-experience structures which are integrated and used in the everyday life of the individual.

To sum, this first part established that the digital mindset, like any other mindset, has two main components: a **cognitive component** and an **action component**. Inside the cognitive component **differentiation** and **integration** can be differentiated. They both refer to knowledge but in the case of the digital mindset they refer to digital knowledge. The **action component** also has two possibilities: **acceptance** and **rejection**. The digital technology can be accepted and used or rejected and abandoned but both decisions are based on the cognitive component and the knowledge a person has about digital technology.

This thesis focuses on the managers and their mindset. But not every manager possesses the digital mindset. There are some which have a non-digital mindset. Thus it is important to present the differences between the digital mindset and the non-digital mindset.

3.2 The digital managerial mindset and the non-digital managerial mindset

It has become clear that digitalization requires something new. In the digital age unlearning old habits becomes as important as learning new concepts. According to Rammal (2012) “rewiring the brain” is essential in order to succeed in a digital society. This rewiring needs to be done on a company level as well. Marketing and business overall look different through a digital lens. This does not mean that the traditional channels become useless and outdated but the company has to take into consideration that their role is redefined in the evolving ecosystem (Rammal, 2012). In terms of marketing the shift is quite significant. The previous trend was using passive massaging through mass media to publish content. The digital mindset requires marketers to recognise patterns and distil relevant content among all the creations of the customers. As an answer for all these information they have to publish relevant content to engage and build relationships (Rammal, 2012). The digital mindset requires content creation which is driven by insight, idea, interaction and innovation. Rammal (2012) talks about the organisations and rewiring as follows:

> “Only if an organisation rewires itself to embrace the chaos and complexity, can the true adoption of digital be significant in the way they build brands and products.”

The business world is full with managers who embrace technology with its new and unknown features, they have no problem facing the challenges of the uncertain and who use technology in their advantage. These managers feel comfortable with digital technology and the uncertainty it brings, they are flexible and adoptive. However the business world does not contain ONLY this type of managers. There are plenty managers, company leaders who does not feel comfortable around new technology, who rather choose the safe, well-known way over the new and uncertain one. They are the ones who do not possess the so-called digital mindset. These managers feel uncomfortable around digital technology and the uncertainty it brings; they are not too flexible and not very adoptive with digital technology.

Both mindsets have their own characteristics which are represented in figure 5. The mentioned characteristics will be further discussed in this subchapter. To discuss the characteristics of the digital and non-digital mindset is very important in order to get a better understanding of managers.

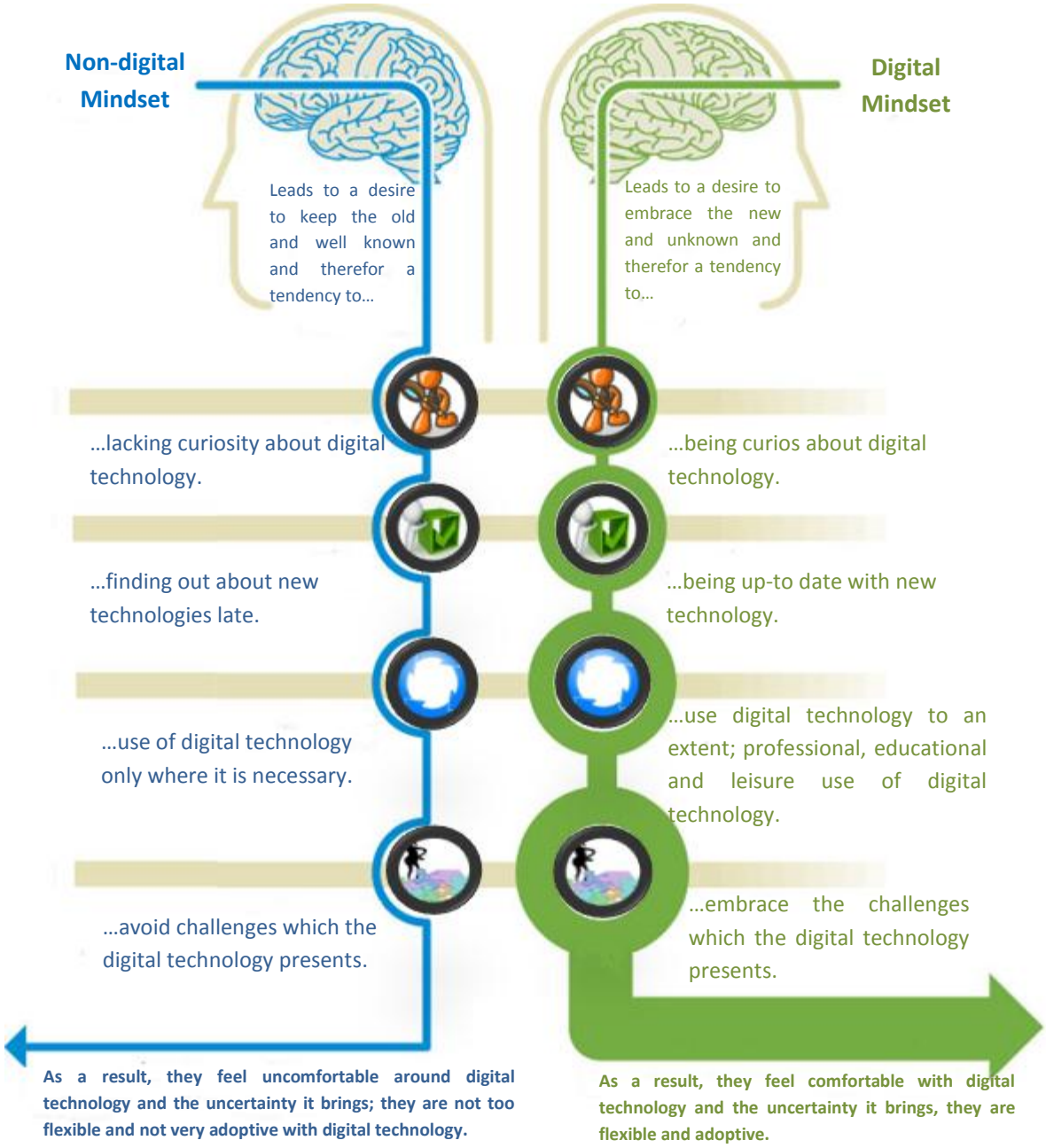

Figure 5: Non-digital mindset vs. Digital mindset, Own creation based on Dweck (2007)

3.2.1 Curiosity

A main characteristic of the digital mindset is curiosity about new technology and digital technology in general. This is very important because managers nowadays started to pay more and more attention to digital technology because it is a great help in managing the processes (Mukherji, 2002). Without curiosity about digital technology managers will ignore the latest innovations which could be used in order to increase the success of the company. According to Arsenault (2004) leaders, who lack interest in digital technology, and their way of leading is obsolete in todays' digital environment thus cannot lead a company to success.

It was argued earlier that digital leaders are a necessity in the era after the digital revolution. But without curiosity for digital technology a manager cannot become digital leader. A digital leader is always out there looking for new technologies and new ways to improve the situation of his/her

company. On the other hand, a manager who is not interested in digital technology will not search for information about the latest innovations and this might represent a disadvantage for the company.

Personal curiosity for digital technology in general can lead a manager to find out about and try innovations which he/she would not have considered otherwise. For instance, an individual accidentally finds an innovation which he/she considers being very interesting and after giving it some thoughts decides to try it. The individual likes the innovations and concludes that it has lots of advantages. If this individual happens to be a manager of a company he/she might decide to implement the randomly found innovation in the life of the company because it can improve the performance and will eventually lead to higher profit.

A manager with a non-digital mindset will lack this interest for digital technology and as a result will not seek actively information about it. Thus some of the important and profitable innovations will simply gloss next to him/her creating a significant disadvantage compared to the competitions.

3.2.2 Being up-to date

A strongly related characteristic to the previous one is being-up to date with digital technology. A curious manager will always be up-to date with the latest innovations because he/she is constantly looking for information. A manager who possesses a digital mindset finds very important to find out about the newest technologies early so he/she can have the longest period possible to find out everything about the innovation and assess its usefulness for the company. A manager always has to seek ways to improve his/her company's performance. Nowadays this is achievable with new innovations. A manager always has to be up to date with the technological innovations in order to be able to turn it into an advantage for his/her company. Moreover it is expectable that these managers will collect the information from different sources using their available networks. Having multiple sources of information can prove very helpful in determining the perceived usefulness and the perceived ease of use which will lead (or not) to actual use. A manager has to obtain as many information as he/she can in order to be able to determine the advantages of a technological innovation and the benefits it can bring to the company. The gathered information will define the manager's attitude towards using new technology and will influence the actual use of the innovation. To determine the perceived ease of use is very important because the manager has to take into consideration not only the direct costs of implementing a new technology but also the indirect costs, such as the training of the employees for being able to use the new technology.

On the other side of the coin, a manager with a non-digital mindset will not find it very important to be up to date with new technology as they consider them uncertain and unreliable. Finding out everything about the latest innovations is not the main concern of a manager with a non-digital mindset as they find the research process a waste of time and resources (Bessen, 1999).

3.2.3 The use of digital technology

It is not enough however to only know about the existence of the digital technology. A digital mindset will always feel the urge to also use it. From the point of view of the manager with the digital mindset this means that digital technology is not only used in "the office", on a professional level. A manager with the digital mindset will use the digital technology for educational purposes, to

further train himself/herself for example. Moreover he/she will use digital technology in the private life as well, in his/her free time for leisure purposes.

A manger with a non-digital mindset will use digital technology only when it is necessary. This type of managers do not feel very comfortable around technology and as a result they avoid using it as much as possible. The main reasons for them to not use the digital technology are the lack of interest and the unpleasant feeling they get around these technologies, rather than the actual access to them. As van Deuersen and van Dijk (2009) argue, the divide is not as visible nowadays in terms of access to digital technology but the gap is getting bigger and bigger in terms of digital skills. Many people who have access to digital technology are not capable of taking full advantage of it because they lack the necessary skills. These skills are there in a manager with the digital mindset and he/she is not afraid to use them.

3.2.4 Challenges presented by digital technology

Using digital technology might sound simple but it presents some challenges. A manager with a digital mindset will not be afraid of these challenges. These managers are willing to take these challenges and the risks which come with the challenges. Adopting a new technology always represents some challenges for the company. Its adoption might not be successful at the end but a manager will not know this for sure unless he/she tried it.

Adopting a new innovation can be quite scary and this is why managers with non-digital mindset try to avoid the challenges which it brings with itself. Avoiding the challenges is much safer and requires less risk taking. In this matter the non-digital mindset can be compared to Dweck's (2007) fixed mindset. Someone with a fixed mindset is more likely to pick the easier task and face only the challenges he/she is certain can handle. The fixed mindset says: "Smart people succeed." This is why someone with a fixed mindset will pick the less challenging task. This way success is more likely. Similar to this, managers with non-digital mindset will also prefer the less challenging tasks, i.e. do not apply the newest innovations, because they believe that success can be achieved in the "old fashioned way".

These four main characteristics of the digital mindset can be divided in two. Curiosity and being up-to date belong to the knowledge part of the digital mindset while wide usage and accepting the challenges belong to the action part of the digital mindset. Curiosity and being up-to date can be further categorised as parts of differentiation as they strongly relate to the breadth of knowledge a person has about digital technology. Wide usage and accepting the challenges can be further categorised as parts of the acceptance part of the action component as they only happen if the digital technology is used.

Highlights

This subchapter draws attention to the **differences between the digital and non-digital mindset** and by doing so it highlights four important characteristics of the digital mindset. A manager with a digital mindset has to be **curious** about digital technology, has to **be up-to date** with the newest innovations, hast to **use** digital technology for personal, educational and professional purposes and has to **accept the challenges** presented by the usage of digital technology.

These characteristics can further deepen the understanding of the digital mindset as they can be classified as parts of the cognitive and action component. Curiosity and being up-to date are parts of the **differentiation** of the cognitive component, while wide usage and accepting the challenges are parts of the **acceptance** part of the action component.

The discussion of the manager has been brought into discussion with this subchapter. Possessing the discussed characteristics however is not enough to be considered as someone with a digital mindset. Managers need digital competencies and this will be discussed in the next subchapter.

3.3. What a manager needs in the digital age

The thesis previously argued that digital competencies are absolutely a necessity for managers in the 21st century. Computing, computers and information systems were part of the company for more than 75 years now however managers started to pay more attention to them only recently. New technological innovation appear very often and through them digital technologies have changed the way people work, communicate, and keep track of business (Jackson, 2002). Most organisations use this digital technology to manage their processes (Mukherji, 2002). Managers have to use computers to manage data, control budgets, and communicate with constituents and to be able to do so they have to be competent in digital skills. As it was stated previously being literate in today's society means to possess the skills and abilities that enable people to understand and use digital technologies.

In order for a manager to be considered as having a digital mindset he has to acquire and possess certain digital skills and competencies. Having a digital mindset means that the manager has to be familiar with digital technology on several levels: hardware, software and he/she also has to be able to apply this technology to improve business processes (Duening and Ivancevich 2006). These all are important from the point of view of the digital mindset and they are part of the necessary skills. Digital hardware competencies range from being able to use a keyboard and a mouse to understand the components of a computer network. Knowing the hardware components of a network can help the manager to understand the various choices he/she has in order to address business processes with technology. The same reason stands behind the knowledge on a software level. The managers have to be familiar with software categories and by doing so they will be able to envision better way of doing work. Moreover managers need to apply hardware and software to business processes, select vendors and manage the relationship and implement a technology solution with their people (Duening & Ivancevich, 2006). Implementing digital technology to company processes implies understanding the workflow. The managers have to analyse carefully the workflow and try to find places where technology can help to make the process more efficient. Figure 6 illustrates this process of implementation. It starts with examining the company's processes and applying technology where it is possible. Applying technology contains process automation and application integration. The next step is to monitor the process. This will help to identify bottlenecks, resource constraints and task sequence problems. The final step is making the changes in the processes and through this in the whole organisation (Duening&Ivancevich, 2006).

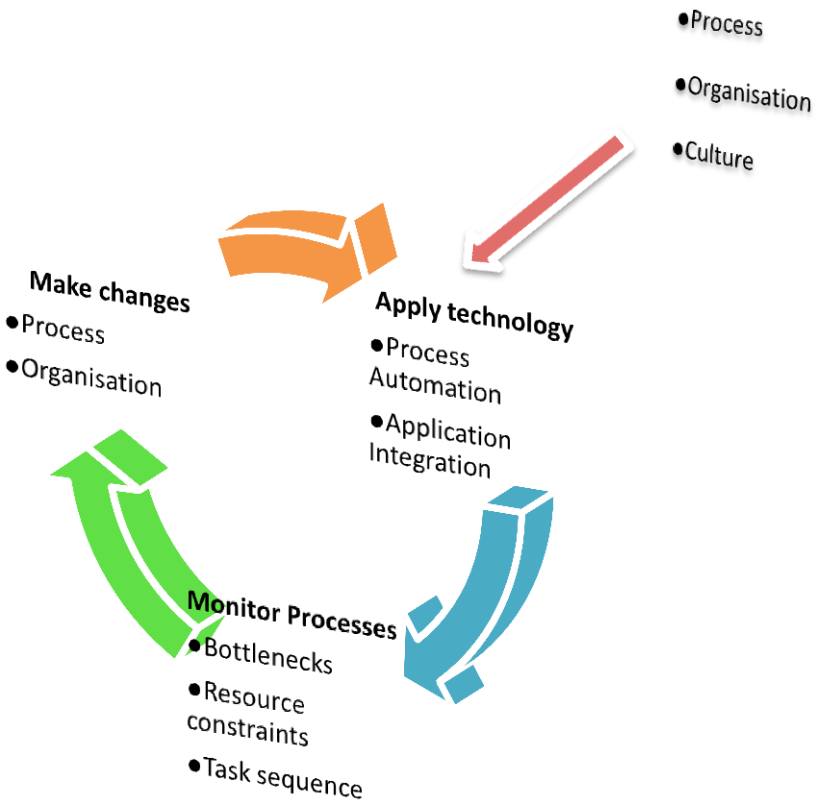

Figure 6: Business Process Redesign, based on Duening&Ivancevich, 2006

The duty of the managers is to know when and how to implement the technological innovations in order to make the company better. This is very important because technology can make a firm more productive, more efficient, can help to reach a higher level of interpersonal communication, can increase the amount of collaboration, can upgrade the information sharing and can make the whole company more competitive (Duening&Ivancevich, 2006).

It can be concluded that the environment in what people are living is highly digitalised. And in this digitalised world managers have to have certain competencies in order to be stated that they have a digital mindset. The next subchapter will present the necessary competencies a manager has to acquire.

Highlights

In order to acquire the digital mindset a manager has to be familiar with digital technology on **hardware** and **software** levels and he/she also hast to be able to **integrate** this knowledge in the processes of the company in order to make it more efficient.

3.3.1 Digital competencies

Digital competencies cover more than the simple technical skills. A term, which this thesis considers as synonym of digital competence is digital literacy. According to Jenkins (2009) digital literacy requires the recognition and use of the power to manipulate and transform digital media, to distribute and easily adopt them to new forms. Digital literacy is not only about being literate at using a computer, it is also concerned with how to effectively find, use, summarize, evaluate,

create, and communicate information while using digital technologies. The reason why this thesis prefers the term "competence" over the term "skill" is because "competence" is more than just knowledge and skills. Competency involves "the ability to meet complex demands, by drawing on and mobilizing psychosocial resources (including skills and attitudes) in a particular context" (OECD, 2005). As a conclusion the definition of digital competence which this thesis follows is:

> ***Digital competence is a set of knowledge, skills and attitudes a person has toward digital technology, which are recognised and used by the individual in the activities of adopting and transforming digital media, effectively find, use, summarize, evaluate, create and communicate information both in private and work-life.***

The definition of digital competence highlights the fact that these competences have to be recognised and used by the individual; it is not enough to just possess them. Digital competencies are used to adopt and transform digital media, effectively find, use, summarize, evaluate, create and communicate information both in private and work-life. Today's society is very information dependent. A vast amount of information can be found on the internet and while physical access gaps are more or less closing in the developed countries the skill gap tends to grow (Van Dijk, 2005). The changes brought by the digital revolution, demand new knowledge, skills and attitudes, not only from the individuals, but from the managers too. These three components are interdependent and the relationship between them is what defines digital competence. Figure 7 illustrates the relationship between the three components.

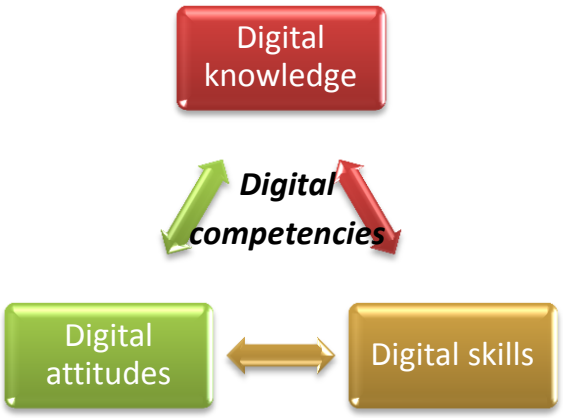

Figure 7: The digital competence trinity, own creation

These three components are present in the case of analogue, or non-digital, competencies and they have the same relationship as the one presented in the figure above. In order to get closer to the concept of the digital mindset it is necessary to examine these components in detail and put them in contrast with the non-digital knowledge, skills and attitudes.

3.3.1.1 Digital knowledge and non-digital knowledge

A very important part of any mindset is knowledge as a mindset is a set of knowledge structures. The mindset is shaped by experiences and new absorptions (Gupta & Govindarajan, 2002). Digital knowledge is formed through the new experiences a person has with digital technology. In other

words digital knowledge is the sum of all the knowledge a person has about digital technology. If a person does not interact with digital technology he/she will not gain any knowledge thus it is impossible for him/her to form a digital knowledge. These individuals will preserve the non-digital knowledge of the previous eras which occurred before the digital revolution.

The two primary attributes of a mindset, defined by Gupta and Govindarajan (2002) are also concerned with knowledge. As it was mentioned earlier, differentiation refers to the breadth of knowledge an individual has about digital technology while integration refers to how well the individual can integrate these knowledge elements in his/her life.

Acquiring knowledge about digital technology is time and effort consuming. For someone with the digital mindset this is easier however because he/she already has the curiosity about digital technology. A digital mindset is interested to learn new things, it is constantly seeking for ways to improve. By doing so the digital mindset is always up-to date with new technologies. This knowledge gives the advantage to decide if the new technology is needed on a personal or on a company level. In opposition knowledge about digital technology is not the concern of a non-digital mindset. A person with a non-digital mindset thinks that the analogue knowledge he/she already possesses is enough and there is no need for something new and seemingly complicated. They usually don't trust digital technology and see it as a threat. They trust the familiar, analogue way of life and they find no space for the digital knowledge in their lives.

According to the Longman dictionary knowledge in a certain area is called "literacy". In today's digitalised society digital literacy became necessary in the life of the individual and in the life of the company too (Jenkins, 2009). Digital literacy is the knowledge possessed by an individual about digital technology and the skills which are necessary to use it.

Many authors argue that digital literacy is in very close relationship with other types of literacy, such as media literacy, information literacy, internet literacy, ICT literacy (Bawden, 2001; Eshet-Alkalai, 2004; Sefton-Green, et al., 2009). Figure 3.4 shows that the digital literacy is overlapping with Internet literacy, ICT literacy, media literacy and information literacy. ICT literacy refers to the ability to use a computer and related technologies and to implement this knowledge in the use of a computer. This is the narrowest digital concept (Simonson, Maurer, Montag-Torardi & Whitaker 1987). Internet literacy refers to the proficient usage of the internet (Ferrari, 2012). It adds to the toll-related knowledge and skills the consideration and ability to successfully function in networked media environment (Ala-Mutka, 2011). Media literacy implies the ability to analyse media massages and the media environment (Christ & Potter, 1998). According to the American Library Association (1989) information literacy is "the ability to recognise when information is needed and the ability to locate, evaluate, and use the needed information effectively. Media and internet literacy largely overlap on their own. The difference however is that while information literacy refer to the ability to find, organise and process information, media literacy is more concerned with having the skills to interpret, use and create media for one's own benefit and participation (Ala-Mutka, 2011).

All these literacies overlap with the digital literacy because they all have a digital component. Digital literacy is the broadest concept and has all the characteristics of the other literacies and also adds further aspects for using digital tools responsibly and effectively for personal tasks and

development, benefiting from people networks (Ala-Mutka, 2011). Figure 8 illustrates the relationship between digital literacy and other literacies.

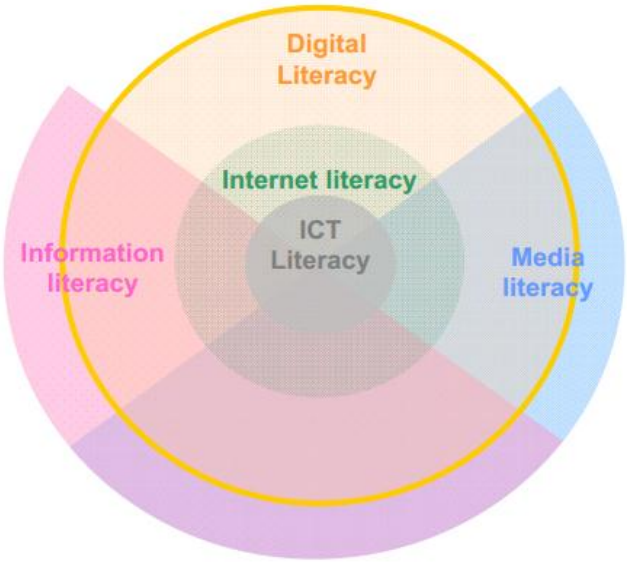

Figure 8: Digital literacy and other related literacies. Source: IPTS (Ala-Mutka, 2011)

It can be concluded that digital literacy at the beginning was mainly understood as the ability to use a computer and being able to write in programming languages (Ferrari, 2012). As technology evolved so did this term. Nowadays digital literacy implies the ability to understand the digital media, to search and being critical about the retrieved information but also to be able to communicate with others through a variety of digital tools and applications, such as the internet and mobile devices. In other words digital literacy implies that the person who possesses it has a certain skill set which allows him/her to use digital technology. The next subchapter will present these skills.

3.3.1.2 The necessary skills

Based on the previous subchapter it can be stated that a manager who possesses the digital mindset also has to possess some degree of ICT, internet, media and information literacy and this means that they need to own skills from all of the mentioned literacies in order to be competitive in a digital environment. These skills are very varied and were discussed by many researchers. This thesis uses the four sets of skills proposed by Van Deuersen and van Dijk (2009). These four sets of skills were born from Steyaert's (2002) three general types of digital skills. Steyaert (2002) distinguished between instrumental skills, structural skills and strategic skills. *Instrumental skills* refer to operational manipulation of technology, *structural skills* are related to the structure in which information is contained and *strategic skills* are related to proactively looking for information, information-based decision-making and scanning for relevant information (Steyaert, 2002). Van Dijk (2005) modified Steyaert's types and he defined the operational skills, the formal information skills, the substantial informal skills and the strategic skills. *The operational skills* refer to the skills which are required for operating a computer and network hardware and software. *The formal information skills* are related to the ability to understand and handle the formal characteristics of a computer and a network such as file structures and hyperlinks. *Substantial information skills* refer to the ability to find, select, process and evaluate information in specific sources of computers and networks. Last

but not least the *strategic skills* are the capacities to use information as the means for specific goals and for the general goal of improving one's position in society (Van Dijk, 2005).

Van Deuersen and van Dijk (2009) further developed the classification of skills and defined the operational internet skills, the formal internet skills, the information internet skills and the strategic internet skills.

The operational internet skills: The operational internet skills indicate a set of basic skills using computer technology. Different authors define the operational skills differently but they all agree on the fact that someone who has the operational internet skills is capable of operating a computer, and he/she has a basic knowledge about networks, hard and software (Mossberger et al., 2003 and Van Dijk, 2005). Søby (2003) adds that this skill set is the basic component of digital literacy. According to van Deuersen and van Dijk (2009b) operational internet skills are the following:

- *operating an internet browser*: opening websites by entering the URL in the browser's location bar; navigating forward and backward between pages using the browser buttons; saving files on the Hard Disk; opening various common file formats; bookmarking websites; and changing the browser's preferences,
- *operating internet-based search engines:* entering keywords in the proper field; executing the search operation; and opening search results in the search result lists,
- *operating internet based forms:* using the different types of fields and buttons and submitting a form).

Formal internet skills: The formal internet skills allow the use of hypermedia. Hypermedia makes it possible for the users to move not only forward but also backward and to unknown locations which can cause a sense of disorientation in them. These skills are necessary because the Internet is non-linear (Nielsen, 1990). Van Deuersen and van Dijk (2009b) include in the formal internet skills the following:

- *Navigating on the Internet:* being able to recognise and click links that are embedded in different formats such as text, images, menus and website lay-outs
- *Maintaining a sense of location while navigating on the Internet:* not becoming disoriented when navigating within a website; not becoming disoriented when navigating between websites; and not becoming disoriented when browsing through, and opening search results.

The information internet skills: The information internet skills, according to the American Library Association are those skills which make it possible: "to recognize when information is needed and has the ability to locate, evaluate and use the needed information effectively" (Correia & Teixeira, 2003). The information skills require the user to go through a few steps. First of all the user has to choose a search system, then he/she has to formulate search queries and select the most relevant results. The last step is the evaluation of the information source when users check the correctness of the data and the reliability of the source (van Deuersen & van Dijk, 2009b). The information internet skills contain skills like:

- *Locating required information*: choosing a website or a search system to seek information; defining search options or queries; selecting information; and evaluating information sources).

The strategic internet skills: The strategic internet skills are defined by van Dijk (2005) as: "the capacity to use computer and network sources as the means for particular goals and for the general goal of improving one's position in society." These skills relate to the usage gap between those who use IT technology for professional and educational purposes and those who use it for entertainment. The strategic skills are very complex and they imply four steps. The first step is goal orientation. After establishing the goal the next step is taking the right actions on the internet. After this a decision has to be made. The last step is gaining the benefits of this decision. As van Deuersen and van Dijk (2009) put it, strategic skills mean:

- *Taking advantage of the internet* by an orientation towards a particular goal; taking the right action to reach this goal; making the right decision to reach this goal; and gaining the benefits belonging to this goal.

The first two sets of skills are called medium-related internet skills while the last two sets are called content-related internet skills (van Deursen and van Dijk, 2010). The medium-related and content-related skills have a sequential and conditional nature. If the individual does not have medium-related skills than it becomes impossible for him/her to acquire the content-related skills. It can be concluded that content related skills are dependent on medium related skills. Nonetheless these skills are necessary for the general population to function well in an on-line environment. These skills are important because thanks to the digital revolution there was a shift from traditional media to digital media. In the case of the traditional media active mental processing was enabled but digital media requires certain interaction with interfaces. A minimum level of active engagement with the environment is required because there is also the possibility of interactions, transactions and interpersonal communication.

These skills are indeed necessary to possess in the digital era however the skill sets described by Van Deursen and van Dijk (2010) are limited only to internet usage. However using digital technology does not equal using the internet. The internet is just one part of the digital technology. As it is illustrated in figure 8 internet literacy is only one part of digital literacy so it is impossible to put the equals sign between internet skills and digital skills. It is important to consider these skill but they have to be extended beyond the internet. Operational formal, information and strategic skills does not necessary have to be strongly connected with the internet. These skills are necessary to use new technologies for personal, professional, and organizational advancement. It is not hard to see that the medium and content related skills are not only necessary when navigating the internet but they are essential when using digital technology in general.

From the point of view of the digital mindset these skills are considered as necessity. As already argued, a manager has to possess both the medium-related and the content related skills in order to be able to declare that the particular manager has a digital mindset. On the other hand for a manager with a non-digital mindset these skills are not considered as necessary. However without these skills the non-digital mind is not able to use the digital technology. As it was mentioned earlier, digitalisation is real, and cannot be avoided. As a conclusion even someone with a non-digital mindset is forced to use digital technology at least on a minimal level. This means that even a manager with a non-digital mindset has some very basic digital skills and uses digital technology as long as its usage is unavoidable.

3.3.1.3 Attitude towards "the digital"

The possession or the lack of possession of digital knowledge and the necessary skills is determinative from the point of view of the attitude towards digital technology (Donat, Brandtweiner, Kerschbaum, 2009). An individual who has the knowledge about digital technology and possess the skills which are needed to operate these digital technologies is more likely to have a positive attitude towards the digital technology than someone who lacks the knowledge and the necessary skills. Attitude is defined by Ajzen (1993) as :

> "…an individual's disposition to react with a certain degree of favourableness or unfavourableness to an object, behaviour, person, institution, or event – or to any discriminable aspect of the individual's world"

Attitudes are multidimensional and they include three components: a cognitive, an emotional and a behavioural component. The cognitive component refers to the perceptions and knowledge an individual has towards the attitude object. The emotional component represents the feelings towards the attitude object and the behavioural component refers to reactions towards the attitude object (Donat, Brandtweiner, Kerschbaum, 2009).

From the point of view of the digital mindset this means that the attitude towards digital technologies also has three components. In the case of the digital mindset the cognitive component refers to the knowledge a person has about digital technologies, the emotional component refers to the feelings the person has towards digital technology and the behavioural component refers to the usage of the digital technology. A manager with a digital mindset is more likely to possess knowledge about digital technology. Moreover he/she is more likely to favour the digital technology over the analogue one because the acquired knowledge. If a manager's mindset has these two components then it is highly possible that he/she will express these in actual usage. A non-digital mindset's attitude on the other hand will be unfavourable towards digital technology. In the case of a non-digital mindset the knowledge about digital technology is not present due to lack of interest. In many cases the non-digital mindset has negative feeling about digital technology, especially because of the lack of the knowledge. A non-digital mindset feels uncomfortable around digital technology and expresses a sentiment of discomfort when it comes down to usage.

The cognitive and emotional states are developed by stimuli (Lee, Ha, Widdows, 2011). In the case of digital technology this is the technology itself. By developing cognitive and emotional states, the stimuli influence the individual, who is called "organism" in the Stimulus-Organism-Response framework, developed by Mehrabian and Russell in 1974 (Lee, Ha, Widdows, 2011). The last step is the individual's response to the new technology. To relate this with the manager's digital mindset, it can be stated that digital technology is the stimulus for the managers, who are the organisms of the framework. Through the stimulus the managers develop a cognitive and emotional state towards the digital technology and form a response of acceptance or avoidance. The stimuli which can influence the managers' response are design, performance, and communication surrounding his/her experiences with the purchase and consumption (Lee, Ha, Widdows, 2011). These stimuli contribute later to the decision of the managers to use or to avoid the technology.

Digital competencies are constituted of knowledge, skills and attitude. From the point of the view of the whole picture digital competencies are part of the cognitive component and inside that, part of

integration because they are related to integrating the knowledge about digital technology and by doing so acquiring the relevant competencies.

Highlights

This subchapter established the **necessary competencies** a manager needs in order to acquire a digital mindset. It was established that they have to be familiar with digital technology on both **hardware and software** level and they have to be able **to use this knowledge** in the advantage of their company.

Digital competencies were defined as the relationship between knowledge, skills and attitude. **Digital knowledge** incorporates ICT, internet, media and information literacy and digital literacy. **Digital skills** were defined as medium and content related skills. The medium related skills are the operational and formal skills while the content related skills are the information and strategic skills. **Digital attitudes** contain a cognitive and emotional and a behavioural component.

In relationship with the discussion about the digital mindset digital competencies are part of the **cognitive component** and inside that, part of **integration** because they are closely related with integrating the digital knowledge in one's life.

3.4 Theoretical framework

Figure 9 presents the theoretical framework developed in the discussion above.

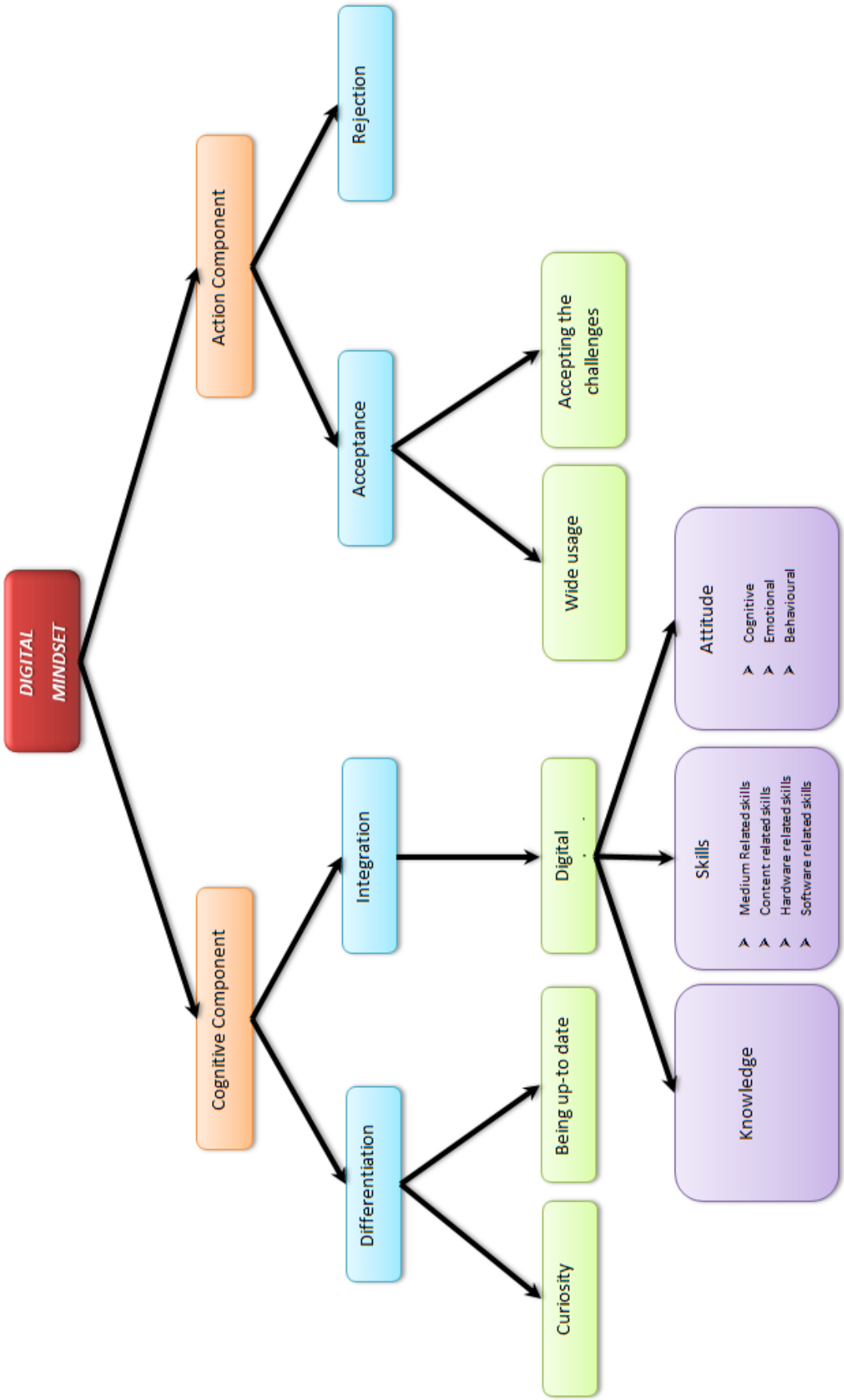

Figure 9: The digital mindset

As the figure illustrates the digital mindset has two main aspects: a cognitive component and an action component. The cognitive component is built up from differentiation and integration. Differentiation is the breadth of knowledge a person has about digital technology while integration is the level to what a person integrates his/her knowledge into his/her life.

Differentiation is constituted of curiosity the digital mindset has for digital technology and the fact that this person is always up-to date with information about new innovations. Integration contains the necessary digital competence which a person with digital mindset needs. These are divided into knowledge, skills and attitudes. The skills are divided into medium and content related skills moreover to hardware and software skills. The last part of the digital competencies are attitudes. These are built up by a cognitive, an emotional and a behavioural component.

The action component of the digital mindset also has two parts: the acceptance and the rejection of the digital technology. A person with the digital mindset might also choose not to use a digital opportunity because it might not bear any efficiency for him/her at the given moment. The difference between a person with a digital mindset who rejects technology and a person with a non-digital mindset is that the individual with the digital mindset possesses the necessary information about the digital opportunity thus is able to evaluate it and decide if he/she needs it or not, whereas the individual with the non-digital mindset does not possess this information.

The acceptance of the digital technology is divided into wide usage and accepting the challenges which the digital technology implies. This means that once the digital technology accepted it will be used on many levels from personal to professional. A person with a digital mindset is also aware of the fact that digital technology will raise some challenges but these challenges are met with openness because the digital mindset believes that overcoming these challenges will have important benefits.

This subchapter closes the discussion on the digital mindset. The next step is to form an analytical framework in order to be able discuss the digital mindset on a practical level. The analytical framework is based on the discussion above and is presented in the next subchapter.

3.5 Analytical frame to discuss the digital mindset

In order to determine if managers possess a digital mindset or not the creation of an analytical framework is necessary. The analytical framework will help to decide if managers fit the picture depicted in this chapter or not. The analytical framework is based on the above discussed information.

It was determined earlier that the four main characteristics of a digital mindset are: curiosity towards digital technology, being up-to date with the latest innovations, use of digital technology and facing the challenges presented by the use of digital technology. These four characteristics can be divided in two categories: knowledge and usage. The characteristics curiosity towards digital technology and being up to date with the latest innovations can be classified under the knowledge category while the use of digital technology and facing the challenges this use represent can be classified under the usage category. Based on these assumptions two dimensions can be identified, which can be recognized as the main attributes of the digital mindset. These are:

Dimension 1: ***Digital Cognition***

Dimension 2: ***Breadth of Use***

These two dimensions will allow measuring the digital mindset. The two dimensions can be used in empirical testing which will allow two categorise respondents in relation to their digital mindset.

According to the Longman English dictionary cognition can be defined as the mental action or process of knowing, understanding, and learning something. In other words, cognition refers to acquiring knowledge and understanding through thought, experience, and the senses. Digital cognition refers to the aggregate knowledge a person possesses about digital technology. This dimension is used to measure how well managers know the digital technology which is available for their company.

The other dimension, breath of use, is defined in this thesis as the variety with which a manager uses digital technology. The more a manager uses digital technology the more this gets integrated in his/her life and the more it changes his/her mindset and will eventually lead to a digital mindset. This dimension will show how integrated is digital technology in the managers' life.

The result of the combination of these two variables is represented in figure 10. This matrix will help to determine where a manager is situated in relationship to digital mindset. According to this matrix every manager will fall in one of the following categories:

Category 1: Non-digital Mindset
Category 2: Digital Usage Oriented Mindset
Category 3: Digital Knowledge Oriented Mindset
Category 4: Digital Mindset

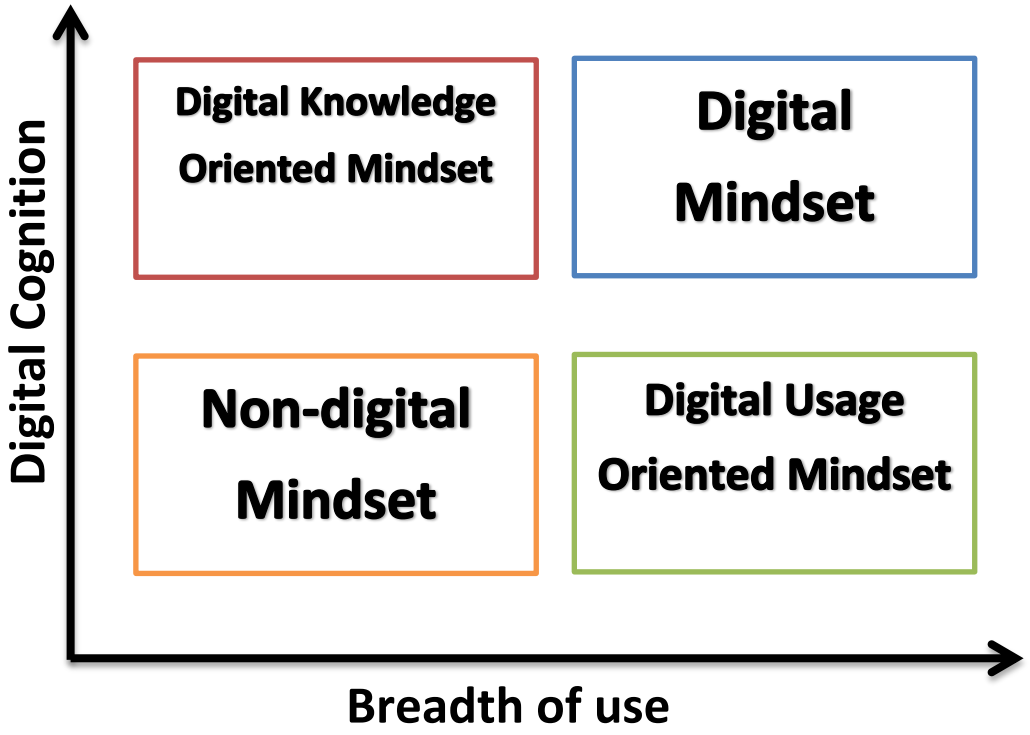

Figure 10: Mindset Matrix, own creation

The presented matrix views breadth of use and digital cognition in general. It does not talk about any one specific technology. It focuses on the general knowledge and behaviour about digital technology. The first category is the non-digital mindset. This mindset can be characterised by low digital cognition and low breadth of use. This means that a person with a non-digital mindset does not have knowledge at all, or has very little knowledge about digital technology and he/she does not use digital technology more than it is absolutely necessary.

The second category, the digital usage oriented mindset, can be described with low digital knowledge but high breadth of use. A person who falls into this category is likely to use digital technology more than someone with a non-digital mindset however this person, for some reasons, has very little knowledge about digital technology. In a person with this mindset the right side of figure 10 is emphasised. This means that this person does not possess nowhere near enough knowledge about digital technology however decides to use it anyway.

The digital knowledge oriented mindset refers to a person who has extensive knowledge about digital technology, is up-to date with the latest innovations but has very little interest in using digital technology. This can happen for various reasons, for example the person cannot afford to buy the latest available innovation but still has knowledge about it because he/she is interested in it. The digital knowledge oriented mindset could be illustrated as only the left side of the theoretical framework presented in figure 10. This means that a person with this mindset can be characterised as being curious and up-to date with digital technology and he/she also possesses the necessary skills in order to be capable of the usage of this technology. As a conclusion this person has differentiation and integration but rarely crosses to the right side of the figure, the usage.

High digital cognition and high breadth of use characterises the digital mindset. A person with the digital mindset has extensive knowledge about digital technology and also uses it to an extent, in his/her professional and personal life.

This thesis focuses on the non-digital mindset and the digital mindset thus these two categories are examined more carefully. However it is very likely that not every manager will fall in one of these two categories but they are going to be representatives either of the knowledge oriented mindset or the usage oriented mindset.

3.6 Operationalizing the analytical framework

Operationalization in social sciences refers to the process of defining a vague concept in order to make it clearly distinguishable or measurable and to understand it in terms of empirical observations. In other words operationalization is the process of specifying the extension of a concept, describing what is and what is not part of it (Hands 2004). From the point of view of this thesis this means that a way to measure digital cognition and breadth of use has to be established. Operationalization is necessary because so far the discussion has been on an abstract level but in order to bring it down to a concrete level measurements are required.

In the process of operationalizing the Mindset Matrix the first step is to select a set of variables to measure digital cognition and breadth of use. The second step is to use a specific rating system for each dimension. After this the average score has to be found in order to be able to represent it in

the matrix. Digital knowledge will be marked on the x-axis and usage will be marked on the y-axis. The process is illustrated in figure 11 below:

Figure 11: The process of operationalization, own creation

The method of quantification will start with assigning numerical values to the answers of each question. This will be possible because possible answers will be anticipated. After this, values will be given to each answer based on which direction it pushes the interviewee (towards breadth of use, towards digital cognition, or both). If unanticipated answers are given to a question, these will be quantified according to the described process. The maximum achievable amount, on both axis, will be the total amount of questions asked, thus allowing for the semi structured nature of the interview. After this an average score is calculated for every interviewee which will place them in one of the four categories presented in the mindset matrix. The threshold which a respondent has to pass on both axes in order to be considered as having the digital mindset is 50%. This amount was chosen because an individual does not have to show the signs of the digital mindset in his/her every answer but a minimum amount has to be set. The coding sheet for the existing questions can be found in the appendix.

As it was mentioned before the analytical framework will be operationalized with the help of semi-structured interviews. The semi-structured interviews will be used to facilitate an on-line survey in order to get broader understanding of the digital mindset. The next sup chapter will present the qualitative, semi-structured interviews in more detail. It will also contain the interview questions used to research the findings of this thesis.

3.6.1 Semi-structured interviews

It was established in the methodology chapter that this thesis proposes qualitative research methods. This research method uses three techniques. These are the focus group technique, the observation and the qualitative interviews. The third mentioned technique of the qualitative research is the most important from the point of view of this thesis. Qualitative interviewing seeks to gain an insight into the experiences of the person being interviewed. This technique gives an opportunity for the researcher to listen to what the interviewees have to say about issues that stand in the middle of the research (Kuada, 2011). The current thesis proposes semi-structured interviews as the method to collect data. This would provide primary data. Semi-structured interviews are suggested because they provided in-depth knowledge and enabled to see the researched phenomenon from the point of view of the “main characters”. Using this technique could help to understand managers better and get a better understanding of their mindset. The interviews could also help in establishing a hypothesis.

This subchapter will present the semi-structured interviews and will argue why it is a good choice to use it in the case of the digital mindset.

According to Kvale (2008) qualitative interviews are very good in grabbing the everyday aspect of life. Interviews are useful to getting the story behind a participant's experience. The interviewer can pursue in-depth information about the topic under investigation (McNamara, 1999). The semi-structured interviews were preferred in the case of this study because they allow the understanding of the issues and events from the point of view of the interviewees. Bryman and Bell (2007) argue that semi-structured interviews allow the researcher to find out what are the events, patterns and forms of behaviour which are considered important by the interviewees in the investigated situation. They also make it possible for the researcher to give a structure for the interviews but this structure is not very strict. A little structure is needed because without it the focus can be easily lost and the researcher will end up with a huge amount of unnecessary data (Dubois & Gadde, 2002).

In the case of applying semi-structured interview the researcher has a set of questions which he/she has prepared beforehand. These questions provide a structure for the whole conversation. These questions are focused on the research topic. This structure however is not "carved in stone", the interviewers has the freedom and flexibility to change the order of the questions or the wording. Moreover it is also possible for the researcher to ask new questions to follow up interviewees reply and/or ask for clarifications in certain matters (Kvale, 2008).

Semi-structured interviews should be preferred in the case of this thesis because they provide a structure but they also give freedom and flexibility for both the interviewer and interviewee. According to Eneroth (1988) the best way to collect data is via unstructured manner. However, these unstructured manners can lead to a vast amount of data which are not necessary important from the point of view of the research. Moreover the interviewee can be side tracked and without any structure the interviewer has a very slight chance to direct the conversation back to the main topic.

3.6.1.1 The interview

Section 1: Background and demographic questions

1. Tell me about yourself please.
   - How old are you?
   - Where are you from?
   - Where did you studied?
   - What did you study?
   - How long have you been working with IT?
   - Did you always want to become an IT professional?
2. Can you recall how old were you when you first started to be interested in computers/ technology?
   - How did you feel then?
3. Can you remember anything specific that made you want to go into IT?
4. Would you like to add something in relation to your background in IT?

Section 2: Curiosity and being-up to date

5. Are you interested in digital technology?
   - How do you find out about new technologies?
   - Do you get your information from various sources? If yes who?
6. Do you search for information about digital technology?

- How often?

7. Have you ever suggested implementing a new technology in your company?
   - What was it?
   - What was the outcome?
8. Can you describe how you feel when you acquire a new technological innovation?
   - Can you elaborate on that?
9. How fast do you adopt a new technology?
   - Do you jump on a new technology as soon as it is available on the market or you wait until others try it out first?
10. Can you describe the process you are going through from the point of finding out about a new innovation to the point you actually buy it?

Section 3: Digital competencies

11. When you are trying to find a piece of information how do you proceed?
12. How important is the internet for you?
    - Why?
    - What do you use the internet for daily?
13. Let's say you would like to take your wife/husband/girlfriend/boyfriend for dinner. You would like to take her to nice place but you are not familiar with the restaurants in the city. How would you find a restaurant?
14. What is your primary source of finding out the news?
15. Do you have any on-line activities you participate in?
    - Are you a member of any social media sites? If yes, which?
    - How often do you check your profile?
    - Do you have a blog or a vlog?
16. How about your company? Does your company have any on-line presence?
    - Can you elaborate please?
    - Who handles the company's on-line presence?
17. Have you ever used the internet in order to try to gain some advantage for your company?
    - How?
18. How do you feel about the fact that everything is becoming digitalised nowadays?
    - Do you feel comfortable around digital technology?
19. Do you think that the new technology is always better than the old one?
    - Could you give me an example?
20. How would you assess your familiarity with IT/ computers?

Section 4: Use of digital technology and challenges

21. Have you ever used digital technology in order to make your work-life more efficient?
    - What was it?
22. What do you use digital technology in your work life for?
    - Information seeking?
    - Communication?
    - Others?
23. Would you like to have access to the newest technology at your workplace?
    - Do you think that it will prove your efficiency?

24. How do you feel about new technologies at your workplace?
    - Do you find it challenging?
    - Do you like it?
25. After a tiring day at the office, what do you do to relax?
    - Do you watch a movie on the TV or on your computer?
26. If you were asked to organise an informal event for your friends how would you proceed?
27. If you had to give up one thing, would it be your phone or your computer?
    - Why?
28. If you had the option to change your profession would you change it?
    - What would be your choice?

Section 5: Thanks and goodbyes

How did the interview feel for you?

Thank you for all that valuable information, is there anything else you'd like to add before we end?"

Based on the answers the interviewees give they can be placed in one of the four categories: non-digital mindset, digital knowledge oriented mindset, digital usage oriented mindset and digital mindset. Section two and three can assess the breadth of knowledge the interviewee has about digital technology while section four can assess the wideness of the usage of digital technology.

3.8 Summary

In this chapter the theoretical basis of the thesis was established. The theory on mindset opened up the door for the theory of the digital mindset. It was established that the digital mindset is not only a way of thinking but it's also a way of acting.

It was established that the business world is not only composed of managers with the digital mindset but there are also managers with non-digital mindset leading their companies. Thus a comparison between the digital and non-digital mindset was natural. As a conclusion four characteristics of the digital mindset was determined. These are: curiosity about digital technology, being up-to date with the latest innovations, using digital technology for professional, educational and leisure purposes and accepting the challenges represented by digital technology. This whole discussion was based on Dweck's theory on mindset from cognitive psychology.

It was further discussed that someone with a digital mindset has to have certain digital competencies. Two types of digital competencies were presented, the medium-related internet skills and the content related internet skills. It was argued that these skills are necessary from the point of view of the digital mindset however they must be extended beyond the internet. It was concluded that these digital skills are very important in the business world thus managers' digital competencies were discussed. It was determined that managers have to be familiar with digital technology on hardware and software level and they also have to be able to integrate digital technology in the processes of the company.

Finally within the analytical framework the Mindset Matrix was presented. The matrix is based on the previous assumptions presented in this chapter. This matrix will allow measuring the mindset of the managers and it will determine which respondent falls into which category.

4. Conclusions and Discussion

In the following, the conclusions of the thesis will be presented in the attempt to answer the research questions. A reflection about the implications of the findings will be made and the limitations of the thesis will be discussed.

4.1 Conclusions

In order to guide this thesis a main research question was created. This was: How can be the digital mindset understood from a managerial point of view and what would be a possible way to measure and analyse it? This main question was divided in two parts forming two sub questions. The first sub question was: *How can be the concept of digital mindset understood?* And the second sub question sounded like: *How would it be possible to measure the digital mindset? In the following the findings based on the secondary data will be summarized in order to answer the research questions.*

4.1.1 How can the concept of digital mindset be understood?

Today's society is a digital society. The digital era started in 1971 with the release of the first microprocessor and from there escalated quickly. 50 years ago mobile phones were rarity; nowadays it is hard to find someone, in the advanced societies, who does not own one. In a couple of years black and white televisions turned into flat screened HD or 3D TVs which have the thickness of a common credit card. Moreover, the innovations of the IT industry are remarkable since the 1970s. Starting with desktop computers, through laptops and notebooks to handheld tablet PCs the life of the individual was changed. Since the 1970s digital technology found its way to every aspect of life, whether on a personal or on a professional level. People became more and more familiar with the digital technology and learnt to exploit its advantages to an extent never seen before. Having the digital technology at fingertips changed the way people think, learn and act. It is undeniable that something has changed in a part of society, and this is the way they think and act about digital technology. In other words, they developed a new mindset, the digital mindset.

The digital mindset is a set of mental knowledge-experience structures which are formed due to living in a digitalised society and being in daily contact with digital technology. These knowledge-experience structures are recognised and used by an individual in order to become successful in the digital environment. A manager with a digital mindset feels comfortable with digital technology and the uncertainty it brings. The main characteristics of the managers who possess the digital mindset are flexibility and the ability to adopt. These managers have the desire to embrace the new and unknown. The characteristics of the digital mindset can be divided in two categories: characteristics related to knowledge and characteristics related to the actual use of digital technology. The knowledge-based characteristics are: curiosity about digital technology and being up to date with the newest innovations. Managers with a digital mindset are curious about digital technology, wanting to know as much as possible about it. Moreover they always look for information about the newest innovation, and use different sources to do so. The usage-based characteristics are: personal, educational and professional usage of digital technology and embracing the challenges which the digital technology presents. A manager with a digital mindset uses digital technology to an extent. He/she uses it to relax, to train himself/herself and also uses it in work related circumstances. Furthermore, a manager with a digital mindset is not afraid of the challenges the digital technology represents.

The digital mindset plays a very important role in today's society. If a manger wants to be successful and lead his/her company to prosperity he/she needs to acquire digital competencies. A manger has to be familiar with digital technology on both hardware and software level but he/she also has to be able to apply this digital technology to the processes of the company. A manager has to be able to tell when and how to implement the digital technology in order to maximise the company's performance. These digital competencies are a key factor of the digital mindset.

4.1.2 How would it be possible to measure the digital mindset

Measuring the digital mindset is unavoidable in order to get a better understanding of the concept. This thesis suggests the method of semi-structured interviews. The interviews will allow an insight view through the interaction with the managers. They will also allow to focus on the respondents and see their beliefs and experiences the way they, themselves see it. Semi structured interviews are a good method to see the digital mindset through the eyes of the ones possessing it. After quantifying the semi-structured interviews it will be possible to classify the respondents in one of the four categories: digital mindset, non-digital mindset, knowledge-oriented mindset, usage-oriented mindset. In this way an even better understanding of the digital mindset can be achieved and it will open the doors for other researches in this field.

4.2 Limitations

As any project, the current thesis also has some limitations. It is very important to take these limitations into consideration and this is why they will be discussed below.

The theories and researches on digital mindset are very limited in the current literature. The thesis tried to use all the available information in order to construct the theoretical framework. It should be kept in mind that this thesis is intended to open up a discussion about the digital mindset because it is a very relevant topic in today's social and economic situation.

The information gathering process for this thesis was a long and tiresome one and a lot of effort was put into it. However a certain degree of information lack is inevitable.

4.3 Implications

This thesis contributes to the understanding of the digital mindset. It opens up the discussion of a new mindset among managers which can make the company more successful than ever. The thesis is nowhere near exhaustive about the concept of the digital mindset but if it arouses interest for the digital mindset then it accomplished its goal. There are many aspects of the digital mindset which needs to be researched.

4.4 Suggestion for further research

This thesis proposes semi-structured interviews in order to get a better understanding of managers and their mindset. Based on these interviews a questionnaire can be designed which could further deepen the understanding of the digital mindset on a wider scale. A questionnaire could shed light to aspects which have not been foreseen during the making of the interviews or in the results they produced.

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Appendix

Quantifying the answers

Section 2: Curiosity and being up to date

Question nr. 5: Are you interested in new technologies?

Possible answer	Score (knowledge, usage)
Yes	0, 0
No	0, 0

- How do you find out about new technologies?

Possible answer	Score (knowledge, usage)
Online source	1, 1
Offline source:	1, 0

- Do you get your information from various sources?

Possible answer	Score (knowledge, usage)
Yes, online source	1, 1
Yes, offline source	1, 0
No	0, 0

Question nr. 6: Do you search for information about digital technology?

Possible answer	Score (knowledge, usage)
Yes	1, 0
No	0, 0

- How often?

Possible answer	Score (knowledge, usage)
Every day	1, 0
Every week	1, 0
Every two weeks	0, 0
Every month	0, 0
Less than a month	0, 0

Question 7: Have you ever suggested implementing a new technology in your company?

Possible answer	Score (knowledge, usage)
Yes	1, 1
No	0, 0

Question 8: Can you describe how you feel when you acquire a new technological innovation?

Possible answer	Score (knowledge, usage)
I feel very excited.	1, 1
I can't wait to try it	1, 1
I am not excited.	0, 0
I don't know	0, 0
Others	X,X

Question 9: How fast do you adopt a new technology?

Possible answer	Score (knowledge, usage)
As soon as it becomes available for purchase	1, 1
I wait till a few people try it out first and get some information about it.	1, 0
Mainly after the most people already uses it.	0, 0
I like the ones I already have.	0, 0
Others	X,X

Question 10: Can you describe the process you are going through from the point of finding out about a new innovation to the point you actually buy it?

Possible answer	Score (knowledge, usage)
I find out about it and I go and buy it.	0, 1
I find something out then I gather some information and then I buy it.	1, 1
I find out about it, gather some information about it but I will most likely wait with the purchase.	1, 0
I am not interested in buying new technologies.	0, 0
Others	X,X

Section 3: Digital competencies

Question 11: When you are trying to find a piece of information how do you proceed?

Possible answer	Score (knowledge, usage)
I use online source	1, 1
I use offline source:	0, 0

Question 12: How important is the internet for you?

Possible answer	Score (knowledge, usage)
I can't imagine my life without it.	1, 1

It is very important.	1, 1
It is not so important.	0, 0
It is not important at all.	0, 0
Others	X,X

- What do you use the internet for daily?

Possible answer	**Score (knowledge, usage)**
Various activities.	1, 1
Simple activities.	0, 1
I don't use it daily.	1, 0
I don't use internet at all.	0, 0
Others	X,X

Question 13: Let's say you would like to take your wife/husband/girlfriend/boyfriend for dinner. You would like to take her to nice place but you are not familiar with the restaurants in the city. How would you find a restaurant?

Possible answer	**Score (knowledge, usage)**
I'd use on-line sources.	1, 1
Ask from friends on-line.	1, 1
Ask from friends off-line.	0, 0
Use other off-line sources,	0, 0
Others	X,X

Question 14: What is your primary source of finding out the news?

Possible answer	**Score (knowledge, usage)**
I watch on-line news channels	1, 1
I read it on-line.	1, 1
From the TV/radio.	0, 0
From newspapaers.	0, 0
Others	X,X

Question 15: Do you have any on-line activities you participate in?

Possible answer	**Score (knowledge, usage)**
Yes	1, 1
No	0, 0

- Are you a member of any social media sites?

Possible answer	**Score (knowledge, usage)**
Yes	1, 1
No	0, 0

- How often do you check your profile?

Possible answer	Score (knowledge, usage)
A few times a day.	1, 1
Once a day.	1, 1
A few times a week.	1, 1
Weekly.	0, 0
Less than weekly.	0, 0
Others	X,X

- Do you have a blog or a vlog?

Possible answer	Score (knowledge, usage)
Yes	1, 1
No	0, 0

Question 16: How about your company? Does your company have any on-line presence?

Possible answer	Score (knowledge, usage)
Yes	1, 1
No	0, 0

- Who handles the company's on-line presence?

Possible answer	Score (knowledge, usage)
Me.	1, 1
My team. I just supervise.	1, 0
I have someone for that. I don't get involved.	0, 0
Others	X,X

Question 17: Have you ever used the internet in order to try to gain some advantage for your company?

Possible answer	Score (knowledge, usage)
Yes	1, 1
No	0, 0

Question 18: How do you feel about the fact that everything is becoming digitalised nowadays?

Possible answer	Score (knowledge, usage)
I enjoy it.	1, 1
I like it because it makes like easier.	1, 1
I don't like it but I adopt.	1, 1

I don't like it at all.	0, 0
Others	X,X

Question 19: Do you think that the new technology is always better than the old one?

Possible answer	**Score (knowledge, usage)**
Yes if you know how to use it.	1, 1
No but you have to know what is it and how to use it.	0, 0
No but you have to know about it.	1, 0
No but you have to use it anyway.	0, 1
Others	X,X

Question 20: How would you assess your familiarity with IT/ computers?

Possible answer	**Score (knowledge, usage)**
I am very good with computers.	1, 1
I know the basics.	0, 1
I am not good with computers.	0, 0
I don't really use computers.	0, 0
Others	X,X

Section 4: Use of digital technology and challanges

Question 21: Have you ever used digital technology in order to make your work-life more efficient?

Possible answer	**Score (knowledge, usage)**
Yes	1, 1
No	0, 0

Question 22: What do you use digital technology in your work life for?

Possible answer	**Score (knowledge, usage)**
Various activities.	1, 1
Simple activities.	0, 1
Just for what I really need it for.	0,0
I don't use it at all.	0,0
Others	X,X

Question 23: Would you like to have access to the newest technology at your workplace?

Possible answer	**Score (knowledge, usage)**
Yes	1, 1
No	0, 0

Question 24: How do you feel about new technologies at your workplace?

Possible answer	Score (knowledge, usage)
I enjoy it.	1, 1
I find it challenging but I can't wait to try it.	1, 1
I am not looking forward to new technologies.	0, 0
I don't like it at all.	0, 0
Others	X,X

Question 25: After a tiring day at the office, what do you do to relax?

Possible answer	Score (knowledge, usage)
I relax by doing an on-line activity.	1, 1
I relax by doing an off-line activity.	0, 0

Question 26: If you were asked to organise an informal event for your friends how would you proceed?

Possible answer	Score (knowledge, usage)
I would organise it on-line.	1, 1
I would organise it off-line.	0, 0

Question 27: If you had to give up one thing, would it be your phone or your computer?

Possible answer	Score (knowledge, usage)
Phone	0, 0
Computer	0, 0
I can't choose.	1, 1

Question 28: If you had the option to change your profession would you change it?

Possible answer	Score (knowledge, usage)
Something digital technology related.	1, 1
Something which is in no relation with digital technology.	0, 0