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Risk management and networks: How SMEs adapt to changing business environments via networking?

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ABSTRACT

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The aim of this qualitative research is to study what impacts global megatrends have in organizational context to SMEs, how SMEs are prepared for these changes with risk management and how networking aids SMEs to adapt to changing business environments. Moreover, the aim is to study how SMEs recognize and perceive potential threats arising from these changes. SMEs risk management practices are further examined against these megatrend-related impacts and how networks partake the different risk management stages.

Empirical evidence for this research was gathered by conducting several rounds of semi-structured interviews with 11 informants. In addition, stakeholder analyses were employed to collect primary data. The research was implemented in South Karelia, Finland in the fall of 2017 spring 2018 and analyzed by using content analysis method.

The results indicate that risk perception has a significant role mandating the nature of a megatrend-related change when recognizing and perceiving changes. Furthermore, the perception of global megatrend impacts varies significantly among case companies. In general, risk management practices in case firms are unsystematic and reactive. Moreover, networks offer an access to information and advice, which can be useful in different stages of risk management. However, the role of network utilization decreases when the risk management process progresses and the utilization of different stakeholders changes and decreases.

TIIVISTELMÄ

Tekijä	Emma Pääkkönen
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Tämän tutkimuksen tavoitteena on selvittää mitä vaikutuksia globaaleilla megatrendeillä on organisatorisessa kontekstissa pk-yrityksille, miten muutoksiin on varauduttu riskienhallinnan avulla ja miten verkostot auttavat yrityksiä sopeutumaan muuttuviin toimintaympäristöihin. Sen lisäksi tavoitteena on tutkia miten pk-yritykset tunnistavat ja havaitsevat näistä muutoksista johtuvia mahdollisia uhkia. Pk-yritysten riskienhallintaa tutkitaan tarkemmin näiden megatrendeistä johtuvien muutoksien näkökulmasta ja miten verkostot osallistuvat riskienhallintaprosessin eri vaiheisiin.

Tutkimuksen empiirinen aineisto kerättiin käyttäen useampaa puolistrukturoitua haastattelukierrosta, jotka teetettiin 11 haastateltavalle. Sen lisäksi, empiiristä aineistoa kerättiin sidosryhmäanalyysien avulla. Tutkimus toteutettiin Etelä-Karjalassa, Suomessa syksyllä 2017 ja keväällä 2018 ja analysoitiin käyttäen laadullista sisällönanalyysiä.

Tulokset osoittavat, että riskien aistimisella on suuri rooli megatrendeihin liittyvien muutoksien tunnistamisessa ja havainnoimisessa määrittäen minkälaisena muutos koetaan. Sen lisäksi, globaalien megatrendien havaitseminen vaihtelee merkittävästi vastaajien välillä. Yleisesti ottaen case-yritysten riskienhallintaprosessi on epäsystemaattinen ja reaktiivinen. Yritysverkostojen kautta case-yritykset voivat saada tietoa ja neuvoja, jotka voivat avustaa riskienhallinnan eri vaiheissa. Verkostojen rooli riskienhallintaprosessissa kuitenkin pienenee prosessin edetessä ja eri sidosryhmien käyttö tiedonhankintaan muuttuu ja vähenee.

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In Lappeenranta 1.10.2018

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1. INTRODUCTION

In this chapter the background of the study is presented as well as the research objectives and research questions. In addition, delimitations are considered in outlining the study. The research design of the study and methodology is presented followed by a description of the structure of the study.

1.1 Background of the study

In the global economy, *change* has become a central issue for businesses. Today's turbulent global environment is having a significant impact on their performance while volatile circumstances complicate forecasting of future events (Rekettye & Rekettye 2013). Introduction of management of change are suggested to be one of the most crucial elements of leaderships as controlling these uninvited changes, such as trends and external events, in business environment may determine the survival of organizations as they may have devastating impacts on a firm's shareholder value and firm's growth trajectory (Bruckman 2008; Slywotsky et al. 2005). Moreover, many organizations are facing lack of resources or diminishing resources and therefore increasing pressure is created on their leadership to proactively respond to unplanned changes (Slywotsky et al. 2005).

Megatrends can provide valuable clues and information about the likely future through their present form and therefore can be utilized as a starting point to assess the business environment (Guemes-Castorena 2009). There has been a lot of discussion of megatrends, which have seemed to become a popular topic when discussing the future. Megatrends such as digitalization and globalization are widely used when discussing of forces, which might shape the future. The term was originally coined by John Naisbitt (1982) to describe the significant economic, social, political and or technological movements. The definition can be supplemented by adding also cultural and philosophical factors to the influencing factors forming megatrends (Mittelstaedt 2014). Thus, megatrends tend to shape all aspects of society and they have a high level of certainty but over which there is little control (Mittelstaedt et al. 2014; Retief et al. 2016). Furthermore, there can be interactions and inter-linkages between the megatrends and therefore they cannot be isolated and therefore should not be considered in isolation (Retief et al. 2016).

These are such large phenomena and it can be challenging to evaluate how far-reaching impacts these changes have. Although megatrends are considered important and useful (Guemes-Castorena 2009; Mittelstaedt et al. 2014; Retief et al. 2016), some scholars argue that megatrends are incapable to function as a signifier to be used for foresight activities due to their vague meaning (von Goeddeck et al. 2013). More precisely, due to their vague meaning, megatrends can become *empty signifiers*. Furthermore, it is

emphasized that addressing trends is important, however it has not been widely discussed in organizational context. In particular, the strategic implications of megatrends can be unclear and can increase organizations' blind spots hindering the ability to foresee the possible changes in business environment. Moreover, there may be regional variances among different megatrends and some influence in only certain areas (Retief et al. 2016).

Megatrends can represent both threats and opportunities for companies. However, the increased complexity of modern society contributes to an increased level of risk in business areas (Verbano & Venturini 2011). Risk management can aid companies to systematically identify, analyze and manage possible threats (Slywotsky et al. 2005; Waters 2007). In fact, the increasing complexity and velocity of the business environment has increased the volume and complexity of risks and therefore, an increasing focus on risk management has emerged (Frigo et al. 2011). Due to increased risks, risk management activities may be necessary to guarantee companies' survival and create sustainable value (Verbano & Venturini 2013).

Risk management can be complicated to companies due to their used techniques and ad-hoc, not planned before it happens, risk management (Frigo et al. 2011). In particular, risk management activities vary among SMEs due to their limited resources and structural features and in many cases entrepreneur is in charge of risk management (Falkner & Hiebl 2015). SMEs can be more exposed and sensitive to the harmful effects of risks such as changes in legislation, financial fluctuations, customer requirements and demands, technology and supply network relationships such as power issues due to their limited resources (Verbano & Venturini 2013; Bhamra et al. 2011). Furthermore, it can be more challenging to SMEs to evaluate and handle the impacts caused by megatrends in comparison to larger organizations in which there can be a person a department assigned for risk management.

A healthy SME sector is suggested to be a crucial element for economic development and a vital part of the economy (Coleman et al. 2016). Furthermore, SMEs are suggested to have a crucial role in social and economic wealth creation (Schoonjans et al. 2013). In fact, majority of companies are small and medium-sized in Finland, accounting to 98% of all companies (Statistics Finland 2017). Thus, these turbulent changes caused by global megatrends can have a significant impact on SMEs as well as to economic development as SMEs tend to have a scarcity of resources and knowledge to handle these rapid changes in the operational environment (Schoonjans et al. 2013). In fact, a small change in SMEs can have a significant impact to the economy due to their position (Sen et al. 2016).

Organizations are suggested to part of versatile networks consisting of different nodes such as people, machines and buildings and participation in networks can be crucial to gain competitive advantage especially for an SME (Camarinha-Matos et al. 2009). To facilitate adaptation to changing conditions and business environments, networking activities between individuals are suggested to be important (Shiplov et al. 2014). In fact, in many business environments networking might be an inevitable solution for companies to respond quickly to changes as networking can create several opportunities for companies to cope with changes, such as an access to complementary resources, information, markets and technologies and aid companies to achieve strategic objectives (Gulati et al. 2000). In particular, SMEs are suggested to benefit most of the knowledge and resources received from networks (Schoonjans et al. 2013).

1.2 Research objectives and questions

It is possible to perceive some megatrends as empty signifiers due to their vague meaning (Von Goeddeck et al. 2013). Moreover, there can be regional variances among megatrends (Retief et al. 2016). Although megatrends are suggested to be meaningful providing important information, it can be challenging for a company to identify and perceive what actual impacts megatrends have in an organizational context as megatrends are described to have an impact on all aspects to society (Mittelstaedt et al 2014). Although the importance of megatrends is emphasized, academic contributions on megatrends and their impacts to companies are limited and do not provide insights how companies identify or perceive megatrend-related changes in organizational context (Retief et al. 2016). Therefore, the aim of this study is to instigate scientific discussion on how megatrends effect in organizational context, how they are recognized and perceived and how networked risk management aids to adapt into the changing business environment. Furthermore, the focus of this study is on the potential threats, which may cause risks for the company. These threats are further examined through the lens of risk management: how these risks are managed and how networks take part in the process.

Turbulent changes arising from megatrends can have huge influence on the performance of businesses as they can represent potential threats for companies (Rekettye & Rekettye 2013). While the complexity of modern society increases the amount of risks companies face, an increased interest on risk management has arisen to address risks more systematically (Verbano & Venturini 2011; Slywotsky et al. 2005). In particular, SMEs are vulnerable to these potential threats due to their limited resources. Therefore, this study examines how SMEs are prepared for these potential megatrend-related threats with risk management.

Networks might offer potential resources to aid in the risk management process to adapt to changing conditions by providing an access to information, technologies, and resources (Shiplov et al. 2014; Gulati et al. 2000). However, although there are academic contributions on what complementary resources networks can offer to a company, academic literature on network contribution to risk management is limited (Falkner & Hiebl 2015). Therefore, this thesis intends to shine new light on how networks contribute to the different stages of the risk management process.

Based on the research objectives and theoretical review of available literature this research seeks to address the following questions:

1. How do megatrend-related changes affect in the organizational context of SMEs? How these changes are recognized and perceived?
2. How SME's are prepared for the identified megatrend-related impacts with risk management?
3. How does networking contribute to risk management activities in SMEs?

This study contributes to three different research streams: Megatrend perception, SME risk management and networks. At the intersection of these research streams, this study combines these themes allowing to establish a holistic view on how SMEs adapt to changing business environments. The positioning of the study is illustrated in Figure 1.

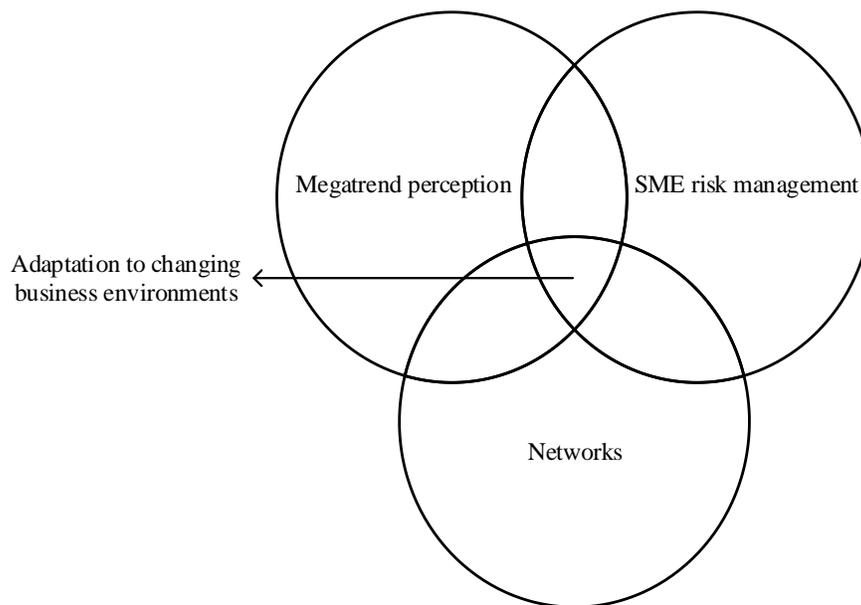


Figure 1. Positioning the research

1.2.1 Delimitations

As megatrends can be complex, unpredictable in their impact and have seismic impacts, it may require companies to adapt to the changes caused by megatrend-related implications (Mittelstaedt 2014; Retief et al. 2016). Moreover, their unpredictable nature of megatrends may cause uncertainty for businesses representing both opportunities as well as risks to organizations (Burstbauer et al. 2014). In fact, risks tend to have speculative characteristics: a risk provoking loss is a downside risk, and risk provoking a possibility of profit, an upside risk (Verbano & Venturini 2013). This thesis will focus on examining the possible risks arising from megatrend-related changes and does not engage with the opportunities.

External forces of change, which arise from the business environment are examined in this study. Although, also internal forces of change can cause risks to companies, this study does not engage with them.

1.3 Research design & methodology

In this section, the research design and methodology are presented in order to explain how the research was carried out. The research design of this thesis is presented in Figure 2.

Abductive research perspective was employed, which combines the deductive and inductive research approaches. Commonly, the deductive research approach is used in cases, in which there is a lot of existing literature and using existing theory to form research questions, objectives and theoretical framework can be formulated (Yin 2009). However, when the researched topic is new and existing literature limited, induction may be more suitable research approach in order to collect the data first and reflect it to existing theories allowing changes during the research process and taking into account the views of individuals in social context (Saunders et al. 2009). In comparison, deduction can limit the suggestion of alternative theories as suggested by Saunders et al. (2009): Choosing a particular theory and hypotheses may already decide the outcome of the research. In order to enable a more flexible research process while using existing literature to some extent, both deduction and induction are used in this study. Abductive research approach allows that the research process is not focused on too narrow perspectives determining the results beforehand and enabling a dialogue between empirical data and theoretical literature (Alvesson & Kärreman 2007). The existing literature was used to formulate research questions, objectives, theoretical framework, data collection and analysis. While, induction allows the possibility of new findings deriving from the data collected. The theoretical part of the study uses deduction by moving from theory to data and the empirical part uses induction to move from data to theory.

Qualitative and *explorative* research design was chosen for this study, which is especially suitable for a research to clarify an understanding of a problem which precise nature is unsure (Saunders et al. 2009).

Multiple-case study approach was chosen as research strategy, which offers a possibility to examine a contemporary phenomenon in its real-life context and in depth, is particularly beneficial if the boundaries between the phenomenon and context are not evident allowing to develop a broad understanding of a specific phenomenon (Yin 2009). Moreover, case studies can be used for several reasons: to generate theory, test theory or provide a description (Eisenhardt 1989). Multiple-case study approach offers also an effective way of focusing to establish whether the findings from the first case apply in other cases as well, leading to a possible generalization based on the findings by exploring differences within and between cases (Saunders et al. 2009; Yin 2009). Nine cases from different industries were selected based on information-oriented selection in order to maximize the empirical data compare the results in cross industrial context (Flyvberg 2011).

Case studies can be further categorized according to their purpose and *instrumental case study* strategy was chosen for this study. Besides developing an understanding of a particular case, instrumental case study allows establishing a more general understanding of the phenomenon and the cases offer insights to establish an understanding facilitating the attempt to develop theory on networked risk management (Stake 1995). This study utilizes these particular cases as instruments in order to generate a more general understanding of risk management practice and network contribution in SMEs.

Besides their purpose, case studies can be further categorized based on their unit of analysis. The unit of analysis of this study is *holistic* which focuses on a single unit of analysis (Yin 2009). This study examines the risk management process in case companies and therefore the research design is holistic.

Methodological choice of this study is *multi method qualitative* employing qualitative methods of semi-structured interviews and workshops. Qualitative method offers an effective way to generate or use non-numerical data, which is expressed through words enabling to access rich and detailed data combining qualitative data collection technique and qualitative analysis procedure through the use of conceptualization (Saunders et al. 2009).

Primary data was collected by means of semi-structured interviews. Furthermore, stakeholder analyses were employed in a workshop to gain insights on the stakeholders of the companies. In combination, these techniques aided to establish a broad understanding of the studied themes, stakeholder networks and their roles. Gathered data was analyzed using qualitative content analysis. A more detailed description of empirical research methods is provided in Chapter 5.

Cross-sectional time horizon was employed since it allows to study a particular phenomenon at a certain time (Saunders et al. 2009). This research focuses to study the risk management related to the megatrend-related change implications at the time of the study.

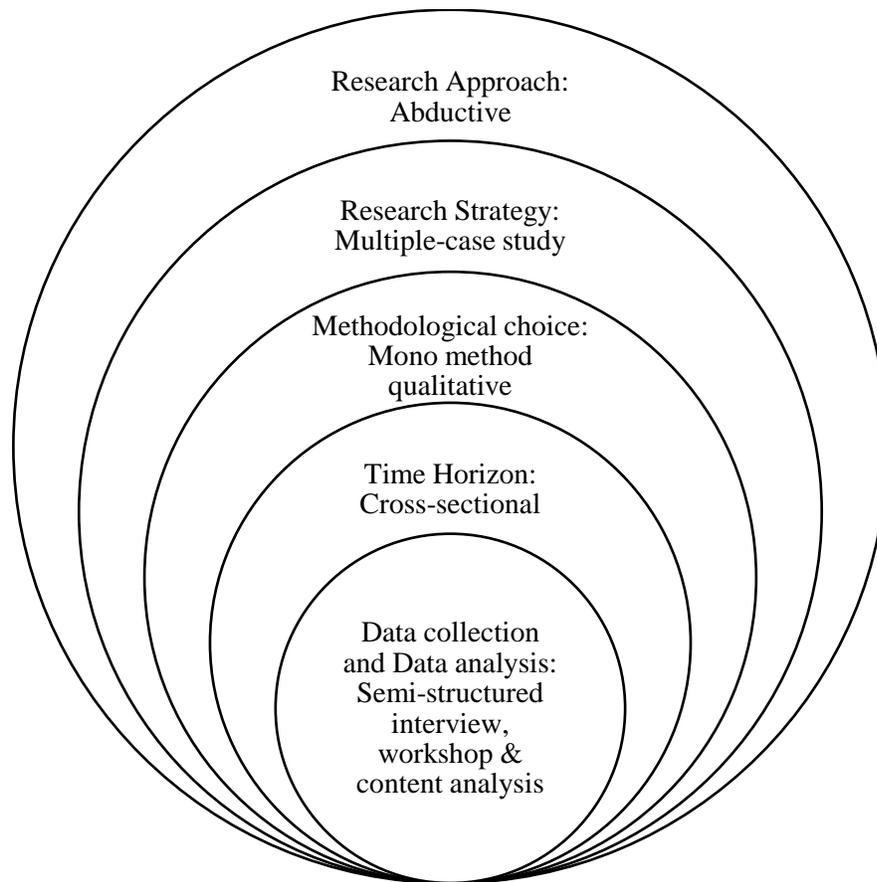


Figure 2. Research design (adapted from Saunders et al. 2009)

1.4 Structure of the thesis

The overall structure of the study takes the form of nine chapters, which is divided into two major parts: Theoretical and empirical part. The theoretical part introduces, reviews and summarizes theoretical literature comprising chapters 1-4. The empirical part follows a qualitative research approach applying the theory to practice comprising chapters 5-9. The structure of the study is presented in Figure 3.

The first chapter sheds light on the importance of the study as well as presenting the research gaps in the existing literature. The following two chapters lay out the theoretical dimensions of the study and examine how megatrends effect on a global and a local level and how the perception of these changes is

constructed. Moreover, SME risk management practices are introduced as well as the role of network attributes in the risk management process. The fourth chapter combines and synthesizes the theoretical literature by presenting a theoretical framework constructed based on the key theoretical concepts.

The empirical part of this study begins from the fifth chapter by presenting the empirical research methodology as well as case descriptions. Chapter 6 presents the results and analyses of the study as well as cross-case analysis and three mini cases with their within-case analyses. Chapter 7 presents a discussion of the findings, reflecting the findings at the theoretical literature and the implications of the findings. The last chapter of the study presents conclusions as well as the significance of the results. Furthermore, theoretical contributions and practical implications are presented which are followed by the limitations of the study and areas for further research.

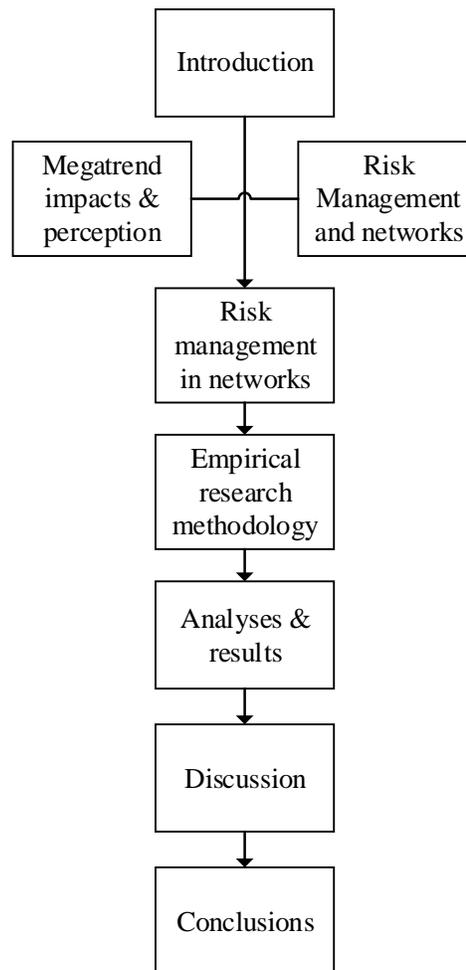


Figure 3. Structure of the study

2. MEGATREND IMPACTS AND PERCEPTION

Trends and megatrends can provide important clues of the near future for companies (Guemes-Castorena 2009). The term *megatrend* was originally introduced by John Naisbitt (1982) to describe the substantial economic, social, political and/or technological movements shaping all aspects of the society. Megatrends can be defined as complex, requiring skills to understand, unpredictable and extensive in their impact (Mittelstaedt et al. 2014). They can also be used to refer to global influencing factors that have a high degree of certainty but there is a little control of them (Retief et al. 2016). Furthermore, they are suggested to be embedded in the context of their time and are a creation of the residue of previous megatrends and once initiated megatrends develop on their own and cannot be easily controlled (Mittelstaedt et al. 2014). Megatrends can also interact with each other and therefore should not be isolated or considered in isolation (Retief et al. 2016). Although megatrends can have extensive impacts, there can be regional variances among megatrends and some megatrends influence only in specific areas (Mittelstaedt et al. 2014; Retief et al. 2016). Due to their seismic impact, these global trends may require strategies for adaptation instead of strategies focusing on changing the trends (Retief et al. 2014).

In comparison to megatrends, Buck et al. (1998) highlight *trends* to have two definitions: the classic definition describing a trend as a fundamental societal change over an extended time. However, the modern definition describes the trend as a phenomenon over a short time, such as music or fashion. When adopting the modern definition, trends are shorter in duration, less significant in their magnitude and have less deeper effects than megatrends (Mittelstaedt et al. 2014).

Although megatrends can provide important information for companies on the likely future and act as a starting point to assess how they shape the business environment and as a departure in strategy, they have received criticism for their vague meaning (Guemer-Castorena 2009; Von Goeddeck et al. 2013). Von Goeddeck et al. (2013) argue that megatrends can be overloaded with meaning and therefore fail to transport clear information of the megatrend itself and in some cases can be perceived as *empty signifiers*. More precisely, megatrends such as urbanization and demographic changes can become meaningless to an organization in case there is no deep understanding of the phenomenon and they can be perceived as empty signifiers. By holding together a number of similar incoherent elements contributing equally to a certain discourse, megatrends can represent an abstract form, which acts as a bracket describing heterogeneous societal changes, that can lead to an overload of determination of the meaning (von Goeddeck et al. 2013). Therefore, megatrends can restrain the foresight capability of an organization as suggested by von Goeddeck et al. (2013) and if they are seen as a metaphor for societal changes, it is highly important to understand and evaluate the strategic meaning of these changes before utilizing them for strategic purposes

to avoid making decisions based on empty signifiers. Due to their abstract nature, megatrends may not be suitable for in-depth research and they rather represent a starting point for analyzing what further implications they may have (Guemer-Castorena 2009; Von Goeddeck et al. 2013).

In some cases the abstract characteristics seem to depend on the trend itself although some authors suggest that megatrends are complex and in some cases meaningless. Whereas megatrends such as urbanization and demographic change can be overloaded with meaning (von Goeddeck et al. 2013), digitalization can be more easily understandable in organizational context. Digitalization is defined as usage of digital technologies in order to transform a business model by establishing new ways to create revenue and value (Gartner 2018). Thus, it seems that the potential of a megatrend to become an empty signifier depends on the megatrend itself and its meaning to an organization.

2.1 Matrix of megatrends

The importance of understanding on-going megatrends is becoming increasingly relevant and in recent years a body of practitioner literature has emerged. Reports of megatrends have been produced by global accounting and management as well as consulting firms, although this 'grey' literature is not peer-reviewed, it can provide insights on the policies, agendas and current scenario planning focus of global companies (Mittelstaedt et al. 2014; Retief et al. 2016). Academic literature on megatrends is limited (Retief et al. 2016) and therefore the search of megatrends focuses mainly on internet search engines instead of academic databases.

The purpose of the matrix analysis was to identify megatrends, which are common to the majority of the resources and find consensus among them. Consensus was identified as agreement among the sources whereby at least three must identify the megatrend. By requiring consensus, this pragmatic approach limits the number of megatrends identified for analysis. The identified megatrends fall into five different areas: political, economic, social, technological and environmental. Therefore, the PESTE framework is utilized, which is a common tool for analyzing different changes in the macro environment of an organization.

The matrix analysis revealed that there are inconsistencies and overlapping in the definitions provided by different sources. More precisely, while one source identified a technology as megatrend, some sources identified the same technology to be an implication caused by this megatrend. Some similar megatrends were combined in the matrix in order to avoid overlapping. The most obvious overlap seems to concern technological megatrends and although several different technological megatrends were presented, there was little consensus among different sources. However, there was consensus among the sources that the technological development of technologies is rapid, which seems to act as an umbrella concept to include a variety of different technologies. Therefore, the identified technologies were examined in detail to identify

which technological megatrends seem to have the most significant impacts in organizational context. The identified megatrends are listed in Table 1.

Table 1. Matrix of megatrends

Categories		OECD 2016	Sitra 2017	EY 2017	PwC 2016	EEA 2014	Rekettye & Rekettye 2013
Political	Role of governments	x				x	
Economic	Economic power shift	x		x	x		x
	Natural resources and energy	x	x		x	x	
	Sharing economy	x	x	x			
	Uncertain economic develop- ment		x			x	
	Growing middle class					x	
Social	Urbanization	x		x	x	x	
	Demographic changes	x		x	x	x	x
	Globalization	x	x	x			
	Society	x				x	
	Health, inequality and well- being	x				x	
Technological	Automation		x				
	Robotics		x	x			
	Artificial Intelligence		x	x			
	Digital platforms		x				
	Rapid development of digital technologies	x	x		x	x	x
Environmental	Climate change and environ- ment	x	x	x	x	x	x
	Growing ecosystem pressure					x	

2.2 Impacts

There can be regional variances among different megatrends and some are ongoing in only certain areas (Retief et al. 2016). Therefore, the megatrend impacts are viewed by through geographical lens and taking into consideration the geographical context of the case companies when assessing the potential local impacts.

2.2.1 Economic changes

The economic power is shifting towards Brazil, Russia, India, China (BRIC) and other Asian economies and (PwC 2016; OECD 2017). BRIC countries are projected to transform from labor and production economies to consumption-oriented economies that are expected to increase their market share (PwC 2016).

This global *economic power shift* from Western-led global organizations to regional organizations might reshape the competitive environment for organizations when developing regions are gaining importance resulting in mature markets potentially to lose influence and capital when becoming less attractive for business and talent (EEA 2015; PwC 2016).

Sharing economy is becoming an increasingly potential method of business (EY 2016; OECD 2017). Furthermore, it enables both economic development and ecological sustainability (Sitra 2017). Enabled by information and communications technologies (ICTs) collaborative consumption includes activities of giving, sharing or obtaining and access to goods and services through online services (Hamari et al 2015). Characterized by flexibility and accessibility of utilization of products, the sharing economy is aligned to diverse needs of entities on the B2C as well as B2B market. Sharing economy has enabled the development of successful business models such as Airbnb and Uber (Ocicka et al. 2017). However, the speed of growth in different sharing systems indicates that the sharing economy is threatening some established industries, in particular automotive, hospitality, media, travel, retail and finance (Ismail et al. 2014 cited in Kathan).

Although energy efficiency has improved, advanced economies remain highly resource intensive and energy demand is projected to increase 50% by 2030 (EEA 2015; PwC 2016). U.S Energy Information Administration (EIA 2017) estimates that most of the *energy growth* occurs outside of OECD countries such as China and India where the economic growth is driven by increasing demand for energy. Economic growth can be measured with gross domestic product (GDP) which is a key determinant in energy demand and countries with increasing GDP contributing significantly to increasing energy consumption.

Increasing demand for resources has potential to limit access to some essential resources and *resource scarcity* is becoming a growing economic concern (EEA 2015; PwC 2016). Ever growing population constrains the natural resources what will challenge established consumption patterns (EY 2016). Furthermore, some resources are geographically distributed unevenly that might increase price volatility and even contribute to geopolitical conflict (EEA 2015). However, the changes from industrialized systems to service and knowledge economy can decrease the demand for resources to increase economic growth (PwC 2016).

2.2.2 Social changes

Urbanization is suggested to be the most significant phenomenon of the changes in human settlements patterns (Zhang 2015). An increasing share of the world population lives in urban areas and nearly 90% of future urban expansion takes place in Asia and Africa (OECD 2017). Rapid urbanization took place in Europe and North America as a result of industrialization and since 1950 urbanization has begun to slow down in most developed countries (Zhang 2015). However, according to a study conducted by Boschma et al. (2009) metropolitan regions attract highly skilled labor in European countries such as England and Wales,

the Netherlands, Sweden and Finland that contributes to differences in population size and structure between growing urban areas and rural areas, resulting in regional imbalances in the demand and availability of labor.

Demographic trends influence areas differently and countries have diverse demographic trajectories (PwC 2016). Extensive population growth is projected in Africa where the population will more than double by 2050 accounting to more than half of the population increase (OECD 2017). However, in some societies, the population is ageing and even declining (PwC 2016). In developed regions, population is projected to stagnate or grow slightly, mostly due to immigration (EEA 2015). These diverse demographic trends contribute to significantly to the shift in economic power, changes in societal norms and resource scarcity (PwC 2016).

Ageing population can affect the resource consumption and the environment (EEA 2015). Aging occurs when the median age of a region or a country rises due to declining birthrates and/or longer life expectancy and although ageing is a worldwide phenomenon, the impacts have been most significant in developed countries (Chand et al. 2014). According to UN (2017) in comparison to 2017, the amount of persons aged over 60 or more is projected to double by 2050. Currently in Europe 25% of the population is aged 60 or more and by 2050 the share increases to 35%. It is suggested that the ageing process of the population in the Nordic countries is ongoing and eventually increasing its pace (Iacono et al. 2018). Furthermore, it is estimated by Chand et al. (2015) that the rapid aging will bring important and unprecedented changes, which will have an influence on the global economic environment resulting in challenges in multiple business areas. Furthermore, aging population has potential to result in decrease in the labor supply available to businesses unless the retirement age is not raised. Unless productivity rises while the available labor supply decreases, labor costs can increase.

Besides workforce supply, Acemoglu et al. (2017) argue ageing population to have impact on the adoption of automation and robotic technologies. By analyzing data from the Federation of Robotics (IFR) across 49 industrialized countries, the results show a strong positive correlation between old-age dependency and change in the number of robots at work in the observed industrialized countries (Acemoglu et al. 2017). Therefore, in particular the scarcity of younger employees in ageing countries has potential to foster the higher adoption of automation technologies and robotics as suggested by Acemoglu et al. (2017).

Globalization has increased during recent decades due to emerging market growth and trade liberalization creating new competitors, lower price points and reordering supply chains that disrupts existing business models (EY 2016). Companies implementing global strategies have potential to benefit from economies of scale, economies of scale in marketing and competitive advantage for cost difference (Hout et al. 1982). In

contrast, some companies prefer to use local suppliers to avoid possible risks of political unrest, currency and customer problems and risks associated with cultural differences (Ellegaard 2008; Poba-Nzaou & Raymond 2011). In these cases, companies see the advantages of global outsourcing and emerging market suppliers such as prices advantages, less advantageous as local sourcing and promote localization (Falkner & Hiebl 2015).

Globalization can create international *integration*, which facilitates flow between people and cultures on an international level, and ideas can be shares to create or improve existing products. Furthermore, globalization creates integration between product markets via international trade and integration of world markets resulting in price changes. (Grossmann & Helpman 2015) Integration can be horizontal or vertical as defined by Pellinen et al. (2015): In vertical integration the collaboration between different operators in the supply chain is improved and a company can acquire new firms to gain control over the whole supply chain. Horizontal integration on the other hand seeks to improve collaboration with operators that work in the same stage of the supply chain and by acquisition similar capabilities, companies can increase market share and cost competitiveness and decrease the amount of competitors.

2.2.3 Technological changes

The rapid development of technology includes technologies such as digitalization, robotics, artificial intelligence and automation that can have an impact on nearly every industry (Sitra 2017). The pace of technological change is increasing as well as research and development especially in nanotechnology, biotechnology and information and computer technology speeding the discovery and development of new technologies (EEA 2015). Furthermore, the combination of internet, network capable mobile devices, cloud computing, data analytics and machine learning capabilities can transform the future (PwC 2016).

Although these changes are suggested having an impact on most industries, it is not known exactly how these technologies will influence (Sitra 2017). Technological advances have been disrupting business models for centuries and these capabilities have potential to influence on consumer expectations, interaction with consumers and underlying business models supporting these activities (EY 2016; PwC 2016). The expected waves of Internet of Things (IoT), artificial intelligence, robotics and virtual reality are projected to be more revolutionary than the IT revolution, which comprised personal computers, online, mobile and social capabilities (EY 2016).

Integration of *digital technologies* has potential disrupt current business models by providing new opportunities to create value and revenue, the transformation process into digital business as digitalization (Gartner 2018). Digital technologies are suggested to be the fundamental driving force of the IT revolution or fourth industrial revolution, which also includes physical and biological technologies. The revolution is

driven by new breakthroughs within these areas and as a great fusion with each other. Digital technologies include four aspects of technologies: 1) Internet of Things, 2) artificial intelligence, 3) big data and cloud computing and 4) digital platforms. (Guoping et al. 2017)

Internet of Things (IoT) is used to describe both consumer and enterprise level perspectives on industrial internet (GE 2018). IoT utilizes small identification tags in products and machines such as internet-linked sensors, actuators mobile phones and radio-frequency tags (RFID) to communicate with each other to achieve common goals throughout the economy (EEA 2015; Guoping et al. 2017). *Industrial internet*, also known as Industrial Internet of Things (IIoT) was originally coined by General Electric in 2012 to describe a network bringing together machines, advanced analytics and people where devices are connected by communications technologies in order to collect, monitor, analyze and deliver new insights to the decision-making process of industrial companies (General Electric 2018). In combination, these technologies provide features such as integration of tracking, identification technologies, and enhanced communication having potential especially in industrial manufacturing and monitoring, automation, logistics, intelligent transportation, business and process management of goods and people as well as intelligent fire control, environmental protection and public security (Atzori et al. 2010; Guoping et al. 2017).

Artificial intelligence (AI) has progressed within the recent years due to advances in calculation speed and storage capacity. AI is used to stimulate the thinking and behaving process of individuals to increase the high-level application of intelligent machines and systems resembling the human brain. (Guoping et al. 2017) Breakthroughs in artificial intelligence have potential to increase productive potential as well as create investment opportunities (Pwc 2016). More precisely, AI is widely used in machine learning in which the computer has the ability to discover hidden insights without being programmed to do so and make reliable and repeatable decisions when encountered with new data based on learning of existing data by using algorithms (Guoping et al. 2017). Furthermore, advancements in artificial intelligence and machine learning promote even greater automation could influence demand of employment (PwC 2016; OECD 2017). These advancements can increase the phase of automation in countries with high old-age dependency ratios and decreasing amount of young employees as stated by Acemoglu et al. (2017). Consequently, as the annual supply of industrial robots and connected things is rising, they are estimated to have significant impacts on productivity and income distribution. Although it is uncertain how seismic impacts these technologies have, OECD (2017) estimates that one in ten jobs could be subject to automation in the OECD area over the next decade. Although these technologies have potential to reduce employment, new employment is created in new areas (Sitra 2017).

Big data is described to be a major area of ICT development and as an increasing amount of data is created daily, computers can store and process significant amounts of data (EEA 2015; Coleman et al. 2016). Big

data and analytics describes this high-volume, high-velocity, high variety and complex data and how it is used to analyze, predict and control business processes (Coleman et al. 2016). Furthermore, it is suggested that gathering and analyzing data in real-time might become an essential requirement for business, rather than a competitive advantage (Pwc 2016).

Digital platforms are suggested having potential to transform all industries and substitute physical world ecosystems by catalyzing convergence (Sitra 2017; EY 2016). Digital platforms are decreasing the transaction and friction costs, which occur when organizations or individuals share a product or a service and easily usable platforms are suggested offering new ways of consuming goods and services as well as mediating information to match supply and demand (Guoping et al. 2017).

Another driver for the fourth industrial revolution is *3D printing*, also referred to as additive manufacturing, which is used to create three-dimensional solid objects from digital models (Guoping et al. 2017; EEA 2014). Furthermore, 3D printing enables more rapid prototyping, more opportunities for experimentation and shorter design-production cycle (Pwc 2016). Although the future of 3D printing is uncertain, it is estimated to affect new business models, policy and society as a whole by contributing to the localization of production, the emergence of new competitors and development of consumer demand (Jian et al. 2017).

Rapid technological progress is enabling users to experience new perspectives of reality and *augmented reality* (AR), referring to real-time digital overlay of information to real objects, is becoming increasingly researched in the ICT sector (European Commission 2017; EEA 2014). The potential of AR applications is estimated to be huge and deployment possibilities for both consumer and enterprises across industries such as enterprise and public sector, healthcare, engineering, retail and education (European Commission 2017).

While the breakthroughs in technology are increasing, simultaneously actors for disruption and destruction are enabled and the importance of *cyber and cloud safety* is highlighted (Pwc 2016). Moreover, when the amount technological advancements increases, new vulnerabilities are created challenging security measures, for example IoT is expected to open a new area for cyber-attacks as they are connected to internet and has the capability to distribute them widely than internet (Pwc 2016; EEA 2015; Atzori et al. 2010).

Although the impacts of the fourth industrial revolution are uncertain, it is estimated that new available technologies will increase the amount of competitors utilizing these technologies and innovation as competitive advantages increasing productivity in all sectors and geographical areas (Pwc 2016). Furthermore, the third industrial revolution comprising of wide application of information and electronic technologies and automation of manufacturing processes, is ongoing and influencing businesses (Guoping et al. 2017).

2.2.4 Environmental changes

Climate change can contribute to severe consequences such as increasing temperature, which will likely increase the amount and intensity of heat waves and hot extremeness globally (EEA 2015; IPCC 2013). However, these changes vary significantly between regions: in regions such as North Africa and the Mediterranean mean precipitation is likely to decrease and in most mid-latitude regions such as Europe and North America more frequent and intense extreme precipitation events are highly likely (IPCC 2013).

Climate change can also contribute to extreme weather and rising sea levels, which could render traditional methods of farming, fishing and hunting in certain areas (PwC 2016). As global warming increases the likelihood of these severe and irreversible consequences in most regions, risk reduction is possible with climate change mitigation and adaptation activities (EEA 2015). In particular, organizations are suggested to have an obligation to promote sustainability and reduce unsustainable consumption (Retief et al. 2013). Consequently, stricter boundaries concerning unsustainable resource consumption and CO₂ emissions can limit the economic growth more than during previous decades (Sitra 2017).

2.3 Impacts perceived as risks

Megatrend-related changes can have significant impacts to companies. As megatrends can be complex, unpredictable and have seismic impacts, it may require companies to adapt to the changes (Mittelstaedt et al. 2014; Retief et al. 2016). In fact, these impacts can present uncertainty to organizations as it is possible to list possible impacts, however there is no certainty which implication takes place and this uncertainty has potential to inflict risks (Waters 2007). In contrast, the unpredictable nature of these changes has potential to cause also opportunities as risks can have potential to provoke possibility of profit (Burstbauer et al. 2014; Verbano & Venturini 2013). However, SMEs can be more exposed and sensitive to risks caused by these changes and therefore these changes are viewed as potential risks.

2.3.1 What is a risk?

Risk can be measured with geometric mean and minimized by distributing it across different independent events as suggested by Bernoulli in 1738. The traditional definition of risk measures risk with two combined variables: Probability and magnitude, probability describing the frequency of the occurrence and magnitude describing the extent of consequences the event might generate (Verbano & Venturini 2013). Risk can also describe possible financial and economic losses or benefits received after implementing an action associated with uncertainty (Chapman et al. 1983). Thus, risks tend to have speculative characteristics: a risk provoking loss is a downside risk, and risk provoking a possibility of profit, an upside risk (Verbano & Venturini 2013).

Due to the complexity and magnitude of risks companies are facing, scholars divide risks into two main categories: dynamic risk and static risk. *Dynamic risks* result from changes in the economy or the environment and changes in technology and economic variables like income level and price level are dynamic risks (Gupta 2016). These changes in the external environment of a company can include external factors affecting an entity such as political, economic, social, technological and environmental (COSO 2016). Dynamic risks tend to have speculative characteristics, which can cause damages or opportunities for a firm (Verbano & Venturini 2013). Furthermore, as dynamic risks arise from the economy or the environment, they are difficult to anticipate and quantify although they mainly involve financial losses, eventually affecting the public and society (Gupta 2016). In contrast, *static risks* are not affected by changes in the environment and can result from a destruction of an asset causing damage without an opportunity to benefit from it (Gupta 2016; Verbano & Venturini 2013).

In this study risk is defined as a dynamic risk caused by the changes in the environment and technologies and considering only downside risks. More precisely, megatrend-related changes cause different impacts to companies, which can be listed. However, it is not known which impacts take place, which in turn causes uncertainty to companies (Waters 2007). Uncertainty can be further categorized by its type and in this case, these changes create uncertainty limiting the knowledge of the future and it can be that understanding these changes is also limited by the capabilities of an individual causing structural and procedural uncertainty (Vilko et al. 2014). Thus, this uncertainty caused by megatrend-related impacts is viewed as a risk, which is a threat that these impacts take place and disrupt normal activities (Waters 2007). When there is uncertainty included whether a risk takes place, it is referred to as a threat. However, when there is certainty that a risk takes place or it is identified, it is referred to as risk.

2.3.2 Megatrend change related threats

Next, the identified changes are further examined to establish an understanding what impacts they can have. More precisely, what characteristics these impacts have and can they be present threats to companies in the geographical area of the case companies. All identified potential local level threats are visualized in Figure 4.

Due to the *economic power shift* emerging markets are becoming more economically powerful (PwC 2016; OECD 2017) resulting in global organizations lose capital as they might be regarded as less attractive than regional organizations (EEA 2015; Pwc 2016). Consequently, this megatrend might affect larger organizations to lose capital in the emerging markets for regional operators. However although the competitive environment in the emerging markets is changing, it might not have significant local level impacts to SMEs in developed countries and the most significant changes concern global organizations operating in the area of emerging market.

Sharing economy represents opportunities for companies by enabling sharing, obtaining or giving access to services and goods (Hamari et al. 2015), however according to Ismail (cited in Kathan et al. 2016) this increasing business model development might threaten some established industries such as hospitality, automotive, media, travel, retail and finance. Therefore, sharing economy can be a potential threat for SMEs as it creates new competition to established industries.

Resource scarcity is becoming an economic concern as well as uneven geographical distribution and increasing demand for resources can contribute to resource price volatility (EEA 2015; PwC 2016). Moreover, increasing demand for resources has potential to limit access to resources and disrupt business. Although changes from industrialized systems to knowledge economy can decrease the demand for resources (PwC 2016), resource scarcity can be a potential threat for companies, which require certain resources for business activities.

Urbanization may create challenges for companies as metropolitan regions can attract highly skilled labor in European countries resulting in regional imbalances in the demand and availability of labor (Boschma et al 2009). Imbalances in demand and availability of labor may result in talent shortage and difficulties in recruiting employees in rural areas.

In the Nordic countries ageing of the population is ongoing and increasing its pace (Iacono et al. 2018). *Ageing population* has potential to decrease labor supply for businesses resulting in talent shortage (Chand et al. 2015). Furthermore, aging population can influence the adoption of automation technologies and robotics in case there is scarcity of younger employees in ageing countries (Acemoglu et al. 2017). Thus, ageing population can affect talent shortage and increase labor costs in order to attract new employees. Moreover, ageing population can increase the adoption of automation and robotics.

Globalization has increased during recent decades due to emerging market growth and trade liberalization and companies implementing global strategies have potential to benefit from the economies of scale, competitive advantage for cost difference and the economies of scale in marketing (EY 2016; Hout et al. 1982). Therefore, globalization can create new competitors and increase competition, which can present potential threats for companies (EY 2016).

One implication of globalization is *localization* and some companies may prefer using local suppliers in order to avoid threat of political unrest, currency and customer problems (Ellegaard 2008; Poba-Nzaou & Raymond 2011). However, utilizing local suppliers can increase prices in comparison to using emerging market suppliers for price advantages (Falkner & Hiebl 2015). Therefore, localization and using local suppliers can increase costs for companies utilizing local sourcing and present threats for companies.

Other impacts of globalization are horizontal and vertical integration. In *horizontal integration*, the collaboration with operators operating in the same stage of supply chain is improved and by acquisition, companies can increase their market share and reduce the amount of competitors (Pellinen et al. 2015). Although horizontal integration can decrease the amount of competitors, when companies acquire other companies, new larger competitors emerge in the market that can utilize the economies of scale for cost difference. Consequently, these new competitors can increase the competition and therefore represent potential threats for smaller operators in the market. In contrast, *vertical integration* aims to improve collaboration between different operators in the supply chain and similarly to horizontal integration, a company can acquire other operators in the supply chain to gain control over the supply chain (Pellinen et al. 2015). Consequently, companies acquiring other operators along the supply chain, can create increased competition by being able to improve the collaboration and efficiency between different actors along the supply chain.

The pace of *rapid technological development* is increasing simultaneously with discovery and development of expected advancements in digital and physical technologies: artificial intelligence promoting even greater automation capabilities, robotics, digital platforms, 3D printing, augmented reality, simulations, IIoT, big data and analytics are expected to be revolutionary (EY 2016; OECD 2017; Sitra 2017; EEA 2015; EEA 2015; Guoping et al. 2017). These technologies have potential to offer new ways to do business, deliver new insights to decision-making process, offer new ways to consume goods and services (General Electric 2018; Coleman et al. 2016; Guoping et al. 2017). Furthermore, it can increase the amount of new competitors utilizing these technologies as competitive advantage and utilizing these technologies may become essential for businesses increasing competition among companies in all sectors and geographical areas (PwC 2016). Thus, whether company is utilizing these new technologies or not, it can be that they will face increased competition, which can pose a potential threats for companies. While the rapid technological development progresses, the importance of *cyber and cloud safety* increases (PwC 2016) as new technological advancements may cause new vulnerabilities and even opening new areas for cyber-attacks (PwC 2016; EEA 2015). Thus, rapid technological development can also cause potential threats for companies related to cyber security.

Climate change can contribute to increase the intensity of heat waves and hot extremeness globally as well as frequent and intense precipitation (EEA 2015; IPCC 2013). Consequently, these changes can render some traditional methods of farming, fishing and hunting (PwC 2016). Changing weather conditions can be a potential threats for companies which core business is related to certain weather conditions and therefore cause business difficulties.

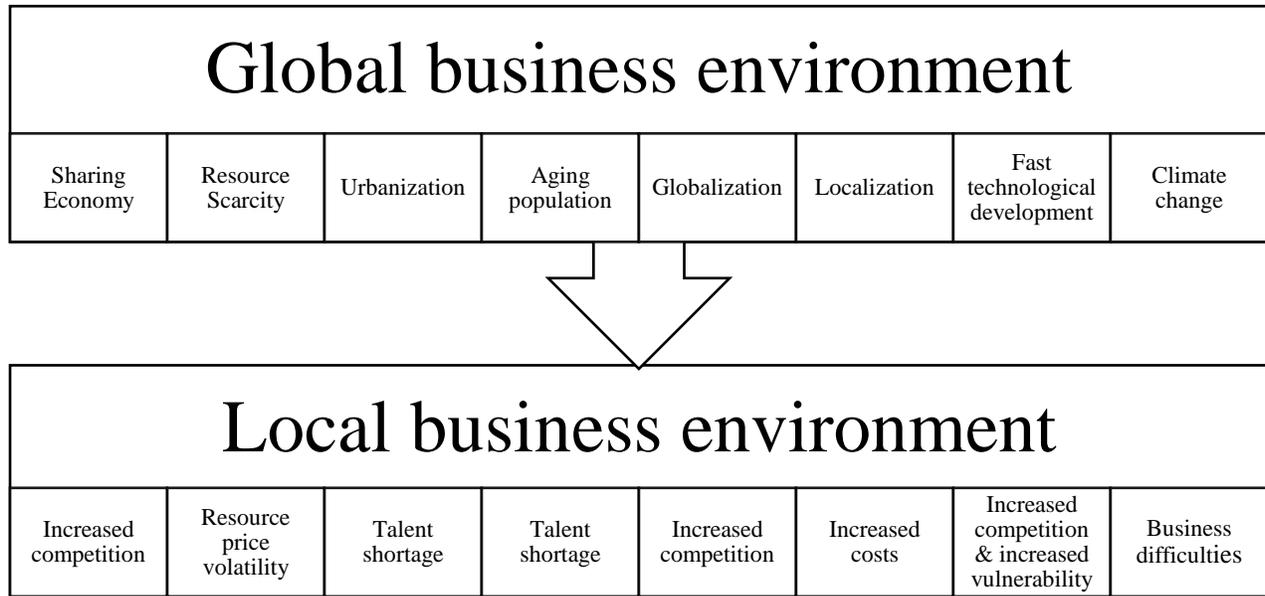


Figure 4 Potential megatrend-related threats in local business environment

Together, the megatrend-related changes can present potential threats to companies, however due to uncertainty it is not known which impacts will take place. In fact, some scholars define trends related to demographic, socio-cultural, regulatory and political changes as strategic risks (The Casualty Actuarial Society 2003). However, once the megatrends are examined in their local business environment, these strategic risks seem to have more versatile impacts to companies. These potential risks are related to different business areas such as human resources, material prices and competition. In order to examine, which type of potential risks are managed with certain resources, these potential risks are further categorized based on the risk category suggested by The Casualty Actuarial Society (2003) which suggests that there are four different risk categories: 1) Hazard risk 2) financial risk 3) operational risk 4) strategic risk.

Hazard risk is related to fire and other property damage, natural perils, theft and other crimes, personal injury, business interruption, personal injury, disease and disability. *Financial risk* refers to price such as interest rate, foreign exchange, asset value and commodity, liquidity risks such as cash flow, opportunity cost and call risk, credit risks, inflation and purchasing power and hedging and basis risk. *Operational risk* comprise of business operations such as product development, efficiency, capacity, product or service failure, supply chain management and human resources, empowerment risks such as leadership and change readiness, information technology such as relevance and availability and information and business reporting such as taxation, planning and budgeting, accounting information, investment evaluation and pension fund. *Strategic risk* includes damage to reputation such as brand erosion, unfavorable publicity and fraud, competition, customer preferences, technological innovation and capital availability as well as trends related to demographic, socio-cultural, regulatory and political changes. (the Casualty Actuarial Society 2003)

Potential megatrend related threats can be further categorized in risk types. Megatrends can present strategic risks to companies, however when the local level impacts are examined in more detail, they present a variety of different risks besides strategic risks. The potential risks can represent financial, operational and strategic risks to companies. These risks types and their megatrend-related threats are visualized in Figure 5.



Figure 5. Megatrend-related risk types

2.3.3 Risk perception

Although megatrend-related changes may present potential threats to companies, scholars suggest that individuals perceive uncertainty and risks differently. In fact, considerable amount of studies examine how people perceive risk, how they manage it and in some instances *risk perception* does not correlate with the measurable probabilities of risks (Botterill & Mazur 2004). Risk perception can mandate how risks are perceived based on individual’s memories, personal experiences and cultural context (Garvin 2001). This socially constructed perception is closely connected to individual’s cognitive framework, which develops based on individual’s experiences to mandate how individuals perceive the reality and how they act in their environment (Abelson 1981; Fiske & Taylor 2008). Cognitive frameworks are stored in the memories of individuals to represent reality, aid to anticipate others’ behavior and to cope with the environment (Fiske & Taylor 2008).

Top management such as managers, decision makers and other powerful actors in the organization can contribute significantly to the creation of *cognitive frameworks* at firm level as suggested by Hambrick and

Mason (1982). More precisely, these frameworks are formed in interaction with its members, top management in particular forms and makes sense of information from the firm as a whole, and organizational outcomes can represent the reflections of top managers' perceptions on their environment (Hambrick & Mason 1984). In fact, managers and decision makers have been important subjects in many analyses of adaptation as they are in charge of formulation, direction, coordination and managing the organization's response to rapidly changing business environment (Kiesler et al. 1982). However, it is suggested that managers view risks less precisely and differently from risk as it is stated in decision theory and three differences are apparent (March et al. 1987; Mitchell 1995). First, a positive outcome of uncertainty is not seen as an important aspect of risk by the majority of managers and risk is seen related only to negative outcomes (MacGrimmon et al. 1986 cited in Mitchell 1995). Second, some managers view that risk is not predominantly a probability concept and uncertainty is rather factor in risk whereas magnitude or possible negative outcomes are more crucial than probability (Shapira 1986 cited in Mitchell 1995). Third, managers do not show significant interest to reduce risk to a single quantifiable construct to study risk as one number, although quantities are commonly applied when discussing risk and managers pursue precision when estimating risks (March et al. 1987).

Top management has a tendency to modify existing firm-level cognitive framework in case it is perceived that the environment and existing assumptions differ (Daft & Weick 1984). Consequently, top management searches for information and allocates resources to gain competitive advantage to their competitors and simultaneously receive feedback from business networks of their performance and represent how appropriate the assumptions were (Hambrick & Mason 1984; Nadkarni & Barr 2008). Moreover, when companies are in interaction with their competitive environment, they tend to adopt the behavior and beliefs of companies, which are regarded as successful initiating new industry level framework evolution and these collective actions can promote industry evolution (Bogner & Barr 2000; Kiss & Barr 2015). In fact, the collective actions may be representations of companies' top managements' cognitive frameworks, which include their perception of the future of the industry (Nadkarni & Naryan 2007).

Although cognitive frameworks may provide information about the reality and information to anticipate others' behavior, companies may be locked in already existing patterns and discard new information from the business environment as cognitive frameworks are path dependence (Fiske & Taylor 2008; Martignoni et al. 2016). Therefore, companies may be incapable or slow to act in changing business environment and even become blind to alternatives to adjust their behavior to respond to competitor's actions and changing environment (Martignoni et al. 2016).

On the firm level in small companies owners are usually dominant or single decision makers in their organizations and as top managers' perceptions construct the cognitive frameworks, the perception of small company owners may give valuable information of the industry evolution (Acar & Göç 2011; Hambrick & Mason1984). Consequently, as shared cognitive patterns contribute to industry evolution (Bogner & Barr 2000), small company owners partake in this process with their own personal traits. Moreover, understanding these decisions may offer insights to predict organizational outcomes (Hambrick & Mason 1984).

3. RISK MANAGEMENT AND NETWORKS

Risks are suggested to have increased in all business areas of firm's activities and management due to the growing complexity and dynamism of the organizational context in which firms operate in, contributing to increased importance of risk management (RM) (Verbano & Venturini 2011). However, some scholars view that managers have always faced uncertainty, which is a common feature in every organization, thus the increased emphasis on risk management can be a defensive reaction to more challenging operational business environment (Crovini 2017). To respond to changing environment and potential risks of large magnitude, deploying a systematic approach to manage strategic risks can be a potential tool (Slywotsky et al. 2005).

First reasons to adopt RM was to search the best offer for insurance to reduce costs and at that time, only pure risks, such as fire, were identified and assessed considering their economic-financial impact of losses while other types of risk such as strategic or financial risks were usually neglected (Verbano & Venturini 2011). Currently, RM is applied to other risks as well and Hubbard (2009, 10) defines risk management as follows: "The identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events." In fact, risk management practices may potentially enable risk prevention (Hiebl et al. 2013; Thun et al. 2011). Usually top management is responsible for RM and risks depend both on the internal factors such as internally made decisions by management as well as on external factors which can contribute change in the micro and macro environment in the operational context of a firm (Verbano & Venturini 2011).

It is possible to define nine different development paths of risk management that differ in definitions of RM, approaches to risks considered, methodologies, techniques and fields of application (Verbano & Venturini 2011). However, all methods aim to minimize risks in relation to resource constrains and opportunities to manage risks (Hubbard 2009). One of these development paths is strategic management (SRM) which is the implementation of a continuous and integrated process to identify and assess strategic risks that can be considered as potential threats to reach financial and operational goals of a firm. (Chatterjee et al. 2003; Miller 1992).

Slywotsky et al. (2005, p.84) define seven categories of strategic or business risks with subcategories as follows:

1. Industry: shift in the competition/collaboration, margin squeeze, rising R&D/capital expenditure costs, overcapacity, commoditization, deregulation, increased power among suppliers, extreme business-cycle volatility.
2. Technology: shift in technology, patent expiration, process becomes obsolete

3. Brand: erosion, collapse, redefinition of the scope of brand investment, relocating brand investment
4. Competitor: emerging global rivals, gradual market-share gainer, one-of-a-kind competitor
5. Customer: Customer priority shift, increasing customer power, over-reliance on a few customers
6. Project: R&D failure , IT failure, business development failure, merger or acquisition failure
7. Stagnation: flat or declining volume, volume up, price down, weak pipeline

Every firm usually has a specific set of different strategic risks that are closely related to the organizational characteristics as suggested by Slywotsky et al. (2005). Therefore, the RM function should be regarded as the core competence for strategic growth of the firm as risks are associated with every business and every management of a company in varying degrees (Verbano & Venturini 2011; Verbano & Venturini 2013). Furthermore, risks should be regarded as a core elements in discussions of corporate financing and strategy as well as risk management integrating RM as an essential part of everyday business (Kim & Vonotras 2014).

3.1 SME risk management

Although the literature of risk management in SMEs is fragmented and at an early phase of development, several studies emphasize the lack of risk management in particular among SMEs (Verbano & Venturini 2013; Marcelino-Sábada et al. 2014; Hiebl et al. 2013). This can be for several reason, such as the fear of additional costs of risk management implementation, the unfamiliarity of risk management and unawareness of risk management benefits (Hiebl et al. 2013; Thun et al. 2011). However, risk management practices vary remarkably among SMEs and they may be very informal resulting to limit the capability to share those practices and building risk management capacity (Falkner & Hiebl 2015). In contrast, some SMEs follow a more active risk management approach and one-third of studied companies in Burstbauer's (2014) research follows active risk management practices.

Differences in SME risk management practices can be for several reasons and certain *preconditions* may influence on the implementation of risk management (Brustbauer 2014; Kelliher & Reinl 2009). Firm size is suggested to be a significant precondition affecting risk management and when the company size increases, the scope of risky events is likely to differ in extent, timing and nature, which can result in adaptation of a comprehensive risk management strategy (Gordon et al. 2009). As larger firms profit from greater economies of scale and resources when implementing RM practices, they are also more likely to implement RM practices than smaller firms are (Beasley et al. 2005). Furthermore, SMEs tend to have scarcity of resources and structural features, which can hinder risk management such as lack of time, financial and human resources, limited risk management skills, inadequate management knowledge and training, poten-

tially contributing to hinder successful risk management (Wong 2005; Alquier & Tignol 2006). Furthermore, financial constraints may limit the adaptation of formal RM approaches such as econometric models, reporting standards, management accounting techniques and control systems designed for large organizations, as they are too costly and complicated for SMEs (Gao et al. 2011). In summary, due to limited resources and structural features, SMEs may follow more passive and/or informal risk management practices (Falkner & Hiebl 2015). However, in some cases SMEs can focus on less risky strategies to avoid potential negative outcomes due to their resource constraints (Gilmore et al 2004).

Other suggested preconditions for risk management include *operating sector* and *ownership structure*. Operating sector can effect on the implementation of RM as regulated industries such as financial industry and highly competitive sectors seeking profit may have more comprehensive risk management practices (Beasley et al. 2005). Third precondition for RM implementation is ownership structure as RM implementation cannot be successful without the support of the firm owners and their awareness of its value and importance (Beasley et al. 2005). Consequently, in firms where an owner-manager is dominant or where there is no professional manager, RM implementation can be lower than in other firms and in particular, family-owned firms tend to have less active risk management practices. (Brustbauer 2014).

3.2 Risk management process

In theoretical literature risk management is defined as an iterative *stage-gate process* to systematically identify, analyze and respond to risks (Henschel, 2009; Hubbard 2009; Aloini et al. 2007; Waters 2007). Besides these core steps, a preparatory step for risk management includes defining the RM plan to ensure its consistency with strategic business objectives (Waters 2007; Verbano & Venturini 2013). First stage of risk management is risk identification in which potential threats and risks to the company are identified (Waters 2007). In fact, several authors consider the risk identification phase the most crucial as poorly implemented risk identification may impact the next phase of risk analysis' accuracy in case not all important risks are identified (Morano et al. 2006). In the second stage risk analysis is conducted by analyzing and evaluating to determine the probability and possible consequences to identified risks (Waters 2007). In many cases, the risk analysis focuses either on financial factors or organizational, technological and market factors (Keizer et al. 2002). Before managing risks in the third phase, a threshold of acceptability is defined based on the risk appetite and available resources for risk management (Verbano & Venturini 2013). In risk management phase, most urgent and unacceptable risks are managed with chosen techniques (Waters 2007). After the core phases, the last phase of the RM process is to monitor whether taken actions are suitable, report as well as review and as the process is iterative, the process returns to identify new potential threats (Waters 2007). The risk management process is illustrated in Figure 6.

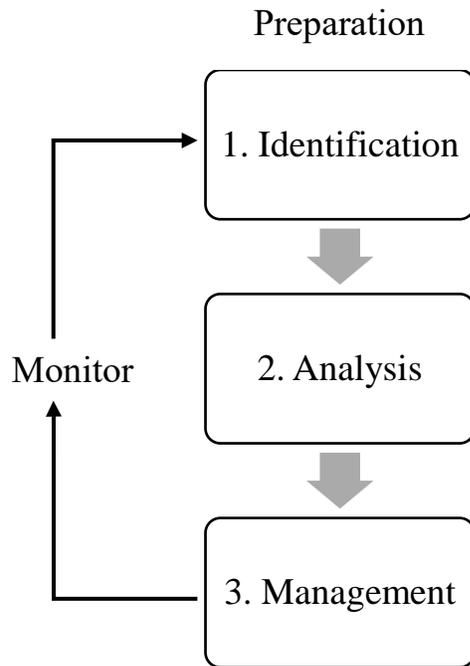


Figure 6. Risk management process (adapted from Waters 2007)

3.2.1 Identification

The first core step of risk management is risk identification (Waters 2007). There are several methods for SME managers to identify risks and Hollman and Mohammad-Zadeh 1984 (cited in Falkner & Hiebl 2015) suggest three different methods: systematic review of all data on business activities, assets and staff, flowcharts to analyze all operations or activities of the company and financial statements to identify the potential sources of financial losses.

Risk perception can limit risk identification. More precisely, risk perception is suggested to be a personalized, continuous process concentrating on only closely perceivable threats and consisting of subjective evaluations mainly conducted by the owner of the company in SMEs (Herbane 2010). Moreover, there are a few academic contributions on how risk perception influences the risk identification process: how owner-managers/entrepreneurs perceive risk and how they perceive the implications of business-related risks (Gilmore et al. 2004). Therefore, different risk identification tools might aid the owner to identify risks more systematically and from a larger perspective. Frequently used risk identification tools include SWOT analysis (Strengths, Weaknesses, Opportunities and Threats), brainstorming, interviews and risk questionnaires (Spedding & Rose 2008; Gorzén- Mitka 2013; Dinu 2012). In fact, brainstorming is suggested to be one of the most popular risk identification tools (Morano et al. 2006). These methods can be further divided into collection and search methods. Collection methods such as SWOT and interviews offer information on risks that have already occurred contributing to retrospective risk identification where as search methods such as brainstorming and questionnaires suit identifying potential threats in the future, providing a prospective risk identification method (Baumann et al. 2016).

Resources found outside the company can also contribute to risk identification such as external consultants (Spedding & Rose 2008). Besides external consultants, there are a few academic contributions on what other risk identification tools external resources could provide and it is unclear how external advice influences risk identification practices (Falkner & Hiebl 2015). Indeed, due to the lack of empirical studies on the risk identification process in SMEs, it is unclear who contributes to risk identification in SME's, whether it is the owners and managers or is advice sought outside the companies from external consultants or other sources (Falkner & Hiebl 2015; Spedding & Rose 2008).

3.2.2 Analysis

As many SMEs face resource scarcity, risk analysis is an important tool for evaluating which risks the scarce resources should be allocated. Risk analysis should be a daily activity among SMEs although it may be an implicit and tacit process rather than a formalized plan of risk analysis (Herbane 2010). Like risk identification, the evaluation of risks is connected with risk perception and comprising of the owner's experiences (Herbane 2010). In fact, previous experiences can aid owner-managers analyze risky situations with greater knowledge based on experiential knowledge and make more informed decisions (Gilmore et al. 2004).

There are several tools for analyzing risks: informal or formal and quantitative or qualitative (Zsidisin et al. 2004). However, as risk management process tends to be a more informal process, simpler tools are analyzed which may be more suitable for SMEs. A commonly used approach is a matrix to analyze a risk based on likelihood, which analyzes the probability for the risk to occur and impact indicating the analyzed impacts of the risk in case it occurs (Spedding & Rose 2008). The rating scales of these two variables vary and a more simplified process of risk analysis suggests measuring the likelihood as highly unlikely, unlikely or highly likely and impact as negligible, significant, major or catastrophic (Marcelino-Sádaba et al. 2014).

Risks can be also analyzed as part of business planning by linking risk management to business planning as suggested by Henschel (2006). Constraints on personnel and financial resources may not allow establishing a separate risk management procedure and an alternative way to analyze risks is by setting a threshold and suitable measures, which are applied in case the threshold exceeds. Thus, by linking these two activities, a more systematic risk analysis can be conducted without mathematical or statistical procedures in business planning setting, which is familiar to owner-managers.

External resources can also contribute to risk analysis. In some cases, SME owners may acquire information through informal networks for risk framing (Herbane 2010). Moreover, in some cases insurance companies can aid companies to analyze risks by providing tools for downside risk analysis and generally aid companies to analyze their risks more systematically (Gao et al. 2013). Overall, the literature is scarce on who

contributes to risk analysis in SMEs: is it the owners and managers in SMEs or is advice to risk analysis also sought outside the companies (Falkner & Hiebl 2015). In case advice is sought outside the company, external influence may have an influence on risk management practices (Falkner & Hiebl 2015).

3.2.3 Management

Once the risks have been analyzed, suitable methods are chosen to manage risks. In fact, it is suggested that all risks should be analyzed but the focus of risk management should be on most important risks allowing SMEs focus their limited resources thoughtfully (Falkner & Hiebl 2015).

Means to manage a risk can include quickly recognizing market shifts, responding rapidly to customer feedback and competitor moves, staying ahead of competitors by introducing new products or services, which may contribute to risk mitigation as new opportunities are sensed and seized (Kim & Vonotras 2014). Other risk management methods are accepting a risk, adapting to it, reducing the probability and or consequences, opposing a chance or moving it to another environment (Waters 2007). Internal resources for risk management are used in SMEs across all types of sectors to manage technology, financial and operational risk (Kim & Vonotras 2014).

When applying internal resources for risk management, owner-managers tend to use their core competencies to manage risks, which build upon over time and create competency of *experiential knowledge* consisting of previous experience, existing knowledge, communication, judgment, and experiential learning in the SME business environment (Carson et al. 2000). In fact, experiential knowledge might aid the entrepreneur in all aspects of decision-making and provide aid to handle situations more satisfactorily by viewing and analyzing potentially risky situations with greater knowledge and make more informed decisions (Gilmore et al. 2004).

External resources may also provide aid to risk management. Through various types of formal agreements, firms can obtain valuable information and necessary resources, which can have a significant impact on the prosperity of the firm depending on the networking strategy and cooperative agreements (Kim & Vonotras 2014). Formal agreements with insurance companies can be a potential risk management tool and in some businesses insurance is a primary tool risk management, although small firms are aware that sometimes insurance may be associated with considerable costs and although insurance basically covers unexpected events (Cioccio & Michael 2007). Furthermore, insurances can provide other services for small companies, such as compliance assistance with statutory requirements and management services (Hollman 1984 et al. cited in Falkner & Hiebl 2015). Thus, in cases in which the SMEs have taken an insurance and the risk does not materialize, taking an insurance may be beneficial, as it obliges SMEs to examine their risks systematically (Falkner & Hiebl 2015).

Close relations with suppliers can be a potential risk management tool and some SMEs utilize contracts with suppliers to influence supplier behavior (Falkner & Hiebl 2015; Ellegaard 2008). These contracts may include a performance guarantee requiring high quality products and even some penalties may take place in case of failure (Ellegaard 2008). Moreover, working with familiar suppliers may have its advantages when partners share the same mentality and risks associated with new suppliers can be avoided (Poban-Nzaou & Raymond 2011). By focusing on collaboration with familiar local, suppliers, it can be possible to avoid risks of outsourcing such as political unrest, risks associated with cultural differences, currency, customer problems and knowledge loss (Ellegaard 2008).

Besides networks formed through formal agreements, some firm owners maintain a network of contacts and utilize networks, which may be beneficial for small firms as they have potential to aid entrepreneurs managing risks in ways of ensuring business continuity by nurturing relationship with existing customers and networks can be utilized to attract new customers (Gilmore et al. 2004). Informal networks can advance effective risk management as they potentially provide an access to skills, knowledge and additional resources (Kim & Vonotras 2014). Furthermore, networks can be utilized to manage risks in cases where a firm is entering new area of business, market or increasing in size: owner-managers may seek advice and information from the existing network contacts to make more informed decisions (Gilmore et al. 2004). Moreover, networking with competitors may give information or advice of the creditworthiness of a potential customer aiding the owner-manager to make more informed decisions (Gilmore et al. 2004). Furthermore, networking can be a potential risk management method to cope with different risks such as technology, financial and market by utilizing formal and informal networks (Kim & Vonotras 2014) In particular, formal networks such as strategic alliances, are seen as beneficial for all kinds of risks except operational risks (Kim & Vonotras 2014). Internal and external resources for risk management for different risk types are illustrated in Figure 7.

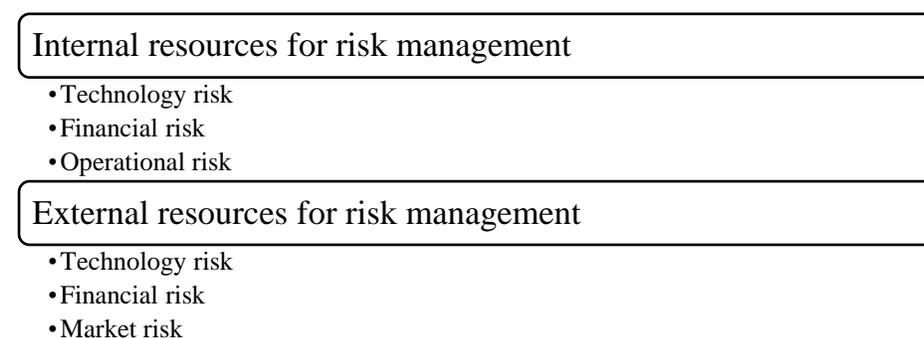


Figure 7. Internal and external resources for different risk types

3.3 Risk management and network contribution

Human and social capital are suggested to be one of the main aspects in developing, implementing effective risk management strategies, techniques and systems (Alquier & Tignol 2016; Gao et al. 2011). In particular, developing *social capital*, acquiring resources through different networks, can compensate for the scarcity of financial and human capital resources and through communication, entrepreneurs can access and use social capital through exchanging information, identifying problems and managing conflicts (Xu & Xu 2008; Packalen 2007). Communication can facilitate access to both, external and internal networks through which entrepreneur can access necessary human and financial resources (Gao et al. 2011).

Although social capital may offer an important competitive advantage for a firm helping to create additional synergies and assets, social capital contributes to other multiple definitions, uses and interpretations such as disciplines in economics and organizational behavior and accounting, referring to the connections between individuals and social networks (Gao et al. 2011). By utilizing social capital, business-learning networks have expanded from organizational cooperation to provide an access economies of scale, to economies of network that expose organizations to collective knowledge and social actions. (Adler and Kwon, 2002; Burt, 2005).

An increasing competitive environment has increased the importance of network participation in which collaborative networks appear in a variety of different forms, shifting from supply chains to more stable networks, which require less coordination and information exchange due to clearly defined roles (Camarinha-Matos et al. 2009). In fact, the definition of supply chains has been evolving from the 1980's describing the flow of materials to assistance among members, to taking a supply chain centric approach rather than an organization centric approach (Braziotis et al. 2013). Differences between collaboration and cooperation can be defined in terms of value (Camarinha-Matos et al. 2006).

It is suggested that there are four different network types: 1) Networking 2) Coordination 3) Cooperation 4) Collaboration. Networking consists of communication and information exchange to share information for mutual benefit (Himmelman 2001). Although in networking both participants benefit from networks, participants may not share common goals and therefore no value is generated (Camarinha-Matos et al. 2006). In coordination besides information exchange, activities are aligned to achieve better results and create mutual value (Himmelman 2001). Value is created on an individual level and participants may have different goals (Camarinha-Matos et al. 2006). Cooperation involves information exchange, adjustments of activities as well as sharing resources to achieve compatible goals to create aggregated value to individuals (Himmelman 2001; Camarinha-Matos et al. 2006). In collaboration, information is used to create something new by exchanging information, altering activities, sharing resources as well as attempting to enhance the capacity of another actor for mutual benefit and purpose (Denise 1999; Himmelman 2001). Furthermore,

in collaboration consists of sharing resources, risks and rewards (Himmelman 2001). Different network types and their integration level are listed in Table 2.

Table 2. Integration level of network types (adapted from Camarinha-Matos et al. 2006)

Integration level				Joint goals Joint identities Working together (Creating together)
			Compatible goals Individual Identities working apart (with some coordination)	Compatible goals Individual Identities working apart
		Complementary goals (aligning ac- tivities for mutual benefit)	Complementary goals Aligning activities	Complementary goals Aligning activities
	Communication & Information ex- change	Communication & Information ex- change	Communication & Information ex- change	Communication & Information ex- change
	Network	Coordinated Net- work	Cooperative Net- work	Collaborative Network
	Coalition's type			

Depending on the integration level of a network, scholars suggest that networks can provide three functions, which can improve success of a firm: 1) information and resource access 2) access to customers and suppliers and 3) access to advice and emotional support. First, social contacts and relations are important channels for obtaining access to information and information obtained from network ties is often seen more reliable, useful, exclusive and less redundant than information received from formal sources (Powell 1994 cited in Brüderl & Preisendörfer 1998). In particular, information obtained from weak ties is seen more valuable as the information often originates from distant parts of the social system and traverse a greater social distance when compared to strong ties (Granovetter 1983). Furthermore, it is suggested that besides gaining valuable information for risk management, firms can obtain complementary resources and assets from networks (Kim & Vonotras 2014). In some cases, strategic networks can also provide an access to technologies, markets, innovation and performance offering advantages such as learning, scale and scope of economies and risk sharing (Gulati et al. 2000). Second, network contacts provides access to suppliers and customers and by spreading information of business through diverse networks, new customers may be reached and network contacts have potential to broaden the financial basis of a new firm by offering informal credits (Powell 1994 cited in Brüderl & Preisendörfer 1998). Third, individuals may rely on networks to provide business information, problem solving and advice as networks provide an access to advice and even emotional support for risk-taking among entrepreneurs (Hoang & Antoncic 2003).

In summary, networks can offer an access to variety to information, resources, technologies and markets contributing to more effective risk management and risk sharing (Gulati et al. 2000). However, it is suggested that the primary goal of networking is knowledge transfer (Zekan et al. 2011).

3.3.1 Informal and formal networks

The term inter-organizational network can be used for strategic alliances, partnerships, inter-organizational relationships or collaborative agreements to describe social interactions, cooperation, collaboration and relationships (Provan et al. 2007). In contrast, networks can be defined through their structure: networks consist of actors connected by ties in which the actors or nodes can be individuals, units or firms connected by ties, which can be governed or ungoverned (Borgatti & Foster 2003). These ties can be strong, weak or absent: Strong ties connect close friends and weak ties connect acquaintances (Granovetter 1983). Moreover, network theories can be viewed from two different perspectives: the actor level and the network level. The actor level focuses on an individual or organizational actor and focuses on the actor-level involvement in networks to examine what implications network participation has in its operation and outcomes. In contrast, the network level examines the characteristics of a network as a whole and its outcomes (Provan et al. 2007).

Network members can be linked through different types of connections such as contracts securing a more formal network and through these connections materials, services, information, financial resources and social support flows (Provan et al. 2007). Among formal networks, strategic alliances are based on formal agreements and voluntary cooperation between organizations in which resources can be combined to cope with uncertainty created by external forces, which cannot be controlled (Gulati & Gargiulo 1999). Besides combining resources, these voluntary agreements may entail sharing, exchanging or co-developing services, products or technologies and they may reduce the exposure to uncertain and risky environment by offering capabilities to manage uncertain environment (Gulati 1998; Starkey et al. 2000; Gulati & Gargiulo 1999). Besides strategic alliances, joint ventures are suggested to be another type of formal network, which is defined as the creation of a new entity based on shared equity between partners (Gulati 1998). Moreover, trade associations are suggested to be an important source of information (Kingsley & Malecki 2004).

Formal networks can be an effective way for organizations to manage risks. Collaboration with other organizations can include formal agreements such as subcontracting, strategic alliances, R&D agreements, technical collaboration agreements, licensing agreements and marketing promotion (Kim & Vonotras 2014). Through these ties, companies can obtain complementary resources, assets and valuable information for more effective risk management (Kim & Vonotras 2014).

Relationships can be primarily based on informal interpersonal relationships across network members facilitating information exchange, although legally binding contracts can exist within a network (Gulati 1995). These connections can be trust-based forming a more informal network (Provan et al. 2007). While formal networks can be visualized by structures such as organizational charts and other well-defined structures by management, informal networks visualize how tasks are accomplished in practice describing the social ties between individuals communicating on issues, which are not directly governed by management (Krackhardt & Hanson 1993; Burns & Stalker 1961). Besides describing the social ties of individuals within a firm, informal networks extend across organizational boundaries including working relationships, collaborations and knowledge exchange between individuals, which are not described in organizational structures (Cross & Parker 2004).

Information exchanged between formal and informal networks is not necessarily the same knowledge and in fact, some scholars suggest that there is a clear difference between the knowledge shared in formal and informal networks (Zekan et al. 2011). Information shared in informal networks is more tacit and holistic, whereas the information shared in formal networks is more formal concerning issues such as the quantity and data of a product (Uzzi et al. 1997). In fact, embedded relationships can create economic opportunities, which are less likely to occur through contracts (Uzzi 1997).

Network ties can have several consequences: Knowledge transfer which increases the attitude similarity, imitation and generation of innovations as well as mediating transactions among organizations and providing access to resources and power (Brass et al. 2004). As informal and formal networks provide access to different types of knowledge, the appreciation of both formal and informal networks has increased significantly in business world (Powell & Grodal 2005). Due to information access of a firm, networks ties may influence positively on outcomes such as firm survival and in particular, embedded ties with which an individual has close and high proportion of interaction, has greater potential to contribute to firm survival (Uzzi 1997).

Currently, there is little agreement on which network ties are most useful for a company. Brüderl & Preisendörfer (1998) remark that strong and weak network ties result in higher performance in terms of increasing sales growth for new businesses and although both network ties contribute improvement of survival and growth, strong ties are suggested to be more supportive than weak ties. In contrast, Uzzi (1997) highlights that firms benefit more from the trust-embedded ties and the broader information collection provided by arm's length ties. In both, the manager's level of experience and trust in potential contacts can constrain network ties (Brüderl & Preisendörfer 1998).

Although scholars do not agree on which ties are most useful for a company, a certain balance between strong and weak ties is seen as most efficient. In fact, organizations are suggested to extend networks ties in the direction of valuable resources and information (Brüderl & Preisendörfer 1998). Weak and strong ties can offer access to different information: Information through weak ties is different as individuals connected by weak ties move in different circle offering different information, which the individual in the other circle receives (Granovetter 1973). Moreover, indirect contacts reached through weak ties offer an access to ideas, information and influences and thus, the fewer indirect contacts a firm has, the more limited the amount of received knowledge can be and can lead to encapsulation of the firm (Granovetter 1973).

4. RISK MANAGEMENT IN NETWORKS

After examining relevant issues about megatrend perception, risk management and its specialties among SMEs and network contribution, this study moves to integrate these three research streams together.

Risk management is suggested to be an iterative stage-gate process to identify, analyze and manage risks (Henschel, 2009; Urciuoli & Crenca, 1989; Aloini et al. 2007). The increasing complexity and dynamism of business context in which organizations operate in, has increased risks in all areas of organization's activities and as a response, risk management has gained importance (Verbano & Venturini 2011). In fact, some scholars regard the increased importance of risk management as a defensive reaction to respond the increasingly demanding business environment (Crovini 2017).

Risk identification is the first stage of risk management, which is suggested to be subjective evaluations mainly conducted by the owner of the company, which are concentrated only on closely perceivable threats (Waters 2007; Herbane 2010). Literature suggests that managers view risks less precisely: risk is seen to relate to negative outcomes, negative outcomes are more crucial than probability and there is no significant interest to reduce risk to a single quantifiable construct (March et al. 1987; Mitchell 1995; MacGrimmon et al. 1987 cited in Mitchell 1995; Shapira 1986 cited in Mitchell 1995). This can be related to risk perception representing the memories, personal experiences of an individual (Garvin 2001). In fact, literature suggests, that an essential part of risk identification is risk perception, which mandates how risks are perceived. Risk perception is based on individual's memories, personal experiences and cultural context (Garvin 2001). Furthermore, socially constructed perception is connected to individual's cognitive framework mandating how reality is perceived and contributing to aid in anticipating others' behavior and cope in the environment (Abelson 1981; Fiske & Taylor 2008). Cognitive frameworks are stored in the memories of individuals to represent reality, aid to anticipate other's behavior and to cope with the environment (Fiske & Taylor 2008). In organizational level, top management such as managers and decision makers usually forms these frameworks (Hambrick & Mason 1984). Consequently, in small companies these frameworks are mainly formed by the entrepreneurs as they are usually dominant or single decision makers (Acar & Göç 2011).

Top management has a tendency to modify existing frameworks to gain competitive advantage by being in contact with business networks (Daft & Weick 1984; Hambrick & Mason 1984). Consequently, being in interaction with competitors, firms can adopt behavior and beliefs of companies that are regarded successful (Bogner & Barr 2000; Kiss & Barr 2015). Thus, perception of changes can give clues on what type of competitors are regarded successful by individuals.

As risk perception is suggested to be an essential part of risk identification, the risk perception process can have an impact on which potential threats are considered as risks. Thus, when the risk identification process begins of a megatrend having a local impact, it is possible for an individual to whether recognize these local impacts and consider it as an impact of a certain megatrend or not. In case this local implication is recognized, individual's risk perception can have an impact on how it is perceived based on individual's memories, personal experiences and cultural contest (Garvin 2001). In case the previous memories and experiences of a similar implication have been negative, it can be that also this impact is perceived negative and identified as a risk. The risk identification decision three is visualized in Figure 8.

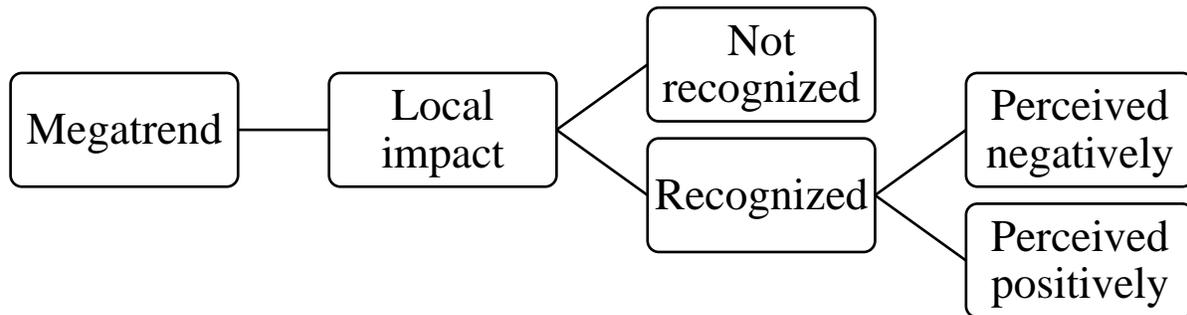


Figure 8. Megatrend perception decision tree

For identifying risks an individual can use own skills, tools or external resources. It is suggested that owner-managers use their experiential knowledge identify risks, what is built on previous experience, existing knowledge, judgment and communication, which can further reflect the subjective role of owner-manager (Carson et al. 2000). Although, frameworks provide information of the reality and information to anticipate other's behavior, it may cause path dependency locking the firm into existing patterns and discarding new information from the business environment (Martignoni et al. 2016). Therefore, tools can be beneficial to identify risks more systematically and objectively such as brainstorming, SWOT analysis, interviews and risk questionnaires (Spedding & Rose 2008; Morano et al. 2006; Gorzén-Mitka 2013; Dinu 2012). Collection methods provide retrospective information on what has already occurred such as SWOT and interviews representing retrospective risk identification whereas search methods such as brainstorming and questionnaires aim to identify potential future threats contributing to proactive risk identification (Baumann et al. 2016) Moreover, advice can be sought outside the company, such as external consultants (Spedding & Rose 2008). Collectively, these studies outline a critical role of experiential knowledge in risk identification, which can be supplemented by using different tools. In contrast, little is known about external resources in risk identification and although literature suggests that advice can be sought outside the company, it is not exactly known which stakeholders take part in this process.

Similarly to risk identification, risk analysis is connected to risk perception and reflect the owner's previous experiences by providing greater knowledge to analyze risky situations and make more informed decisions (Herbane 2010; Gilmore et al. 2004). Besides experiential knowledge, tools can be used to analyze risks more systematically (Zsidisin et al. 2004). A matrix offers a means to analyze risks in terms of probability and impacts by rating the two variables (Spedding & Rose 2008; Marcelino-Sábada et al. 2014). Another tool to analyze risks is to link the risk management process to business planning and analyze risks in a qualitative way (Henschel 2006). Although several risk analysis tools exist, there has been little empirical studies on what tools SMEs prefer to use. Besides internal resources, networks can offer advice and resources for risk analysis. In particular, informal networks can provide information on risk framing whereas formal networks such as insurance companies can provide means for downside risk analysis (Herbane 2010; Gao et al. 2013). Similarly to internal resource contribution to risk analysis, there has been little discussion of how external resources contribute to risk analysis.

In risk management, risks are managed with chosen techniques and these techniques can include quickly recognizing market shifts, rapidly responding to customer feedback and competitor actions as well as staying ahead of competitors by launching new products or services (Waters 2007; Kim & Vonotras 2014). When sensing and seizing new opportunities, experiential knowledge aids the owner to in all aspects of the decision-making process when choosing which actions and strategies to implement (Kim & Vonotras 2014; Carson et al. 2000; Gilmore et al. 2004).

External resources can contribute to risk management by providing information and necessary resources, which can be obtained through formal agreements, and consequently, formal networks (Kim & Vonotras 2014). In particular, insurances can be an important tool for SMEs to manage risks although it covers mainly unexpected events and include considerable costs (Cioccio & Michael 2007). Besides covering unexpected events, insurance companies can offer compliance assistance and management services (Hollman 1984 et al. cited in Falkner & Hiebl 2015). Thus, taking an insurance obliges SMEs to assess and examine their risks more systematically (Falkner & Hiebl 2015). Another risk management method is maintaining close relations to suppliers through which performance and delivery of high-quality products can be guaranteed (Falkner & Hiebl 2015; Ellegaard 2008). Moreover, by collaborating with same and familiar suppliers, it is more likely to avoid risks with suppliers sharing the same mentality than working with new unfamiliar suppliers (Poba-Nzaou & Raymond 2011).

Informal networks can provide assistance for risk management as well. In fact, firm owners can maintain a network of contacts and by networking, owners can ensure business continuity by having good relations with existing customers and also attract new customers (Gilmore et al. 2004). Through these same informal networks, firm owners may access skills, additional resources, knowledge and even advice which can be

beneficial for risk management and aid the owner to make more informed decisions (Kim & Vonotras 2014; Gilmore et al. 2004). In fact, in some cases social capital may compensate the lack of financial and human capital and necessary resources are obtained through networks (Xu & Xu 2008; Packalen 2007).

Together, these studies outline the risk management process of SMEs and emphasize the importance of both internal and external resources, which can be further divided into informal and formal networks. In fact, existing research suggests that different resources and knowledge is shared in formal and informal networks (Zekan et al. 2011; Uzzi et al. 1997). Moreover, these studies provide insights on the formal and informal networks, however, in some cases the actual stakeholders presenting formal or informal network member is not named and therefore, these network members are referred to in the theoretical framework as informal or formal network members.

Both formal and informal networks can contribute to different stages of risk management. Formal networks are formed through formal agreements, which include several types of collaboration such as subcontracting, strategic alliances and technical collaboration agreements (Kim & Vonotras 2014). In contrast, informal networks are not formed through formal agreements and can be trust-based (Provan et al. 2007). Both networks include different types of flows between participants, however the information shared between informal and formal networks is different: Informal networks include more tacit and holistic information sharing whereas formal networks may include information sharing based on the formal agreement between the participants such as product data (Zekan et al. 2011; Uzzi et al. 1997). In combination, the flows of complementary resources, assets, information, knowledge, access to technologies and markets can contribute to more effective risk management (Kim & Vonotras 2014; Gulati et al. 2000). However, some scholars emphasize that as risk management is connected to networks, network strategy and cooperative agreements contribute significantly to risk management and therefore, networking partners should be chosen carefully in order to gain access to required information and resources (Kim & Vonotras 2014).

Human capital and social capital are suggested to be one the main aspects to develop effective risk management and it is believed that the primary goal of networking is to transfer knowledge between networks participants (Alquier & Tignol 2016; Gao et al. 2011; Zekan et al. 2011). Therefore, networks may provide prominent risk management techniques in several stages of risk management. However, existing research suggests that formal networks contribute to risk management in several stages whereas informal networks in one stage (Kim & Vonotras 2014; Cioccio & Michael 2007; Falkner & Hiebl 2015; Gilmore et al. 2004). Due the tacit knowledge flows between informal networks, it is possible that informal networks contribute more to risk management than only to risk management phase. In particular, as SME risk management process can be in general a more of a tacit process (Herbane 2010), informal networks could provide suitable resources to risk management.

Moreover, the previous theory suggest that different types of risks are managed differently: with internal and/or external resources (Kim & Vonotras 2014). Thus, the local level impacts derived from megatrend-related changes are coped with internal resources such as experiential knowledge and risk management tools and/or with external resources such as informal and formal networks. Therefore, internal resources may be used to manage operational risks such as talent shortage deriving from the megatrends of urbanization and ageing population (Kim & Vonotras 2014). In comparison, market risks such as increasing competition arising from sharing economy, globalization and power shift megatrends, are less amenable for internal resources and to manage these risks, in particular formal networks are suggested to be suitable as suggested by Kim & Vonotras (2014). Furthermore, financial risks such as resource price volatility arising from the megatrend resource scarcity, is amenable for both external resources: informal and formal networks (Kim & Vonotras 2014).

Based on previous literature, I have formed a theoretical framework, which synthesizes the scientific and practitioner literature reviewed on megatrends, SME risk management and parallel to the risk management process, the contribution of networks is visualized in each stage of risk management. The framework proposes that both internal and external resources are utilized in the risk management process. Moreover, the model includes the different levels of which megatrend-related changes have impacts: global and local business environment. The risk management process is illustrated in Figure 9.

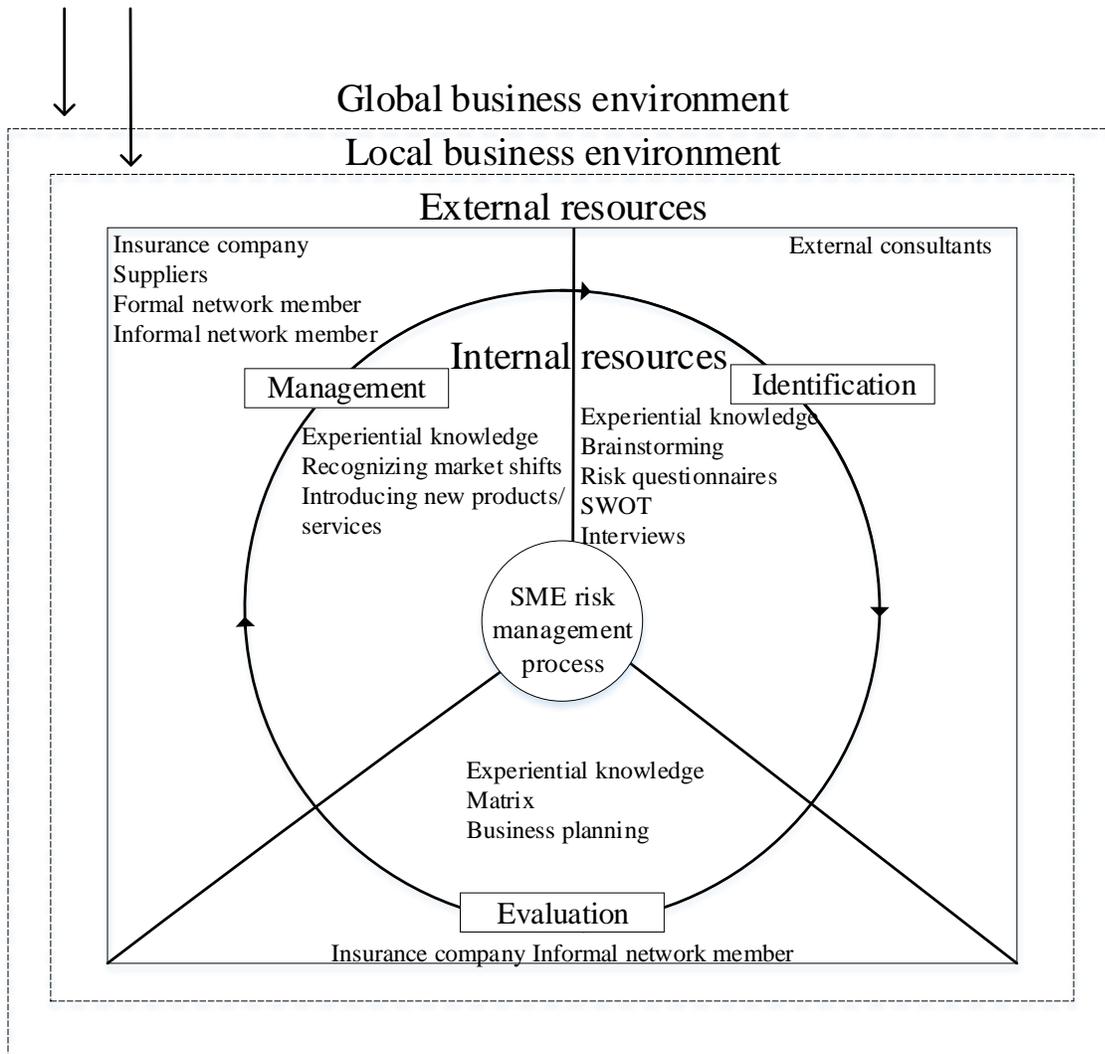


Figure 9. Risk management process

5 EMPIRICAL RESEARCH METHODOLOGY

In this section, the empirical research methodology is presented to describe in detail empirical data collection, case selection and data analysis. First, the data collection process is explained followed by description of the data analysis process. Second, the reliability and validity of the study are explained to examine the quality of the study. Lastly, brief case descriptions of the case companies are provided.

5.1 Data collection

The methodological choice of this study is multi method qualitative. The primary data for the empirical part of the research was collected by means of semi-constructed interviews and also workshops were used as a method to gather data on stakeholder networks by employing stakeholder analysis tool. Interviews provide a means to gather reliable, valid and detailed data to the research topic and an opportunity for interviewees to reflect their thoughts without needing to write something down (Saunders et al. 2009). Semi-structured interview method was employed to gain rich insights of the discussed topics. Semi-structured interview is a non-standardized method in which the researcher has particular themes and questions to be discussed with the interviewee and depending on the interview, themes and questions can vary, some questions might be added or left out (Saunders et al. 2009). The topics of the interview were designed to cover the on-going changes in the companies, the risk management process and network participation in the process. Interview guides are presented in Appendices 1 and 2, in Finnish and English.

Workshops were seen as a useful method to collect data as they are described to be arrangements where a group of individuals learn, acquire new knowledge, innovate or perform problem-solving (Ørngreen & Levinson 2017). During a workshop, stakeholder analyses were conducted and the identification of different stakeholders of the case companies begun by employing a value mapping tool by Bocken et al. (2013) in order to identify and establish an understanding about different stakeholders and their proximity for the case companies. Next, the identified stakeholders were further analyzed and categorized with a stakeholder analysis tools, which was prepared according to the procedure by Eden and Ackermann (1998). Stakeholders were assorted on a two-by-two matrix on a commitment versus influence grid to establish an understanding of which stakeholders were seen as influential and which committed or both. Both tools were conducted with the same informants whether in a group of several informants simultaneously or in person with the informant of the case company with an instructor facilitating the process in Finnish. Together, these two tools offered insights on the stakeholder networks and their roles to the case companies. The utilized value mapping tool and stakeholder analysis tool are presented in Appendices 3 and 4, translated in English.

Selection of cases was based on information-oriented selection to maximize the empirical data (Flyvberg 2011). Thus, cases were selected from a variety of industries in order to maximize the data to represent how SMEs perceive megatrend-related changes, manage risks and utilize networks for it.

The interviews of overall 11 informants were based on an interview form with open-ended questions with several themes in order to promote discussion. Altogether, two or three rounds of interviews were conducted with the same informants to gather data and in each round, the topics of the themes were explored in more detail. Using several interview rounds enabled informants to become familiar with terminology of the studied themes and gave the informants an opportunity to provide more detailed and well-thought answers. Moreover, several interview rounds enabled collection of more detailed data and the informants were given the chance to supplement their previous answers. The interviews were mainly conducted with the entrepreneurs who are in charge of the daily business as they were evaluated to be suitable informants to describe the topics of the research. Moreover, they were seen as the “experts” in their business having insights on the industry. The empirical data of the last interview round was utilized for this study. Detailed respondent information is listed in Table 3.

Table 3. Respondent information

Company	Company size	Sales 2016 (€)	Industry	Position of informant	Interview length (min)
Company A	Micro (1)	30 000	Wellbeing services, dietary supplement retailing	Entrepreneur	95
Company B	Micro (2)	-	Entertainment and activity services	CEO	70
Company C	Micro (5)	650 000	Restaurant and catering services	Entrepreneur	76
Company D	Micro (7)	720 000	Machining and metal product design and development	Entrepreneur	47
Company E	Micro (9)	850 000	Bakery and cafeteria services	Entrepreneur	54
Company F	Small (10)	700 000	Bakery and cafeteria services	Entrepreneur	45
Company G	Small (40)	14 000 000	Sports equipment and small machine retailing	Business controller Marketing manager	82 113
Company H	Small (47)	4 800 000	Transport and logistics services, wood chipping processing	Director of development	73
Company I	Medium (50)	5 200 000	Sports entertainment business	CEO	34
Company J	Medium (65)	45 000 000	Vehicle sales and maintenance	Marketing manager	142

The interviews were personal face-to-face interviews conducted in Finland during fall 2017 and spring 2018, in Finnish. The length of the interviews varied between 30 minutes and 2 hours and 20 minutes, having an average length of 75 minutes, which varied depending on how many megatrend-related impacts they were able to recognize and their risk management activities and network contribution. All interviews were audio-recorded and lasted in total 13 hours and 51 minutes. The data was further transcribed resulting to a total amount of transcription of 222 pages. The informants decided the location of the interviews and majority of the interviews were held at the premises of the interviewee to guarantee a comfortable place for the interviewee to express their impressions of the phenomenon.

During the interviews, participants were asked to reflect on the impacts of aforementioned megatrends from which most significant recognized impacts were utilized to further question the risk management process to these risks and investigate the network contribution.

5.2 Data analysis

Qualitative content analysis was employed in order to summarize and get a general description of the studied themes. In particular, abductive content analysis was applied in order to use the theoretical background of the study as guidance in the latter stages of the analysis and leaving a possibility for new findings to occur which cannot be related to theoretical background (Tuomi & Sarajärvi 2018). The content analysis process was prepared according to the procedure by Tuomi and Sarajärvi (2018, p. 123) as follows:

1. Listening and transcribing the interviews
2. Reading the transcribed interviews and familiarizing with the content
3. Defining units of analysis based on collected data and theoretical framework
4. Searching for in-vivo phrases in empirical data
5. Coding in-vivo phrases into relevant nodes
6. Grouping nodes into themes
7. Combining themes and creating aggregate dimensions

The data analysis process begun by transcribing the audio-recorded interviews and in order to ensure consistency, the written data was read parallel with the audio recordings. Next, the transcribed data was uploaded to qualitative analysis software Nvivo, which enabled coding the empirical data into nodes. In order to remain as close to the original data as possible, in-vivo codes were used when possible and applicable. Coded nodes partially arose from the data and partially from the theoretical framework. Next, the nodes were grouped into 2nd order themes and further into aggregate dimensions utilizing the data structure by

Gioia et al. (2012). In this way, reporting both respondent and researcher perspectives was possible contributing to demonstrate the links between the data, induction and theoretical background presented in this study as well as visualize the analysis process from raw empirical data into themes.

5.3 Reliability & validity

Reliability demonstrates that operations such as data collection and analysis are possible to repeat and receive same results (Yin 2009). Moreover, providing a detailed description of the whole process contributes to reliability in qualitative research (Stenbacka 2001). Therefore, the procedures of this study are documented in detail and many steps are made operational as possible for repetition to strengthen the reliability of the research.

The purpose of this study is to generate understanding and validity in qualitative study can be assessed whether the study provides an access to understand the studied phenomenon (Stenbacka 2001). To gain an understanding about the phenomenon, special attention was paid to the interaction with the informants. Thus, the aim has been to give the informant an opportunity to speak freely and therefore, more informal interview settings and semi-constructed interviews were employed with chosen informants, which were part of the studied phenomenon and regarded as experts in their industries. The informants were given the opportunity to speak freely of the discussed themes and supplement their answers. Moreover, the semi-structured interview method enabled add questions in case it was seen necessary and specified questions were asked in case the provided answers were seen subject to possible misinterpretation in order to decrease the subjectivity of the researcher.

Applied case study approach limits the external validity of this research (Yin 2009). The study was conducted with a small number of companies, which limits the generalizability of the results. However, conducting a multiple-case study can strengthen the external validity in comparison to a single case study. Moreover, the study was conducted on a limited geographical area limiting the generalizability, and the results of the study cannot directly be applied to other contexts due to regional and cultural differences.

Case study approach has received criticism that the empirical data is often collected based on the subjective evaluations of the researcher (Yin 2009). In order to construct validity, the informants were asked to review and comment on the accuracy of findings. A summarizing figure, presented at the end of Chapter 7, was presented to the informants and the figures of individual risk management process of mini cases were presented to the informants representing those companies. The informants were also given a chance to supplement their answers in case misinterpretation during the initial data collection phase. Furthermore, peer debriefing was employed to test the validity of the study through the lens of external people to the study by

asking reviewers who were familiar to the study or the phenomenon to review the data and the research process (Cresswell and Miller 2000).

5.4 Case descriptions

Following sections will present descriptions of each case company describing their current approach risk management as well as network utilization. All companies are located in South-Karelia region, Finland.

Company A operates in the industry of wellbeing services and dietary supplement retailing. The company has one employee, the entrepreneur. The company was established in 2012 and provides tailored wellbeing services and products to its customers. The entrepreneur is in charge of risk management and identifies as well as analyzes potential risks constantly. Moreover, the company has extensive network, existing of several different informal and formal network members.

Company B operates in the entertainment and activity services industry. The informant is the CEO of the company and it employs altogether two employees. The company was established in 2017 and offers different entertainment and activity services for B2C and B2B customers. CEO of the company is in charge of risk management. The company does not have an extensive network limiting the amount of informal and formal actors.

Company C operates in restaurant and catering services industry offering services to B2C and B2B customers. The company employs five people and was founded in 1980's. Risk management is conducted by the entrepreneur and cautiousness is an essential part of their business operations. The company's existing network comprises mostly of formal actors.

Company D operates in machining and metal product design and development offering its services to B2B customers. The company has seven employees and was founded in 1975. The Company offers versatile services such as machining and design and aiming to offer added value to its customers by increasing the life cycle of its products. Risk management is conducted by the owner as there is no possibility to recruit another person to handle risk management. Moreover, the network of the company is challenging especially with certain stakeholders.

Company E operates in the industry of bakery and cafeteria services. The company was originally founded in 1960's and it employs nine people. The company's aim is to provide, fresh products without food additives to its B2C customers. The entrepreneur is in charge of risk management. The network of the company comprises both formal and informal actors.

Company F offers its B2B and B2C bakery and cafeteria services. The company was founded over 25 years ago and offers local and handmade products to its customers. Furthermore, the company employs 10 people.

The entrepreneur is in charge of risk management and the network of the company includes the personal network of the entrepreneur as well as other stakeholders related to business activities of the company.

Company G is in the industry of sports equipment and small machine retailing. The company is a family business established in 1970 employing 40 people. The company offers a versatile selection of products and customer service professionals for its B2C and B2B customers. Several employees take part in the risk management process and several risks are anticipated. Moreover, risks are not focused on single person in the company but the responsibility is shared among the staff responsible of different departments. The network of the company is large consisting of long-term suppliers, which is mainly due to the long history of the company.

Company H operates in the transport and logistics services industry as well as wood chipping processing. It is a family business and was originally founded nearly 50 years ago. The company employs 47 people and has long traditions and is an innovative, trustworthy and punctual partner for its B2B customers. Besides the CEO, also other managerial level employees take part in risk management. Due to the investment-intensive nature of business, risks are carefully analyzed before investments are made. The company has good and long relations with its important customer and is regarded as a trustworthy operator.

Company I is in sports entertainment business and employs 50 people. It was founded in 2000 and offers sports entertainment for both B2C and B2B customers. Risk management is conducted by the CEO as well as other managerial level employees. The company has a wide network consisting of several different operator and business partners.

Company J operates in the industry of vehicle sales and maintenance employing 65 people. The company has been in operation for over 50 years providing its B2C and B2B customers versatile services related to vehicles and their maintenance. The key personnel found within the company conduct risk management. The network of the company consists of formal stakeholders and the personal network of the informant.

6. ANALYSES AND RESULTS

In this chapter the empirical findings are presented and explained in detail. First, the megatrend-related changes in organizational context are explored: how these changes are recognized and perceived. An overview of the results is presented to indicate differences and similarities across cases. Second, the risk management processes to the risks arising of megatrend-related changes of the companies are explained and studied what risk management activities companies utilize and how different stakeholders contribute to the process. Furthermore, three mini cases are presented in each phase and through within case analyses, cases are explored as stand-alone entities utilizing the theoretical framework presented in Chapter 4.

6.1 Megatrend implications

In order to analyze companies' risk management practices to megatrend-related impacts, the impacts of megatrends need to be examined in organizational context and how these changes are recognized and perceived. Recognized local impacts and risks are listed in Table 4, which offers insights on how these impacts are recognized and perceived by informants.

Table 4. Recognized megatrend-related risks

Global business environment	Local business environment	
Sharing economy	Decreased sales	Company G: Decreased customer willingness to own a product
Urbanization	Recruitment challenges changing clientele Decreased sales potential	Company B: Difficulties to attract customers outside large cities
		Company H: Challenging to recruit staff outside large cities, clientele more challenging
		Company D: Challenges to attract staff
		Company J: Decreased sales potential
		Company F: Loss of skillful staff
Aging population	Recruitment challenges Loss of clientele	Company H: Difficulties to recruit new personnel, fewer instructors for new recruits, retirement waves
		Company I: Decreasing amount of clientele
		Company C: Loss of clientele groups
		Company A: Global chains increase competition
Globalization	Increased competition Increased delivery times	Company G: Increased competition, increased amount of competitors
		Company H: Longer delivery times
		Company F: Mass production decreases prices
Automation & robotics	Increased competition	Company E: Competitor produces more cheaper, increased product selection
Digital platforms	Increased expenses & workload, decreased sales & product selection	Company H: Challenging & time-consuming usage, software & equipment expenses
		Company G: Challenging usage, decreased product selection, decreased sales
Climate change	Business difficulties	Company C: Loss of seasonal clientele
		Company G: Decreased prebuying of seasonal products
		Company H: Untypical weather conditions create workload volatility

Recognized local impacts include mainly threats, which can present potential operational and strategic risks. Moreover, it offers insights to differences and similarities across cases. In fact, some preconditions suggested by Kelliher and Reintl (2009) which affect in risk management, seem to affect on recognizing local impacts: firm size and operating sector. In fact, Table 4 is quite revealing in several ways. It seems that recruitment challenges are more evident in larger companies. Moreover, digital platforms are more widely used in larger firms and therefore, their implications are more easily recognized and perceived. Besides

firm size, in some cases sector also effects on identified megatrend-related changes and it seems that changes related to automation and robotics are more evident in industries where majority of work tasks can be automated in industries such as baking industry.

From economical megatrends, one informant recognized that *sharing economy* has decreased sales. An increasing amount of customers are not willing to own a product and instead use second-hand products decreasing the amount of customers buying new products from the store.

A variety of perspectives were expressed when discussed of *urbanization* impacts. One informant felt that urbanization has contributed to recruitment challenges, in particular in rural areas outside large cities the company had challenges to recruit employees. Another informant considered that urbanization has slightly decreased the amount of potential customers as metropolitan areas are able to provide public transportation and thus the products offered by the company are not needed. Furthermore, one informant considered that due to urbanization, it was more challenging to attract customers outside metropolitan areas to rural areas. One informant also noted that due to urbanization, an increasing amount of clients are living in urban areas which effects on the customer service they require. In contrast, some noted that as the business is located in a city, urbanization increases the amount of potential customers

A common view amongst the informants recognizing impacts of *aging population* was that it contributes to loss of knowhow and skilled employees. One informant argued that aging populations has created recruitment challenges and when employees retire, there are fewer instructors to pass on knowledge to newly recruited employees. Furthermore, retirement took place in waves, which caused pressure to replace a large number of employees at one time. Besides loss of knowhow, aging population was perceived by two informants to slightly decrease the amount of customers as currently, majority of the company's clientele consisted of older generations.

Some interviewees recognized that *globalization* has increased competition. Increased competition was caused by global chains entering the Finnish market or increased usage of online stores contributing to increased the amount of competitors worldwide. Global chains entering the Finnish market were perceived as a risk due to their economies of scale and scope. Furthermore, some interviewees argued that globalization has decreased the risk of online purchases increasing the usage of online stores, in particular among products, which do not require the expertise of a salesperson. Consequently, increasing the usage of online stores.

While several informants felt that globalization had increased competition, one informant considered that globalization has increased delivery times for products. This informant mentioned how globalization has caused centralization of operations resulting into large warehouses, which has increased the distances and

increases the delivery times for the products. Surprisingly, another informant felt the opposite and considered that globalization has shortened delivery times and made them more trustworthy. In contrast, many informants considered that globalization has lowered process and increased business opportunities.

Amongst technological megatrends, implications of *automation and robotics* were related to increased competition. Some informants considered that automation and robotics enable more efficient production contributing to lowered prices. Which in turn, created increased competition to companies, which were not utilizing such technologies. Moreover, automation and robotics had enabled production of wider selection different products, which offers more alternatives to customers. Consequently, this had affected customer preferences to change increasingly often, creating pressure to informants to offer a variety of different products as well. Besides negative impacts, respondents also noted that systems, which enable automation of certain work tasks, reduced manual work. However, although these systems were seen beneficial, there were expenses on purchasing these systems. Automation also enabled a paperless office, which brought ease to the entrepreneur and freed time for other work tasks.

A recurrent theme in the interviews amongst companies utilizing *digital platforms* was that they are time consuming and increasing workload. Usage was time consuming due to difficulties in usage, using several different platforms, which did not work together and managers needing to supervise reporting. Furthermore, informants mentioned that software cost as well as equipment to use them. One informant also noted that the usage of digital platforms has had an impact to purchasing: product selection has decreased and products cannot be seen before purchase. Digital platforms also enable selling of used products online, which had caused decreasing sales for one informant. In particular, digital platforms enable exchange of used products more easily and reaches a large audience. In contrast, some informants were able to recognize also positive features of digital software such as automatic data generation, increased transparency, worktime monitoring and tracking system.

Besides automation, robotics and digital platforms, a common view among the informants was that there are no implications of technological megatrends. Thus, this may indicate that these megatrends are not currently relevant for the case companies.

From environmental megatrends, some respondents felt that *climate change* did not have an impact on their business while others recognized implications of changing weather and especially precipitation's impacts to business. However, implications were cautiously linked to climate change with uncertainty whether they are caused by it. These recognized impacts included volatility in workload due to poor weather conditions and changes in customer behavior such as not pre buying of certain products for specific season due to uncertainty of this season.

Together these findings indicate that majority of companies recognized at least one local implication for megatrends. Moreover, it seems that majority of companies recognized one megatrend which had most significant impacts to business.

6.1.1 Megatrend recognition and perception

One unanticipated finding was that differences in perception and recognition of megatrends begin on the *definition* of the megatrend itself. In some cases, the informant was not familiar with the megatrend or considered the megatrend to have a different definition.

Two broad themes emerged from the analysis how informants recognized and perceived megatrend-related changes: *internal resources* and *external resources*. A recurrent theme amongst informants was that own thinking and reasoning were broadly utilized to recognize changes. In recognition several informants mentioned using observation to examine events in own company, other companies and communities to recognize potential risks to company. In fact, all informants mentioned several ways to perceive megatrend-related changes with internal resources, while some mentioned also the utilization of external resources in the process. These external resources consisted of networks formed of employees, managers, customers, suppliers, retailers, importers, business partners, other entrepreneurs, competitors, consultants, trade union, public conversation, academia, political parties and social media. These sources also provided information and signals of possible changes, which was constructed by the informant with own thinking and reasoning to recognize possible risks arising from change.

Whilst a majority of informants conducted observing, thinking and reasoning unsystematically on their own, one informant mentioned of a workgroup which was formed to share observations with other managerial level workers and to evaluate their impacts.

Once a change was recognized, *own resources* and *network resources* were utilized to perceived the change. Majority of informants perceived the recognized changes through own experiences, which aided to define the nature of the change. Thus, in case the experiences were negative, the change was perceived as negative and as a possible risk for the company. Furthermore, some informants mentioned receiving information and signals from networks, which contributed to perceiving changes. Employees and business partners provided information and observations. One informant mentioned benchmarking with other entrepreneurs, competitors, of changes and their impacts. In some cases also suppliers informed of their observations which was seen useful for perceiving the changes. From public conversation some informants mentioned receiving knowledge on is a change having positive or negative impacts, which had an impact on the perception.

Customers also provided information on perception as well as case examples of similar situations. Furthermore, one informant mentioned that also inner circle, social media and political parties provide information for perceiving changes.

One unanticipated finding was that, informants perceive both direct and indirect changes to their business. Majority of informants considered primarily implications to their business regarding the direct implication of megatrends. However, some informants also considered what local implications megatrends can have to their stakeholders such as suppliers and considered how those changes can indirectly affect to their business. In fact, one informant also considered the national impacts of online stores and how they impact in the economy which indicates that perception can also take place in such called levels starting from own business and proceeding to supplier and even national level impacts.

6.1.2 Mini cases

Next, three mini cases are presented to describe how certain megatrends affect in the organizational context of individual case companies and how the changes are recognized and perceived. The most significant recognized local impacts are presented first, moving to less significant impacts. Detailed figures on the complete process of recognizing megatrends and taking risk management activities are presented in Chapter 7.2.

Case company A

The first case will present how a megatrend-related changes affect in the organizational context of case company A, a micro enterprise with one employee operating in the industry of wellbeing services and dietary supplement retailing. Informant recognized how globalization has increased competition to such an extent that smaller operator might not be able to cope with it and customers want to buy from larger chains as they are able to provide services from a wider scale. This change was perceived both positive and negative: although globalization offers an access to global chains to enter Finnish market creating intense competition, it also offers an access for SMEs to access international markets.

Globalization megatrend was made sense through a process of receiving information and experiences from different perspectives such as business partners, colleagues, inner circle, social media groups, recreational groups, customers, studies, trainings, local government and different positions of responsibility, which was constructed and processed by the informant. Furthermore, informant constantly observed the society and other companies to examine what is happening and what is the reason why other companies succeed and others not. These observations are taken into consideration when business decisions are made. In summary, information, experiences and observations take part in internal dialogue, which the informant combines and constructs and uses for the decision-making process of perceiving changes.

Case company F

The second mini case describes how megatrends affect in the organizational context of case company F, a small enterprise in the baking and cafeteria services industry with 9 employees. Automation and robotics related changes had caused turbulent changes in the firm's organizational context as larger companies, which were able to invest in automation and robotics, were able to produce bakery products more faster and cost-efficiently utilizing economies of scale and scope. Which, in turn, created intense competition for the case company producing its products manually. These megatrend-related changes were recognized through own experiences and observations and these changes were perceived as a risk to the firm.

Besides technological changes, also social changes affected in the organizational context: once employees retire, a remarkable amount of knowhow is lost as well. In particular, as this company's products are made manually which highlights the importance of manual skills and knowhow. Moreover, young employees replacing these retiring employees do not have the same skills and knowhow. These impacts were recognized through own reasoning and perceived as negative.

Case company H

Third mini case examines what impacts megatrends have to case company F, a small enterprise with 47 employees operating in the transport and logistics services and wood chipping processing industries. Urbanization created recruitment challenges as it was more challenging to recruit staff when the workplace was not located in a large city. Moreover, urbanization has initiated a change in the clientele as an increasing share of the company's customers, forest owners, live in urban area which has changed the way of work and how these customers need to be treated. These megatrend-related changes were recognized through own reasoning and recruitment experiences and perceived negative.

Aging population has created recruitment challenges as while employees retire, it is challenging to recruit new employees and there is a scarcity of employees to brief and train new employees. Furthermore, employees retire in waves creating pressure to recruit many new employees in one time. In addition, these changes were recognized through own experiences and reasoning and they were perceived negative.

Changes deriving from digital platforms created several changes to the company. Digital platforms were widely used and the informant felt that they had had both positive and negative impacts. Business partners of the case company were using different digital platforms and therefore employees need to report same information in several platforms, which increases the workload and is time-consuming. Furthermore, usage of platforms was considered challenging by the majority of employees. Besides increasing workload for employees, usage of digital platforms increases the workload of managerial level employees as they need

to supervise the reporting and verify the added information. Moreover, the devices to use digital platforms have brought expenses to the company as well as maintenance. On the other hand, digital platforms offer tools, which aids in the job itself such as worktime tracking. These changes were recognized through own experiences of using digital platforms. Perception of these changes were both positive and negative, based on previous experiences as well.

In organizational context, globalization had created longer delivery times for products. Due to globalization the amount of warehouses had decreased increasing the distance between the firm and the supplier leading to longer delivery times. Moreover, due to long delivery times, the firm needs to prepare in other ways not to waste time when waiting for a certain delivery by having spare products, which results into additional costs. These changes were recognized through own experiences and although the informant mentioned that globalization has increased the availability of different opportunities, globalization was perceived more as a challenge than an opportunity.

Climate Change has increased precipitation, which in turn contributes to poor weather preventing work for the case company. Consequently, the work is conducted when the weather is less unstable which has increased workload volatility. Similarly to recognizing previous megatrend-related changes, changes to climate change were also recognized through own experiences and perceived negative.

Together, these results provide important insights into the perception and recognition of megatrends. When a local implication is recognized, the informant perceives the change with own thinking aided with observations and possible information gained through networks. In case a change is perceived negatively, it can be a possible threat for the company, which in turn moves to risk identification to identify whether these potential threats are risks.

6.2 Networked risk management process in SMEs

After examining how companies recognized and perceived the local impacts caused by megatrends, this study moves to examine the risk management process of the case companies to study how SMEs are prepared for the identified megatrend-related impacts with risk management and how networks contribute to the process.

Although literature suggests risk management to be a systematic process, the risk management process in case companies was not executed in a systematic way and did not always follow a certain procedure or stages. Furthermore, risk management process was an informal and retrospective process and in most cases not a continuous process. Risk management was also focused on closely perceivable threats and identified risks were managed in case the implications had been recognized in own business activities. Moreover, risks were handled individually case-by-case, applying different risk management procedures.

Besides utilizing resources found within the company, the findings indicate that all case companies utilize their networks for risk management. Formal networks formed through formal contracts included employees, financier, business partners, suppliers, manufacturers, importers, customers industry alliance, accounting office, consultant and competitors. Besides formal contracts, networks can be based on trust. Informal networks include competitors, other entrepreneurs, personal network consisting of a variety of contacts in the same industry or other industry, word-of-mouth, inner circle, recreational groups and social media. A common view amongst the informants was that stakeholders found outside the company are highly important to offer new perspectives. When respondents were asked to reflect on the overall contribution of the potential provided by networks, on average respondents felt that networks utilization was satisfactory.

Overall, these results indicate a variety of formal and informal networks. Moreover, as theoretical literature suggest, formal networks were related to products or services provided by the company. However, for many entrepreneurs distinguishing between formal and informal network was not always obvious. In fact, some described their formal networks that although they are formed through formal agreements, the relationship between the two is rather informal. Thus, networks can be both formal and informal.

6.2.1 Risk identification

Risk identification process consists of several own resources as well as different stakeholders. The data structure visualizing 1st order themes, 2nd order themes and the aggregate dimension are listed in Table 5.

Table 5. Risk identification findings

Aggregate dimension	2nd order themes	1st order themes
Risk identification	1. Own resources	
	Observation	General observation Observation of email correspondence Observations of other companies, entrepreneurs and competitors
	Knowledge searching	Knowledge search from reports Knowledge search from sales Knowledge search from network Knowledge search from statistics Curiosity to seek knowledge General knowledge search from press General knowledge search from the internet
	Reasoning	Understanding capabilities of an SME Reasoning the capabilities of an SME Reasoning competitor action implications
	Experiential knowledge	Applying knowledge of previous experiences

	Constructing information and reviewing it with experiential knowledge
2. Tools	
Retrospective tools	Manual follow-up of sales Software provides information on sales and purchases
Intuition	Intuition as a tool
SWOT	Usage of SWOT to identify business risks
3. Networks	
Suppliers	Knowledge transfer with suppliers Advice from suppliers Sparring with suppliers Speculation with suppliers
Employees	Knowledge transfer of word-of-mouth with employees Knowledge transfer of potential risks with employees Knowledge transfer with employees who are in contact with customers
Customers	Knowledge transfer with customers on trends Knowledge transfer with B2B customers of the state of their business
Business partner	Detailed information from business partner
Consultant	Collaboration with consultant for budget Advice from consultant
Competitors	Knowledge transfer with competitors
Inner circle	Future visions from inner circle
Political facets, entrepreneurs, recreational groups, studies	General information from political facets, entrepreneurs, colleagues, recreational groups and studies
Social media	General knowledge search from social media
Public conversation	General information and examples from public conversation

Risk identification was partly consisted of the *subjective evaluations* of the owner and in some cases, informants were managerial level employees who took part in the risk identification process. A common view among the informants was that their own capabilities and resources were highly important for risk identification. In fact, all case companies mentioned usage of own abilities the respondent has such as observations from markets and competitors gained by living in the moment, own thoughts, reasoning, intuition, experiential knowledge, getting people to talk and even arbitrary. However, the size of the company also seems

to have an impact on risk identification and the whole process of risk management and the smaller the firm is, the more own resources were utilized.

Several informants use experiential knowledge to identify risks and what is surprising, many informants felt that experiential knowledge was a crucial part of their intuition as well. However, some informants felt that intuition was an important tool to identify risks while others considered that intuition can be untrustworthy and should not be used as an only tool.

Risk identification *tools* utilized by majority of case companies were not particularly tools designed for risk identification and they were usually related to financial aspects of business. Informants mentioned usage of different tools for risk identification such as sales analytics, warehouse management on sold products, manual follow-up of sold products and following sales. These tools offered retrospective information and were not solely used to identify risks, but provided information and signals of possible risks. However, one respondent mentioned usage of SWOT. In sum, particular risk identification tools are used to minor extent and if used, the tools offered retrospective information on already occurred risks and not conveying information on potential future threats. One respondent clarified the difference when a tool should be used and when not: In case a potential risk would take place in an industry or a process that the firm is not familiar with a tool might be useful. However, usually potential risks are related to issues that are already familiar to the company.

Besides focusing on financial aspects, risk identification was focused on closely perceivable threats as risks that were recognized through own experiences were considered most significant, where as other potential risks arising from megatrends which may create future threats, were not considered significant. Thus, not focusing on future challenges, further supports retrospective risk identification.

Altogether, companies do not have specific solution or procedure for risk identification and risks are handled individually when discovered resulting into retrospective risk identification. Moreover, some information on possible challenges, which may pose a future threat, were informed for employees in case some would have solutions for it.

Although, firms were lacking a specific procedure for risk identification, informants were aware of risks they had recognized and usually informed of consequences in case risk materializes. Moreover, some informants mentioned that risk identification is a continuous process and in some cases regarded as a subconscious process.

Besides own resources, *knowledge searching* was a common activity among informants. Information was searched from a variety of sources, which enabled informant to view potential threats from different perspectives and gain insights on their significance. Furthermore, by understanding own capabilities and limited perspective on identifying potential threats, besides own resources, respondents mentioned other sources to access information and with own interest and curiosity to seek information respondents acquired information from various channels: stakeholders, market research, studies, newspapers, internet search engines, social media and discussion portals. In sum, these means provided an access to investigate what is happening around the world to keep yourself informed.

A variety of different *formal stakeholders* are utilized for risk identification. A common view amongst informants was that formal network members offer an access to information. These members include employees, customers, competitors, manufacturers, importers, suppliers and business partners. Furthermore, in one case importers also offered a partner for speculation and advice. Besides, information access business partners also offered market analyses and currency analyses for one case company. Few informants mentioned usage of a consultant and how they could provide remarkable more advice and resources than other stakeholders: business advice, budgeting and financial reports.

Furthermore, informants considered that several *informal stakeholders* provide an access to information: competitors, entrepreneurs, word-of-mouth, inner circle, recreational groups and social media. Furthermore, one participant emphasized the importance of own personal network to gain new perspectives, develop and test new ideas, exchange information and sparring.

6.2.2 Risk analysis

Risk analysis consisted from both own and external resources. The findings of this stage of the risk management process are listed in Table 6.

Table 6. Risk analysis findings

Aggregate dimension	2nd order themes	1st order themes
Risk analysis	1. Own resources	
	Observation and thinking	Daily observation and thinking Risks analyzed with own capabilities
	Knowledge searching	General information searching from the internet
		General information searching from discussion portals Knowledge search from reports

Intuition & Experiential knowledge	Analyzing risks with intuition Analyzing risks without intuition Analyzing with experiential knowledge
Setting a threshold	Deciding threshold for a product Risk management actions take place after certain threshold
2. Tools	
Retrospective tools	Software provides information on sales and profits Profit calculator as a tool Cost structure as a tool
Budget	Budget used as a tool
3. Network	
Employees	Risks analysis with employees Knowledge transfer with employees Experiential knowledge transfer with employees
Accounting office	Financial knowledge transfer
Financier	Knowledge transfer with financier
Suppliers	Knowledge transfer with suppliers
Customers	Knowledge transfer with customers
Competitors	Experiential knowledge transfer with competitors
Inner circle, social media & political facets	Knowledge transfer with inner circle, social media & political facets
Consultant	Knowledge transfer with consultant

Findings indicate that risk analysis is implicit and tacit process as no case company had a formalized plan for risk analysis. However, an exception was risks related to work safety. Furthermore, risks were analyzed utilizing own thinking, pondering, daily monitoring, observations and own skills to construct thinking and knowledge.

Several informants mentioned the importance of *experiential knowledge* in risk analysis as well, which gave guidance based on previous experiences and aided the informant to view issues from a wider perspective. Similarly to risk identification, although intuition was regarded highly important, some respondents mentioned that intuition cannot solely be trusted as it can be mistaken. Respondents mentioned information gained from systems reporting actual data from sales, which has proved intuition incorrect. Thus, software were regarded as useful to verify whether the intuition is correct.

Besides utilizing own resources, many respondents search knowledge from different sources for risk evaluation. Several respondents mentioned utilizing data available in their own systems for example financial data which was regarded highly important to provide support for own initial thought.

This study is unable to demonstrate that case companies utilize specific risk analysis tools with an exception of one company utilizing SWOT analysis. However, relating to information searching, several respondents mentioned tools such as the computer, which aids in information searching and information from business processes from different software. Moreover, certain risks were analyzed based on the information found through internet, search engines and discussion portals. Other tools included budget, which was used to analyze risks from financial perspective. Overall, these different tools and channels aided the respondent to make more informed decisions in the risk analysis process.

In the analysis stage, also two informants mentioned setting a threshold for a risk. This threshold was defined by financial grounds and once it was passed, potential threat was considered as a risk and actions were chosen to manage it.

Both formal and informal stakeholders contribute to risk analysis. Formal network members offer an access to more specific data. Employees offered evaluations on impacts, experiential knowledge on issues, joint pondering and general intuition. Accounting office provided information on financial data, sales and cost structure and competitors offered benchmarking. Moreover, these findings reveal that several informal stakeholders contribute to risk analysis. Majority of the informants held the view that the most significant resources gained through informal networks was information. Information was gained from word-of-mouth, recreational groups and inner circle. Furthermore, competitors were able to provide experiential knowledge for case companies and other entrepreneurs aided by providing benchmarking and advice.

6.2.3 Risk management

Several respondents mentioned to manage risks with the help of previous experiences and by applying experiential knowledge, owner-managers were able to make more informed decisions once situations were analyzed with greater knowledge.

Once market shifts were recognized, actions to mitigate risks included more marketing of own product or services. In order to stay ahead of competition in some cases improvements on own product or service were made and in one case, business model was changed to adapt to changing business environment. Moreover, when faced tough competition, risk management actions included cutting costs, releasing financial equity such as selling properties or equipment.

Resources found within the company were more widely used than resources outside the company. Informants used their own time, energy, thinking and reacting to manage risks. Furthermore, several respondents mentioned that entrepreneur is responsible of risks and therefore own resources were utilized for it. Depending on the company size, in larger companies challenges were also informed to employees in the company as some may have suggestions how to manage risks arising from it.

Findings of the study suggest that network members are rarely utilized in risk management. One informant mentioned one supplier who offers products, which are possible to return of exchange in case the product does not sell adequately. In few cases informants mentioned that in order to increase sales, some informants utilize their existing customer networks. Depending on the company size, in larger companies challenges were also informed to employees in the company as some may have suggestions how to manage risks arising from it. In specific issues, few informants mentioned using a consultant for risk management. In some cases also accounting office provided information, which was seen useful when deciding the actions for risk management. The resources utilized for the risk management stage are listed in Table 7.

Table 7. Risk management findings

Aggregate dimension	2nd order themes	1st order themes
Risk management	1. Own resources	
	Releasing equity & increasing sales	Selling unnecessary equipment Increasing sales price Increasing sales
	Cost cutting	Decreasing the amount of staff or increasing sales
	Focus on less risky strategy	Focus on more steady source of profit
	Improving own product or service	Attracting new and current customers by offering interesting products and services
	Adaptation of business	Making decisions based on what is successful
	Tapping into existing networks	Knowledge transfer with competitors Contacting existing customers
	Own input	Managing risk with own contribution
	2. Network	
	Employees	Joint thinking on measures
Accounting office	Financial information transfer Knowledge transfer on specific issues	

	Advice from accounting office
Suppliers	Refundable orders from supplier
Consultant	Using a specialist for risk management

Although majority of informants mentioned using solely company's internal resources for risk management, the opinion among informants varied significantly when asked to name the most important stakeholder for risk management. While some informants regarded that employees are most important for risks management, others considered suppliers, customer, accounting office and competitors the most important one.

6.2.4 Mini cases

Next, the same three mini cases are utilized to explain the individual risk management process and network utilization in the companies to examine how SMEs adopt to changing business environment via networking.

Case company A

The informant of case company A mentioned several internal resources to identify risks. In particular, own observations of what impacts increased global competition can have in organizational context was one essential way. Moreover, also own reasoning on the cost structure between a larger company and an SME aided the informant to identify potential threats. Own reasoning included also understanding own capabilities compared to a global competitor. Furthermore, understanding acts regarding competition and procurement aided the informant to identify risks.

External resources were also seen as a significant resources contributing to risk identification. Acting in the regional government also enabled an access to statistical information, which also contributed to risk identification. Other formal stakeholders besides regional government included customers who offered information. Through conversations and interactions informant mentioned to gain information from informal stakeholders such as political facets, other entrepreneurs, colleagues, inner circle, social media and recreational groups. Information gained from these stakeholders was processed with own thinking and was utilized to identify potential threats.

For risk analysis, own resources were seen as a significant asset as well as network. Risks were analyzed with own capabilities to construct and modify received information from different channels. By viewing a risk as a whole and also understanding its details, the informant was able to analyze the risk from a larger perspective and different aspects. Having a large network of stakeholders enabled the informant to receive information and experiences from different aspects. Formal stakeholders included customers and informal stakeholders included political facets, other entrepreneurs, colleagues, inner circle, social media and recreational groups.

For risk management informant considered that own capabilities were most important. Through own reasoning and capabilities, informant chose the risk management actions. For increased global competition, informant mentioned to adapt business based on observations on why other companies have failed and what is popular among communities. The complete risk management process is visualized in Figure 10.

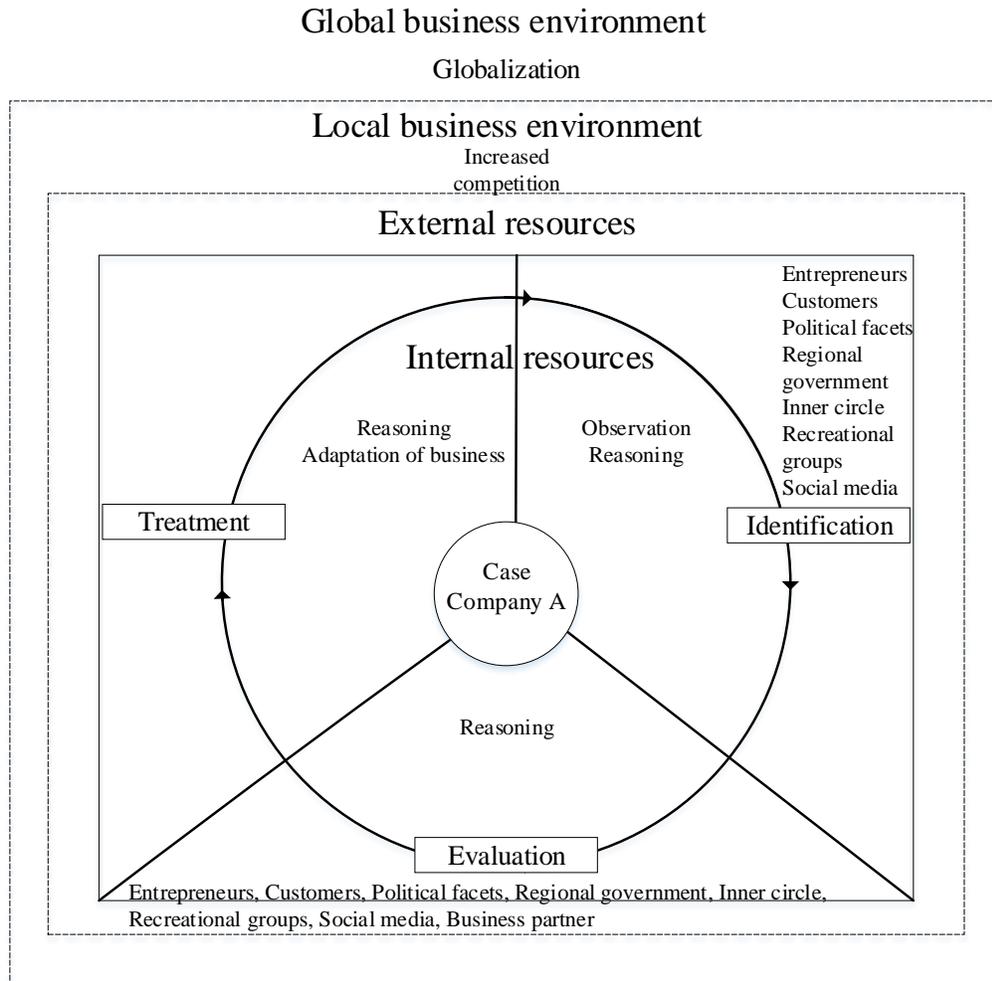


Figure 10. Case company A risk management process

Case company F

For risk identification informant from case company F mentioned a large-scale usage of internal resources. Regarding impacts from automation and robotics, the informant used own reasoning and observations to evaluate how automation enables lower prices and how companies without automation investments cannot compete against such companies. In particular, competition is intense due to high labor expenses. Information searching was also considered an important way to receive information of potential risks. This in-

formation was received by observing competitors, following own sales, overall market situation and commodity prices. In particular, media was seen as a useful channel to try to predict what will happen in the near future. According to the informant, these information sources acted as channels to receive information, which was constructed by the informant to identify potential threats. These potential risks were identified based on the intuition of the informant. In fact, the informant described the intuition to be a tool to construct different type of information and signals from different perspectives and use own thinking to consider what could be done differently. Furthermore, the informant considered that the intuition aids to view issues from a larger perspective and it has developed during the years by learning something new every day. Thus, this also describes experiential knowledge.

Besides internal resources, also external resources were considered important. Formal stakeholders such as suppliers were important to gain information from the markets, prices and overall situation at the markets. Informal stakeholders were also considered important and although competitors were competing in the same market, the informant considered them as colleagues. With competitors information was exchanged and in some instances meetings were held to exchange opinions and observations. Once information was received, informant processed this information to be used to identify potential risks.

Risks were analyzed by using own reasoning of risks, facts and own intuition. When confronted a risk, the informant reasoned what impacts it can have. Risks were analyzed by utilizing some formal networks members: such as financier and accounting office. In particular, accounting office provided information on sales and sales development, which served as guidance for risk analysis. Similarly to risk identification, in risk analysis information was gathered from external stakeholders, however the information was constructed by the informant who made the final decision.

For risk management internal resources included cutting costs or increasing marketing. In case the informant could not sell more product to customers, informant considered that the only way to manage the risk is to cut costs such as cutting staff. Although the informant was in charge of taking risk management measures, informant considered to receive aid for risk management from the accounting office, which offered financial information of the company from several years for comparison. The complete risk management process is visualized in Figure 11.

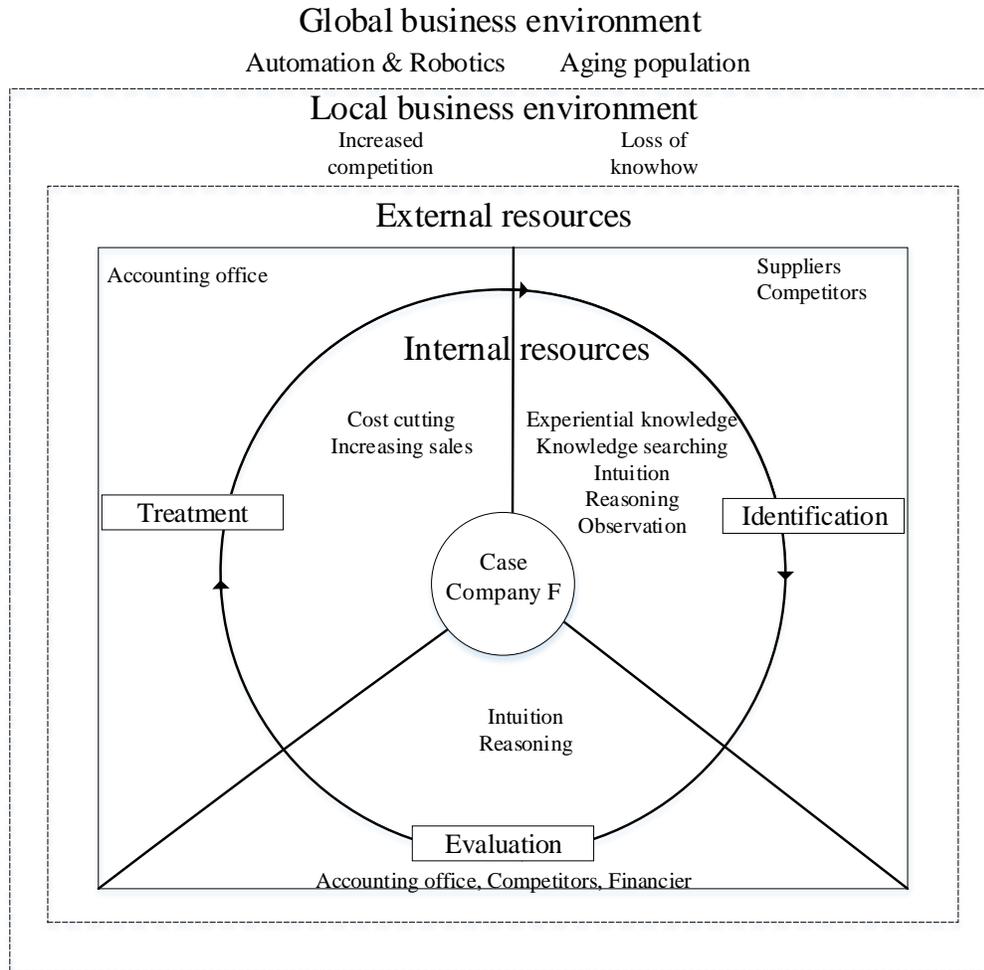


Figure 11. Case Company F risk management process

Case company H

Case company H considered experiential knowledge highly important for risk identification as majority of potential threats were related to an experience-based issue related to the work from which the informant has experience of and by applying previous experiences risks could be identified. In fact, experiential knowledge was seen as a starting point for risk identification.

Tools for risk identification were used occasionally. SWOT analysis was conducted occasionally to assess business risks on a general level. Furthermore, in some cases investment calculations provide information to identify potential threats. In addition, information searching was used for risk identification and internet search engines were seen useful to provide useful information as well as media.

The informant considered resources found within the company important for risk identification. Information of possible threats was acquired from employees, formal stakeholders, and in many cases they had the

informal word-of-mouth information as well. Other informal stakeholders included competitors, which were seen as colleagues, who provided exchange of information and observations. In particular, they could offer information, which is related to the practical work itself. Formal stakeholders also included customers who could provide information for risk identification.

For risk analysis, also experiential knowledge was utilized to analyze what impacts identified risks can have by comparing identified risk for similar ones. Furthermore, both formal and informal stakeholders take part in risk analysis. Formal stakeholders such as employees can offer experience-related information for risk analysis enabling more precise risk analysis. In addition, competitors as informal stakeholders can offer experience-based information for the informant.

For risk management mainly internal resources are utilized and based on experiential knowledge, risk management actions were chose by utilizing previous similar situations. Employees can also aid in the process by joint pondering of actions and in case of recruitment challenges, employees can use word-of-mouth to try to attract new employees.

Although, risk management actions are taken by the company, also informal and formal stakeholders provide aid for the process: competitors and business partners can offer benchmarking and information on how they have overcome a similar risk and have they come up with a significant process to manage the risk. The complete risk management process is visualized in Figure 12.

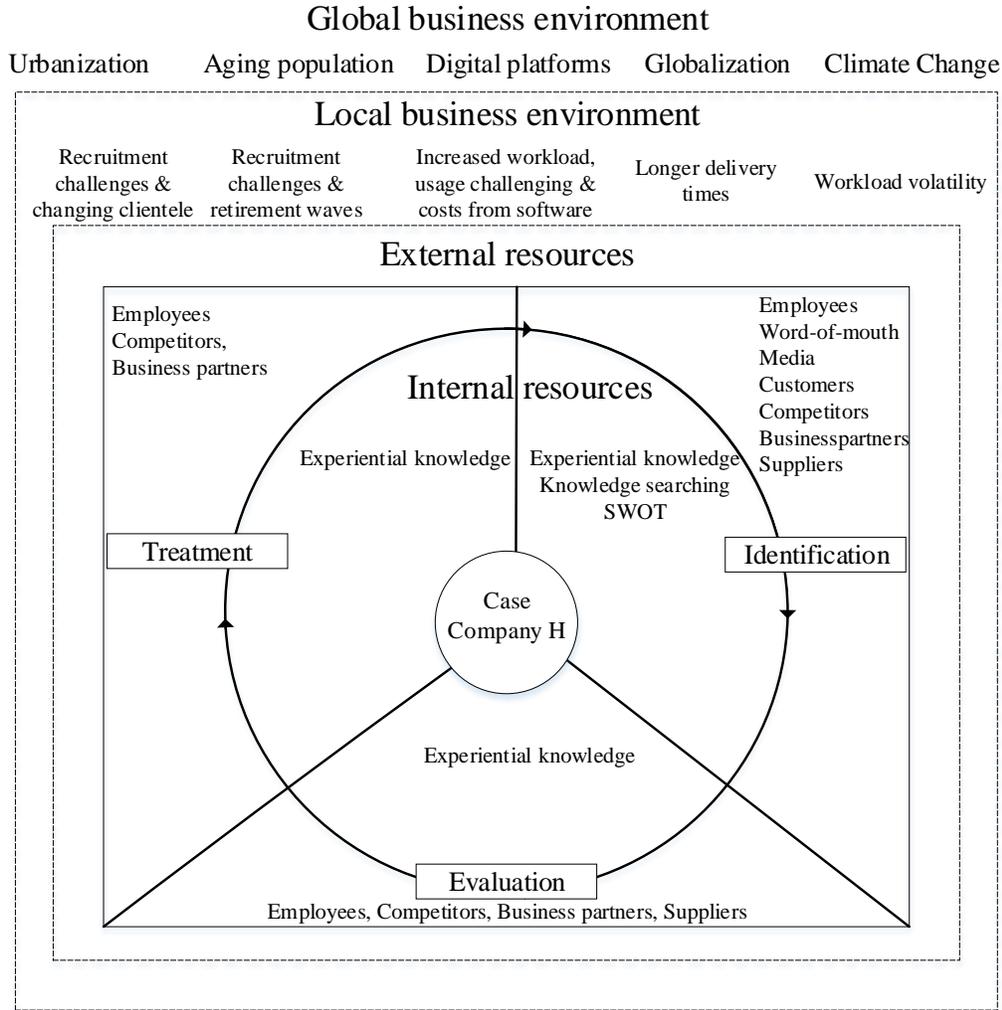


Figure 12. Case company H risk management process

7 DISCUSSION

In this chapter the results and their implications are discussed and the findings are reflected to the theoretical background presented in this study. First, the megatrend perception and perception of local level impacts of different megatrends are discussed. Second, the findings of risk management practices of the case companies are discussed as well as the contribution of network members in each stage of the risk management process.

7.1 Megatrend perception

As megatrends have significant impact on all society, they can provide important information for companies on the likely future and act as a starting point to see how it shapes the business environment and as a departure in strategy. (Guemer-Castorena 2009; Von Goeddeck et al. 2013). However, von Goeddeck et al. (2013) argue that megatrends can be overloaded with meaning and therefore fail to transport clear information of the megatrend itself thus megatrends such as urbanization and demographic change can become meaningless for an organization in case there is no deep understanding of the phenomenon. One unanticipated finding was that differences in perception and recognition of megatrends begin on the definition of the megatrend itself. In fact, some informants were not familiar with certain megatrends or understood the term differently than defined in theoretical literature. Consequently, this can contribute to the idea of *empty signifiers* of von Goeddeck et al. (2013) and not transport clear information of the megatrend. Moreover, some technological megatrends such as industrial internet, simulations and augmented reality, received a scarcity of identified implications, which can be for the vague meaning of the term itself resulting to misunderstanding the phenomenon. Consequently, these empty signifiers loaded with meaning, can undermine the foresight capability of the companies.

These results seem to suggest that SMEs recognize megatrends differently. In the case of automation and robotics, a variety of perceptions were expressed as these changes were perceived negative, positive or both. A possible explanation for differences in perception might be that as companies can adopt beliefs and behavior of companies that are regarded successful (Bogner & Barr 2000; Kiss & Barr 2015), which has an impact on risk perception. Therefore, informants who consider their competitors successful, that are using automation and robotics, may adopt a belief that to be successful, similar adoption of automation and robotics is necessary. Thus, case companies who use such technologies perceive this change positive, whereas companies who are not using such technologies perceive this change negatively. Furthermore, companies who perceive this change both positive and negative, hold the view that although technologies benefit the company, they require investments.

Together, these results provide important insights into *risk perception* of the respondents. Literature suggests that risk perception is constructed and influenced by personal experiences, memories and cultural context mandating how risks are perceived (Garvin 2001). Furthermore, perception of risks is continuous and focused on closely perceivable threats (Herbane 2010). These results are partially consistent with those of other studies and suggest that risk recognition and perception is mainly conducted by utilizing own resources such as observation, thinking and reasoning as well as interpretation of available information of network to construct a perception of recognized local impacts. Furthermore, risks, which were already recognized in own business activities, were easier to analyze than risks, which were not yet recognized, suggesting that risk perception is focused on closely perceivable threats. However, the current study also found that some informants perceive both direct and indirect change to their business considering what implications megatrends can have to their stakeholders. By having different level of perception, these findings seem to indicate that although majority of informants consider direct impacts, some also consider indirect impacts and do not solely focus on closely perceivable threats, which contradicts with the ideas of Herbane (2010). Moreover, perceiving several levels of potential risks, may indicate of the development of risk identification and by viewing potential risks from a larger perspective, may contribute to a more accurate risk identification process.

Furthermore, these findings further partially support the idea Herbane (2010) of risk perceptions being mainly subjective evaluations conducted by the owner of the company as majority of the informants were entrepreneurs forming the perception. However, in three cases, respondents were not owners of the company and instead operated in managerial level and contributed to risk perception. Furthermore, this correlates with the size of the company as these companies were small or medium-sized having staff from 40 to 65.

Literature suggests that top management forms and makes sense of information as a whole and organizational outcomes reflections of their perceptions of the environment (Hambrick & Mason 1984). These results agree with the findings of Hambrick and Mason (1984) as entrepreneurs and top management makes sense of the information gained from networks and from inside the company, construct the information and make decisions based on their judgement of needed actions.

7.1.1 Local impacts

By enabling sharing, obtaining or giving access to services and goods, *sharing economy* may create increasing competition in industries such as hospitality, automotive, travel, retail, media and finance (Hamari et al. 2015; Ismail et al. cited in Kathan et al. 2016). Although some case companies operated in industries potential to be affected by sharing economy, only one respondent recognized impacts created by this megatrend. Sharing economy had decreased sales as a decreasing amount of customers are willing to

own a product and use second-hand products instead. This may indicate that sharing economy does not currently have significant impacts to companies or the impacts are so subtle, it is challenging to recognize them.

Urbanization may create imbalances in the demand and availability of labor in metropolitan areas and results to talent shortage and difficulties in finding employees in rural areas (Boschma et al. 2009). This is supported by the findings as some respondents noted that especially in rural areas, outside large cities, companies have challenges to recruit employees. In contrast, others noted that as the business is located in a city, urbanization increases the amount of potential customers. Furthermore, urbanization has enabled new business possibilities. Together, these results provide important insights to how urbanization is perceived depending on the location of the business and when faced recruitment challenges, urbanization was seen as negative change whereas there were no recruitment challenges, urbanization was seen as a positive change. Changes were perceived through their impacts on human resources and sales.

Aging population has also potential to inflict talent shortage by reducing the available labor supply and increase recruitment costs to attract employees (Chand et al. 2015). These findings further support the idea of Chand et al. (2015) as some respondents mentioned that aging population has created recruitment challenges. Furthermore, one respondent mentioned that retirement takes place in waves, which causes pressure to replace a large number of employees. Together, these findings seem to indicate that operational risks are easily recognized as they can be recognized in everyday business activities.

Globalization creates competition, lowers price points and global outsourcing and emerging market suppliers offer price advantages (EY 2016; Falkner & Hiebl 2015). These ideas were supported by the current study as several informants mentioned that globalization has lowered prizes and increased the amount of business opportunities, which was perceived as a positive change. Moreover, one interviewee argued that globalization has increased the delivery times for products due to one central warehouse in Europe in comparison to several, while other interviewee considered that the delivery times of products have become shorter due to having one central warehouse in Europe. Literature suggests that globalization creates competition, which was recognized by many respondents as globalization offers an access of global companies to operate in national markets. Increased competition was recognized especially in industries which products or services did not require sales person assistance such as products bought from online stores. However, one respondent noted that this same channel used by global companies, offers also a possibility for SME to enter international markets.

In summary, results show that *globalization* has benefitted the companies and in some cases increased competition. Thus, the impacts are perceived differently among case companies and the changes were perceived positive if the company had plans of expanding business activities to global markets or the amount of international customers was increased. Furthermore, lowered price points were perceived positive by all informants whereas increased competition negative. Moreover, as this megatrend has so versatile and significant implications, both negative and positive implications are easily recognized.

Technological changes such as *automation* and *robotics* can disrupt business models and have potential to influence on consumer expectations and interaction with consumers (EY 2016; PwC 2016). Impacts related to this megatrend were recognized as increased competition as automation and robotics enabled more efficient and low-cost production in comparison to hand-made products, which partially supports the previous literature as it had affected on consumer expectation of a large product selection. Besides negative impacts, informants also recognized that these systems have useful features. However, although these systems were seen beneficial, there were expenses on purchasing these systems. Overall, these results indicate that in some cases informants recognized negative impacts and/or positive impacts. Moreover, impacts are seen particularly negative in case automation and robotics have created competition, which may indicate that as this implication is very negative, it is challenging to see other possible impacts as the first recognized impact overrules them. Consequently, other impacts are more easily recognized in cases the megatrend has not created increased competition.

Digital platforms have potential to offer new ways of consuming goods and services (Guoping et al. 2017), which is partially supported by the findings as due to digital platforms, e-procurement had increased. Moreover, other impacts created by digital platforms were perceived both positive and negative. Due to digital platforms, product selections offered by the importer had decreased, usage of platforms was challenging and time consuming, systems and equipment for platform usage were costly. However, positive impacts included automatic data generation, distant working, easy information remote access and easy real-time monitoring. Taken together, these results suggest that there is an association between positive and negative impacts and in cases in which one was recognized, the other one was evident as well. Together, these findings may indicate that in case recognized changes were not significantly negative and affecting largely to the operation of the company, the informants were more objective to evaluate and recognize implications.

Climate change can contribute to rising sea levels and extreme weather and in mid-altitude regions such as Europe and North America more frequent and intense precipitation events are highly likely (PwC 2016; IPCC 2013). Some respondents felt that climate change did not have an impact on their business while others recognized implications of changing weather, especially precipitation and its impacts to business.

However, implications were cautiously linked to climate change with uncertainty whether they are due to it.

In general, megatrends in the same PESTE categories were perceived in a similar way by majority of informants, which was the most interesting findings on megatrend perception. Technological megatrends were perceived as fast and when discussing past and the future, it was apparent how technology had changed business significantly. In particular, when projecting the future, respondents shared many scenarios and visions of possible implications and commenting on the unexpected nature of these changes. On the other hand, megatrends related to social megatrends such as aging population, were perceived as a slow change and its impacts were challenging to describe. Moreover, it seemed that respondents did not have as many visions and future scenarios on social megatrends. It is difficult to explain this result, but it might be related to the speed of change, which is caused by these megatrends. As technology creates change in a rapid pace, it can be challenging for individuals to keep up whereas social changes develop more slowly and individuals have more time to adapt to these changes.

Furthermore, when discussing of social and technological megatrends, it seemed that social megatrends were more easily acceptable and did not raise as intense discussion as technological megatrends. It is challenging to explain this finding, however it can be related to the dimensions of these changes. Advances in technology contribute to technologies whereas social changes are related to people and it can be that changes related to humans are more easily acceptable for empathic reasons.

The findings indicate that some megatrends have more recognized impacts than others. Megatrends such as automation and robotics and globalization gathered the majority of recognized impacts among respondents. It seems that these results are due to the significance of these megatrends and may indicate that these megatrends have the most wide-scale impacts across different industries. Another possible explanation for this result might be the implications they have had: Increased competition can be easily recognized.

7.2 Risk management

Theoretical literature defines risk management as an iterative stage-gate process (Henschel, 2009; Urciuoli & Crenca, 1989; Aloini et al. 2007) to identify, analyze and manage risks (Hubbard 2009; Verbano & Venturini 2013; Vilko 2012). Usually top management is responsible for risk management (Verbano et al. 2011), which applied to the case companies as well. However, although some suggest that risk management should be the core competence for strategic growth and an integral part of every business process (Verbano & Venturini 2011; Verbano & Venturini 2013; Kim & Vonotras 2014), risk management was not considered as important as theoretical literature suggests and mainly financial risks were considered in business processes. This may indicate the lack of resources and structural features and due to these limitations, the

role of risk management is minor. Moreover, focusing on financial risks may indicate of the risk management approach of informants and due to scarcity of resources, only most critical risks are considered and managed.

Entrepreneurs were aware of business risks, which may reflect the business responsibility the entrepreneur has. Furthermore, existing research emphasizes the lack of risk management in SMEs, which may derive from fear of additional costs, unfamiliarity of risk management and its benefits (Hiebl et al. 2013; Thun et al. 2011). Although being aware of financial risks, risk management practices were in many cases unfamiliar for case companies and its stages from identification to management. This may indicate of an informal risk management process where similar stages are executed, however not as systematically and without a formal procedure. In fact, existing research suggest that risk management practices can be very informal among SMEs (Falkner & Hiebl 2015) which applied nearly to all case companies as they didn't have a specific documented procedure which was applied every time when risks were managed. In fact, in many cases entrepreneurs were not familiar with terminology related to risk management. However, some authors agree that risk management varies among SMEs and one-third follows a more systematic risk management (Burstbauer 2014) which applied to one case company.

Positive outcome of uncertainty is not as always seen as an important aspect of risk and risk is seen related only to negative outcomes (MacGrimmon et al. 1986 cited in Mitchell 1995). However, the findings of the current study do not completely support the previous research as some entrepreneurs perceived that risk may also present opportunities for the company. A possible explanation for these results may be due to the distance of the risk: By recognizing a risk early, there might be more time to analyze a potential risk and whether it includes also positive aspects.

These findings further support the idea of Shapira (1986) that uncertainty is a factor in risk and magnitude or possible negative outcomes are more crucial than probability as although there was uncertainty in megatrend-related changes, the negative impacts were perceived more remarkable than the probability of the risk occurring.

Existing research suggest that managers tend not to show interest to reduce to a single quantifiable construct, although quantities are common when discussing risk and estimating its significance (March et al. 1987). These findings support the idea as in many cases although a possible risk was recognized, it involved uncertainty in means of probability and impact. Thus, when the characteristics of the risk and its impacts were unclear, it was challenging to evaluate the impacts of the risk as one quantifiable construct. Moreover, respondents showed no interest to reduce a risk to a number despite majority of risks were perceived from financial perspective of the company. Together, these findings seem to indicate of the scarcity of resources

among SMEs and therefore in risk management potential risks are prioritized over possible opportunities. Although risk management focuses on financial perspective, risks are not reduced to a single number can imply of the limited knowledge or time constrains of informants.

Collaboration with other organizations is potentially an effective way to manage risks and formal networks formed though formal agreements can offer an access to obtain complementary resources, assets and valuable information contributing to more effective risk management (Kim & Vonotras 2014). Formal networks formed through formal contracts included employees, financier, business partners, suppliers, manufacturers, importers, customers industry alliance, accountant office, consultant and competitors. A common view among the informants was that stakeholders found outside the company are highly important to offer new perspectives.

Besides formal contracts, networks can be based on trust. These interpersonal relationships facilitate exchange of information (Gulatati 1995). Informal networks include competitors, other entrepreneurs, personal network consisting of a variety of contacts in the same industry or other industry, word-of-mouth, inner circle, recreational groups and social media. The findings seem to indicate that information exchanged with informal stakeholders was more tacit and holistic corroborating the ideas of Uzzi et al. (1997).

Collaboration is suggested to be an effective way to manage risks and findings of this research reveal a variety of formal and informal networks. Moreover, as existing research suggests, formal networks were related to products or services provided by the company. However, for many entrepreneurs distinguishing between formal and informal network was not always obvious. In fact, some described their formal networks that although they are formed through formal agreements, the relationship between the two is rather informal. This finding can indicate that although information exchanged with formal stakeholders concerns primarily products or services, also other information can be exchanged and formal stakeholder can be simultaneously both formal and informal. Furthermore, informal networks were regarded as important for the informants, which may imply of the will of receiving knowledge from a variety of sources and from a long distance. The network contribution in each stage of risk management process and the usage of individual resources is illustrated in Figure 13.

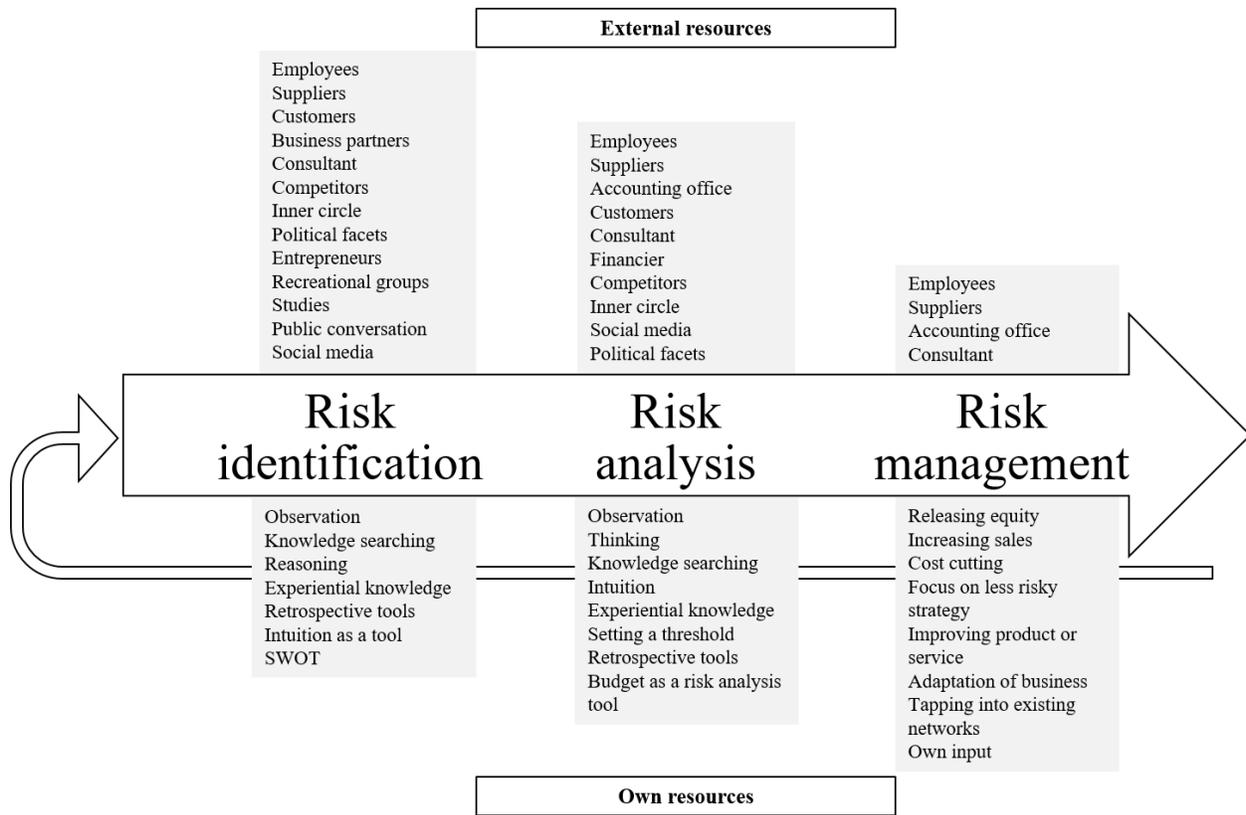


Figure 13. SME risk management process

7.2.1 Identification

Risk identification can be a personalized process based on the *subjective evaluations* conducted by the owner of the company (Herbane 2010) which was partly supported by the findings as some respondents were not owners of the company but managerial level employees who partook the risk identification process. In particular, the resources of the informants were important resources for risk identification and there are several possible explanations for this. The size of the company seems to effect on the usage of own resources for risk management and in general, the smaller the company, the more own resources were utilized. Furthermore, another possible explanation for utilization of own resources might be that own skills are seen most trustworthy: although information and advice can be acquired from different sources, the information is processed with own thinking to draw conclusions. By utilizing own resources for risk identification, the process may be a personalized process based on subjective evaluations.

Several informants mentioned usage of *experiential knowledge* in risk identification, which corroborates the ideas of Gilmore et al. (2004), who suggested that experiential knowledge enables owner-manager analyze situations more carefully. What is surprising is that many respondents hold the view that intuition fills the same criteria as experiential knowledge defined by Gilmore et al. (2004). Furthermore, intuition was seen as a highly controversial resource for risk identification. Some informants hold the view that

intuition cannot be solely trusted, while others rely on intuition. There are several possible explanations for this. Firstly, it is possible that informants who rely on intuition have not had experiences proving intuition not trustworthy. Secondly, it might be that companies utilizing intuition in risk management have limited resources for risk identification and consider it important.

Tools may provide a systematic way to identify risks and frequently used tools include SWOT analysis, brainstorming, interviews, risk questionnaires and risk surveys (Gorzén- Mitka 2013; Dinu 2012). Tools mainly utilized by case companies were retrospective and not particularly designed for risk identification, However, one respondent mentioned usage of SWOT. Thus, no particular tool was used for risk management, rather used tools also contributed to risk identification. This can be for several reason. Informants might not be familiar with specific tools for risk identification or might hold the view that risk identification tools are costly and/or time consuming which would corroborate the ideas of Gao et al. (2011) who suggested that formal risk management approaches can be too costly and complicated for SMEs. Moreover, tools utilized for risk identification were retrospective. A possible explanation for these results may be the lack of knowledge of risk identification and its benefits.

Besides own resources, information was sought from a variety of sources which enabled informant to view potential threats from different perspectives and gain insights on their significance. A possible explanation for this might be that in risk identification the focus is to acquire as much information from different sources to become more aware of on-going issues.

Several different *formal stakeholders* are utilized for risk identification. A common view amongst informants was that formal network members offer an access to information, which corroborates the ideas of Zekan et al. (2011) who suggested that the primary goal of networking is knowledge transfer. Literature also suggests that consultants can contribute to risk identification and in few cases, a consultant was utilized corroborating the ideas of Spedding and Rose (2008), however, consultants provided remarkably more resources than other stakeholders: business advice, budgeting and financial reports. A possible explanation for this result might be that the consult has been hired by the case company for a specific purpose where as other formal network members where originally joined the network through business activities and are primarily used for business activities and simultaneously provide some information on potential risks.

Although there a few academic contributions how *informal network members* contribute to risk identification (Falkner & Hiebl 2015), the findings of this study reveal that several different stakeholders provide an access to information. Furthermore, one participant emphasized the importance of own personal network to gain new perspectives, develop and test new ideas, exchange information and sparring. There are several

possible explanations for differences in network contribution. First, companies operate in different industries and have formed different networks. Second, some companies had long history with its network members, which may indicate that through many years of collaboration, trust has built between these members, which might enable sharing of other resources useful for risk identification besides information. Moreover, exchange of tacit and holistic information with informal stakeholders may be suitable for informants to identify potential risks as the risk identification process itself is also tacit. A possible explanation for the wide informal network utilization can be the desire of the informant to receive as much information from a variety of perspective, which can be perceived more trustworthy, instead of trusting only few sources of information.

Altogether, these findings indicate that formal and informal networks are utilized to gain information. As previously suggested, the focus of risk identification among informants seem to be on receiving as much information as possible. Thus, networks offer an access to information, which is further analyzed and constructed by the informant who draws conclusions of the information received. Furthermore, it can be that this information searching compensates the unsystematic process of risk identification and has become a useful tool for informants. Another explanation for utilizing networks for information searching can be due to limited resources of case companies and in many cases, it is possible to receive information on possible threats while handling business issues with formal network members.

Risk identification is described as a continuous process in academic literature (Herbane 2010) which partly applies to case companies. Respondents were aware of risks they had recognized and usually aware of consequences in case risk materializes. However, case companies are lacking tools to identify threats and used tools provide retrospective information, which doesn't contribute to proactive risk management. Moreover, the risk identification process was somewhat subconscious process, which was conducted in many cases inactively all the time. These findings can indicate of the responsibility entrepreneurs feel of financial risks and although the risk identification process is informal, most significant risks are still attempted to identify in order to take action.

7.2.2 Analysis

Risk analysis among SMEs can be an implicit and tacit process, although risk analysis is suggested to be a daily activity and a formalized plan (Herbane 2010). These results match those observed in the earlier study of Herbane (2010) as no case company had a formalized plan for risk evaluation. Instead of a formalized plan, case companies analyze risks with own resources. A possible explanation for this is the scarcity of resources among case companies, which limits the risk analysis process. Consequently, utilizing own resources contributes to subjective risk evaluation process which is related to risk perception comprised of the owner's experiences corroborating the ideas of Herbane (2010).

Theoretical literature suggest that *experiential knowledge* enables owner-managers analyze situations with greater knowledge based on previous experiences (Gilmore et al. 2004). In many cases, experiential knowledge was perceived as intuition, which gave guidance based on previous experiences. Although intuition was regarded highly important, some respondents mentioned that intuition cannot solely be trusted as it can be mistaken. Respondents mentioned information gained from systems reporting actual data from sales, which has proved intuition incorrect. Thus, information is searched more carefully from different sources. These findings seem to indicate that although intuition and experiential knowledge are regarded as valuable resources, risk analysis requires also other relevant information in order to avoid analyzing risks subjectively. Thus, information and data available from own systems and networks is used, which further corroborate the idea of risk analysis' focus to be relevant information.

In risk analysis several tools can be utilized such as a matrix to analyze the likelihood and impact of a risk (Spedding & Rose 2008; Marelino-Sábada et al. 2013), however this study is unable to demonstrate that case companies utilize specific risk analysis tools. What is surprising is that several respondents mentioned computer as a tool and certain risks were analyzed based on the information found online. A possible explanation for these results may be the lack of adequate risk analysis tools and the lack of knowledge on risk analysis and limited resources for risk analysis. It may be that informants prefer utilizing tools, which they see beneficial to search information and are already familiar. Other tools included budget, which was used to analyze risks from financial perspective. Overall, these different tools and channels aided the respondent to make more informed decisions in the risk analysis process.

It is not clear who contributes to risk analysis and whether advice is sought outside the company (Falkner & Hiebl 2015), however findings of this study reveal that both formal and informal stakeholders take part in risk analysis. It is possible that the group of *formal network members* changes in risk analysis due to need to receive more accurate information, which is seen more beneficial for risk analysis. It is suggested that insurance companies can provide tools to analyze risks more systematically (Gao et al. 2013), however the findings of the current were not able to demonstrate this. A possible explanation for this result may be the limited amount of respondents. Furthermore, it is possible that aid from insurance companies is received when insurance is taken. Several *informal stakeholders* contribute to risk analysis and majority of the informants hold the view that the most significant resources gained through informal networks was information. The utilization of several informal network members can be for several reasons. First, information gained from word-of-mouth, recreational group and inner circle can be utilized to represent new perspectives for risk analysis. Second, competitors and other entrepreneurs might be able to offer more relevant and specific information as well as advice to analyze risks. The utilization of several informal network members can be for several reasons.

Utilization of networks in risk analysis decreases in comparison to risk identification. A possible explanation for this result may be the shifted focus from the amount information to more specific and relevant information. It seems possible that majority of stakeholders utilized, are able to provide more relevant information and data on specific issues. It is possible that the ratio of using formal network members changes in risk analysis due to need to receive more accurate information, which is seen more beneficial.

Before managing risks in the third phase, *threshold of acceptability* can be defined based on the risk appetite and available resources for risk management (Verbano & Venturini 2013). These findings support the idea of setting a threshold as many companies set a threshold for a risk based on financial grounds and once threshold was passed, the potential risk was considered as a threat and was dealt with. In fact, the most interesting finding on risk analysis was that although the process is tacit and implicit, a common view amongst interviewees was that setting a threshold for a risk was important and once the threshold was passed, actions were needed. A possible explanation for this finding might be that by setting a certain threshold, it allows allocation of scarce resources of the case companies to be used elsewhere and once the risk requires actions, these resources can be allocated to handle the risk.

7.2.3 Management

In risk management, analyzed risks are managed with chosen techniques. Literature suggest that owner-managers use their own competencies and experiential knowledge to manage risks (Carson et al. 2000; Gilmore et al. 2004). These findings further support previous research on experiential knowledge as several respondents managed risks with the help of previous experiences and by applying previous knowledge, owner-managers were able to make more informed decisions. Usage of experiential knowledge can indicate that own experiences and knowledge are seen as reliable methods and as the responsibility of risk management is at the entrepreneur, it can be that entrepreneurs rely most on their own resources.

Risk management methods included recognizing market shifts, responding to competitor moves by introducing new products or services, which supports the idea of Kim & Vonotras (2014). Other risk management methods included marketing of own product or service, improving own product or service, cutting costs, releasing financial equity such as selling properties or equipment and adaptation of business model to adapt to changing business environment. Although, a variety of perspectives was expressed, it seems that the results indicate that altogether there are two risk management activities for informants to use: 1) to contribute more with own resources or 2) decrease expenses. It is difficult to explain this result, but it might be related to lack of knowledge of risk management benefits and risk management methods. Another possible explanation for this result may be the responsibility, which informants feel of the risks and therefore, own resources are most widely used. More precisely, it can be that entrepreneurs consider own resources

most trustworthy to manage risks and they are preferred as entrepreneurs are responsible of risks, they might prefer being in responsible of risk management techniques as well.

Internal resources for risk management can be used in SMEs across all types of sectors to manage technology, financial and operational risk (Kim & Vonotras 2014). The results of the current are not able to demonstrate the ideas of Kim and Vonotras (2014) as for operational risks such as talent shortage, word-of-mouth was utilized in an attempt to find new employees. However, the current study was not able to demonstrate the ideas of Kim and Vonotras (2014) of market risks being less amenable for internal strategies as several informants considered that when competition increased cutting costs was a potential solution. Which may imply of the control the informants wish to maintain while managing risks.

For risk management few informants mentioned receiving information through *formal network members* such as accounting office and employees, which supports the ideas of Kim and Vonotras (2014). Furthermore, in some cases a consultant is utilized for specific issues and a variety of valuable information and advice is received which also corroborates the ideas of Kim and Vonotras (2014). However, existing research suggest that it could be possible to receive other necessary resources from formal networks but currently rarely SMEs receive other resources besides information. It can be that, due to the responsibility companies feel of the risks, they are not reaching towards their formal network members in an attempt to gain more resources. Moreover, in cases in which more resources is received from a consultant, it can be that utilizing one can be costly and therefore the services of a consultant are utilized only for specific issues due to the limited resources of an SME.

Insurance can also provide compliance assistance and management services for risk management (Cioccio & Michael 2007; Hollman 1984 et al. cited in Falkner & Hiebl 2015), however in this study informants did not consider receiving aid from insurance companies. A possible explanation for this result is that assistance through insurance is received when the insurance was taken or companies do not consider insurances useful for risk management. Moreover, it is also possible that possible tools received from insurance companies are seen as too challenging and complicated to execute.

Close relations with suppliers can provide aid for risk management by utilizing contracts to ensure quality and delivery times (Falkner & Hiebl 2015; Ellegraad 2008). However, the informants did not consider using contracts as a way to manage risks. Although long delivery times were identified as a risk, it can be that using such a contract to ensure delivery times is not possible. However, one informant mentioned that suppliers can aid in risk management by offering products which are possible to return or exchange in case the product does not sell well.

Informal network can aid to manage risks by ensuring business by nurturing relationships with existing customers and networks can be utilized to attract new customers (Gilmore et al 2004). The findings partially corroborate this idea as few informants mentioned utilizing their existing customer networks in order to try increase sales.

Together these findings suggest that resources found within the company were more widely used than resources outside the company. Owner-managers used their own resources to manage risks. Furthermore, several respondents mentioned that responsibility of risks is at the entrepreneur and therefore own resources were utilized for it. This may indicate that for risk management, the focus is on control, which can refer to the responsibility the entrepreneur has and therefore own resources are seen most trustworthy. However, this partly contradicts with the findings on what network members informants considered as the most useful risk management: employees, suppliers, customers, accounting office and competitors. One explanation for this might be that although external stakeholders are considered most important for risk management, the entrepreneur wishes to maintain control in risk management and therefore does not utilize stakeholders for risk management.

In summary, these findings show that fewer network members are utilized for risk management in comparison to risk analysis and identification. There are several reasons for this results. Firstly, a common view amongst the informants was that risks are their responsibility and therefore own resources should be utilized. Secondly, utilizing only own resources for risk management can indicate of how risk management focuses on controlling these risks. Thus, in order to maintain a control over risks, risks are managed with resources found inside the company, which are close to the informant. The risk management process and the focus of each stage is visualized in Figure 14.

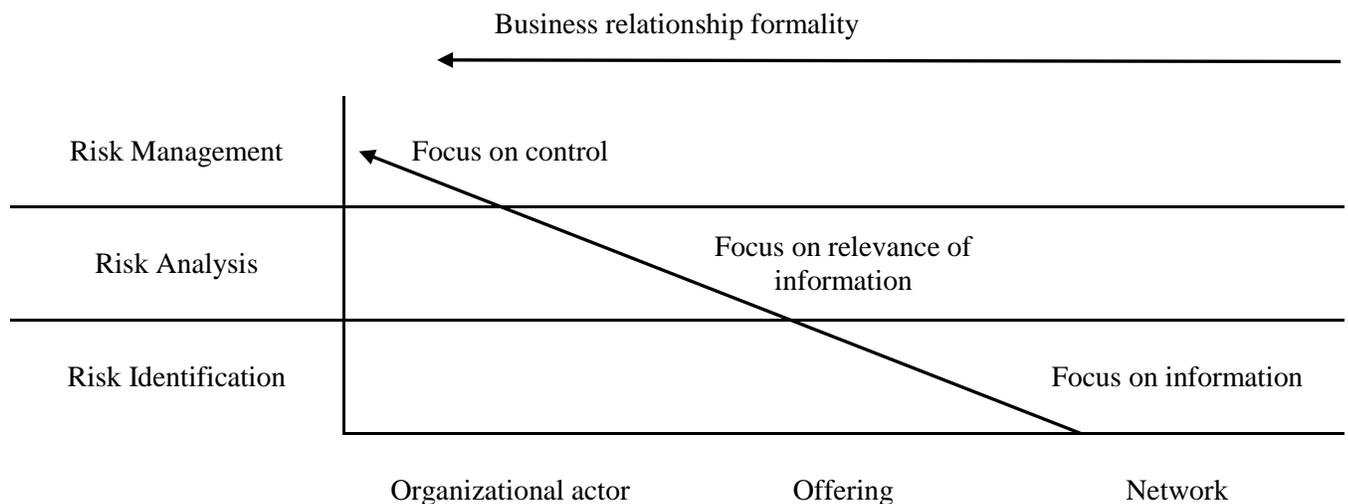


Figure 14. Risk management stages' focus

What is interesting is that one informant mentioned usage of a supplier for risk management who offered trading of products in case the product was not selling adequately. It can be that in this case that the focus is on finding solutions for an issue instead of focusing on controlling the risks. Furthermore, as internal resources mentioned by informants seem limited, networks can have potential to aid in risk management. In particular, if the informant can trust to another stakeholder to provide a solution for a risk.

8 CONCLUSIONS

Megatrends are causing significant changes to companies highlighting the importance of risk management. This study set out to determine how global megatrends affect in the operational field of SMEs, how they are perceived and how potential megatrend related risks are managed. In this chapter, the research questions are answered, conclusions of the study are presented as well as theoretical contributions and practical implications. In addition, limitations are discussed and suggestions for future research.

How do megatrend-related changes affect in the organizational context of SMEs?

Megatrend-related changes affect in a variety of ways in the organizational context of SMEs creating operational and strategic risks. Recognized local level impacts of megatrends include increased competition, increased expenses, recruitment challenges, business difficulties, loss of clientele and decreased sales. In some cases, the vague meaning of the megatrend limited the recognition and perception of its local impact.

How these changes are recognized and perceived?

Megatrend-related changes were recognized by utilizing the resources of the informant and external resources. Individuals used their own thinking, observation and reasoning to perceive changes as well as received information from both formal and informal network members.

Once a change was recognized, a majority of informants perceived the recognized changes through own experiences, which aided to define the nature of the change. In case the experiences were negative, the change was perceived as negative and as a possible threat for the company. Some informants mentioned receiving information and signals from networks, which contributed to perceiving changes.

Informants perceived changes differently. The findings suggest that some megatrends have more implications than others and megatrends such as globalization, automation and robotics received a majority of answers. Thus, it can reflect on the significance of the megatrend itself and although megatrends are described to have significant impacts to all society, it seems that some have more significant impacts than others do.

The perception of an individual can limit the capability to view a change from a larger perspective. Some impacts were perceived extremely negative such as increased competition, which was observed by the informant and it seems that in case the previous experiences were negative, they seemed to overrun other possible positive impacts. Thus, risk perception can limit the perspective of an individual in case the first recognized impact is overpowering.

Technological changes are perceived as unpredictable and fast changes whereas social changes are perceived more slow. Moreover, it seemed that informants considered that technological changes were in many cases unpredictable and therefore seemed to raise more discussion and future speculation among informants. In comparison, social changes such as urbanization and aging population seemed to be more predictable changes and did not raise similarly heated discussion and speculation among informants. In fact, it seemed that social changes were more acceptable for informants.

How SME's are prepared for the identified megatrend-related impacts with risk management?

Preparing to these megatrend-related changes varied among companies showing several ways for SMEs to adapt to changing business environment. Throughout the risk management process, experiential knowledge was broadly utilized as well as own resources such as observation and knowledge searching. In general, the risk management process seems to be unsystematic, tacit, retrospective and risks were handled individually once discovered. Furthermore, this study has shown that tools are rarely used in the risk management process. Taken together, the available measures for risk management are limited: 1) more input from the entrepreneur or 2) decreasing expenses.

Informants integrate risk management tools to tools they are already familiar with. Using a computer as a tool to search information for the risk management process, can indicate that due to limited resources, informants integrate some parts of the risk management process into processes that are already known for them, such as information search from the internet. Furthermore, using systematic tools for unsystematic risk management might not be seen suitable and therefore tools are utilized that also provide information on other issues but also contribute partially to risk management, such as using budget to analyze risks.

How does networking contribute to risk management activities in SMEs?

Networks contribute to the risk management process in a variety of different ways and both formal and informal networks are utilized to gain information. However, the evidence of this study suggest that the network contribution changes as the risk management process progresses. In risk identification, networks are broadly utilized to gain plenty of information from different sources and perspectives and focusing to gain as much information as possible. In risk analysis, the focus shifts to relevance of information as less stakeholders are utilized as more specific and relevant information is searched from stakeholders, which are able to provide specific information. For risk management, majority of informants utilize resources found inside the company, indicating the focus of control. However, in one case a solution for risk was found outside to company, which offers important insights on how network potential could be utilized when focus is shifted to solutions instead of control.

8.1 Theoretical contributions

Theoretically, this study contributes to two ongoing discussions: megatrend perception and risk management in networks.

This study contributes to the nascent literature of megatrend perception revealing that some megatrends can be perceived more versatile and profoundly than others. In fact, in some cases the vague meaning of the megatrend itself can also limit the perception of some megatrends corroborating the ideas of von Goeddeck et al (2013). Megatrend perception is closely related to individual's own observations, thinking and reasoning resulting to a personalized megatrend perception, forming a similar process of perception as suggested by Garvin (2001) and Herbane (2010). Furthermore, some megatrends were viewed more profoundly and both direct and indirect implications of megatrends were perceived, considering the implications megatrends can have on stakeholders. More precisely, this seems to indicate that besides focusing on closely perceivable threats as suggested by Herbane (2010), some individuals are able to evaluate indirect impacts of megatrend-related changes increasing our knowledge of risk perception.

Risk identification was not solely a personalized process based on subjective evaluations of the entrepreneur as previous study of Herbane (2010) suggest and in larger SMEs also managerial level employees took part in risk identification. Experiential knowledge was broadly used for risk identification complimenting the earlier study of Gilmore et al. (2004), however in many cases it was perceived as intuition which in turn was seen as a very controversial asset as some informants relied on it and others did not. Risk analysis process was an implicit and tacit process, which complements the earlier research of Herbane (2010).

In risk identification and risk analysis, *retrospective tools* and tools not primarily designed for risk management are used. More precisely, tools such as budget were utilized for risk identification and analysis, illuminating the integration of risk management tools into tools, which also provide other information. However, one informant mentioned usage of SWOT tool but besides other used tools, the current study does not compliment the earlier studies of risk identification and analysis tools (Gorzén- Mitka 2013; Dinu 2012; Spedding & Rose 2008; Marellino-Sábada et al. 2013). The lack of risk identification tool usage compliments the earlier studies of Gao et al. (2011).

In risk management mainly own competencies, experiential knowledge and activities such as recognizing market shifts, introducing new products or services was utilized complimenting the previous studies (Carson et al. 2000; Gilmore et al. 2004; Kim & Vonotras 2014). This study was also able to illuminate that for risk management other activities are used such as marketing or own product or service, improving own product or service, cutting costs, releasing financial equity and adapting of business model adding to the previous literature of risk management activities (Kim & Vonotras 2014). Operational and market risks

were managed with internal resources and therefore offers new insights to the risk management resources suggested by Kim and Vonotras (2014) by demonstrating that also internal resources can be used for operational and market risks besides external resources.

The visualization of both informal and formal network member roles in different stages of risk management offers several insights for researches. More precisely, this study was able to demonstrate that networks are used in every stage of the risk management providing insights to the discussion of Falkner & Hiebl (2015).

Several different formal and informal stakeholders contribute in risk identification process. In few cases, consultants were used to risk identification complimenting the studies of Spedding and Rose (2008). However, a variety of other formal network members were utilized such as employees, suppliers, customers and business partners adding to the literature of network contribution in risk identification. Informal network members such as competitors, inner circle, other entrepreneurs, recreational groups, social media and public conversation take part in the risk identification process supplementing the nascent literature of informal network participation in risk identification pointed out by Falkner & Hiebl (2015) in their systematic literature review of SME risk management.

Knowledge transfer seemed to be the most important resource between stakeholder members, which compliments the previous research of Zekan et al. (2011). By utilizing a variety of different stakeholders offered an access to a large pool of knowledge which was further processed by the individual who constructed the information and made conclusions. Altogether, the focus of risk identification was in receiving information, which also provides insights on the role and ratio of formal and informal networks contributing to the nascent literature of network contribution in risk identification.

Both informal and formal network members take part in risk analysis. Formal network members such as employees, suppliers, accounting office, customers, consultants and financiers provide accurate information for SMEs providing insights to the role of formal network members on which there are few academic contributions (Falkner & Hiebl 2015). The current study was not able to demonstrate the usage of insurance companies for risk management and therefore is not able to compliment the previous findings of Gao et al. (2013). This study also provides insights how informal network members such as competitors, inner circle and social media take part in the process contributing to the nascent literature of informal network contribution in risk analysis stage pointed out by Falkner & Hiebl (2015). Altogether, the results demonstrate that the focus in risk analysis is to receive relevant information to analyze risks more carefully and the primary goal of networking in risk analysis is knowledge transfer, which compliments the studies of Zekan et al. (2011). Furthermore, this study provides insights on the role and ratio of formal and informal network

members: the amount of informal network members decreases whereas the amount of formal network members increases in comparison to risk identification.

For risk management, few formal and informal network members are utilized. Existing customer networks are utilized in an attempt to increase sales complimenting previous study of Kim & Vonotras (2014). Also in few cases employees, accounting office and suppliers were able to provide information for risk management contributing to the literature on formal network contribution in risk management by Kim & Vonotras (2014). Although, these stakeholders offer information, the responsibility and the actions are taken by the entrepreneur. However, the informants did not mention the usage of insurance companies and therefore this study does not complement the previous studies of Cioccio and Michael (2007). In few cases consultant was used for a specific issue, which compliments the idea of Kim & Vonotras (2014) on formal network contribution in risk management. Furthermore, in one case, supplier provided a solution for risk management by offering products, which are returnable in case the product does not sell as anticipated which compliments the previous study of Kim & Vonotras (2014) on formal network utilization. Although in risk management the primary goal of networking was knowledge transfer complimenting the study of Zekan et al. (2011), networks were utilized to minor extent. More precisely, the role of network members decreased significantly in comparison to risk identification and analyses stages whereas the usage of own resources increased indicating that in risk management, the focus is on control.

Altogether, the current study is able to demonstrate the whole risk management process with its different stages and stakeholder contributions in each stage. More precisely, this study is able to offer insights on what resources formal and informal network members are able to offer in the different stages of risk management and naming out these specific network members. Previous research adds to networked SME risk management by offering insights on what resources can be acquired through networks such as the studies of Zekan et al. (2011) and Gulati et al. (2000). From the perspective of risk management, scholars such as the study of Kim and Vonotras (2014) differentiate between informal and formal networks and their contribution to managing different types of risks, but do not explain in detail which stakeholders these informal and formal network members entail. Furthermore, studies examining the risk management process as a whole from identification to management and not only examining the roles of formal and informal network members, but also examining who stakeholders these formal and informal networks include are scarce.

SMEs included in this study perform networked risk management, which is the most obvious finding to emerge from this study. In particular, networks contribute significantly to risk management offering new information to SMEs and it seems that without networks, the amount of information of potential risk would be significantly smaller. Therefore, it seems essential to consider also the stakeholders and the network the SME operates in when discussing of SME risk management.

8.2 Practical implications

Some megatrend-related changes tend to have both positive and negative aspects, however risk perception often mandates how a change is perceived based on previous experiences. Thus, a negative experience can lead to perceiving a change negatively and in case the experience is extremely negative, it can overrun other aspects of the change. Consequently, by understanding how risk perception can impact on perception, managers can become aware of their potentially subjective perception. By reaching to existing networks, information can be received on perception and receiving information from several perspectives can decrease the subjective role of an individual in perception and increase objectivity. Moreover, by increasing objectivity in risk perception can aid an individual to assess and evaluate a change from a larger perspective to see both negative and positive aspects of a change.

Entrepreneurs as well as managerial level employees of SMEs can utilize the findings of this study to discover new means and measures for risk management as well as improve used ones. First, the findings have revealed that experiential knowledge and intuition can be mistaken. Therefore, besides experiential knowledge and intuition, there should be with another sources of information supporting the intuition such as information found from software regarding the business processes, reports, or from the internet. Second, the findings have shown that accessing several sources of information inside and outside the company results to a more comprehensive risk identification process. Third, the findings reveal the significant role of network contribution to risk management and how the role of network utilization decreases as the risk management process progresses. Currently, the network potential is not necessarily utilized to its fullest potential as besides information access, networks have potential to provide other resources as well. However, in order to manage risks more efficiently, it could be helpful to shift the focus of control into solutions. By focusing on solution, new means for risk management could be discover, in particular as networks have much more to offer and although external stakeholders are seen most useful, they are not utilized.

Furthermore, by understanding the network potential and identifying the role of different network actors providing different resources, can help managers manage risk more efficiently. By knowing which actor can offer which resources in the different stages of risk management, these actors can be utilized more efficiently for certain purpose. In particular, as megatrends are causing turbulent changes in the organizational context, companies can use their networks as a resource to adapt to the changing business environment.

8.3 Limitations and future directions

This study has obvious limitations in terms of context-specificity and generalizability. Due to qualitative research approach, the generalizability of these results is subject to certain limitations. For instance, the study includes a small number of companies. Therefore, further work needs to be done to establish whether these results also apply to a larger sample or whether the differences were related to contextual factors. Furthermore, a larger sample of case companies would offer more detailed and reliable insights on megatrend perception and networked risk management leading into generalizable results. Employing a quantitative research method could provide more rigorous results and a similar sample could be used as in the study of Kim & Vonotras (2014) and extending the sample to cross-national SMEs in different sectors, which could offer more insights on cultural differences as well. Moreover, the findings of this study of own and external resources could be utilized as preset list of answer choices for a questionnaire. In particular, the resources utilized for risk management could be further examined and the role of network contribution, whether it follows a similar focus as demonstrated in this study.

The scope of this study was limited in terms of geographical area, which also limits the generalizability. It would be interesting to assess whether the discovered patterns also apply in a cross-national study and does cultural factors effect on perception, risk management and network contribution. A cross-national study would offer additional information as well as insights that are more generalizable. A similar research design could be applied as in the present study in order to gain rich insights on networked risk management.

The current study has only examined SMEs and further research in this field would be of great help in evaluating whether larger companies also follow similar patterns in megatrend recognition and networked risk management. A qualitative and explorative research approach could be utilized to gather valid and rich information on the risk management practices or large companies.

Some megatrends received more recognized implications than others did and technological megatrends received a scarcity of answers besides automation, robotics and digital platforms. Further research could investigate how these megatrends are perceived in industries that are potentially subject to application of such technologies and what local level impacts these technologies have. Employing a similar qualitative research design as used in the present study could provide valuable insights.

The understanding of megatrends begins on the definition of the megatrend. It would be interesting to compare experiences of individuals within the same network to evaluate are megatrends understood differently. Moreover, to assess how potential misunderstandings of megatrends effect within a network. In order to gather rich data, a qualitative and explorative research approach could be applied and semi-structured interviews could be employed.

During the interviews, several informants provided information on potential future impacts of megatrends although the questions concerned already identified impacts. In fact, future research could examine evaluated future impacts of megatrends, in particular as the development of technological development is increasing.

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APPENDICES

APPENDIX 1: Semi-structured interview guide in Finnish

Miten muutokset liittyvät toimenkuvaasi?

TOIMINTAYMPÄRISTÖN MUUTOS

Millaiseksi arvioisitte seuraavien megatrendien vaikutuksen yrityksenne toimintaan?

Teknologiset muutokset

- Robotiikka
- Automaatio
- Digitaaliset alustat
- 3D-tulostus
- Lisätty todellisuus
- Cyber –ja pilviturvallisuus
- Teollinen internet
- Big data ja analytiikka
- Simulaatiot

Taloudelliset muutokset

- Jakamistalous
- Luonnonvarojen väheneminen

Sosiaaliset muutokset

- Urbanisaatio (Kaupungistuminen)
- Väestön vanheneminen
- Globalisaatio
- Lokalisaatio
- Horisontaalinen integraatio
- Vertikaalinen integraatio

Ympäristön muutokset

- Ilmastonmuutos

- Minkälaisiksi havaitset tunnistettujen muutosten vaikutuksen liiketoimintaan?

Järkeily

- Miten muutat havaitut muutokset käytännönläheiseksi vaikutuksiksi?
- Ketkä osallistuvat tähän prosessiin?
- Mistä saat mahdollista apua prosessiin?

RISKIENHALLINTA

Tunnistaminen

- Mitä resursseja käytät riskien tunnistamisessa?
- Käytätkö työkaluja riskien tunnistamiseen?
- Miten eri sidosryhmät riskientunnistamiseen?

Analysointi

- Mitä resursseja käytät riskienarviointiin?
- Käytätkö työkaluja riskien arviointiin?
- Miten eri sidosryhmät osallistuvat riskienarviointiin?

Hallinta

- Mitä resursseja käytät riskienhallintaan?
- Miten eri sidosryhmät osallistuvat riskienhallintaan?

VERKOSTOJEN OSALLISUUS RISKIENHALLINTA-PROSESSIIN

- Kuuluuko verkostoosi muita sidosryhmiä sidosryhmäanalyysissä mainittujen lisäksi?
- Miten eri sidosryhmiin ollaan liitytty?
- Miten hyödyt näistä yhteyksistä riskienhallinnassa?
- Minkälaista riskeihin liittyvää tietoa eri toimijoiden kanssa vaihdetaan?
- Mitkä verkostot ovat kaikista hyödyllisempiä riskienhallintaan?

APPENDIX 2: Semi-structured interview guide in English

How are changes related to your work?

CHANGING BUSINESS ENVIRONMENT

How would you evaluate the impacts the following megatrends have in the operations of your company?

Technological changes

- Robotics
- Automation
- Digital platforms
- 3D printing
- Augmented reality
- Cyber and cloud safety
- Industrial internet
- Big data and analytics
- Simulations

Economical changes

- Sharing economy
- Resources scarcity

Social changes

- Urbanization
- Aging population
- Globalization
- Lokalization
- Horizontal integration
- Vertical intergration

Environmental changes

- Climate change
- How do you perceive the impacts these changes have in your business?

Sense-making

- How do you transform these recognized impacts into local implications?
- Who takes part in this process?
- Where do you receive aid for this process?

RISK MANAGEMENT

Identification

- What resources do you use for risk identification?
- What tools do you use for risk identification?
- How different stakeholders take part in risk identification?

Analysis

- What resources do you use for risk analysis?
- What tools do you use for risk analysis?
- How different stakeholders take part in risk analysis?

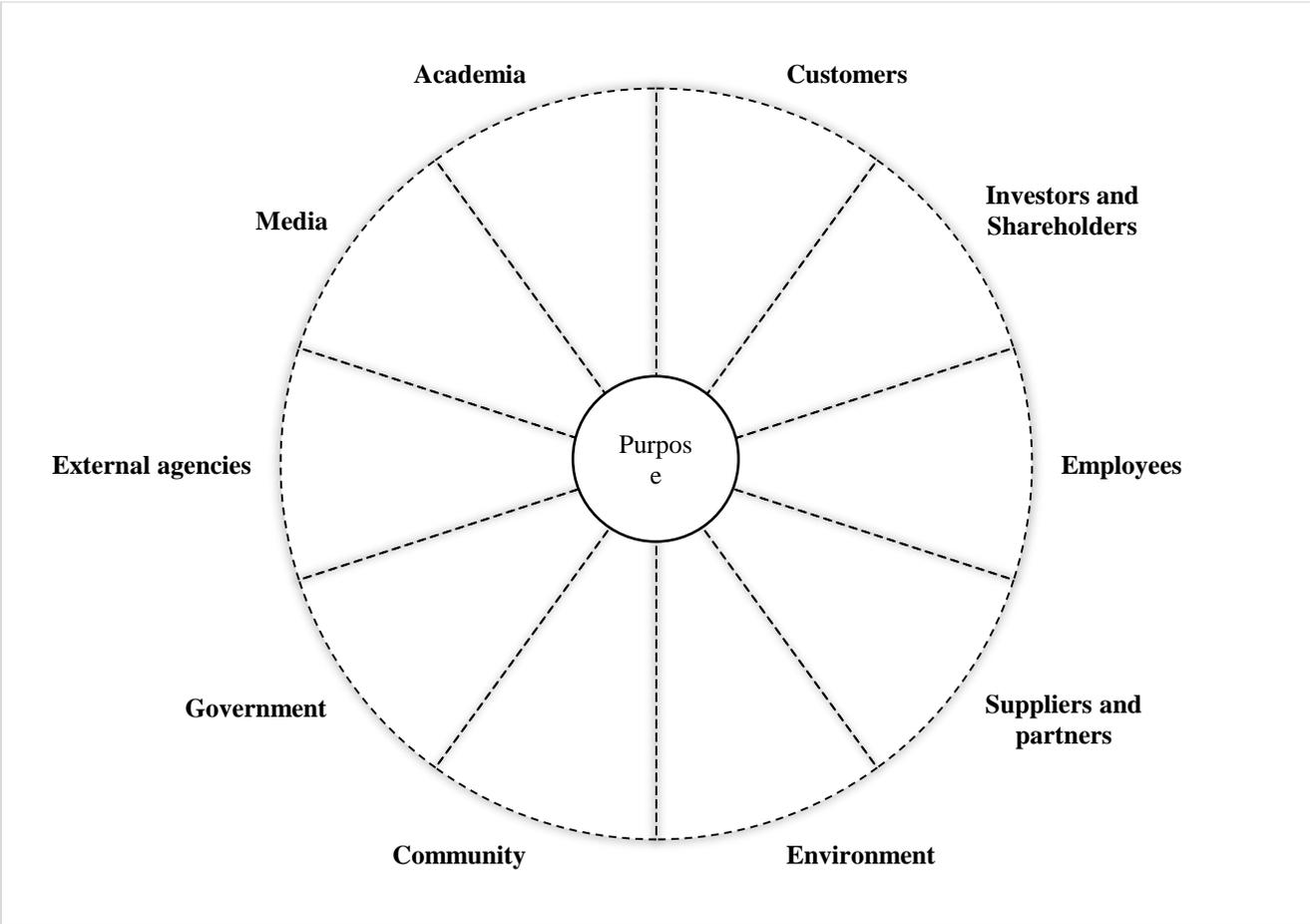
Management

- What resources do you use for risk management?
- How different stakeholders take part in risk management?

NETWORK CONTRIBUTION IN RISK MANAGEMENT PROCESS

- Are there other stakeholders in your network besides the stakeholders mentioned in stakeholder analysis?
- How have you joined these stakeholders groups?
- How do these connections aid in risk management?
- What type of risk related information is exchanged between different stakeholders?
- What stakeholders are most useful for risk management?

APPENDIX 3: Value mapping tool



APPENDIX 4: Commitment versus influence grid

High		
Commitment		
Low		