Risk Management Approaches in SMEs: A Study of Owner-managers in Jordan

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Abstract

The body of literature on managing risks in Small- and Medium- size Enterprises (SMEs) is young but growing. The small corpus of research mostly focuses on formal risk management processes, assuming that managing risks is, or should be, rational – that is, it is optimal, objective and independent of human judgement, procedural, and based on mathematical models. The existing research suggests that SMEs do not apply formal risk management strategies, describing them as reactive to risks. This suggestion is based on evaluations of the sophistication of formal processes of risk management. Formal processes of risk management, however, are developed for large organisations. SMEs are often informal and have little bureaucracy. Despite the growing effort to study management of risk in SMEs, there is a lack of insight into how they actually approach risks. Understanding management of risks in SMEs would allow us to develop more relevant tools which appreciate the structures and processes of SMEs. This raises the question: how are risks approached in SMEs?

This research aims to address the limited knowledge on how SMEs approach risks, increasing our understanding of the role of the owner-manager in managing risks and what shape their decisions on how to approach them. To achieve this, the research explores the broader literature on the concept risk and the notion of risk management. This research argues that the study of managing risks in SMEs should not be confined to the formal processes of risk management. The research represents a shift in approach to studying management of risk in SMEs. This shift focuses on informal decisions and actions to approach risks embedded within the activities of the SME, and the owner-managers' account on approaching risks.

The research is informed by the wider literature on decision-making. Decision-making literature provides a theoretical insight into how owner-managers make risk-related decisions. The research embodies the notion of bounded rationality as conceived by Simon, Gigerenzer, and Selten. Bounded rationality addresses limitations of the notion of a rational decision (which requires unlimited cognitive capabilities such as knowledge, time, and computational powers). It suggests that to understand human decisions, one should take account of cognitive limitations of the

decision-maker and of the structures of the environment in which the decisions are made. To develop this further, the research turns to boundedly rational concepts and theories, particularly the work of Gigerenzer and Goldstein on decision-making heuristics, Kahneman, Tversky and Slovic on risk perception, and Sitkin and Pablo on risk-behaviour. The research also embodies the possibility that decisions are influenced by irrational forces, exploring concepts such as cognitive dissonance.

The empirical part of the research consists of a qualitative study of SMEs in Jordan and their owner-managers' account of managing risks. Data were collected using semi-structured interviews with owner-managers of 31 Jordanian SMEs from five industries: production and manufacturing, construction and contracting, trade and commerce, software development, and services. The collected data was analysed thematically.

Contrary to existing research on risk management in SMEs, the findings of this study suggest that SMEs are not reactive to risks, providing evidence that they approach risks informally. The study shows that owner-managers of SMEs approach risks by approaching their occurrence, approaching their consequences, or dealing with their consequences. What emerges from the study is a more nuanced understanding of informal and undocumented approaches to risks actually used in SMEs. The findings also demonstrate how owner-managers approach risks non-rationally and heuristically: they do not rely on probabilistic calculations or objective models, but make subjective decisions based on how they perceive both the risk itself and the way they would approach it. The findings also demonstrate that the context and environment of the risk, the company, the industry, and the owner-manager shape the owner-managers' decisions on how to approach risk.

This research provides a shift in perspective from the existing literature on risk management in SMEs. It also bridges decision-making literature to the discipline of managing risks. This work contributes to our knowledge on managing risks in SMEs by offering a more nuanced insight into how risks are actually approached in SMEs.

Dedicated to the memory of

Prof. Nabila S. Karam

A great aunt, an ideal person, and an idol to look up to.

I miss you so much, you left too soon.

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List of Abbreviations

CIT: Critical Incident Technique

CoCo: Criteria of Control framework

COSO: Committee of Sponsoring Organizations of the Treadway Commission

ERM: Enterprise Risk Management

EU: Expected Utility

GDP: Gross Domestic Product

IRM: The Institute of Risk Management

ISO: International Standards Organisation

MSME: Micro-, Small- and Medium- size Enterprise

RM: Risk Management

SME: Small- and Medium- sized Enterprise

Chapter One:
Introduction

1.1 Context of the study

The increasing media coverage of terrorism, such as ISIS and the 9/11 attacks, has had major impact on how governments approach such risk (De Goede, 2008). It has made organisations more concerned about their security, and companies take extra precautions to protect their operations in regions vulnerable to terrorist attacks. Events, such as Brexit (the impending withdrawal of the UK from the European Union following a referendum in 2016), have created world-wide turbulences. After the results of the Brexit referendum, the Sterling Pound suffered a severe drop in its price (Forbes, 2016), major companies have withdrawn their businesses from the UK (Reuters, 2018), and European funding for UK-based projects assumed an at-risk status awaiting the new status-quo after the withdrawal (BBC, 2019). A severe flooding in Thailand in 2011 caused major damage and losses to the country. In addition to the lives lost, the flood washed-out the offices of Western Digital, a major manufacturer of computer hard-drives, limiting the supply of these products, creating international disruption to the hard-drive supply chain (The Guardian, 2011), and significantly increasing their prices worldwide (Reuters, 2011). It took around a year for the hard-drive market to recover and their prices to stabilise.

Such events, and several more in the past decades, created a growing awareness of risk. Risks are not only related to major events that create disturbances at macro-levels. Minor or micro-level events, such as a delayed payment, losing a customer, a supplier or an employee, or a faulty product are risks that have consequences as well. Different people, and different researchers define risk differently (Zhang, 2011). In this study, risk is defined as any potential unwanted event or incident, and its consequences, which could realise in the future.

The increasing awareness of risk, alongside major and minor events that caused disturbances around the world in the past decades led to the development of tools to counteract potentially damaging events in the future. Governments and large

organisations, along with academic research, have deployed such tools as risk management.

Risk management is a methodical bureaucratic process undertaken by organisations to prepare themselves shall risks happen. The process identifies, measures, assesses, evaluates, and prioritises risks, providing appropriate strategies to manage and control them, documenting and monitoring them and the actions and decisions taken throughout the process. The tools used in risk management aim for objectivity, minimising human error. Risks are measured probabilistically (Rausand, 2011); they are reduced into a few numbers representing the likelihood of them occurring and their potential impact and consequences. The process itself locks in place actions to be taken, when they should be taken, who is responsible for them, and all the details one should know about these risks (Hubbard, 2009). This methodical process provides clarity, accountability, and rigor to managing risks, albeit at the expense of flexibility, resources, structure, and dynamics of the organisation.

Smit and Watkins (2012) suggest that using risk management strategies could aid the organisation anticipate its exposure to risk in its activities, allowing it to increase its profit and reduce consequent losses. The Institute of Risk Management (2002) explains that risk management should be a continuous and developing process that addresses risks within the organisation's activities, and should be embedded within its strategy, focusing on previous, current, and future activities.

Risk management, in practice and in theory, has thrived over the years and was developed and applied to accommodate various types of risks, such as supply chain, enterprise, strategic, operational, and political risks (Power, 2004). The growth of risk management practice created a parallel growth in research, frameworks, guidelines, and standards. Developments in risk management have been mostly steered toward and dedicated to accommodating the needs, capabilities, and structures of governments and large organisations.

Meanwhile, smaller organisations, such as Small- and Medium- sized Enterprises (SMEs), have received little research attention. The limited literature on managing risks in SMEs mostly focuses on the application of formal standardised processes and strategies of risk management. These processes and strategies heavily rely on bureaucracy and defined structure within the company. However, SMEs tend

to be informal, unstandardized, with minimal bureaucracy. The small corpus of literature suggests that SMEs do not apply risk management strategies (Gilmore *et al.*, 2004; Kim and Vonortas, 2014; Koh and Saad, 2006) despite their vulnerability to risks (Henschel, 2008). Studies have attributed this avoidance of risk management strategies to the incapability of SMEs to apply them (Marcelino-Sádaba *et al.*, 2014); thus claiming that SMEs are reactive to risks. In this thesis, I argue that these claims are questionable.

1.2 Statement of the problem

Within the broader literature on risk management, there is a lack of insight and research into how SMEs actually approach risks (Sunjka and Emwanu, 2015). Studies have found that managing risks in SMEs is often done by the owner-manager (Gilmore *et al.*, 2004; Sunjka and Emwanu, 2015). However, although the broader research on SMEs emphasises the role of the owner-manager in making decisions (Simmons *et al.*, 2008; Watson and Robinson, 2003), research on risk management in SMEs has often come short on understanding this role. Very little research within the risk-management literature has explored how risks are managed from the owner-manager's perspective. To paraphrase Blackburn and Stokes (2000), our lack of understanding of owner-managers' motivations, rationales, and experiences is a major weakness of our knowledge on small enterprises. This is particularly true about our knowledge on managing risks in SMEs.

To date, literature on managing risks in SMEs has been mostly constrained by the views and assumptions of risk management. There has not been sufficient research that speaks to the informal nature of SMEs that revolves around their owner-managers. There has been even less research on the subjectivity of risk and the processes of managing them. If risks are managed informally and subjectively, it is important to understand these informal processes and the forces that lead to them. In short, if we could understand how risks are managed in SMEs, acknowledging the subjectivity and informality of these processes, further research on risk management would be more befitted to speak to the practice.

1.3 Aims and objectives

This research is mainly targeted at literature on risk and risk management in general and within the context of SMEs in specific. In this research, I aim to address the limited knowledge within risk management literature on how SMEs manage their risks, and our even more limited understanding of the owner-managers' role in managing risks and what shape their decisions for doing so. My objective in this research is to identify how owner-managers of SMEs approach their risks, analysing how they make their decisions on approaching risks, and identifying the forces that shape their decision-making process. To achieve this, I raise the following research questions:

Research Question 1: How do owner-managers of small- and medium- size businesses approach their risks? Specifically, what approaches do they take towards risks in their businesses?

Research Question 2: Why do owner-managers approach risks the way they do? Particularly:

1- **How do owner-managers decide on how to approach risks?**

2- **What shapes and informs the owner-managers' decisions on how they approach risks?**

1.4 Significance

Research on managing risks in SMEs is still young and immature. Meanwhile risk management research and practice are becoming increasingly an essential part of business. SMEs are, one way or another, being pushed into subscribing into this risk industry. The significance of SMEs and their vulnerability to risks, and the increasing focus on risk management practice, create the need for further research on managing risks in SMEs to expand the small existing body of literature.

This research speaks to literature on managing risks, specifically within the context of SMEs. It provides descriptive knowledge about approaching risks in SMEs that lacks within the literature. Corvellec (2009) suggests that managing risks is richer in forms and nuances than what the traditional research on risk management can provide. This research contributes to the literature by providing some nuances of

managing risk in SMEs beyond the traditional tools of risk management. In this research, I provide a nuanced account of how SMEs manage their risks, demonstrating evidence contradicting the assumption in existing literature claiming that SMEs are reactive to risk. I do so by rethinking and challenging the assumptions of risk management, acknowledging the informality and subjectivity of managing risks in SMEs. By doing so, I contribute to the existing knowledge on how SMEs approach their risks, and provide a different perspective to studying risks in SMEs. Additionally, I explore the role of the owner-manager in managing risks. I investigate their decision-making process, thus bridging the discipline of decision-making to the study of managing risks.

1.5 An overview

This thesis consists of nine chapters. This first chapter provides an introduction to the research. In chapters Two to Four, I present a review of the literature and theoretical underpinning of my research. In Chapter Two, I tackle the concept risk and the notion of risk management. I discuss risk from a philosophical perspective, presenting different views on the concept. I present the notion of risk management, providing a brief history of the practice, its process, and its criticism in literature.

In Chapter Three, I provide a context for my study – thus, positioning my research in literature. I provide an overview of small- and medium- size enterprises (SMEs), and present a review of the small and young body of literature on risk management in SMEs. I conclude the chapter by arguing that the existing body of literature on risk management in SMEs needs further development. I argue for the need to listen to the practice of managing risks to further our understanding of how risks are managed in SMEs. In this regard, I highlight the significance of the owner-manager of the SME, and their role in managing risk, and the need to understand how they make their decisions on managing risks.

In Chapter Four, I draw on the broader literature on decision making. Particularly, I focus on the notion of bounded rationality as theoretical lens to studying decision making. I explore theories and concepts that could provide a theoretical insight into how owner-managers make their decisions. Specifically, I turn to the work of Gigerenzer and Goldstein on decision-making heuristics, Kahneman, Tversky and Slovic on risk perception, and Sitkin and Pablo on risk-behaviour. I also explore

concepts that are often considered irrational, such as cognitive dissonance. This body of literature helps developing a theoretical understanding of several aspects of the owner-managers' decisions on managing risks.

In Chapter Five, I discuss the methodology of this research and the procedures I took in my qualitative study. I identify the research philosophical positioning and select the research approach and methods. Empirically, I found that a qualitative approach to be most appropriate for my study, as it allows an exploration and understanding of the owner-managers' experiences and subjective thoughts. The chapter describes the study design, and data collection and analysis methods.

In Chapter Six, I present the analysis of the data from interviews with owner-managers of 31 Jordanian SMEs. I present and describe 26 themes that were identified from the data relating to the aims and questions of the research. I use extracts from the interviews to support my analysis and tell the stories found in the data.

In Chapter Seven, I present the findings of my qualitative study. I provide an empirical account of how owner-managers of SMEs approach their risks. I demonstrate that, contrary to existing literature, SMEs are not actually reactive to risks. I do so by identifying three broader themes that relate to the approaches that the owner-managers take to manage their risks. I also tell stories that reflect how the owner-managers make their decisions on how they approach risks. I show that owner-managers of SMEs approach their risks heuristically; that is, they take cognitive shortcuts, relying on the knowledge they have (often being selective with what knowledge they use), and on structures of their environment to approach risks. I also identify forces that shape how the owner-managers approach their risks.

In Chapter Eight, I discuss the findings of the qualitative study, answering the research questions. I also present arguments for rethinking risk management in SMEs, directing future research to broaden its views on managing risks in SMEs. I provide some discussion for taking a different perspective when studying management of risk in SMEs. I also elaborate on the findings of the study, relating them to the existing literature and highlighting and positioning the contributions I make.

In Chapter Nine I conclude the research by presenting the conclusions and recommendations that can be made. I highlight the contribution this research makes to the risk management literature and to the practice of managing risk. I critically reflect

on my research and the journey I took, acknowledging the challenges I faced and the limitations of my research and provide opportunities and recommendations for future research. Finally, I give some concluding remarks.

Chapter Two:
Risk and Risk Management

2.1 Introduction

The previous chapter provided an introduction to this research, outlining its context, definitions, aims and objectives. This chapter provides a review of literature on the concept risk and the notion of risk management. The chapter has two objectives:

1- To explore the concept risk, providing an overview of its understanding and uses in literature, and its philosophy (section 2.2),
2- To provide an overview of risk management: its history, process, and criticisms (section 2.3).

2.2 The Concept Risk

Douglas and Wildavsky (1982, p.1) ask "Can we know the risks we face, now or in the future? No, we cannot: but yes, we must act as if we do". We face risks on a daily basis, be it in our personal lives, at work, in business, within society, within organisations, or at a government level. In the last couple decades, the notion of risk has become central to several aspects of our lives, and the topic of various conversations, news headlines, reports, and speeches.

In the introduction chapter, I defined risk as any potential unwanted event or incident, and its consequences, which could realise in the future.

But what is risk? Beyond a mere definition: what do people mean by risk? Is risk a real object or is it an idea? Can risks be measured? If so, what can these measurements mean to us? How much can they tell us about the future? This section explores the literature on risk discussing answers to these questions. Section 2.2.1 takes a conceptual exploration of risk, investigating the uses of the notion in literature. Section 2.2.2 explores the philosophy of risk. It provides a review of an ontological and epistemological dispute of the concept, a discussion of the notion of uncertainty, and an overview of the notion of probability. Finally, section 2.2.3 gives some remarks from literature on the emergence of a risk industry.

2.2.1 **A conceptual exploration of risk**

Shattell (2004) conducted a concept analysis of risk. She analysed the use of the term in literature. She reviewed literature in different fields such as nursing, psychology, business and industry, and economics, to name a few. Her review found that "the concept widely used but rarely defined" (p.12). According to the author, the term risk is used in literature to mean different things, such as decision-making, danger to self or property, insurance, and forecasting financial losses.

Shattell suggests that the word risk comes from the French noun '*risque'*, meaning loss or hazard, referring to events that could occur in the future inherent to one's activities. Bernstein (1996), however, suggests the word originates from the Italian verb '*risicare'*, meaning 'to dare' – implying the notion of risk being a choice. These two roots can be seen in two conceptualisations of risk I found in literature: inherent risk and risk-as-choice.

This study focuses on inherent risks: a concept of risk found in literature that relates to the ambiguity and uncertainty of future events (e.g. see Arshad *et al.*, 2007; Herbane, 2015; Hubbard, 2009; Power, 2007). Such risk is inherent within the individual's, group's, or organisation's activities and lies in potential disturbances and threats that could happen in the future. For example, the risk of an accident while driving a car. This risk is inherent in the activity of driving a car. This concept would be used within the context of business and companies. An example of such risk would be a potential network failure for a company that relies on computer network, a supplier going out of business, or a key employee leaving the company. Such risks are inherent within the business and have an existing possibility of occurrence; created by external factors, by the nature of the business itself, or have already been created as by-products of business decisions.

Risk-as-choice is a conception of risk which reflect the uncertainty in outcomes of decisions (e.g. see Bernstein, 1996; Lipshitz and Strauss, 1997; Loewenstein *et al.*, 2001; Shapira, 1995; Sitkin and Pablo, 1992). Broadly speaking, this concept relates to deciding whether to take an uncertain and risky action (i.e. risk-taking), or deciding which option to take. For example, uncertainty of online-market demand affects the decision of whether a company should invest in starting an online shopping division, or the risk of entering a new market or starting a new product. Risk

in this example is an outcome (or a by-product) of the decision; the options are to take the opportunity but create risk or decline it and avoid it. This conception mostly puts an emphasis on the decision of risk-taking and risk-avoiding.

Figure 1 shows a simplistic illustration of the two conceptions. The figure shows two cases of a person, let us call her Pandora (represented by an X) walking down a road. In the case on the left (risk-as-choice), Pandora is facing a split-road, Route B is risky (represented by a star) but Route A is not. The risk Pandora would face depends on her choice of route (Route A is risk-aversion, Route B is risk taking). That is, risk is the outcome of the decision to take Route B. The focus in this case is on the decision: "should Pandora take Route A or Route B?".

In the other case (inherent risk), Pandora is walking Route B – as route B would lead to her destination. Her path is risky, and is not dependent of any decisions, but is inherent in the route she is taking. The focus in this case is on the risk itself: "what should Pandora do so that she would not be affected by the risk?".

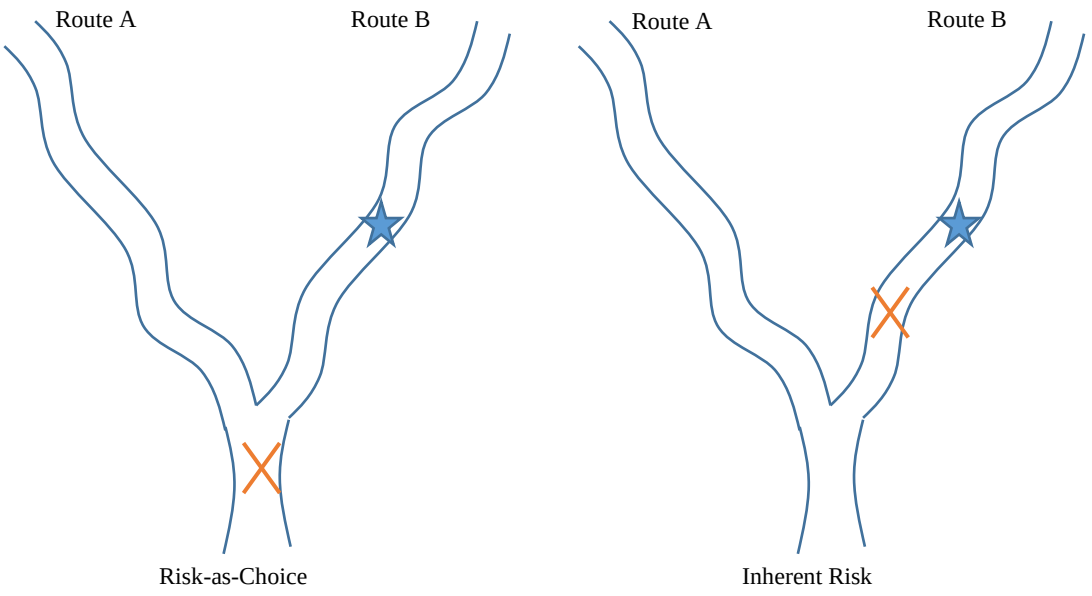


Figure 1: Risk-as-choice and inherent risk

Putting this illustration into a different context: Risk-as-choice represents the decision of an owner-president of a company on whether develop a new product and face the risk of market-rejection (Route B) or maintain the status quo and avoid the risks (Route A). Market-rejection would only become a risk if the decision was to

develop the product. Inherent risk, on the other hand, the company is developing a new product, and has a risk of market-rejection. In that case, the risk is not dependent on a decision to be made but is part of the activity of developing a new product. Although the two risks are the same, in the second case the focus is on what the owner-president of the company would decide to do to protect the company from this risk.

The purpose of this conceptual distinction is to clarify an often undistinguished and interchangeable use of these two conceptualisations of risk. Literature on risk-taking is concerned with risk-as-choice (like how Pandora has to choose whether to take Route A and avoid risk, or Route B and take the risk), while risk management is more focused on inherent risks (like how Pandora has to handle the risk in her route). Many authors, however, do not make or acknowledge this distinction, and end up focusing on risk-as-choice in a research on managing risks (e.g. see Gilmore *et al.*, 2004; Rogers, 2002). Elangovan and Suddaby (2019, p.2) suggest that "There is no shortage of advice and guidance for leaders in making decisions in organizations, the cognitive traps to avoid, and the prescriptions to embrace for optimizing outcomes". The same cannot be said, however, about inherent risks – as it will be discussed in more details later in this thesis.

2.2.2 The philosophy of risk

2.2.2.1 Two schools of thought

In addition to the different conceptual uses of the concept risk, literature has a fundamental epistemological and ontological divide (Zhang, 2011). This divide has been widely explored in literature (e.g. see Döderlein, 1983; Bradbury, 1989; Thompson and Dean, 1996; Hansson, 2010; Zhang, 2011). This section discusses the concept risk from an objective and a subjective school of thought.

2.2.2.1.1 *An objective view on risk*

The objectivist view on risk draws from natural sciences: risks exist, they are determined by physical facts (Hansson, 2010), independent of people's mind and values (Zhang, 2011) defined by statistical expectation value. In disciplines such as risk perception, objective risk is used to contrast how subjects rank or evaluate risks, where a mismatch with statistical expectation value (i.e. objective risk) is interpreted as 'misperception' (Hansson, 2010) or an error (Kahneman *et al.*, 1982). Hansson (2010, p.232) describes the objectivist view of risk such that "an accurate and

reasonably complete characterization of a risk can be made by stating (only) objective facts about the physical world".

Epistemologically, objectivists consider risks to be probabilistic (Zhang, 2011) and some consider probability as the *only* epistemological dimension of risk (Thompson and Dean, 1996) while other dimensions should be debased. From an objectivist view, one *must* understand probability to understand risk (Thompson and Dean, 1996) and any decision based on a non-objective view of risk is considered irrational (Bradbury, 1989). Thus, objectivists measure risks using scientific methods, quantitative data (Zhang, 2011), and mathematical models of probability (more on this later).

The objectivist view on risk has been prevailing in literature (due to advances in and dominance of science and technology) and is conceptualised in terms of economic costs and benefits. The advantage of an objectivist view is that it offers a way to compare risks, as it relies on providing a quantitative measure of the product of the probability and outcomes of an event (Zhang, 2011). This objective measure allows risks to be compared based on a common criterion, thus accelerating developments in theories on risk, and promoting standardised and rational risk decision-making (Zhang, 2011).

However, McKenna (2001, p.53) suggests that the problem with objective risk analysis is that it assumes "risk can be neutrally and objectively measured". Smallman (1996, p.17) discusses Watson (1981) critique of objective risk, suggesting that assuming risk is a unique substance, produced by physical processes, that can be "measured precisely by risk assessment" is "overly simplistic and should be rejected". To quote Short (1984, p.712), "social-science contributions to this paradigm have largely ignored how people in fact live with risks and how living with risks affect their perceptions and behaviour". For instance, people could ignore the standardised and rational practices of risk management when they have alternative perceptions of risk (Kutsch and Hall, 2009).

2.2.2.1.2 *A subjective view on risk*

Relativists have a subjectivist view on risk. Such view treats risk as a social construct, an outcome of social processes (Zhang, 2011). McKenna (2001) suggests that risks are not real but are socially constructed based on perceptions and

assumptions. According to Bradbury (1989), this view assumes that risk is not a physical entity that exists, but rather a social process that is dependent on those assessing and experiencing them. Slovic (2010) suggests that, from this view

> *"risk does not exist 'out there', independent of our minds and cultures, waiting to be measured. Instead, human beings have invented the concept risk to help them understand and cope with the dangers and uncertainties of life. Although these dangers are real, there is no such thing as 'real risk' or 'objective risk'" (p. 733).*

Döderlein (1983) discusses epistemological views on risk. His description of subjective risk does not seem to be consistent with how Bradbury (1989) describes it – a social construct, but rather a subjective belief. He describes subjective risk to have probability based on "the degree of belief in a statement". He also discusses the notion of perceived risk. He describes perceived risk to relate to "an individual's feeling of fear in the face of an undesirable possible event".

Barki (2011, p.280) suggests that risk is but a "figment of our imagination". He suggests that this could help us be aware of, and prepared for, potential undesirable future events, "if and when they do occur". Yet, he argues that outside our minds, risks are only possibilities of events to occur, and once they do, "the notion of risk disappears". Risk is people's reaction to their experience and circumstances based on their concerns about the development in the future (Douglas and Wildavsky, 1982; Zhang, 2011). It is a multidimensional concept and adopting these dimensions in describing risk should be dependent on the observer of risk (i.e. the individual or group), and the context of the observer and the risk (Plough and Krimsky, 1987). These dimensions should not be considered irrational or unscientific, but should form a base for how we understand risk (Thompson and Dean, 1996; Zhang, 2011).

To put this view into perspective, Denenberg *et al.* (1974) and Barki (2011) describe Columbus' journey. At the time, there was a belief that earth is flat. Presumably, shippers assumed there was a risk that the ships would fall off the edge of the world and, thus, insured against it. However, we now know, with certainty, that the risk of that happening has always been zero. The risk only *existed* in the minds of the shippers and the insurers. Despite the historical inaccuracies, this story reflects the

subjective nature of risk: risk was socially constructed based on beliefs, concerns, and available knowledge instead of being based on physical or objective facts.

For this research, the relevant point to take from this philosophical dispute is not particularly ontological: that is, it is not a matter of whether risks are real or imaginary. The relevant point is more the validity of our knowledge: what can be considered valid knowledge about risk? The remainder of this section takes two approaches to discussing this question. First, it takes a look into a dichotomy of risk and uncertainty, and then it explores the notion of probability and the assumed probabilistic nature of risk.

2.2.2.2 Risk and uncertainty (Knightian Uncertainty)

The notion risk is often associated with uncertainty. Some authors use the two terms interchangeably, while others draw a distinction between them. The distinction between risk and uncertainty is often drawn on the work of Knight (1921) – thus calling the latter Knightian uncertainty. This distinction draws on our knowledge, or lack thereof, of probabilities. Conventionally, this distinction is interpreted such that risk are decision-situations where "probabilities are available to guide choice"; while uncertainty are decision-situations where "information is too imprecise to be summarised by probabilities" (Epstein and Wang, 1994, p.283). Some authors offer a different base for distinction. For instance, Power (2007, p.6) suggests that uncertainty becomes risk once it "becomes an object of management", regardless of information about probability. This section focuses on the Knightian distinction, as it is the most common distinction in literature, and as it contributes to the objective-subjective divide on risk. To understand this dichotomy, this section reinvestigates its source: the work of Frank Knight (1921, 1964).

Although the risk-uncertainty dichotomy is often drawn on Knight's (1921, 1964) work, some authors (such as Runde, 1998) describe his work to be more quoted and cited than actually read. This claim is made because although literature often attributes this dichotomy to Knight (1921), "his categorisation of different kinds of 'probability situation' [is] a good deal more subtle than the simple risk/uncertainty dichotomy might imply" (Runde, 1998, p.539).

Runde (1998) attempts to clarify the Knightian distinction, noting that Knight does not particularly focus on an explicit risk-uncertainty *dichotomy*. In the first

chapter of his book *Risk, Uncertainty and Profit*, Knight (1964, p.21, italics added) notes that the concern of his work is with the "contrast between Risk as a *known* chance and *true* Uncertainty". This statement has been the base of the traditional risk-uncertainty dichotomy used in literature. Nonetheless, this contrast, as discussed later, reflects two ends of a continuum (with *known* chances on one end, and *true* uncertainty on the other) rather than two dichotomous (that is, two entirely different (Oxford Dictionary, 2010)) notions of risk and uncertainty. Knight's work actually focuses on a categorisation of "probability situations": *a priori* probability, statistical probability, and estimates. *A priori* probability is an "absolutely homogeneous classification of instances completely identical except for really indeterminate factors" (Knight, 1921, p.224). *A priori* probability is based on *a priori* (in advance, theoretical, and deductive) or mathematical calculations and is often applicable to games of chance (Knight, 1921) such as rolling a die (1/6) or a game of roulette (1/36) (more on this later). Knight suggests that this type of probability is "practically never met with in business" (p.215) and that the proportion of buildings going on fire in a particular region cannot be calculated using *a priori* principles. This proportion, however, can be calculated using statistical probability.

Statistical probability is based on empirical evaluation of an event that cannot be measured based on combinations of probable outcomes (Knight, 1921). The main distinction of this type is its reliance on empirical classification of instances, and its assumption that the past will repeat itself in the future. An example of statistical probability is assigning the probability of 1/1000 to having a faulty product by observing ten out of 10,000 products malfunctioning on the production line. In the conventional distinction between risk and uncertainty, risk is measurable using *a priori* or statistical probabilities. Uncertainty, however, is assigned the third type: estimates.

Estimates happen when there is no valid basis for evaluating probability (Knight, 1921); that is, when it is not possible to compute *a priori* or statistical probabilities. Pure estimates happen when the situation is "so entirely unique" that one cannot form any probabilities based on similar instances (Knight, 1921, p.226).

Knight (1921) suggests that these three types fall on a continuum, where *a priori* and estimates are on the two ends of the spectrum: "There are all gradations

from a perfectly homogeneous group of life or fire hazards at one extreme to an absolutely unique exercise of judgment at the other". The distinction is a matter of degree, all situations fall in between the two extremes, depending on the homogeneity of the possible outcomes. In other words, situations that are purely probabilistic or purely estimates are rather rare. Most real-life situations are a combination of probability and estimates.

The question that can be asked here is: where does one, if one can, draw the distinctive line between risk and uncertainty? An omniscient being would have all the knowledge not only to calculate any probability, but also turn uncertainty into certainty. On the other hand, a fully ignorant person would have absolute uncertainty about even the simplest situations. Looking at it differently, if we measure, with absolute accuracy and precision, every variable affecting the trajectory of a tossed coin (the force and spin at which it is tossed, the coefficient of restitution of the table and the coin, the drag caused by the air, an accurate measure of gravity at that location, etc.) then we can know, using physics, the side on which the coin will land. Recall Denenberg *et al.* (1974) and Barki's (2011) take on Columbus' journey: having more knowledge about the earth changed our probabilistic calculations of the risk that ships would fall off the edge of the globe. Thus, probability is only relevant to our ignorance, and not the physical facts. However, the objectivist view dictates that risk is a matter of probability and is independent of the individuals involved. In other words, it dictates that risk is a matter of pure facts, and so is probability. Not knowing the facts should not change the probability nor the risk (yet it does!). Thus, it can be argued that the objectivist view on the risk-uncertainty distinction is epistemologically flawed as it contradicts its very basic of objective assumptions, as risk and probability are (as demonstrated) dependent on those observing them.

I am not attempting to specifically contribute to the risk-uncertainty distinction; however, I would argue that the notion of uncertainty as distinguished from risk should be rejected within the context of this study. This study acknowledges the subjectivist view on risk: risk is dependent on the individuals observing it. Therefore, the limitations of the individuals' knowledge are part of the risk description rather than them being distinct from it. Uncertainty in this study is a characteristic of risk rather than a distinct notion. As Kaplan and Garrick (1981, p.12) symbolically put it: "risk = uncertainty + damage". Although this 'symbolic equation' is overly

simplistic, it represents how risk can be *uncertain* events or incidents that could – *uncertainly* – cause *uncertain* outcomes.

2.2.2.3 A quick look into the realm of probabilities

Thus far, the notion risk has been described to be associated with probability, be it in the objective-subjective dispute or in the risk-uncertainty distinction. This section takes a look into the realm of probabilities. The science of probability is too broad to be given a short overview. There is no shortage in literature on how to quantitatively calculate risks (e.g. see Rausand, 2011; Wilhelmsen and Ostrom, 2012; Popov, Lyon and Hollcroft, 2016) or probabilities (e.g. see Jeffreys, 1998; DeGroot and Schervish, 2012; Haigh, 2012). The science and mathematics behind these calculations are not relevant to this research, but their complexity is – especially from a lay person perspective. Thus, this section is meant to be illustrative rather than exhaustive. The purpose of this illustrative overview is to provide a brief insight into what is involved in quantitative calculations of risks and probability.

2.2.2.3.1 *An objective probability – The basics*

The classical or objective view on probability is what was earlier called *a priori* probability: the probability can be calculated in advance based on the knowledge of the possible outcomes. When all possible outcomes are known and are equally possible, the probability of an event is the proportion of outcomes favouring it (Haigh, 2012). This is best explained by means of an example: rolling a die. The common die has 6 faces, each with a number from 1 to 6. Assuming the die is fair (i.e. it is not made to favour one number over the others), the likelihood of getting any of the numbers is equal. Thus, the probability of getting one of the numbers (Pr(E)) is the number of wanted outcomes (that is: 1) divided by the number of all possible outcomes (that is: 6).

$$Pr(E) = \frac{number\ of\ wanted\ (or\ unwanted)\ outcomes}{total\ number\ of\ possible\ outcomes}$$

$$\Pr(E) = \frac{n_E}{n}$$

Probability theory gives different formulae and tools for calculating combinations of probabilities, such as rolling two dice, or picking two red balls from a bag, and so on. Nevertheless, risks in real-life are more complex than a toss of a coin

or a roll of a die (except for a gambler), making further discussion of probability theory unnecessary for this study.

2.2.2.3.2 *Frequentist probability*

A frequentist (also called statistical or experimental) probability is based on the frequency at which an event has occurred in the past (Haigh, 2012). The example of a faulty product on a production line was given earlier to explain statistical probability. The frequency (or relative frequency) of an event *E* is defined as:

$$f_n(E) = \frac{n_E}{n}$$

where *n* is the number of repetitions (i.e. the total number of products produced), n_E is the number events occurring throughout the n repetitions (i.e. the number of faulty products amongst the products produced), and $f_n(E)$ is the relative frequency of the occurrence of the event *E* based on *n* repetitions.

The (statistical) probability is then calculated as:

$$\Pr(E) = \lim_{n\to\infty} f_n(E) = \lim_{n\to\infty} \frac{n_E}{n}$$

that is, the limit of $\frac{n_E}{n}$ as *n* approaches infinity. To understand this without the mathematical terms: the probability of an event is its frequency when repetition has happened an infinite number of times. Simply put, the measure of probability based on the frequency of a faulty product becomes more accurate the more products are produced.

2.2.2.3.3 *Bayesian probability*

Bayesian probability is often used in analysing and assessing risks. Bayesian probability acknowledges the limitation in knowledge preventing the calculation of a statistical probability. It gives a numerical value between 0 and 1 (or a 'subjective probability') representing one's degree of belief about the likelihood of an event occurring (Rausand, 2011) (the values 0 and 1 represent a certainty about whether the event will or will not occur). This probability is expressed as Pr(E|K): the probability of the event E given the knowledge K (but is often simplified to Pr(E)) (Rausand, 2011). For example, the owner-manager of a company wants to get involved in a construction project. If she believes the risk of failure of that project (E) is low given

her knowledge (K) of its different aspects (such as its scope, the other parties involved, the customer's financial capabilities, and her company's capabilities and resources), she would give evaluate the probability of this risk (Pr(E|K)) as, say, 0.05 (a 5% chance of failure).

A feature of Bayes' probability is its ability to update based on change in knowledge. Say the owner-manager was informed of the involvement of a suspicious third-party – say, a contractor who is known for his poor quality of work which would affect the company's performance and thus the success of the project. This piece of knowledge (D) would change the 'subjective probability' given to the failure of the project. Bayes' formula would imply that the new probability given the new knowledge (D) is:

$$\Pr(\mathrm{E}|\mathrm{D}) = \Pr(\mathrm{E}) \cdot \frac{\Pr(\mathrm{D}|\mathrm{E})}{\Pr(\mathrm{D})}$$

where Pr(E|D) is the subjective probability given the old knowledge (K) and the new knowledge (D), Pr(E) is the prior probability given only the old knowledge (K), Pr(D|E) is probability that the probability E is true given the new knowledge D, and Pr(D) is the probability of the new knowledge independent of the old knowledge.

Obtaining new knowledge can be applied sequentially to the formula:

$$\Pr(\mathrm{E}|\mathrm{D}_1 \cap \mathrm{D}_2 \cap \ldots \cap \mathrm{D}_n) = \Pr(\mathrm{E}) \cdot \frac{\Pr(D_1|\mathrm{E})}{\Pr(D_1)} \cdot \frac{\Pr(D_2|\mathrm{E})}{\Pr(D_2)} \cdot \ldots \cdot \frac{\Pr(D_n|\mathrm{E})}{\Pr(D_n)}$$

where D_1, D_2, and D_n are all the *n* new pieces of information, and $\Pr(\mathrm{E}|\mathrm{D}_1 \cap \mathrm{D}_2 \cap \ldots \cap \mathrm{D}_n)$ is the probability given all the new information.

2.2.2.3.4 *The realness of probability*

In the preface of his book *Theory of Probability: A Critical Introduction Treatment*, de Finetti (1974, p.xv) declares that "PROBABILITY DOES NOT EXIST" (capitalised in original). He writes,

> *"The abandonment of superstitious beliefs about the existence of Phlogiston, the Cosmic Ether, Absolute Space and Time, …, or Fairies and Witches, was an essential step along the road to scientific thinking. Probability, too, if regarded as something endowed with some kind of objective existence, is no less a misleading*

misconception, an illusory attempt to exteriorize or materialize our true probabilistic beliefs" (de Finetti, 2017, p. xv).

The point de Finetti raises is not about how real probability is; he does not intend to dismiss probability as a mirage (Haigh, 2012). The point is, in a sense, epistemological: not of the *validity* of knowledge obtained, but of the *value* of that knowledge. He rejects the claims that probabilities are absolute. He argues that someone's evaluation of probability could have motivations. Whether we know these motivations, share them, or not, or judge them more or less reasonable, is of no effect. Expressing this in his words, "all these things matter in so far as they determined that unique thing that matters": the evaluation of probability itself (de Finetti, 2017, p.7). In other words, the evaluation of probability is what matters; not the motivations behind it, nor its *accuracy* (how close it is to theoretical calculations). The discussion in this section is made from a lay-person perspective, and not specialist (like a scientist, a mathematician, an economist, or a risk specialist). In other words, the purpose of this discussion is not to dispute the science of probability.

De Finetti's remark raises the following question: what does probability mean? Not in a technical or mathematical sense, but in its meaning for the outcome of the future. The British philosopher, mathematician, and Nobel laureate Bertrand Russell might have answered this question in 1929 when he said, "Probability is the most important concept in modern science, especially as nobody has the slightest notion what it means" (Jauch, 1974).

What does it mean that the probability of getting a 4 when rolling a die is 1/6? Will rolling the die result in a 4 or not? It does tell us that if we roll a very large number of dice (or the same die many times) the number of times we would get the number 4 will fluctuate around one sixth the total number of rolls. Rolling a die *60,000* times means each number on the die is *expected* to appear *around* 10,000 times. In a production line, a 0.001 probability of a faulty products, based on measured frequencies, indicates that when producing a *million* products, *around* a thousand of them are *expected* to be faulty (emphasis on *a million*, *around*, and *expected*). And yet, it tells us absolutely nothing about what the number of the next roll will be – other than its likelihood. Nor does it tell us anything about the next product on the production line. Even when 999 functioning products have been produced, one cannot

(and should not) expect the 1000th to be faulty only to fulfil the 0.001 probability (a fallacy called Gambler's fallacy, or Monte Carlo fallacy, which belong to the fallacious law of averages: the assumption that random events are inevitable or certain to balance out previous events, thus satisfying the statistical probability).

The significance of this questionable meaning of probability comes in place at small scales – that is, when an event is unique or in cases of one-offs or a small number of repetitions. The knowledge of 0.001 probability of a faulty product to a person picking a single product from the production line only helps them decide whether or not to pick one; that is, the confidence with which one would take a product. On a small scale, the *objective* probability has an objective *meaning* only when applied into other mathematical models, or a subjective meaning if applied to a subjective judgement. If not used in sophisticated and accurate models, the *objectivity* and *accuracy* by which these probabilities are measured are as useful as adding an accurate measure of 1.452 inches to a rough measure of 13 feet. This is not to say that one is better than the other, but depending on the desired use of this measurement, 13 feet and 1.5 inches (or 2 inches) could be good enough (after all, these measurements are not used in building a space shuttle). Similarly, a subjective rough estimate of 'probability' should be good enough to be used in risk management – at a small scale. One might argue: but why not measure probabilities accurately? Measuring the 13 feet accurately (to the 3rd decimal of an inch) would require relatively very expensive equipment. Similarly, calculating probabilities objectively and with accuracy requires a vast amount of data (see Rausand, 2011, Chapter 7), which also require quite a lot of resources.

2.2.3 **The risk industry**

Whether risk is real or a figment of our imagination, whether it is a matter of probabilities and physical facts or of subjective experiences and perceptions, risk has become an industry that has gained a significant focus in modern life.

Garland (2003, p.49) says that "suddenly, everyone seems to be talking about risk". Douglas (2003, p.14) tells the story of a pregnant woman being informed that there is a 1/200 probability her baby would have Down's Syndrome, and that there is a 1/100 probability the foetus would be damaged if further tests are taken. Douglas questions the shift to the language of probability, and attributes it to changes in culture.

She suggests that the "possibility of a scientifically objective decision about exposure to danger is part of the new complex of ideas". Power (2004, p.58) notes his impression that articles on financial reporting were most popular in the 1980's; in the 1990's, this popularity shifted to auditing, and in mid-1990's, risk and risk management started to have a significant exposure in mainstream literature.

These remarks, amongst many other in literature, reflect the growth of an industry and discourse revolving around risk over the past decades. A common view attributes this to the increasing risks and dangers in the world. Power (2004, p.62), however, argues that "many societies are more conscious that these issues demand organizational control, intervention and management". Rothstein *et al.* (2006) propose a 'theory of risk colonisation' as an account to the growth of concern about risk in regulations. They distinguish societal risk (that is "both traditional and novel risks to members of society and their environment" (p. 2)) and institutional risk ("risks to organisations […] regulating and managing societal risks, and/or risks to the legitimacy of their associated rules and methods" (p. 2)). They argue that the growing centrality of risk in regulations is not caused by the growth of societal risks, but is the result of the increasing focus on regulatory frameworks to manage them.

2.3 Risk Management

The previous section explored the concept risk. This section provides an overview of risk management. The purpose of this section is to identify and describe the key elements of risk management and highlight the purposes for which it became a common practice in many organisations. Section 2.3.1 provides a brief overview of the history of risk management. The process and key elements of risk management are explored in section 2.3.2. Finally, modern-days risk management is criticised in section 2.3.3.

2.3.1 A brief history of risk management

Modern risk management as we know it today is the outcome of an evolutionary process. To understand risk management process, and the notion it has become in the last few decades, this section briefly discusses the history of risk management (Covello and Mumpower (1985); Dionne (2013) provide a detailed

history of risk management, and Bernstein (1996) describes the history of risk and probability).

Risk management, in some ways, has been used for centuries. Since ancient times, city walls were fortified to protect the city from the risk of enemy attacks and crops were stored in case of prolonged severe weather (Hubbard, 2009), transportation risks in ancient Babylon were covered by loans with interest payable upon delivering bought products (Covello and Mumpower, 1985). The Code of Hammurabi included compensations for people harmed by bandits or floods (Hubbard, 2009).

Over the centuries, managing risks has remained a practice based on personal judgement. The evolution of numbers and probability played a role in the development of risk management (see Bernstein, 1996). The Age of Enlightenment in the 18th century brought with it the emphasis on systemisation and quantification in most areas of research, eventually leading to the development of systematic approach to quantifying risks (risk assessment). These systematic approaches were used in, and mostly limited to, insurance, banking, and financial markets and institutions (Hubbard, 2009).

In the 20th century, the practice of risk management as a systemised process started to flourish. Large organisations started taking self-protective activities such as having contingency funds to overcome currency fluctuations, or hedging activities and derivatives (Dionne, 2013). However, the practice, just like risk assessment, was limited to insurance and financial institutions, and was later adopted by governments and high public risk institutions and establishments such as those related to nuclear power and oil exploration.

Until mid-1990's, risk management remained limited to these industries. With the help of some major events affecting many aspects of life such as economy, business, safety, and technologies – such as disappointing outcomes of investments in new technologies, and failures or scandals in some major organisations (e.g. the BCCI scandal and the Sandstorm report (The Washington Post, 1991), the Barings Bank scandal (The Guardian, 1995), several large scale car recalls in the mid-1990's, and the 9/11 attacks in 2001 (De Goede, 2008)) – the practice of risk management caught the attention of many organisations (Hubbard, 2009; Power, 2004). In addition, a series of reports (e.g. the Cadbury Report (1992), and the Turnbull Report (1999)) and

a new wave of regulatory mandates (such as the Sarbanes-Oxley Act (2002) and the Basel II Accord (2004)) motivated organisations to implement risk management strategies (Drummond, 2011; Hubbard, 2009). These reports instructed a range of organisations to manage all their significant financial and non-financial risks (Drummond, 2011). Even organisations not directly affected by these reports and regulations became part of the raising awareness of the new 'risk culture' (Hubbard, 2009).

This risk industry became a crucial part of organisations, both at intra- and inter- levels. Risk management in organisations is no longer focused only on internal risks. Many organisations now look beyond their own boundaries, and some require other organisations within their network to have a risk management strategy. For example, supply chain risk management – supported by recommendations from the Big Four auditing firms (EY (2015), PWC (2016), Deloitte (2017), and KPMG (2014)) – suggests that organisations should understand the risks of their supply chain by acquiring detailed knowledge about their network. Such detailed knowledge is much easier to obtain when the suppliers have risk management strategies implemented. Thus, organisations would favour suppliers with more transparency and awareness about their risks. Nowadays, risk management has become a widespread practice among organisations across different areas.

This history can shed a light at why risk management is the way it is today. First is the growth of risk management during the dominance of systemisation and quantitative evaluation in research. This dominance has dictated the ontological and epistemological stances on risk and risk assessment. This granted quantitative assessment and probability a supremacy over subjective and perceived evaluation of risk, and the procedural prescriptive dominance in research has favoured a systemised process of risk management. Second is the evolution of risk management from finance and insurance - both of which are highly standardised and quantitative fields. As risk management started to shift into other fields, it maintained the standardisation and quantification embedded within its original emergence. This influence was not challenged enough to create a shift in approach as it conformed with the dominating schools of thought in research. Finally, the institutional and organisational focus on accountability and governance favoured the objective procedural nature of risk management. Power (2007, p.4) describes this transformation of risk management as

an ‘audit explosion in new clothing’, reflecting the focus on accountability and monitoring in organisations. He suggests that “Discourses of risk have become more explicitly managerial and regulatory in form, a mode of governing as such” (p. 4).

2.3.2 The process of risk management

Several frameworks and standards have been developed for risk management. For example, the International Organization for Standardization introduced the ISO31000 (2009) standard in 2009 – or its British version: BS ISO31000 and its complementary Code of Practice BS 31100 (2008), the Institute of Risk Management (2002) in the UK developed its own risk management standard, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) (2004) has an Enterprise Risk Management framework, and several others. These frameworks and standards are methodical, procedural, and bureaucratic. They require a clear organisational structure and a clearer documented chain of decisions, actions, and responsibilities.

The existing frameworks, guidelines, and standards (hereafter called frameworks) for risk management are based on the same core principles: risk identification, assessment, evaluation and prioritisation, risk mitigation or treatment, and risk monitoring. Although these frameworks are generically similar, they are specifically different (Rausand, 2011). For example, in the IRM framework, risk identification is part of risk analysis, and risk assessment includes risk analysis and risk evaluation (see also Rausand, 2011). The COSO framework, on the other hand, separates risk identification from risk assessment, and considers risk assessment and risk evaluation as synonymous. This section focuses on the generic fundamental aspects of risk management and not the specifics of a particular framework. The remainder of this section describes the principle elements of risk management: risk identification, risk assessment, risk mitigation, and risk monitoring.

2.3.2.1 Risk identification

Risk identification is a crucial element of risk management. A comprehensive and extensive detailed list of risks is generated, identifying the organisation’s exposure to uncertainty (ISO31000, 2009). The generation of this list should be methodical to include all significant activities and their risks, as those are the risks carried over throughout the process. Risks can be identified through various methods, such as

organisational charts, flow charts, event chain diagrams, brainstorming, or SWOT analysis (Borghesi and Gaudenzi, 2013).

2.3.2.2 Risk assessment

Regardless of the size and capabilities of the organisation, its resources will always be limited. Dealing with all the identified risks could drain these resources. Thus, risk assessment identifies which risks should receive higher attention and resources. Additionally, risk assessment aims for a better understanding of different aspects of risk, such as the likelihood of the risk materialising, its impact and consequences, and the benefits and opportunities associated with it (Borghesi and Gaudenzi, 2013). Therefore, it provides an input for the decision on how to deal with that risk (ISO31000, 2009). In risk management, risk assessment provides a quantitative measure of risk that characterises it by its severity of impact, and its likelihood of occurrence.

Having said that, literature and risk management frameworks provides several tools for assessing and prioritising risks. This section focuses on two of the most commonly used tools: risk matrices and risk registers.

2.3.2.2.1 *Risk matrices*

Risk matrices are commonly used in assessing and prioritising risks. They are used to articulate the level of risk; to rank risks; to justify actions; and to re-assess risks (Cook, 2008). A risk matrix is often a two-dimensional matrix that displays the likelihood and impact of risk. Figure 2 shows a simple 3x3 risk matrix, risks (1 to 5) are placed according to their likelihood and impact. The Low-High scales on both axes can be other types of scale: for example, likelihood can be a 5-point scale of ‘Very Unlikely’ to ‘Very Likely’, or a scale of probability from 0 to 1. The colouring of the matrix (or Heat Map) represents the risk level, where red is high risk – and should get highest priority, and green is low risk – and can get the lowest priority. The heat map itself depends on risk acceptability: that is, what levels of likelihood and consequences are considered necessary to attend to with a higher priority. In the example given in the figure, risks 1, 3, and 5 should receive the highest attention, and should be resolved as soon as possible. Risk 4 can receive little attention, and can be ignored (but continuously monitored)

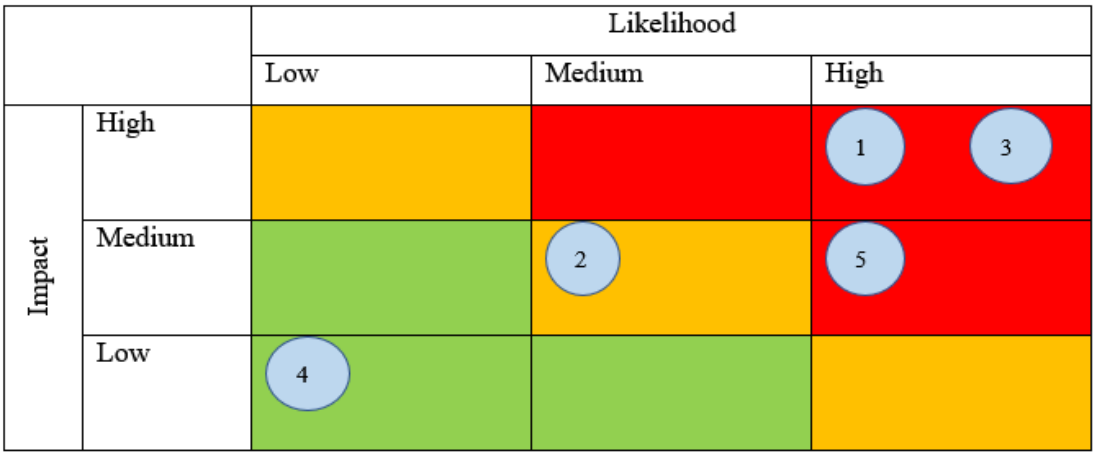


Figure 2: Risk matrix

2.3.2.2.2 *Risk registers*

Risk registers is another tool commonly used in risk management. This tool is more comprehensive than risk matrices, as it can present risks in more details and can be used to monitor the whole risk management process. Risk registers often come in a form of a table, generated on a spreadsheet software – such as Microsoft Excel – or on a specialised software (Drummond, 2011). Unlike risk matrices, the likelihood and impact of risks are given a numerical value. Risks are prioritised based on their risk scores, often calculated as the multiplication of likelihood by the impact – or some similar sort of calculation. The list is often sorted based on the risk score, or colour coding (similar to risk matrices) is given based on risk acceptability. Figure 3 shows an example of a hypothetical risk register in a manufacturing plant (risk description would often include more details and specifics about the risk).

Priority	Risk Description	Risk Owner	Likelihood	Impact	Risk Score	Actions
	A detailed description of the risk	The person responsible for monitoring the risk	The likelihood of risk occurring	The impact of risk	Likelihood x impact	The actions to be taken to mitigate the risk
1	A fault on production line	Production line manager	7	8	56	Monthly preventive maintenance of machines
2	Power outage	Plant manager	3	7	21	Switch to generator
3	Telephone communication outage	Sales manager	1	3	3	Contact telephone company

Figure 3: An example of risk registers

2.3.2.3 Risk mitigation

After identifying and assessing risks, decisions are to be made on how to handle them. The IRM (2002, p.10) framework describes this as "the process of selecting and implementing measures to modify the risk". Mitigating risk, in short, is lessening it in some way (Hubbard, 2009).

Risk management research has categorised these decisions or actions into four risk mitigation strategies: risk avoidance, risk reduction, risk retention, risk transfer (Hubbard, 2009). There is no consensus in literature on the labels given to each strategy. For example, the labels used in this section are based on Hubbard (2009). Hopkin (2010), for example, discusses the 4T's: Tolerance, Treat, Transfer, and Terminate– which are synonymous to Hubbard's. The COSO (2004) framework propose avoiding, accepting, reducing, or sharing risk. Additionally, different frameworks have a broader range of strategies, which can all still be covered under the four mentioned earlier. The labels in this section are chosen deliberately to avoid confusions caused by the different uses in literature.

Risk avoidance means not accepting to engage in actions that could create risk (Hopkin, 2010). For example, if a company sees a major risk in a particular project, risk could be mitigated by avoiding the project itself, or one would avoid driving to mitigate the risk of having a car accident. Moosa (2007) describes this as a negative technique, as it means losing the opportunity or potential benefits of accepting the risk. Risk avoidance could also be interpreted as risk termination, where the activity associated with the risk would be terminated (Hopkin, 2010). For example, if one of a company's suppliers is showing signs of bankruptcy, the company would stop dealing with that supplier.

Risk reduction is to lower its probability or likelihood of occurrence or its impact and consequences. For example, wearing a seatbelt would reduce the impact of a car accident. Hiring a specialised moving company would reduce the likelihood of product damage. Training workers on using hazardous machines would reduce the likelihood a worker would injure himself or herself. In short, the aim of this strategy is to move risks from a 'high' to a 'medium' or 'low' position.

Risk retention is accepting it. In short, it means doing nothing. Risk is retained when it is tolerable, either for being very unlikely to occur, or for having an

insignificant impact. Risk is also retained when it is not possible to do much about the risk, or when doing something would cost more (financially, or otherwise) than the benefits of the action. Organisations may retain, or tolerate, risks beyond their comfort zone or risk appetite to be able to achieve their objectives (Hopkin, 2010).

Risk transfer, as the name suggests, means to let another party take (or share) the risk. For example, if a company wants to transport products to the customer in another country, it can transfer the risks of international transportation to the customer by delivering the products to the local ports. Another way of transferring risk is using a third-party as a medium. For example, large production companies sell their products to local shops instead of selling them directly to the end-user. By doing so, the production company transfers the risk of sales to the local shops, which in turn bears the risks of selling to the end-user. Insurance is often considered a form of risk transfer: by paying a premium, the risk is transferred to the insurer. However, some argue that the risk of being killed in a car accident cannot be transferred to the insurance company (Moosa, 2007). Insurance is a form of compensation shall the insured be harmed by a risk.

Some authors and frameworks, (such as Hopkin, 2010; Wolke, 2017), propose using specific risk mitigation strategies based on the risks' position on the risk matrix. Figure 4 shows a modified version of Hopkin's (2010, p. 246) suggestions of risk responses. The figure suggests that high risks (high likelihood and impact) should be avoided and terminated. Low risks that are unlikely to happen should be transferred to another party (such as insurance or outsourcing) if they have a high impact and tolerated if the impact is low. Risks that are more likely to happen with a low impact should be reduced.

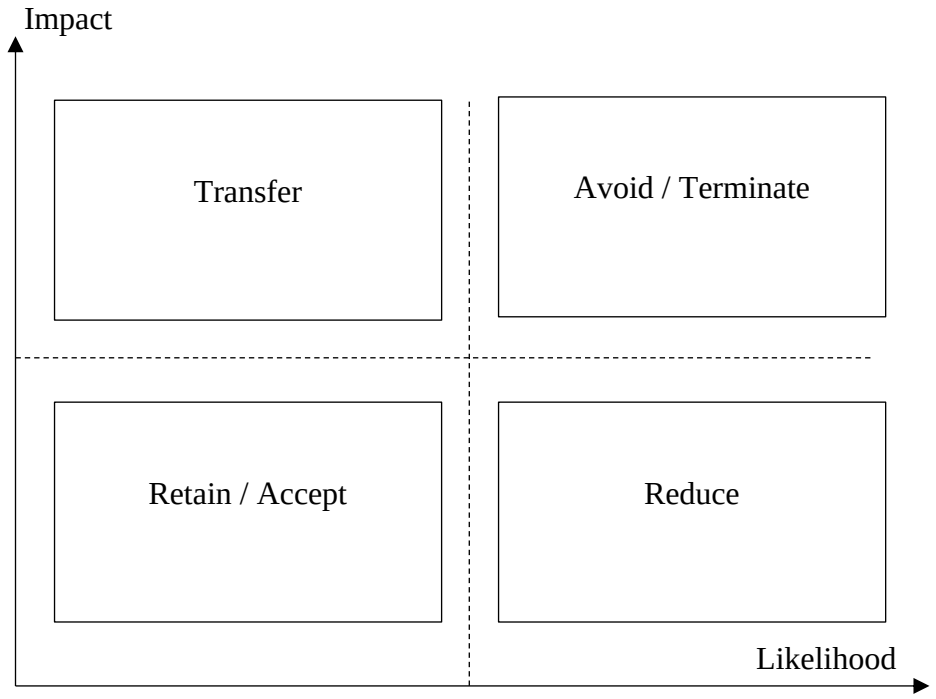


Figure 4: Risk mitigation based on risk matrix

2.3.2.4 Risk monitoring

Risk management is a continuous process: risks are continuously assessed and re-evaluated, and actions assigned to mitigate and control them are monitored and reconsidered. Risk management frameworks propose documentation and communication of risks and related actions (Institute of Risk Management, 2002). Records of risks should include various risk management activities, such as risk management administration, risk mitigation approaches, and improvement plans (Hopkin, 2010). For example, the IRM framework (2002, p.11) suggests that "Effective risk management *requires* a reporting and review structure to ensure that risks are effectively identified and assessed and that appropriate controls and responses are in place" (italics added). As mentioned earlier, tools such as risk registers and risk matrices are usually used for monitoring risks. The IRM framework also suggests the use of regular audits of policy and standard compliance. In short, monitoring risks means the process of risk management is continuously repeated.

2.3.3 Criticism of risk management

This section started with describing how ancient civilisations built walls to protect the city from enemy attacks. Nowadays, risk management has somewhat turned into a tool of accountability – a red-tape process. Governments, for example,

apply risk management to avoid blame (e.g. see Hood (2009) and Power (2004)). Power (2007, p.11) suggests that risk management is being designed to allocate responsibility (risk registers, for example, explicitly assigns and documents these responsibilities); and organisations are adopting risk management strategies "to show that they have done everything that is reasonable because of fear of institutional sanction". Putting it simply, risk management is no longer *building a city-wall* but a tool to protect the organisation by assigning accountability. Although risk management protects organisations from risks, it is mostly being used by organisations to protect them from liability. Recall, for instance, Rothstein *et al.* (2006) distinguishing between societal and institutional risks and proposing a theory of risk colonisation. They suggest that managing institutional risks (in this case, reducing liability and providing procedural and rational grounds for decisions) comes at the cost of lowered concerns about societal risks (for example, the safety of those involved). The authors provide a few examples of this: for instance, in the late 1990's, the UK probation service provided risk assessment protocols demonstrating "procedural rationality for decision-making" to justify how they manage convicted paedophiles released from prison (Hood and Rothstein, 2001; Rothstein *et al.*, 2006). However, little has been done to have better public protection, as they were unable to (probabilistically) predict the risks (Rothstein *et al.*, 2006). (For more on blame and accountability in risk and risk management, see Douglas, 2003; Hood, 2009, 2010; Hood and Rothstein, 2001; Wolff, 2006).

Additionally, risk management reduces risks into two-dimensional entities, consisting of likelihood and impact, measured objectively and managed rationally. However, risk is constructed in a non-linear, non-rational manner (McKenna, 2001). The existing linear risk management techniques and processes produce a "façade of order and control that do not exist in an essentially constructed and complex organizational world" (McKenna, 2001, p.54). This *façade* is being forced, one way or another, onto those who want it and those who do not. Additionally, Zhang (2011, p.13) suggests that "The history of project management showed that ignoring other risk constructions would lead to serious failures".

Drummond (2011) criticises and highlights the risks of risk management. She focuses in her paper on risk registers. Nonetheless, her arguments can also be translated and applied to the formal process of risk management as a whole.

Drummond suggests that risk registers could create the risk of various illusions. Illusion of comprehensiveness, where "the resultant list of risks may look comprehensive, disaggregation may lull managers into a false sense of security by making potentially potent hazards seem less threatening" (p.262); illusion of precision, where the reduction of risks into numbers could lead to a belief that those numbers are accurate rather than an estimation; and illusion of control, where the idea of risk being "managed" and monitored could create a belief that it is controlled. In an article in the Harvard Business Review, Merton (2013) asks the reader whether they would feel safer driving a four-wheel drive car in a snowstorm or a two-wheel drive. Although he suggests the expected answer is the four-wheel drive, he also explains that, statistically, accident rates of both vehicles are similar when driving in snow. The innovation - the four-wheel drive, did not fail to make people safer, he explains. The similarity in accident rates is caused by the change of driving habits when *feeling* safe. In other words, because drivers feel safer in the four-wheel drive car, they are more likely to drive less cautiously compared to when driving a two-wheel drive. This example reflects how having a risk management process could create the illusion of "safety" or control. It can be argued that safety regulations lower the overall safety as they could lead people to become less vigilant and careful (Power, 2007).

Drummond (2011) also discusses the symbolic impact of risk registers. She describes how a system of notation represents intangible, elusive and dynamic risks as tangible, controllable, and predictable. This representation happens when risks are given a clear and defined description and reduced into a few numbers to be controlled. The author also describes reviewing and ticking risks off risk registers as a potential ritual, a "prescribed act of performing", "a re-affirmation of responsible and diligent management" (p.264). In this ritual, the focus turns to clearing the list of risks – which is symbolic of good management and a riskless business – than actually managing these risks. The danger of this ritualistic behaviour is mistaking the map for the terrain. Maps are representative of the real world, risks as entered into a risk management process are a representation of the concerns of future events. Maps are not accurate, nor do they represent all the features of the terrain. Drummond suggests that, like maps, risk registers are "likewise partial representations. They reveal but they also conceal" (p.261). That is, when risks are reduced into numbers, they lose the accompanying concerns, perceptions, and environment that created them. Barki

(2011), however, criticises this analogy. He suggests that while maps represent *real* terrain that exists in the real world, risk registers represent a notion, or a figment of imagination – making the potential misleading of these representations more substantial than what Drummond initially proposed.

In a study on the effects of risk management devices in a Finnish municipality, Vinnari and Skærbæk (2014) found that applying risk management created risks that would not have been created otherwise. Specifically, they found that applying risk management created legal and operational risks, and created uncertainties relating to resources allocated to risk management.

2.3.4 Alternative approaches to risk

The purpose of this chapter was to introduce the concept risk and risk management. However, another purpose of the chapter is to present different elements of risk and risk management from different perspectives to eventually demonstrate broader perspectives and lenses through which risk and risk management can be studied. The present research, as discussed in later chapters, would speak the language of the small body of research that criticises and questions the assumptions of risk management contributing to the broader literature on risk management.

Few authors have taken a critical perspective on risk management. For instance, Lalonde and Boiral (2012) critically review the ISO31000 standard, discussing its contribution but mostly highlighting the pitfalls and misconceptions that it could lead to. In their study, they conclude that "risk management should be seen as a practice-based approach, a strategy that managers *do* and not a strategy that managers *have*", recommending that managers should question their own assumptions about risks and their operations, being vigilant in monitoring how they manage risk. However, Lalonde and Boiral (2012) mainly focus on improvements that could be made to the standard rather than actually being critical of the assumptions it makes.

Searching for publications about "critical risk management" (or any relevant variation) yields results concerning management of critical risks. Very little research has taken a critical perspective on the assumptions of risk management.

Much of the authors taking a critical perspective on risk management focus on the analysis and assessment part of it. This critical perspective mostly relates to the

objectivity and subjectivity of risk discussed earlier in this chapter. Authors such as Aven (Aven, 2018; Aven and Krohn, 2014; Aven and Renn, 2009), Hansson (2010), and Corvellec (2010) suggest that the conventional methods of risk assessment are "subtended by a view of risk as a kind of uncertainty that originates in an adverse event and that should be addressed in formal and scientific terms" (Corvellec, 2010, p.145). They argue, however, that there should be an increasing awareness that risks cannot be, and should not be, reduced and limited to objective facts. They suggest that psychological, social, cultural and political dimensions of risk should be integrated in assessing risks.

In a recent paper for instance, Aven (2018) proposes a check-list based risk assessment tool that integrates risks with the psychological and cognitive risk assessment of those assessing it. The author uses what is called "system 1 and system 2" modes of thinking in cognitive psychology for the integration. This dichotomy was best explained in (Kahneman, 2011) book *Thinking, fast and slow* (although the two systems had been already proposed in literature multiple times beforehand). To explain briefly, System 2 is analytical, logical and slow. In that mode, the mind takes information, and processes them 'consciously' much like when one solves a long mathematical equation, or analyses risk using probabilistic and objective measures. System 1, however, is fast, intuitive, and automatic. In this mode, the mind processes the information 'unconsciously' (so to speak), much like when someone calls your name, your mind – without 'thinking' – knows you are being called, or when one has seen a terrorist bombing on the news and immediately fears being caught in one. These two systems have various applications in different areas of knowledge. Aven uses them (system 1 specifically) to build a tool that captures the assessment of risk done 'unconsciously' by those assessing it. The tool he proposes consists of a list of questions or tasks that should be asked when assessing risks. These questions and tasks aim to capture thoughts from both systems. He suggests that doing so would improve the practice of risk assessment and provide more holistic tools that would capture the subjectivity of the practice. He suggests that such tool would bridge a gap between risk analysts and decision-makers.

Some authors take a critical perspective on risk management as a process. In addition to the criticisms discussed in the previous section (which highlight the weaknesses, pitfalls, and possible dangers of risk management), authors, such as

Corvellec (2009) and Van Asselt (2005), criticise the focus of risk management research on documentations and records that are evidence of management of risk. Van Asselt (2005, p.abstract) proposes that risk and uncertainty can be accommodated by "empirically research[ing] logics, manners and strategies actually adopted in dealing with uncertainty" and risk. He argues that existing literature that focus on how different practices deal with risks and uncertainty lack consideration of the logics and manners which relate to risk and uncertainty.

Corvellec (2009) suggests in his paper that management of risk can be, as he calls it, silent or near to it. He explains that there is an assumption in risk management research that organisations that are exposed to significant risks are best to study risk management, and that studying organisations that use systematic risk management approaches would yield best results. He suggests that risk management is often reduced in research to "explicit, even formalised, risk management" (Corvellec, 2009, p.287). He argues that these assumptions are problematic as they prevent risk management research from recognising the merits of studying risk management in organisations that do not explicitly deal with risks, or those that do not manage their risks through explicit risk management processes. He argues that risk management is much broader and richer than what focusing on explicit use of risk language within an organisation or formalised risk management processes could offer.

The criticisms of risk management discussed in the previous section and the critical perspectives discussed in this section are aimed at the discipline in general. However, they would be amplified when applied to Small- and Medium- sized Enterprises (SMEs). After all, risk management in large businesses is often the responsibility of specialised or at least dedicated people or teams. These specialists can be aware of the intricacies of risk management (after all, they are paid to dedicate their time to doing so). In SMEs, however, managing risk is often done by the owner-manager, or is lost amongst the company's activities (Smit and Watkins, 2012). This would make the possibility of falling into these pitfalls even higher.

2.4 Chapter summary

In this chapter, I explored the concept risk. I started with a conceptual exploration of risk and discussed its different uses in literature. This exploration was followed by a philosophical debate on risk, exploring the two philosophical schools: the objective school and the subjective school. The objective school views risk as an entity, measured only through probabilities based on physical facts, and is independent of the people observing it. The subjective school, on the other hand, views risk as a socially constructed concept, an image drawn by those trying to foresee the future based on their own experiences and concerns and through their own perspective. Furthermore, the concept of uncertainty as opposed to risk was discussed. Literature distinguishes between risk and uncertainty where the former is measurable, and the latter is not. This differentiation was first coined by Knight (1921) who proposed a trichotomy of probabilistic situations: *a priori* probability, statistical or frequentist probability, and estimates. The distinction between risk and uncertainty, and *a priori* and frequentist probabilities and estimates led to the exploration of probability. The concept of probability – and therefore the probabilistic view on risk – was criticised based on de Fennitti's (1974) argument that probability does not exist. De Fennitti suggested that the person's subjective evaluation of probability is what matters, the accuracy in measuring probability is irrelevant. This criticism was taken further, questioning the meaning of probability – especially at a small scale. It was concluded that although probabilities have their merits in certain situations (such as knowing the number of failed products on a production line), they fall short providing knowledge about the future in situations where there is little or no repetition (such as the probability of getting a faulty product when buying a single one).

I then turned to the notion of risk management. The chapter provided a brief history of risk management highlighting its evolution from the ancient times when kings would build city-walls to protect it from enemy attacks, to the modern-days quantitative, normative, and procedural frameworks of risk management. This objective and procedural nature of risk management was attributed to its emergence and adaptation from finance and insurance fields, and to the growing institutional and organisational fondness of accountability and governance. Following the historical background, I discussed the process of risk management, focusing on the base elements commonly found in risk management research and frameworks: risk

identification, risk assessment, risk mitigation, and risk monitoring. Additionally, I described some common tools and strategies often used in each of these base elements. Finally, I presented critiques of risk management found in literature. It was suggested that risk management has become a tool to allocate responsibilities and accountability, often used to show that the organisation has taken all necessary measures to avoid a risk that has occurred. It was also argued that risk management reduces risk into a two-dimensional entity: a product of its likelihood and its impact. I also argued that the criticism of risk management would amplify when applied to small organisations such as SMEs. Additionally, I acknowledge the small body of literature that takes a critical perspective on risk management.

Chapter Three:
Risk and Small- and Medium- sized Enterprises

3.1 Introduction

In the previous chapter, I introduced and discussed the concept risk and the notion of risk management. In this chapter, I turn the focus to Small- and Medium-size Enterprises (SMEs). The purpose of this chapter is to establish the context of my research. To do this, I provide a description of SMEs, highlighting what they are, their main characteristics, and their significance to the economy, employment, and innovation. Additionally, I provide a review of the existing literature on risk management in Small- and Medium- sized Enterprises (SMEs). The purpose of this review is to explore the knowledge we have from previous research, highlighting gaps in our knowledge on how risks are managed in SMEs.

3.2 The context of Small- and Medium- size Enterprises

In this study, a Small- and Medium- size Enterprise (SME) is a company with fewer than 250 employees, managed by its owners, and its decisions are independent of external control (such as a parent company). SMEs are enterprises that are not considered, nor consider themselves large.

This definition is based on various definitions and descriptions found in literature. According to the Department for Business Innovation & Skills (2015) in the UK, SMEs are defined and categorised based on their number of employees. In Jordan, according to the Ministry of Industry and Trade, they are categorised based on number of employees and registered capital (Nuseir, 2016). In the EU, categorisation is based on the number of employees, and annual turnover or annual balance sheet (European Commission, 2013). Table 1 below shows these three categorisations in the UK, Jordan, and the EU.

Table 1: Categorisation of SMEs in Jordan, UK, and EU

Category	Employees (Jordan, UK, EU)	Registered Capital (Jordan)	Annual Turnover / Balance Sheet (EU)
Micro	0 – 9	<30,000 JD	<€2M / <€2M
Small	10 – 49	>30,000 JD	<€10M / <€10M
Medium	50 – 249	>30,000 JD	<€50M / <€43M

This quantitative categorisation, however, does not come without limitations (Stokes and Wilson, 2006). For example, some sectors require more or fewer employees than others of the same size (Holliday, 1995): a production company with 40 employees could be considered small, while a consultancy company with the same number of employees could be considered medium (Stokes and Wilson, 2006). The annual turnover is also inconsistent across different sectors (Holliday, 1995) and economies. For example, a (micro) software development company might have 9 employees, with (small) annual turnover of €11M, while a (small) low-margin paper-bags production company could have 15 employees and a (micro) turnover of €5M (Stokes and Wilson, 2006). Similarly, a company in Germany would have a higher annual turnover than a company with the same number of employees in Greece or Jordan. In Jordan, the registered capital is not representative of the company size. Similarly, it can be argued that a (small) company with 48 employees is not categorically different from (a medium) one with 51 employees, nor are two with €1.9M and €2.1M annual turnover. More importantly, a medium company with 240 employees, €49M annual turnover is not different from a large one with 251 employees or €51M annual turnover.

The Bolton Report by the Committee of Inquiry on Small Firms (Bolton Report) (1971) recognised these limitations, and proposed a non-quantitative description of small firms characteristics (Stokes and Wilson, 2006): a small firm is managed by its owner(s), has a small market share, and is independent (i.e. not part of a larger organisation, and its decisions are made internally without outside control) (Committee of Inquiry on Small Firms (Bolton Report), 1971). Stokes and Wilson (2006) suggests that this description, however, was also criticised: market share is not representative of size in specialised niche industries, and independence is not a particularly measurable construct.

The point to be made here is that although SMEs are often defined in literature, these definitions are not without limitations (Curran and Blackburn, 2000). Thus, and especially within the thesis of this research, the definition of an SME cannot be taken as restrictive or exclusive to one definition or another but as a guideline, descriptive of SME.

Having said that, SMEs have a significant role in national economy, innovation (Curran and Blackburn, 2000; Sunjka and Emwanu, 2015), generation of jobs (Holliday, 1995), technological change, competition and market regeneration (Stokes and Wilson, 2006), and international competitiveness in new product niches (Aquil, 2013; Barrett and Sexton, 2006; Marcelino-Sádaba *et al.*, 2014; Turner *et al.*, 2009). In most, if not all, countries, SMEs make the vast majority of the business count. According to a statistical release by the Department for Business Innovation & Skills (2015), 99.9% of private businesses in the UK are SMEs. They also provide a large number of employments. The statistical release shows that SMEs provide 60% of employment in private businesses, and about 47% of the annual turnover of the sector in the UK. In Jordan, around 98% of establishments have fewer than 20 employees (Department of Statistics, 2011), and 70% of employees in private sector work in organisations with fewer than 100 employees (Department of Statistics, 2015).

Although not a homogeneous group (Blackburn *et al.*, 2013), SMEs tend to have some generic characteristics. They often have little bureaucracy and fast decision-making and short decision chains (Vossen, 1998), making them more flexible (Bartz and Winkler, 2016; Poon and Swatman, 1995), adaptable (Sullivan-Taylor and Branicki, 2011), and resilient (Coltorti, 2006). They also tend not to have formalised management systems or processes and are often influenced by the owner-manager (Burns, 2001). Burns (2001) suggests that a small firm is an extension of the owner-manager's personality to the firm. Ikävalko *et al.* (2010) suggest that the strong identification of the owner-manager with the company is one of the most distinctive characteristics of an SME.

SMEs are often limited on cash and resources, and they often have little influence on the market within which they operate (Stokes and Wilson, 2006). Having a relatively small size, SMEs tend to have small management teams, sometimes consisting only of the owner-manager (Stokes and Wilson, 2006). They are usually

vulnerable to disturbances and turbulences due to their limited resources. What might be considered a small loss for a large company could drive a small company into bankruptcy.

3.3 Risk, Risk Management and SMEs

Risk management research in SMEs is a young but increasingly growing body of literature. Risk management standards and frameworks focus on large organisations. Studies have shown that SMEs often find them too complex to apply (Islam, Tedford and Haemmerle, 2006; Islam and Tedford, 2012a; Pérez-Ezcurdia and Marcelino-Sádeba, 2012; Marcelino-Sádaba et al., 2014).

Due to their small size, limited resources and finances, small market share and smaller market influence – to name a few, SMEs are often vulnerable and sensitive to risks and threats (Falkner *et al.*, 2015), whether they were internal or external (Smit and Watkins, 2012). However, being an important part of the economy, it is important to study and better understand SMEs to be able to provide appropriate support to increase their sustainability.

In this section, I present a comprehensive review of literature on risk and risk management in SMEs that I have conducted for this research. I mainly used three scholar databases to explore the literature: Google Scholar, Web of Science, and EBSCO database through the University of Liverpool Library website. Search for literature was based on combinations of keywords in Table 2 (for example, *managing risks in SMEs, handling threats small firm*, and *risk management small and medium sized enterprises*). The search engines were set to search both titles and abstracts.

Table 2: Literature search keywords

Manag*	Risk	SMEs	
Deal*	Disturbance	MSMEs	
Handl*	Threat	Small and Medium sized	Business
	Turbulence	Small	Enterprise
	Uncertain*		Firm
			Company
Risk	Management		
Uncertainty			
Threat			

Additionally, I searched the sources used in relevant publications as well as those citing them for further literature. Furthermore, suggestions proposed by the search engines as related publications were explored. Literature inclusion was based

on the merits of the publications instead of overall quality of the journals in which they were published (an approach commonly used to conduct a systematic literature review). I took this approach to avoid limiting the already limited literature on the topic. Relevant literature was tabulated, summarising the theses and key contributions of publications (see Appendix 1).

3.3.1 **Risks in SMEs**

SMEs are regularly faced with challenges and risks. Islam *et al.* (2006, p.695) suggest that "small losses, near misses, unsafe acts, unsafe conditions […] Problems, failures and mistakes as well incorrect or ineffective actions are very likely occurrences in the daily business of SMEs". However, they also suggest the outcomes of these near misses could have been different and more significant if they have occurred in different circumstances and conditions.

Gilmore *et al.* (2004) studied owner-managers' perspective of risk to further understand how they manage or cope with risky situations focusing on the relation between risk perception and risk-taking in small businesses. Using data collected by 60 semi-structured interviews from 40 SMEs in the UK, they identified four risky situations SMEs encounter. Their findings show that SMEs were vulnerable to cash flow risks and that they have gone through financial difficulties. Participants, especially those who were once overdrawn, showed reluctance to becoming dependant on their banks. The study also showed that growth and company size are another risky situations SMEs encounter. It showed that small business owners believe that running a larger business would have bigger risks, and that owners have reached or identified a company size beyond which they would not want to grow. According to the findings of the study, entering a new market or business area is also a risk SMEs commonly face. This type of risk is mainly within the scope of decision making, where the owner would gather information to make a decision of whether to enter a new market or area of business. Finally, the study identified entrusting staff with responsibility as another risky situation. Some participants were reluctant to delegate responsibilities to their employees. However, this reluctance was mostly caused by the risk that the employees would leave the company either with valuable information, or with uncompleted tasks.

Islam and Tedford (2012b) explored internal and external disturbances in small and medium-sized manufacturing enterprises in New Zealand. According to their

study, absenteeism, auxiliary equipment failure, machine malfunction, machine breakdown, material shortage, material handling problems and unexpected defective products are seven internal disturbances that occur most frequently within the investigated manufacturing SMEs. The study also showed that delayed supply by regular suppliers, demand fluctuation, and competition are the most frequent external disturbances to the participants. Contradictory to Gilmore *et al.* (2004), however, the study showed that financial obstacles are the least frequent disturbances.

Falkner *et al.* (2015) conducted a systematic review of literature on risk management in SMEs. In their review, they identified six types of risks in SMEs. Being often highly dependent on external financing, Falkner *et al.* (2015) suggest that SMEs are often vulnerable to varying interest rates risks. Another type of risk they identified is raw material prices risks, where the volatility of raw material prices affects the costs with uncertainty. E-business and technological risks were also identified in literature. E-businesses are often in danger of online threats, such as identity theft, and credit card fraud (Sukumar *et al.*, 2011). Off-line businesses are also vulnerable to this type of risks. For example, installing a new software could require the company's commitment of resources and an implementation failure could have a higher impact when the resources are limited.

The authors also found the risks accompanied by the increasing complexity of supply chains. In a study on automotive manufacturing SMEs, Thun *et al.* (2011) suggest that SMEs tend to rely on single suppliers, often aiming to get cheaper bargains by building stronger relationships. However, Ellegaard (2008) found that difficulties with the single supplier could cause significant interruptions to production.

Falkner *et al.* (2015) also identified growth risks as a type of risks in SMEs. As discussed by Gilmore *et al.* (2004), commitment to larger overhead costs causes SMEs owner-managers to be reluctant about growing the size of the business. This reluctance is mostly caused by the uncertainty of the return an increased size could bring.

SMEs also face management and employee risks (Falkner *et al.*, 2015), as knowledge management is often a challenge. Risks such as losing long-term employees and managers is often a problem for SMEs as they tend not to have others who possess similar knowledge (Gilmore *et al.*, 2004).

Smit and Watkins (2012) suggest that companies that are not prepared for risks are more likely to "suffer catastrophic consequences", emphasising the necessity for SME owner-managers to highlight the importance of managing their company risks. A study by Zacharakis *et al.* (1999) shows that the lack of risk management planning, and the failure to adopt a risk limit threshold are two internal factors that cause small businesses to fail. Virdi (2005) also suggests that businesses applying risk management strategies, compared to those that do not, have a higher likelihood to survive and grow.

3.3.1 **Risk management in SMEs**

Research on risk management in SMEs suggests that they do not have comprehensive risk management strategies (Clarke and Varma, 1999). Smit and Watkins (2012) suggest that they often tend to manage risks reactively. Thun *et al.* (2011, p.5511, italics added) suggest that SMEs "predominantly focus on *reactive* instruments that absorb risks through the creation of redundancies instead of preventing risks". Smit and Watkins (2012) also suggest that managing risk is an activity lost amongst other managerial tasks in SMEs.

Islam *et al.* (2006) suggest that SMEs often *avoid* applying risk management strategies. Existing research claims that SMEs are incapable of applying risk management strategies due to their limitations in infrastructure, managerial expertise, financial and intellectual resources (Islam and Tedford, 2012b), human capital, and risk management know-how (Blanc Alquier and Lagasse Tignol, 2006; Gao *et al.*, 2013). Marcelino-Sádaba *et al.* (2014) suggest that SMEs often have limited resources due to their relatively small sizes. They also suggest that projects in SMEs "tend to be internal and managed by unskilled staff" (p.327).

Additionally, in a quantitative study using data from a large survey across different countries, Kim and Vonortas (2014) investigated the use of risk management strategies in young firms (2-8 years). The study focused on four types of risk: technology, market, financial, and human resources risks. It investigated the relationship between being part of a formal network and the perceived level of those types of risk, as well as the relationship between adopting a risk strategy for the four types, and the perceived level of risk. The study found that strategic actions are related to the company's perception of human resources risks and its networking level is

related to its perception of market risks. Technology and financial risks were found significantly related to networking and strategic actions. It also found that the education of the founder, but not previous employment, is positively related to both networking and strategic actions. The findings of the study also suggest high-tech and knowledge-based firms are more likely to have strategic alliance (networking) and strategy than low-tech. The significant of the study is highlighting the impact of the characteristics and operation of the company on its risk management strategies, as well as some characteristics of its founder.

Some authors (e.g. Marcelino-Sádaba *et al.*, 2014; Turner *et al.*, 2010) proposed the need for a simplified risk management framework for SMEs that overcomes their limitations. Some researchers (such as Blanc Alquier and Lagasse Tignol, 2006; Fenollera and Lorenzo, 2011, :Marcelino-Sádaba, 2014 #2; Islam and Tedford, 2012a) have attempted developing such framework by different approaches. These frameworks are based on identifying the limitations of SMEs, and 'tailoring' the risk management process accordingly. For instance, Marcelino-Sádaba *et al.* (2014) developed a project risk management framework for SMEs. The framework is based on identifying difficulties SMEs face entering new projects. It provides a set of project management tools instead of a large list from which SMEs would have to choose from. The authors also propose "a fast and clear documentation method" (p. 330). In short, these frameworks are merely shortened and reduced versions of risk management.

However, these frameworks maintained the procedural nature of risk management – they remained bureaucratic, structured, with an objective flavour. Although some of these frameworks (e.g. Marcelino-Sádaba *et al.* (2014)) have shown relatively 'successful' implementation, there are no further reports on the long-term implementation in the cases studied. Additionally, in the case of the study by Marcelino-Sádaba *et al.* (2014), the researchers were – to some extent – involved in the implementation of the framework in four out of the five researched projects. It can be argued that the apparent success of these frameworks could be tied to their novelty and the close guidance from the researchers.

Verbano and Venturini (2013) conducted a review of literature published between 1999 and 2009 on risk management in SMEs. Their analysis showed an

increase of publications on the area of risk management in SMEs within the period of their search. In the 33 articles analysed, they found a lack of focus on 'risk treatment' where decisions to reduce and manage risks are made; which could be argued to be the core purpose of the whole process. They add that only two papers "highlight risk treatment, while many articles consider the total process, the treatment phase typically lists only the four possible types of solutions […], without suggesting how to select and apply the best combination of techniques" (p.194). Based on the findings and conclusion of Verbano and Venturini (2013) review, it can be argued that the existing literature does not investigate how these 'techniques' are or should be applied nor does it investigate if there are other techniques that SMEs apply in practice.

What is noticeable across the body of literature on managing risks in SMEs is the assumption that when a firm does not have formal processes, techniques, or plans, the firm is considered not to have processes, techniques, or plans at all. Nonetheless, as a common characteristic, SMEs often adopt informal processes (Stokes and Wilson, 2006). Taking that informality into consideration raises the question of whether it is appropriate for them to adopt a formal standardised process like risk management. Only few researches have been conducted on understanding approaches of managing risks in SMEs in practice outside the implementation of formal processes.

Recall the study by Gilmore *et al.* (2004) showed that SMEs often manage their risks through their networks. They found that SMEs tend to nurture their relationships with their customers to ensure repeated business and avoid a lack of it. They also found that owner-managers tend to use their network to identify new long-term customers and to gather information about new customers, mostly to recognise those who "cannot or will not pay" (p.356). The authors suggest that these approaches are often used to manage the previously discussed cash flow risks. They also found that SMEs use their networks to gather information or advice when making the decision to enter a new market or business area. Internal networking and communication were also an approach owner-managers take to "gain appreciation of employees' personal characteristics, skills and ambition" (p.356) enabling them to delegate responsibilities to suitable employees. They found that such internal communication is used to reduce potential risks of entrusting wrong employees with responsibilities, and risks of losing valuable employees with valuable knowledge. Networking, as described by the authors, could be seen as an approach to gather

information and increasing the level of certainty, where further decisions might be easier to be made. The study also showed that SMEs manage their risks through competencies. Owner-managers build experimental knowledge, which aids them in their decision-making process. This knowledge also helps them deal with risky situations, where experience increased the participants' confidence in comparison to when the participants were new in business. The participants also said that they took more risks and placed themselves in more risky situations in earlier days of their business. The participants attributed this to their "lack of experience and general naiveté in business" (Gilmore *et al.*, 2004, p.357).

Smallman (1996) proposed a research model that studies risk management and organisational performance. He suggests three factors that define the approach of managing risk in an organisation: Structure, Strategy, and Culture. He suggests that measuring these three factors can be used to categorise organisations based on their risk management paradigm. The author suggests two risk management paradigms: reactive and proactive risk management. Smallman describes reactive risk management as *event driven* – or *event push*, where changes are made when negative events happen. Reactive risk management requires anticipation, quantification, and specification of outputs. Smallman describes insurance as a reactive risk management. Insurance sets premiums based on actuarial models of risk, following a set process and patterns. On the other hand, proactive risk management is *risk driven* – or *risk pull*, where risks are assessed, monitored, and predicted. Proactive risk management entails avoiding, preventing, or reducing risks, as opposed to the reactive means of accepting or transferring risks.

Henschel (2010) adopted Smallman's (1996) research model and investigated the practice of risk management in German SMEs. The study was based on a questionnaire (314 responses), and 38 in-depth interviews. The samples were from five industries: construction; engineering; IT; auditing, consulting, and training; and trade, service, and logistics. The study explored a relationship between business planning, performance management, and management behaviour, and the practice of risk management. It also measured risk management in the companies at two (or three) levels: risk management process, and risk management organisation (and project risk management where appropriate).

Henschel's study only focuses on having a formal structured risk management approach. Similar to most studies on this topic, it assumes that not having such approaches would mean the company adopts a reactive approach to risks. Additionally, the questions measuring risk management at the three levels mostly focus on the risk identification, and mostly measuring the existence of risk management process rather than the details of its implication. For example, one of the questions in their questionnaire is "How are your risks identified and evaluated?" (p.11), with answer options such as "by management only" and "by designated employees of business units".

As proposed by Smallman (1996), Henschel (2010) adopted Miles and Snow's typology of organisations (Miles *et al.*, 1978). Miles and Snow suggest that, at an organisational level, organisations can be categorised into four types: Reactor, Defender, Prospector, and Analyser (see Miles *et al.*, 1978). Using the previously discussed measures, Henschel (2010) clustered the companies into three types: Reactor, Defender/Prospector, and Analyser. His study provided a description of each type, and he provided propositions on how to overcome each type's risk management deficiencies. According to his findings, the reactive type lacks coherent business planning, formal planning and risk reporting, formalisation of responsibilities for risk management, and knowledge in business management. These companies only focus on and identify specific and short-term risks, and mostly have strong reservations against having business consultants. In contrast, an analyser type company employs sophisticated business planning systems to which risk management strategies are linked. An analyser type applies instruments of performance measurement. Risk management responsibilities are assigned and controlled, and all types of risks are considered with a long-term vision. A defender/prospector type is in between the two, having a traditional approach to business, with some formal planning methods less sophisticated than an analyser type and a medium-term planning horizon and little use of forecasting methods. Risk management for this type is informal, with weak link to business planning, being familiar with a narrow set of well-known risks.

In a study on supply chain risk in automotive manufacturing SMEs in Germany, Thun *et al.* (2011) investigated 13 "instruments" to deal with supply chain risks. The quantitative study is based on a 67-company sample. Out of this sample, only one company had less than 100 employees, and 16 companies had between 100

and 500 employees, while the rest had more than 500 – and are considered large companies. Using factor analysis, the 13 approaches were categorised into two categories: Preventive and Reactive as shown in Table 3. The study showed that both SMEs and large companies appreciate preventive instruments over reactive ones. Nonetheless, it also showed that SMEs tend to implement reactive instruments, while large companies opt for implementing preventive instruments.

Table 3: Preventive and Reactive Instruments (Thun et al., 2011)

Preventive Instruments	Reactive Instruments
Suppliers with high quality	Safety stocks
Suppliers with a high on-time delivery ratio	Overcapacity in production
Prevention of geopolitical risks	Overcapacity in storage
Supplier development	Overcapacity in transportation
Short ways of communication	Dual sourcing
Improved tracking and tracing	Multiple sourcing
	Back-up supplier

A few more studies have been done on risk and risk management in SMEs. Leopoulos *et al.* (2006) studied software tools for risk management in SMEs, Koh and Saad (2006) and Poba-Nzaou *et al.* (2008) investigated uncertainty and Enterprise Resource Planning in SMEs, Rostami (2016); Rostami *et al.* (2015) focused on implementation and tools of risk management in SMEs, Brustbauer (2014) analysed Enterprise Risk Management in SME, and Agrawal (2016) studied its relation to the survival of the companies. Others, such as Herbane (2010, 2013, 2015) focused on threats and disasters in SMEs.

3.4 A different approach to risk in SMEs

Although these studies yield an insight, they are limited in providing an in-depth understanding of how risks are managed and approached in SMEs. They show there are different approaches to manage risks, and different ways in which risks are approached. They show that SMEs tend to have reactive approaches. Nonetheless, these studies are limited, in number (Herbane, 2010; Sunjka and Emwanu, 2015) as in depth. They do not provide a satisfactory understanding of how SMEs approach their risks. Understanding the practice of managing risks in SMEs is a major gap in literature and existing research that needs further exploration (Sunjka and Emwanu, 2015). This gap raises the question of: how *do* SMEs deal with their risks? SMEs, like

any other organisation, face several risks and threats within their business. Yet, one way or another, some – if not many – of them overcome those risks.

More importantly, the broader research on SMEs emphasises the role of the owner-managers in management, be it in leadership or decision-making (Simmons *et al.*, 2008; Watson and Robinson, 2003). Several studies found that risks in SMEs are managed by their owner-managers. Nonetheless, there is lack of insight in literature into the role of the owner-manager in managing risks. There is little research that considers the owner-managers' decisions on approaching risks. Paraphrasing Lipsky (1980), Corvellec (2009, p.287) suggests that "organisations are populated with street-level risk managers; it is time for risk management research and practice to fully acknowledge this". This 'street-level' risk management is not optimal, but it is based on experiences, and being part of the organisation and its environment. After all, kings who built city-walls to protect their cities might have not considered optimisation but were able to understand the nature of their people, enemies, and environment as a whole. In short, these 'street-level' managers could tell us a lot about managing risks that normative models of risk management might have failed to recognise.

Furthermore, in the previous chapter, several critiques of risk management were discussed. A comment was made that these critiques should not be dismissed but amplified when applying risk management to SMEs. Additionally, in discussing the concept risk, different views were presented, and the issues with and criticisms of the objectivist view on risk were argued. It is safe to say that this objective view, adopted by risk management, strips risks from the owner-manager's judgement. A subjective view, however, acknowledges the input of the owner-manager – the one who, as discussed earlier, is at the centre of managing risks in SMEs. Blackburn and Stokes (2000) suggest that "there is much to be done to further our understanding of the motivations, rationales and experiences of the small business owners". Understanding how SMEs manage their risks then has to be done through the owner-managers' perspective, understanding their views, perceptions, attitudes, and input in managing risks and in making decisions to do so.

One research in particular has acknowledged the limitations of existing research and the need for an insight into the informality of managing risks in SMEs. At the International Association for Management of Technology 2015 conference,

Sunjka and Emwanu (2015) presented a paper that focuses on the informal practice of risk management. Their study was focused on South African manufacturing SMEs in the Steel and Engineering Industrial sector. In their paper, Sunjka and Emwanu (2015, p.1476) present a conceptual framework centralised on the "pivotal role of the owner-manager in the SME" shown in Figure 5. Using case studies, the authors studied the informal practices of risk management in four mature small- and medium- companies (in business for more than 20 years, and have between 20 and 200 employees). Data were collected via survey responses and semi-structured interviews with the owner-managers. The authors identified some risks these four companies face, and a few informal practices of managing risks. They found that these companies *build relationships* "across the whole business, that is, with the staff, with suppliers and customers, and with competitors" (p.1482). They describe how employees in these companies showed a sense of "family", and an understanding that their survival (and their own families) and that of the company are not independent – thus, building a sense of loyalty, trust, and responsibility. They found that from this mutual survival relationship emerges the need for *transparency* between the owner-managers and the employees. The survival of the company relies on ensuring *business continuity.* They also found that these companies form a *collaboration* with co-competitors to ensure a continuity of business.

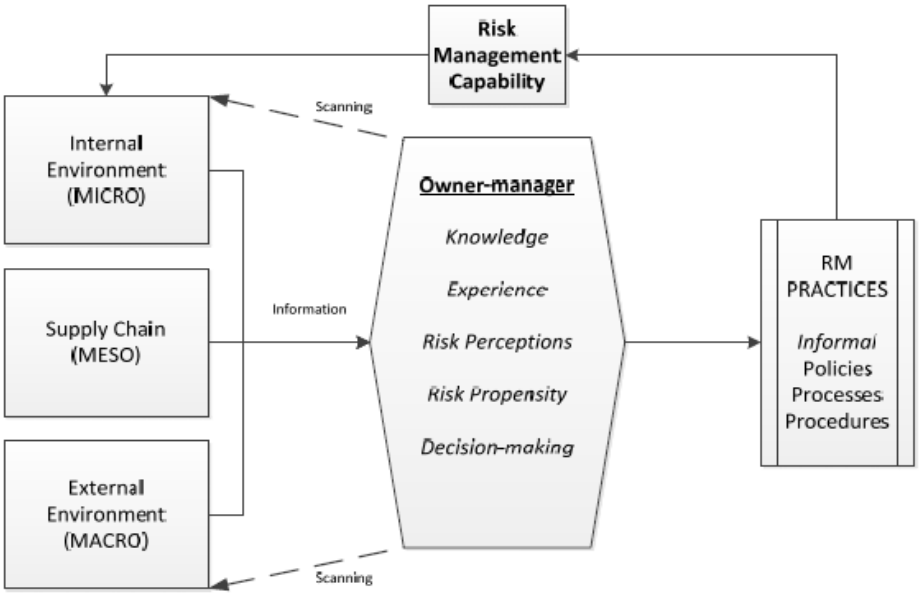


Figure 5: Sunjka and Emwanu (2015, p.1477) conceptual framework of risk management in SMEs

Nevertheless, Sunjka and Emwanu (2015, p.1483) paper was too brief on their discussion of the central role of the owner-manager: "Risk perceptions differed across

the owner-managers, but all agreed that their decision-making regarding risk was influenced by their knowledge and experience". Their research has not been taken any further at the moment of this research. There are no further journal publications, or otherwise, to follow up on this paper. A study of the central role of the owner-manager in informal practices of risk management would have provided a better understanding of the practice. Nevertheless, the conclusion Sunjka and Emwanu (2015) made was that SMEs do indeed have risk management capabilities – albeit implicit within their activities.

This limited knowledge raises the following research questions:

Research Question 1: How do owner-managers of small- and medium- size businesses approach their risks? Specifically, what approaches do they take towards risks in their businesses?

Research Question 2: Why do owner-managers approach risks the way they do? Particularly:

1- **How do owner-managers decide on how to approach risks?**

2- **What shapes and informs the owner-managers' decisions on how they approach risks?**

I focus in this study on how owner-managers approach risks instead of managing them. The reason for focusing on approach can be clarified through the word's definition in the Oxford Dictionary (2010): "a way of dealing with someone or something; a way of doing or thinking about something such as a problem or a task". That is, the way an owner-manager deal with risks and what they do and think about risks. In contrast, to manage means "to succeed in doing something, especially something difficult" or "to be able to solve your problems, deal with a difficult situation, etc.". Therefore, managing risk, by definition, implies success in dealing with it. By focusing on how risks are approached we can understand how owner-managers deal with risks without being limited to successful and effective methods.

3.5 Chapter summary

The purpose of this chapter was to provide a context to this study, positioning the research in the literature. The chapter provided a description of Small- and

Medium- size Enterprises (SMEs). SMEs are companies with fewer than 250 employees, run by an owner-manager or a managing partner, and are independent in their decisions from external control. SMEs often have short and fast decision chains, centred around the owner-managers. They have little bureaucracy, formality, and rigid structure, making them resilient and plastic. SMEs, however, are often vulnerable to risks due to their small size, limited resources, and influence on the market.

The chapter also presented a review of literature on risk and managing risk in SMEs. The review described risks that SMEs face, such as market risks, entrusting employees, supply chain risks, and cash-flow risks. The review showed that research on risk management in SMEs is small and limited. The literature often considers SMEs to be reactive to risks. There was a consensus that SMEs do not apply formal risk management strategies, which was attributed to their resource, capability, and knowledge limitations. The reviewed studies have shown that managing risks in SMEs is an activity often handled by the owner-managers.

Several studies focused on studying the application of risk management in SMEs. Others have attempted to develop simplified versions of risk management strategies befitting the limitation of SMEs. I argued, however, that formal risk management is incompatible with the informal nature of SMEs. Corvellec (2009) suggests that managing risk is richer than being confined to the formal processes of risk management. He argues that we need to listen to the practice of managing risks as it is not always as apparent as these formal processes.

A handful of studies have attempted to research the practice of managing risks in SMEs beyond the application of risk management strategies. Gilmore *et al.* (2004), for instance, found that SMEs rely on their networks and competencies to manage risks. Thun *et al.* (2011) provided a list of reactive and proactive instruments (or methods) German automotive SMEs use to manage their risks. Henschel (2010) developed a typology, profiling SMEs based on the sophistication of their risk management.

Nonetheless, I argued that although the existing research provides an insight, our knowledge lacks a deep understanding of how SMEs actually manage their risks. I propose that this limited knowledge is a gap in literature worth pursuing. I also argued that we have little understanding of the role of the owner-manager in managing

risks. The owner-managers' decision-making process is a significant part of having a deeper understanding of the process of managing risks in SMEs. Sunjka and Emwanu (2015) started a research that speaks to these arguments. However, to date, their research has not been fully developed. Thus, based on the reviewed literature and the arguments I made, I raised the research questions for my study.

Chapter Four:
The Decisions of the Owner-manager

4.1 Introduction

In the previous chapter, I argued for the need to understand the owner-managers' role as a decision-maker in managing risks. Risk management research has been dominated by normative prescriptive models that dismiss the decisions of the risk-manager. Langley *et al.* (1995, p.269) suggest that "the literature of management can no longer afford the convenient differentiation of having the psychologists consider affect in one set of journals while the organization theorists deal with effect in another". It can also be argued that literature of management, specifically risk management, can no longer afford excluding psychological research on risk and decision-making in their normative models. This chapter attempts to build a theoretical bridge between risk management and decision-making.

The purpose of this chapter is to explore the decision-making literature and build theoretical grounds to understanding how owner-managers of SMEs make their decisions on managing risks. In this chapter, I investigate the notions of rationality (a common perspective in decision-making literature and can be associated with risk management literature) and non-rationality (a body of theories that address the limitations of a rational decision) (section 4.2). I also explore theoretical concepts that might explain the owner-manager's decisions on managing risks (section 4.3). I highlight and address some problematic assumptions in mainstream decision-making literature (section 4.4), reflecting them onto the existing research of risk management. Finally, I provide theoretical conclusions on how owner-managers of SMEs make their decisions on managing risks (section 4.5).

4.2 Rationality and bounded-rationality: Paradigms of decision-making

For decades, decision making has been the subject of research in many disciplines such as psychology, sociology, management and organisational studies, political studies, and more recently neuroscience. Eisenhardt and Zbaracki (1992)

discuss three paradigms of decision making: Rationality and bounded rationality, politics and power, and the garbage can. This research takes a rationality and bounded rationality perspective. Rationality and bounded rationality paradigm is applicable at both an individual and an organisational level (Eisenhardt and Zbaracki, 1992). It speaks more to the aims of this study (the focus on the owner-manager) and addresses the more common risky situations (where the settings are not particularly ambiguous or anarchical). Thus, it can help understand managing risks from the owner-manager's perspective.

4.2.1 **Rationality**

This research takes a boundedly rational perspective on managing risks. Nonetheless, it would not make sense to discuss bounded rationality without giving a background to the notion of rationality.

Rationality, at its basic form, assumes that human behaviour has a purpose (Eisenhardt and Zbaracki, 1992). Rationality is used as both a normative and a descriptive view (Simon, 1972). It is used as normative to prescribe how people or organisations should behave to achieve specific goals and objectives under certain circumstances, and as descriptive to explain how people or organisations do actually behave (Gigerenzer and Selten, 2002b). It assumes consistency and value-maximisation in choices within certain constraints (Allison and Zelikow, 1999) to achieve specified goals (Simon, 1972).

Allison (1971) suggests that models of rational action have four basic concepts: goals and objectives, alternatives, consequences, and choice. That is "to choose rationally is to select the most efficient alternative" (p. 29), where that alternative is the one maximizing the outcomes of the decision. He also suggests that rationality adds consistency to the concept of purpose. A rational actor is assumed to have consistent goals and objectives, and to have a constant application of principles to optimise the action. The rational actor is also assumed to consistently rank all alternatives based on a utility function to choose the one with the highest expected utility.

At the essence of rational decisions are some criteria of utility to choosing the most optimal, or the 'best'. Simon (1993, p.396) suggests that a rational decision implies that "nothing is good enough unless it is optimal". Rationality suggests a

rational actor will choose the optimal alternative after evaluating all alternatives. For example, two identical balls sold at two shops: Shop A sells a ball for £10, while shop B sells it for £9. Driving to and from shop A and shop B would cost £1 and £3 respectively. The rational decision would be to buy the ball from shop A, as it is cheaper (or more optimal – money wise) to go to shop A and pay the extra pound for the ball than to drive to shop B and save on the ball while spending more on the drive. Similarly, a rational choice between three cars of the same price would mean evaluating each car based on their mileage-per-gallon, annual repair costs, insurance costs, etc. Such criteria of optimisation are focused on having the optimal miles per penny.

Rationality dictates the use of normative models. Simon (1972) uses the classical *theory of the firm* as an example for this. In the theory of the firm, the main objective is to maximise profit. To achieve maximum profit, the theory states that one should solve the following differential equation of demand and cost:

$$\frac{d}{dq}(R - C) = p + q\ \frac{d}{dq}\big(D(p)\big) - \frac{d}{dq}\big(C(q)\big) = 0$$

where R is the gross receipts, p is the price, q is the quantity, C(q) is cost as a function of quantity, D(p) is demand as a function of price, and $\frac{d}{dq}$ is the differential of the function with respect to q. That is, maximised profit occurs when the differential of the gross receipts less the cost is equal to zero. Rationality in the theory of the firm assumes the decision-maker has solved this equation, which requires knowledge of the variables and the ability to mathematically solve the equation – within a timely manner. In other words, a rational decision would be to produce, sell, and price products based on the outcomes of solving the equation to maximise profits.

Rationality also requires consistency (Binmore, 2008). That is consistency in objectives, environment, and variables. Keeping with the theory of the firm, consistency means the objective of the decision-maker is always maximising profits. If the objective keeps changing between profit maximisation and increasing sales, for example, then the objective is no longer consistent. Consistency also means that the variables, such as demand and cost, are stable and are not affected by unpredictable forces (such as a generic disruption to the industry, or an incident damaging the firm's reputation). The rationality in relying on the mathematical equation lies in its

predictive powers. When the equation is no longer capable of prediction due to inconsistencies in its variables, it would no longer be rational to rely on the equation to make decisions. Binmore (2008) gives an example on such instability. He talks about the shopping habits of a woman, Pandora, and the ability to make educated guesses about her shopping list based on observing her shopping behaviour, budget, and supermarket prices. However, "We won't be able to predict what she will buy next week if something happens today that makes our data irrelevant" (Binmore, 2008, p.9). The author gives an interesting example of "something happening", suggesting that "If Pandora loses her heart to a football star, who knows how this might affect her shopping behavior?". The interesting part about this example is the apparent irrelevance of favouring a footballer to Pandora's shopping habits. Similarly, losing an employee, for example, could (one way or another) affect the sales of the company. This would make the data and the knowledge about the market supply and demand irrelevant and the profit maximisation equation relatively unpredictive.

4.2.1.1 Limits of rationality

Rationality covers strategies of decision making without limitations in time, knowledge, or computational capacities human beings have (Gigerenzer and Selten, 2002b). It requires optimisation, omniscience (knowledge of everything), and consistency. Some authors, such as Gigerenzer and Selten (2002b), attribute these capabilities to "demons" and "heavenly beings". Selten (2002) suggests that a fully 'rational man' is a mythical hero. A hero who can solve all mathematical problems with instant computations. Human beings are too constrained in their capabilities to perform such "demonic" tasks when making decisions.

Arthur (1994) suggests that rationality breaks down under complications. He suggests our logical mental tools cannot function beyond certain levels of complicatedness. It might be easy to gather knowledge about rolling a die, tossing a coin, or even picking the best offer on a bag of peanuts. However, when it comes to most real-life decisions, things are much more complex. Gathering all the information about the risk of entering a new market, the loyalty of employees, or the public opinion about the country's foreign policies is not as simple as counting the sides of a die. He also suggests that the decision maker cannot make rational decisions that rely on others behaving rationally. When making interactive decisions (where the outcomes are dependent on decisions and actions of other people) the decision maker would have to

assume the behaviour of others involved in this decision. Such assumption "lands [the decision-maker] in a world of subjective beliefs, and subjective beliefs about subjective beliefs" (p. 406). An example of this complication is a game dilemma called the prisoner's dilemma. Two prisoners, in separate interrogation rooms, are offered the following: if one of them betrays the other, the betrayer goes free and the betrayed gets 3 years in prison, if they both betray each other, they both serve 2 years, while if neither of them does, they both serve 1 year. Making this decision requires guessing what the other prisoner will do. The rational decision, as a group, is for neither of them to betray and get 1 year each. However, for one prisoner to make this rational decision means they have to assume the other prisoner is also thinking rationally.

In the words of Gigerenzer and Selten (2002b, p.11), "Optimization is an attractive fiction; it is mathematically elegant, and one can draw on a well-developed calculus". However, in most real-life situations, optimisation requires unrealistic assumptions beyond what is available to us in knowledge, time, and other resources. These assumptions are often themselves guesswork and estimates. Brown (2005, p.8) suggests that "we are all subrational", and we can only use rationality as a beacon toward which we should aim. Simon (1993, p.396) suggests that what human beings do cannot be resembled by maximising utility. He argues that the fact that we assume we can identify what is optimal behaviour within the complexities of life is "unbelievable from the beginning". The author suggests that when managers use rational models as management tools, they start to "horribly oversimplify the problem" (p. 398) to fit within the limits of our rationality. Elangovan and Suddaby (2019) suggest that rational models usually rely on analytical intelligence, linearly breaking down the problem. However, they propose that addressing the complexities of some problems requires practical intelligence capable of capturing the "messiness, vagueness, fluidity, non-linearity and open-endedness of decision situations" (p. 2). They argue that rational models focus on the tangible and measurable outcomes of the decision, and overlook the intangible, not-easy-to-measure implications.

4.2.2 **Bounded rationality**

Herbert Simon (1956, 1972) proposed the notion of bounded rationality in criticism and response to the limitations of rationality. He suggests that to deduce a rational choice we only need to know the goals of the decision-maker and the objective characteristics of the situation. However, deducing a boundedly rational choice, we

also need to know what information the decision-maker has about the situation, how they conceptualise it, and what they make of it (Simon, 1985).

Bounded rationality does not imply irrationality. A large part of the literature – specifically, the literature that adopts rationality – considers theories or decisions that do not conform to the rational perspective to be irrational. Although this assumption is not linguistically incorrect, the notion of *irrationality* holds a *wrong, negative,* or *of no sense or reason* connotation. For instance, selling a product at a price lower than its cost, never placing a bet on number 13 on a roulette table, the belief that tossing a coin twice has to result in a head and a tail, and wearing those 'lucky socks' for a football match are examples of what is considered irrational. They are considered irrational either because they do not conform with the rational philosophy, or because – at face value – they appear to conflict with common reason. However, theories of bounded rationality do not try to explain these decisions. As Gigerenzer and Selten (2002b, p.4) put it, bounded rationality is "not simply a discrepancy between human reasoning and the laws of probability or some form of optimization". Behaviours and decisions should not be considered irrational only because they do not conform to the norms of rationality (Selten, 2002). Chess players, for example, do not consider all possible moves before making their decision on their next move. An owner-manager of a company might not take the optimal precautions to prevent a delay in a project. A tennis player would not calculate the projection of the ball based on a mathematical model before running to the other side of the court. These decisions are not rational – as they do not conform to the notion of rationality, but they are also not irrational. As Gigerenzer and Selten (2002b, p.44) say, "psychological plausibility should not be confused with irrationality".

Gigerenzer and Selten (2002b) suggest that bounded rationality is a way of rethinking the norms of rationality and studying actual behaviours and decisions. Simon (1956) uses a metaphor of a pair of scissors to describe bounded rationality. He describes one blade of the scissors as the cognitive limitations of the human being, and the other as the structures of the environment. By exploiting structures in the environments, our minds can be successful despite the limited time, knowledge, and resources. In a way, by taking advantage of our environment, the mind can compensate for its limitations. Simon's scissors metaphor tells us two things. On one hand, it highlights the marriage of both blades to produce a cut where one blade complements

the other. On the other hand, the metaphor emphasises the need for both blades. As Gigerenzer and Selten (2002b, p.4) put it, "Studying only one blade is not enough; it takes both for the scissors to cut". That is, to understand decision-making, we need to understand how these decisions are shaped by their environment and by the limitations of the decision-maker (Simon, 1956).

In his paper, Simon (1972) discusses a game of chess. Rationality suggests a player would have to evaluate every possible move and strategy to pick the "best" one that would make them win the game (that is the strategy with the highest probability of winning). However, the number of possible moves in a game of chess is very large. There are around 10^{120} (that is 1 followed by 120 zeros – a trillion is 1 followed by 12 zeros) possible games of chess. It would take a human being (or a computer) centuries to evaluate all these alternatives. Simon suggests that chess players consider up to 100 possibilities – a number much smaller than "*all*" alternatives. Instead of choosing the optimal move, chess players make a choice when they identify a "satisfactory" option (Simon, 1972).

Simon's explanation of choosing a move in chess demonstrates the difference between rationality and bounded rationality. A rational agent would search and evaluate all the alternatives. A boundedly rational agent would search for an alternative, continuously acquiring more pieces of information or making adjustments. When a satisfactory alternative is reached after acquiring a limited amount of information, the search is stopped, and a decision is made by choosing a satisfying alternative.

In bounded rationality, "Decision alternatives are not given but found, one after the other, in a search process" (Selten, 2002, p.14). However, suggesting they are "found" and "sought for" implies their pre-existence. Although this is not the ontological stance of bounded rationality per se, it is important to emphasise that the search process, and 'finding' the decision alternatives is not as literal as searching and finding a word or paragraph in a book, but is a process of thought creating suitable alternatives. As Simon (1993, p.594) puts it: "Solutions [are not] handed to us. We are not given an inventory or list of solutions".

Arthur (1994, p.406) suggests that "we are superb at seeing or recognizing or matching patterns – behaviors that confer obvious evolutionary benefits". Gladwell

(2007) talks about an experiment: the participants are given four decks of cards, two red and two blue. They can turn over cards from any deck, and each card can either win them or cost them money. Unknown to the participants is that the red decks are stacked to lose, while the blue decks are stacked to win. The experiment shows that after about 50 cards, participants started to develop a hunch about this rigged stacking (thus, unexplainable by the participants, favouring the blue decks). By the 80th card, most participants were able to figure out the game and confirm their hunches. However, the participants were also hooked to some equipment that measured stress levels. The measurements showed that the participants started developing stress responses when turning a card from the red decks by the 10th card (well before knowingly starting to consciously recognise the patterns). This experiment demonstrates that people can recognise patterns pretty quickly, they can observe information to confirm these recognitions. But more importantly, the mind is even more superb at – unconsciously – identifying possible patterns.

Human beings use their recognition of patterns to simplify complicated problems. When a regular customer starts to delay payments, the company owner would take precautionary measures without having to investigate these incidents further. In a game of chess, a player can tell the strategy of their opponent by observing some of their moves and build their own strategy. A Formula 1 driver or a professional tennis player do not make their decisions 'rationally' or 'optimally', but attempt to understand patterns in their environment, and exploit its regularities to make their decisions (Gladwell, 2007).

4.3 A Non-Rational Perspective on Managing Risks

This research takes a non-rational perspective on decisions – that is, decisions do not conform to the notion of rationality (Simon, 1993). It embodies the notion of bounded rationality as a theoretical lens to understanding owner-managers' decisions on managing risks. It also embodies the possibility of irrational forces influencing decisions. This section explores prospect theory, determinants of risk behaviour, heuristics, and cognitive dissonance as non-rational theories and concepts that could explain the owner-managers' decisions on managing risks.

4.3.1 **Prospect Theory**

Before delving into prospect theory, it is necessary to have some background to the commonly used theory of expected utility. Expected utility theory, as Tversky and Kahneman (1986, p.5252) describe it, is a "major achievement of the modern theory of decision under risk" that was derived from "simple principles of rational choice that make no reference to long-run considerations". Expected utility theory had dominated research on decision making under uncertainty for decades, both as normative and descriptive models.

Expected utility theory states that when a decision-maker should choose between risky scenarios, they should choose the option with the higher expected utility value (the sum of the product of utility values of the outcomes and their probabilities) (Mongin, 1998). For example, consider these two games of gamble: game A has a 0.01 probability of winning £100 and 0.99 probability of winning £10, and game B has a 0.1 probability of winning £200 and a 0.9 probability of losing £10. The expected utility of game A would be £100*0.01+£10*0.99 = £10.9, and game B would be £200*0.1 – £10*0.9 = £11. If one has to choose one of these games to play, expected utility theory states that one should opt for playing game B, as it has the higher expected utility. Similarly, Adam offers Bernadette a game of tossing a coin. If the coin lands heads on the first toss (probability p = ½), Adam gives Bernadette £1. If the coin lands heads on the second toss (p = ½ * ½ = ¼), he gives her £2. A fair price of this game, as expected utility theory dictates, would be equal to its expected utility: £1*½ + £2*¼= £1.

However, expected utility theory has shown anomalies when applied into the real world. For instance, experiments offering participants games similar to the first example have shown that more people opt to play game A instead of game B (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Also, Allais (1953) proposed this alteration to the second example: Adam would give Bernadette £4 if the coin lands heads on the third toss (p = ⅛), £8 on the fourth (p = 1⁄16), £16 on the fifth (p = 1⁄32), and so on. The expected utility of this game would be £1*½ + £2*¼ + £4*⅛ + £8*1⁄16 + … (or $\sum_{n=1}^{\infty}[£2^{n-1} * \frac{1}{2^n}] = \sum_{n=1}^{\infty}[£\frac{1}{2}]$); that is, it would be adding £½ an infinite number of times. Thus, a fair price for such game would be an infinite amount of money. However, most people would agree that a much smaller price (such as £7

to £15) would be a fair price for such game (Allais, 1953) (also called Allais paradox) – contradicting the expected utility theory.

Prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992) was based on criticising the theory of expected utility, and was developed in response to the anomalies of expected utility theory (such as the Allais paradox) when applied to the real world (Kahneman and Tversky, 1979). Kahneman and Tversky (1979) argue that expected utility theory does not hold as a descriptive model for individual choices. They suggest that decision makers violate the basics of the model. Therefore, prospect theory offers a descriptive explanation of decision-making behaviour when faced with uncertain prospects.

Based on experiments on uncertain prospects, the authors found that people make choices in two phases: an editing (or framing) phase, and an evaluation (or valuation) phase (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). In the editing phase, the decision maker would frame the acts, contingencies and outcomes of the options available. Kahneman and Tversky (1979) discuss several operations of the editing phase. The most significant operation they discuss is coding, where people would perceive the outcomes in terms of gains and losses, relative to some reference points (often being the status quo) and not in terms of the final wealth. Another operation they discuss is segregation, where people would separate the certain part of the prospect from the risky part. For example, an option of 80% chance of winning £100 and 20% chance of winning £500 is decomposed into a certain win of £100, and an uncertain 20% chance of winning £400.

The second phase of the choice process is evaluation. In this phase, the decision-maker evaluates the edited prospects where probabilities are assigned decision weights, reflecting the impact of the probability on the value of the prospect, and each outcome is assigned a subjective value that reflects the deviation from a reference point (often the status quo) representing losses and gains (Kahneman and Tversky, 1979). The theory suggests a non-linear relation between perceived value and gain or loss – concave for gains, and convex for losses (see Figure 6). This non-linearity suggests that people tend to overestimate small values, and underestimate high values (Tversky and Kahneman, 1992).

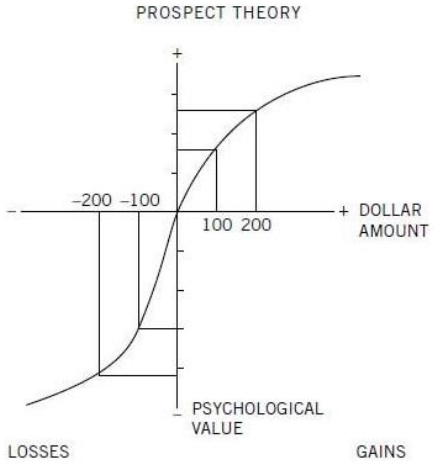


Figure 6: Prospect Theory (Kahneman, 2011, p.283)

Prospect theory also suggests that the function of value is steeper for losses than it is for gain (Kahneman and Tversky, 1979). In other words, it suggests that one's perceived value is more sensitive to losses that it is to gains. A potential loss has a higher perceived value than an equal potential gain. Recall for instance the example of the two gambling games given earlier: game A provides two winning scenarios (£100 or £10), while game B provides a winning scenario (£200) and a losing scenario (£10). Prospect theory suggests that people would opt to choose game A, as game B has a possible loss of £10.

This in turn leads to what is known as problem framing: it is more likely to take a risk if it was presented as a positive prospect. For example, people are more comfortable getting into surgery knowing that the probability of success is 90% than when knowing the probability of failure is 10% (despite the two statements indicating the same prospect). McNeil *et al.* (1982) provided two groups of respondents with statistical information about two treatments to lung cancer: surgery and radiation therapy. They asked them to choose which treatment they would prefer. The information provided to the first group were on mortality rates, while the second group was provided with survival rates, as follows:

> *"Group 1: Of 100 people having surgery, 10 will die during treatment, 32 will have died by one year, and 66 will have died by five years. Of 100 people having radiation therapy, none will die during treatment, 23 will die by one year, and 78 will die by five years. Which treatment would you prefer?*

Group 2: Of 100 people having surgery 90 live through the post-operative period, 68 are alive at the end of the first year and 34 are alive at the end of five years. Of 100 people having radiation therapy all live through the treatment, 77 are alive at the end of one year and 22 are alive at the end of five years. Which treatment would you prefer?"(Tversky and Kahneman, 1986, p.S254)

In their experiment, the percentage of subjects choosing radiation therapy over surgery increased from 18% in the survival framing (group 2) to 44% in the mortality framing (group 1). Putting it in a less morbid context, when we think of gambling, we often think of the probability of winning. Looking at a game of roulette as a 1/37 chance of winning makes the game more appealing (or seem less risky) than thinking there is a (more probable) 36/37 chance of losing the £100 placed on number 13.

4.3.2 **Determinants of Risk-Behaviour**

Prospect theory provides an explanation of how one would choose between risky or uncertain prospects. However, several studies (e.g. Osborn and Jackson, 1988; Staw *et al.*, 1981; Thaler and Johnson, 1990) have demonstrated some discrepancies in human choice that contradict what prospect theory proposes. Sitkin and Pablo (1992) examine these discrepancies and provide a model of risk behaviour. Their model predicts and explains how people make decisions in risky situations, looking beyond the prospects themselves and into the decision-maker and their environment. The model predicts risk behaviour based on a number of determinants (Figure 7). The authors place risk perception ("assessment of the risk inherent in a situation" (p. 12)) and risk propensity (the general tendency to take or avoid risk) at the centre of the model, mediating the other determinants.

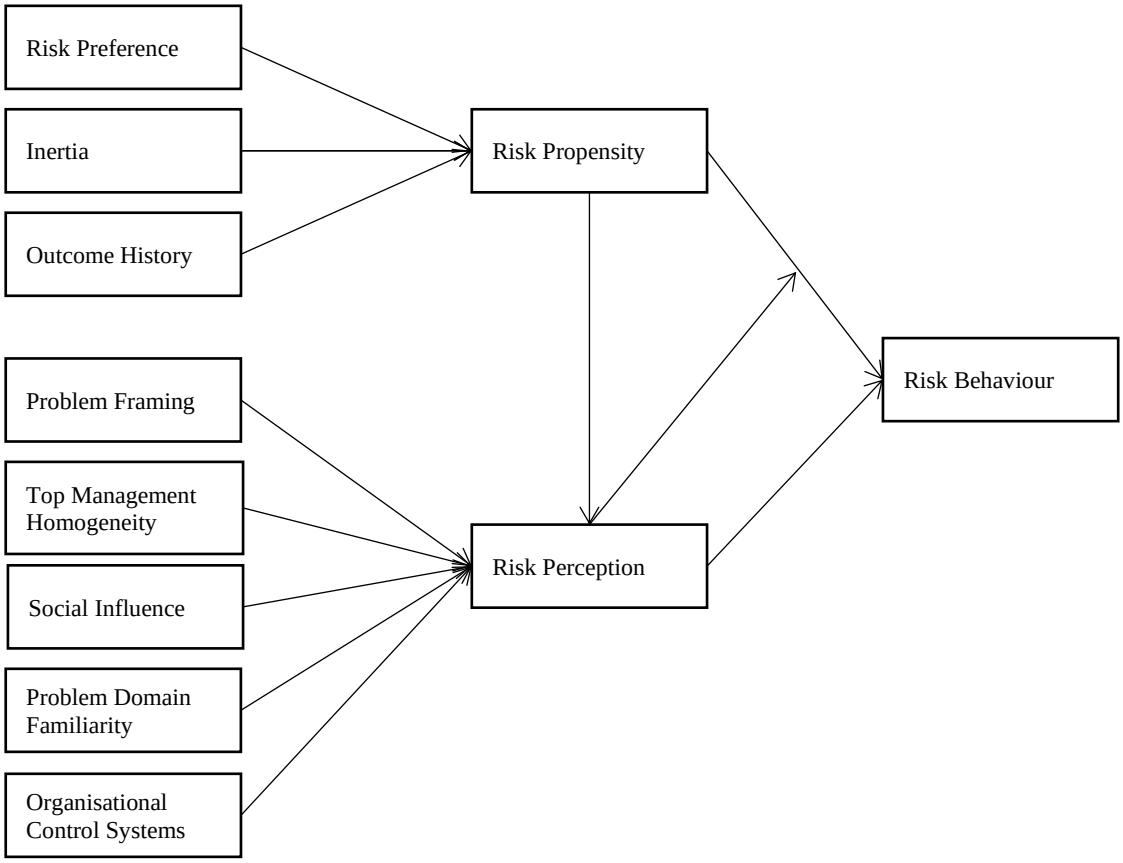


Figure 7: Risk behaviour model (Sitkin and Pablo, 1992, p.15)

4.3.2.1 Determinants of risk propensity

Prior to Sitkin and Pablo's model, some research (e.g. Slovic (1972)) has often attributed risk preference – whether the decision-maker favours taking risks – as a direct determinant of risk behaviour. Personal experiences and beliefs about risk would create preferences in how to assess and approach risks. Simply put, a person who enjoys, and prefers, taking risk, is more likely to take the risk. Sitkin and Pablo (1992, p.15), however, suggest that "the *general desire* to pursue or avoid risks (i.e., risk preferences) does not determine *specific risk behaviors*, but rather it affects the general *likelihood* of a person's behaving in more or less risky ways (i.e., risk propensity)". In other words, the decision-maker's preference does not determine their risk behaviour itself, but affects their tendency to take or avoid risks, which in turn determines their risk behaviour.

Additionally, individuals and organisations develop "habitual or routine ways of handling risk-related situations" (Sitkin and Pablo, 1992, p.17) , exhibiting

institutionalised responses to risks. These habitual ways are influenced by the outcomes of previous decisions. The decision-maker would alter their risk propensity depending on its success. For example, if being risk-averse has resulted in successful decisions, the decision-maker is likely to remain, or even become more risk-averse. Furthermore, the organisation's inertia (that is the organisational resistance to change in these routines and habits) creates tendencies and patterns in risk behaviour (Sitkin and Pablo, 1992). Decision makers are more inclined to follow these habitual ways forming some form of stable patterns in their risk behaviour (Slovic, 1972). If the inertia is high, a decision-maker will often revert to utilizing processes and decision criteria they have used in the past, even when they are tempted and stimulated to try something different.

4.3.2.2 Determinants of risk perception

Sitkin and Pablo (1992, p.12) define risk perception as "a decision maker's assessment of the risk inherent in a situation". It is the decision maker's view of what the risk is, how probable it is to realise, what its consequences can be, its perceived controllability, and their confidence in those assessments. They explain that the decision maker's risk perception influences their behaviour, leading them to "deny uncertainty, [or] to overestimate or underestimate risks" (p.12) along with building "unwarranted confidence" in their assessments.

Risk perception is influenced by the way a 'problem' is presented or 'problem framing' (Kahneman and Tversky, 1979; Sitkin and Pablo, 1992). That is, a problem presented as a chance of success would influence the risk perception positively, while one presented as a chance of failure would influence risk perception negatively. This influence is explained by prospect theory, discussed earlier.

Another factor that influences risk perception is Problem Domain Familiarity. Sitkin and Pablo (1992) explain how learning from previous experiences could lead a decision maker to assume that future events would be similar to previous ones. They suggest that what decision makers learn reflects through responses to regular and new stimuli. Individuals would "interpret new problems in terms of familiar problem categories […] [utilising] pre-existing solution routines" (p.23). In other words, previous experiences of the decision makers, even those irrelevant, would shape their

perception of the risk and how to approach it. It also shapes their decisions, as it is perceptually safer to take familiar approaches than unfamiliar ones.

Social influence is another indirect factor that influences risk-behaviour mediated through risk perception. Sitkin and Pablo (1992) suggest that the organisation's culture and its leader are the two most powerful sources of social influence, arguing that organisations tend to overshadow other influences on individual perceptions and behaviours. They suggest that the risk culture within the organisation shapes the individuals' view of their world and provides decision-makers with guidelines in risky situations. Similarly, the organisation's leader is another social situation influence. The leader influences risk perception "by continuously directing attention to selected situational attributes that are associated with high or low risk, by modeling how risky situations should be handled, and by labeling or filtering information" (Sitkin and Pablo, 1992, p.22).

Risk perception is also influenced by top management homogeneity. Agreement and consensus amongst top management is more likely to be valued by team members than conflict and debate (Sitkin and Pablo, 1992). Homogeneity can "narrow the range of individual risk perceptions in the group (Sitkin and Pablo, 1992, p.20). The collective perception of the group is likely to be higher or lower than the individual's perception. Additionally, according to Janis and Mann (1977), consensus in group could lead to the perception that the judgement is correct. Thus, in homogenous groups (or top management teams), the decision-maker would have more confidence in their perceptions (Sitkin and Pablo, 1992). Risk perception is also influenced by organisational control systems, which can "foster perceptions of either high or low risk in a given situation" (Sitkin and Pablo, 1992, p.24) depending on whether the organisation focuses on the decision-making process itself (process control) or the outcome of the decision (outcome control).

Finally, the model suggests that risk propensity has an influence on risk perception; that is risk-averse decision makers tend to overestimate probability of loss by attending to and weighing negative outcomes, while risk-seeking decision makers tend to overestimate probability of gain by attending to and weighing positive outcomes (Sitkin and Pablo, 1992). In other words, the willingness to take risks, in general, influences one's perception of a risk.

4.3.3 **Heuristics**

Prospect theory and Sitkin and Pablo's model of risk behaviour explain forces that influence the decision-making process. They do not, however, provide an insight into how these decisions are made. Bounded rationality suggests that decision-makers take mental shortcuts to make decisions. These shortcuts are called heuristics.

The word heuristic comes from the ancient Greek verb *heuriskein*, which means 'to find' – that is to find a solution to a problem without using normative analytical tools (Abbott, 2004) (the way Archimedes found the solution to knowing whether the king's crown is made of pure gold or some cheaper metals when he found the volume of water being displaced in the tub is equal to the volume of his body – thus, yelling "*Eureka*", the first-person singular perfect of *heuriskein*, meaning "I have found it"). In mathematics, heuristics are used to find creative solutions to mathematical problems that are hard, or impossible, to solve analytically. In decision-making literature, heuristics are mental tools used to simplify and facilitate decision-making. Heuristics often compensate for the decision-maker's cognitive limitations and utilise patterns and regularities in the environment.

Gigerenzer and Selten (2002b) discuss heuristics through a thought experiment of two hypothetical robots built to catch a tennis ball. The first robot, an optimised rational robot (called *optimised robot*), is programmed with hundreds of equations representing all possible trajectories of the ball. It is equipped with sensors to measure variables needed to calculate that trajectory, such as the distance at which the ball was thrown, its initial speed and projection angle, its spin, and speed of the wind. Using these accurate measures, and a high-speed computational power from high-speed and powerful computers, the robot would identify and move to the optimal position to catch the ball while the ball is in the air. The second robot is boundedly rational and relies on heuristics (called *heuristic robot*). It is equipped only with a camera and a simple controller. The robot is programmed to not move for the first half second when the ball is thrown to estimate the direction in which it should move to catch the ball. As the robot moves, it heuristically, and continuously, adjusts its movement according to the newly acquired information about the position of the ball (using the camera) until it catches it. The robot relies on the fact that maintaining 'eye contact' with the ball will eventually mean catching it.

The authors suggest that this thought experiment illustrates a few points. First, despite its limited capabilities and simplicity, the *heuristic robot* would not be at a disadvantage. Although the *heuristic robot* is not efficient and has to keep adjusting its movement not knowing where the ball might land, the *optimised robot* might not finish its analysis before the ball reaches the ground. A professional Formula 1 driver might fail when following explicit rational choices yet they would succeed by relying on their expertise notwithstanding their limitations. Secondly, by exploiting a regularity in the environment, a heuristic can create successful decisions. The *heuristic robot* exploits the regularity in its "eye contact" (through the camera) with the ball leading to it catching the ball. In a regular world, the ball will always be moving in a continuous trajectory (it will never transport between two points without moving the distance between them), and, unless there is strong wind, the ball will always move toward the robot and never away from it. The third point the thought experiment illustrates is that heuristics are domain-specific. They rely on the circumstances in which they are used. The *heuristic robot* would most likely fail if the wind was strong enough to reverse the ball direction. A Formula 1 driver is likely to struggle driving a car different to the one they are used to. However, under the right circumstances, simple and robust heuristics can be as good as, if not better than, optimised strategies (Gigerenzer, 2001). This is because heuristics exploit regularities in their environment – "their rationality is a form of ecological rationality, rather than of consistency and coherence" (Gigerenzer and Selten, 2002b, p.9). It is also because they are robust, despite their simplicity, and in real-life, decisions often involve several different goals – which bounded rationality can handle (Gigerenzer and Selten, 2002b).

4.3.3.1 Decision heuristics

Gigerenzer and Selten (2002a) propose the idea of an adaptive toolbox that contains different tools for decision-making as an application of Simon's (1956) two blades of a pair of scissors metaphor. Goldstein *et al.* (2002) discuss several heuristics, as tools in the toolbox, that decision-makers use.

Recall the chess game discussed earlier in this section: A chess player would examine a small number of alternatives, and choose what is found to be satisfyingly the best one. This is called *Take the Best* heuristic, which dictates that the owner-manager would consider some, but not all, approaches to managing the risk, only acquiring limited information, and choose the approach that is found as 'best'.

Goldstein *et al.* (2002, p.176) suggest that, in empirical testing, this heuristic uses one third of the information available to it, and that despite its simplicity, its predictions were sometimes found to be "more accurate than those made by multiple regression".

Alternatively, recall the Formula 1 driver or the professional tennis player. A Formula 1 driver could have a few milliseconds to make their decision, which is not enough time to consider alternatives. Thus, the first alternative the driver can think of is probably the right course of action. *Take The First* heuristic dictates that the first satisfying alternative to come to mind is the alternative to be chosen (Goldstein *et al.*, 2002). This heuristic dictates that the owner-manager would take the first approach that comes to their mind to approach the risk; often not considering any other alternatives after that.

Decision-makers would also make their decisions using recognition (or familiarity) heuristic. Recognition heuristic was proposed by Goldstein and Gigerenzer (1999). In its original, and simplest, form, recognition heuristic is used when two options are available, and only one of which is recognised by the decision-maker. In that case, the heuristic dictates choosing the recognised option. For example, in their study, Goldstein and Gigerenzer (1999) asked German and American participants about whether San Diego or San Antonio has greater population. Their findings showed that many Germans only recognised San Diego and chose it as their answer on that basis. Similarly, Langer (1975) provided her participants with a lottery ticket. Tickets were either familiar (with letters of the alphabet) or unfamiliar (with drawings of novel symbols). Langer's study showed that people valued familiar tickets over unfamiliar ones. Similarly, an owner-manager would opt to use familiar management methods over exploring unfamiliar ones.

In addition, people make their decisions by imitation. Instead of gathering information from the environment and calculating and evaluating alternatives from scratch, one would imitate others who are compatible with themselves (Goldstein *et al.*, 2002). Several studies (e.g. Berg, 2014; Hogarth *et al.*, 1980) have observed decisions being made when 'compatible others' have taken a similar decision. Hogarth *et al.* (1980), for instance, showed that owners of small firms in a French town were hesitant to relocate their businesses to some government-supported location despite seeing an advantageous relocation of large businesses. However, when a reputable

mid-sized firm made the decision to relocate, the small firms lost the hesitation and made the decision to relocate. Imitation is a heuristic of copying rules, strategies, and behaviours of others.

4.3.3.2 Risk perception heuristics

The work of Kahneman and Tversky (Tversky and Kahneman, 1974; Kahneman, Slovic and Tversky, 1982; Kahneman, 2011) focuses on people's intuitive assessment of statistics and probabilities and the notion of error. Tversky and Kahneman (1974) describe three heuristics people use to assess probabilities and estimate value: availability, representativeness, and anchoring. These three heuristics have been the base of most of the literature on subjective assessment of risk (e.g. Folkes, 1988; Pachur *et al.*, 2012; Slovic *et al.*, 1980) and the psychology of risk (e.g. Breakwell, 2007; Tversky and Kahneman, 1981).

Availability is a heuristic people use to evaluate probability of an event based on the "ease with which instances or occurrences can be brought to mind" (Kahneman *et al.*, 1982, p.11). It is driven by the frequency at which an event has been seen to occur. It is also driven by the retrieval of memories of similar events (Breakwell, 2007). For instance, one might assess the risk of a terrorist attack based on recalling similar incidents on the news. The risk of a heart attack is assessed by recalling heart attacks amongst acquaintances. A business owner would assess the risk of losing a major customer by recalling other competitors facing similar risks. Availability also implies that events that are easier to remember would have greater impact when estimating probabilities. For example, the spouse of person A is the acquaintance of person B. The spouse dies to lung cancer. It is safe to assume that this incidence would be more memorable to person A than it is to person B. Availability suggests that person A would evaluate the risk of lung cancer higher than person B.

Representativeness heuristic suggests that if an object (A) could be viewed to resemble a group (B), people would perceive the probability of the object (A) belonging to the group (B) to be higher. For example, if a group of people of a certain profession are known to have certain traits, people would assume that a person with such traits to have that profession (as shown in a study by Daniel Kahneman and Amos Tversky discussed in Kahneman (2011)). Similarly, if a risk is perceived to be similar to other risks in some sort, people are likely to assume this risk to be similar to these

other risks in all its aspects. This heuristic relates to problem domain familiarity discussed earlier in the model of Sitkin and Pablo (1992, p.23), where one would "interpret new problems in terms of familiar problem categories […] [utilising] pre-existing solution routines".

The assumption that the object belongs to the group based on representativeness could lead the person to assume information about the object based on their perception of the group. For example, if group B has some stereotypical traits and object A has some of these traits: representativeness heuristic suggests assuming the object belongs to the group; thence the object has the remaining traits of the group. Breakwell (2007) suggests "it is easy to imagine how probability estimates associated with a new hazard that resembles some earlier hazard could be affected by the representativeness heuristics" (p.81). She gives an example of how people's perception of the risk of a new food contamination would be driven by its 'similarity' to earlier contaminant, despite the two contaminations being completely different at a microbiological level.

Anchoring heuristic happens when we estimate an unknown value based on another particular value (even if it was irrelevant). Kahneman (2011) provides a few examples on anchoring. For instance, he and Tversky rigged a wheel of fortune to stop only at 10 or 65. The wheel showed the numbers from 0 to 100. They spun the wheel in front of different groups of students, who were asked to write down the outcome of the spin. The students were asked two questions (Kahneman, 2011, p.119):

> *Is the percentage of African nations among UN members larger or smaller than the number you just wrote?*
>
> *What is your best guess of the percentage of African nations in the UN?*

The average of the percentages of those who saw the numbers 10 and 65 were 25% and 45% respectively. That is, the students anchored their answer to the outcome of the wheel of fortune – not only an irrelevant number, but also a supposedly random one. Similarly, Kahneman (2011) gave an example of asking people the age at which Ghandi died. Unless they know the answer beforehand, their estimates were higher if they were asked whether Ghandi died at the age of 114 than if they were asked if he

died at 35 years. The 114 years in the question anchors the answer to an old age, while 35 years anchors it to a youthful age.

Anchoring heuristic would suggest that managing and perceiving risks are shaped by possibly irrelevant and arbitrary events happening around the time the owner-manager becomes aware of these risks. A risk evaluated in turbulent times could be over-estimated, as the evaluation is anchored to the turbulences occurring at the time. This perception of risk itself would then be an anchor for any future evaluation of the risk. Managing risks would be anchored to particular approaches, not only because people would prefer the familiar, but also because their mind is anchored to think about these approaches. Looking at risk propensity from an anchoring perspective, one's actions are tethered to their previous actions and behaviours. Taking a big risk in the past would anchor our risk-taking behaviour to taking big risks. When one takes a "big risk", "small risks" would seem not risky. When the owner-manager adopts a reactive approach to risk, being reactive becomes the benchmark – or an anchor – for other risks.

4.3.4 **Possible irrational forces**

The discussion thus far has covered theories and concepts that could explain decisions that are – to some extent – not irrational. Sitkin and Pablo's model, for example, might not be rational, but the decision maker – one way or another – still appreciates an optimal or rational decision. The decision of the decision-maker, however, can be influenced by irrational forces. Recall, for example, the experiment by Kahneman and Tversky (Kahneman, 2011) in which they found their students anchored to a supposedly random and arbitrary number when estimating the number of African nations in the UN. It is irrational to evaluate a value based on a completely irrelevant number.

This section explores the possibility of decisions being influenced by irrational forces. Particularly, it focuses on the notion of cognitive dissonance as a force that could alter the decision-maker's judgement or change their beliefs or perceptions to fit with that judgement.

4.3.4.1 Cognitive dissonance

Consider this: you are on a diet to lose weight, and in front of you is a sugar coated, jam stuffed doughnut. On one hand, you love doughnuts, and you are very

tempted to eat it. On the other hand, to lose weight you know you should not eat the doughnut. The two options are conflicting. Eating the doughnut would conflict with your desire to lose weight, while not eating it would conflict with your temptations. Similarly, someone might know that smoking is harmful, yet they would still smoke. When people are put in such situations, where their beliefs, actions, behaviour, and the information they have are conflicting, they enter a state of cognitive dissonance.

The notion of cognitive dissonance was proposed by Festinger (1962). He describes dissonance as inconsistency; inconsistency in beliefs, attitudes, and behaviour. Festinger theorised that people are uncomfortable with cognitive dissonance, and thus would attempt to reduce this discomfort. For instance, the author describes how one might reduce the dissonance when smoking: someone might find their enjoyment of smoking so good that it would be worth any harm, they might convince themselves that the information they have (that is, the serious effect of smoking on health) is not as serious as they are made to be, they might think that other things are also harmful, and they cannot avoid everything that could do harm, or they might think that if they stop smoking they would gain weight, which in turn is also harmful to their health. In all these scenarios, the smoker would balance the dissonance, somehow making their beliefs and attitudes consistent with their behaviour.

While developing the theory of cognitive dissonance, Festinger *et al.* (1956) studied a small dedicated cult (whom they call The Seekers) who believed that on the 21st of December 1955, aliens from the planet Clarion would attack and flood the earth. Their prophecy was based on messages they received from Clarion, sent to them through their leader, whose hand would get seized by the aliens to write the messages. The Seekers believed that only they would be saved from the floods, as they have followed all the instructions Clarion sent. Clarion would send spaceships to take the group away to salvation on the evening of the 20th of December. Like most cults, the Seekers sold their possessions, left their jobs, some got divorced, and so on, in preparation for the doomsday. On the night of the 20th, the group gathered awaiting the spaceships. Festinger theorised that when the sun rises on the 21st, and the group sees that life has continued, their belief, their sacrifices, and the information they will have will be inconsistent, thus they will attempt to reduce these inconsistencies. When the group realised that the spaceships are not coming, and that the world is safe from

the Clarionian attack, their inconsistencies increased, and, as Festinger predicted, they immediately started to attempt to reduce these inconsistencies. Some started to doubt the prophecy, some suggested they did not follow the instructions they received properly, others started to think that the Clarions have abandoned them. At around 4am, consistency was restored: the leader of the group received a message from the aliens:

> *"This little group, sitting all night long, has spread so much goodness and light that the God of the Universe spared the Earth from destruction" (Cooper, 2007, p.5)*

The Seekers were the saviours of the Earth. Their beliefs and the information they have are now consistent.

Renn (1989) suggests that people would perceive risks to be more or less serious if they have other beliefs that benefit from this adjustment of perceptions. For instance, when the owner-manager of a company considers a particular project to be highly risky, yet they believe that taking that project would return great benefits to the company, the theory of cognitive dissonance suggests that the owner-manager would try to reduce the inconsistency. For example, they might take the project, and justify – or rationalise – it by over-presenting the benefits, by under-perceiving the risks of the project, or even by suggesting that without taking great risks they would not make profits. They might also do the opposite: reject the project, over-perceive the risks or under-present the benefits. In all cases, the theory of cognitive dissonance implies that the owner-manager would manipulate the decision-making process to achieve a level of consistency.

Knemeyer *et al.* (2009) did a study on supply chain risk management. They explain that although a behaviourist approach suggests that a manager's behaviours would be guided by their beliefs, cognitive dissonance would suggest that the manager's beliefs could be adjusted to be consistent with their behaviours. For instance, supply chain managers may accept the risk of a catastrophic event and adjust their perception of the risk to be not so risky. In short, cognitive dissonance suggests that although the owner-manager's decisions and behaviours may be guided by their beliefs and attitudes, their beliefs and attitudes may also be adjusted to be consistent with their decisions and behaviours.

Going back to the Clarion invasion, the Seekers' only concern before the prophesised doomsday was their salvation – they were not interested in publicising their beliefs (Cooper, 2007). For instance, they provided very brief interviews to a reporter who wrote an article about them. However, when they received the new message from Clarion, the newly gained consistency was based on unvalidated information. Thus, after their discomfort, the group sought publicity, taking their cause to the media. They desperately wanted others to validate their new belief, and to show that their discomfort was not in vein. Similarly, cognitive dissonance would imply that a decision maker would seek similar validation for newly acquired consistency after dissonance, or attempt to reduce dissonance by validating the decision by attempting to learn that others are comfortable with the inconsistency they have.

4.4 Problematic assumptions of mainstream decision-making research

> *"It was a lot easier to listen to the scientists and the lawyers, because [they] could provide pages and pages of documentation supporting their conclusions. I think that approach is a mistake, and if we are to learn to improve the quality of the decisions we make, we need to accept the mysterious nature of our snap judgments" (Gladwell, 2007, p.52).*

Literature on decision-making is wide and broad. It covers a broad range of philosophies, perspectives, and assumptions. To understand the choice of the theoretical lens and concepts for this research, this section explores some problematic assumptions and limitations in the mainstream decision-making literature reflected on the research of risk management.

4.4.1 Limitations of decision-making research

Langley *et al.* (1995, p.260) argue that for decades decisions in decision research in organisations "have been described as discrete and concrete phenomena driven by rational - albeit bounded - minds, stripped of affect, insight, and history". They argue that decision-making in organisations researchers have often ignored what they called the "dark and tangled stretches" (p.261) of decision-making as tackling

them directly would have compromised their research methods. They criticised such researchers for compromising their results for methodological convenience.

Decision-making literature has provided a both 'seemingly credible' descriptive and prescriptive framework for decision making. However, Langley *et al.* (1995) identified several limitations to the conventional conceptions of decision making. In their paper, they focus on three of these limitations: reification, dehumanisation, and isolation. That is to say, the existing literature on decision-making treats a decision as an existing identifiable "moment of 'choice'" that "unfold[s] in a sequential pattern, oblivious of individual differences and divorced of human emotions and imagination", and can be "isolated from [other decisions] and from much of the collective reality that is organization" (p. 264). In this section, I discuss these limitations, and describe how risk management research reifies, dehumanises, and isolates management of risk.

Langley *et al.* (1995) suggest that literature on decision-making reify decisions, assuming they "exist" as a moment of choice that has an identifiable beginning and end. Decision making literature views a decision as a commitment to action, often identifiable by the documentation or tangible records of that commitment. Relying on such approaches could help research *identify* the decision, or the outcome of the decision-making process, but it ignores the undocumented and intangible side of that decision process. Langley *et al.* (1995, p.265) ask "Must there be a clear *point* as well as a clear *place* of decision? Associating it with some specific document may simplify the research, but at what price?" It is easier to rely on documents as they provide us with *concrete answers*, however it deludes us from the fuller picture. The authors give an example of a company's decision to build a new factory. They suggest that finding the *decision* being *made* in one of a board meeting minutes would suggest precisely that: the decision was made there and then. However, they argue, the *real commitment* (as they call it) might have been made months before that meeting, when the owner-president of the company visited the site and made up their mind.

Focusing on the document alone – or on the illusion of when the decision was made – could mislead us from understanding the decision process. It ignores the thought process the owner-president has had when they made up their mind. Langley

et al. (1995) suggest that it is possible that a decision is a construct that "do[es] not exist; [decisions] are merely constructs in the eyes of the observer" (p.265). A decision does not usually happen in a specific moment in time, but rather develops and evolves. Take the crystallisation of salt as a metaphor: a decision being a salt crystal created in a salt-solution. Overtime, salt from the solution would start to precipitate onto some particle in the solution, creating a small salt crystal. Over time, more salt would precipitate onto the crystal becoming a bigger more magnificent one. The crystal *becomes* rather than simply *is*. Decisions crystallise over time, they become what they are and develop in the mind affected by various (relevant or irrelevant) ideas, perceptions, beliefs, observations, and information. Even if the decision is not even being considered (for example, well before the company considered building a new factory), these forces are ready, in the mind, awaiting to shape the decision. Similarly, neither managing risk nor the decision to do so happen in a specific moment in time. They *become* rather than they *are.* The owner-manager of a company might hire a security guard for the warehouse because since they were a child they have seen people in uniform guarding warehouses. They might make the decision to keep stock because they once visited a shop that was out of stock and realised that having stock is important. Formal risk management strategies, however, assume otherwise. They assume that risk response decisions are made at a specific moment (that is when a risk is identified and evaluated, a decision is made for the response plan). They ignore the decision-making process and thought that have happened before the decision was "made".

Langley *et al.* (1995, p.266) also suggest that literature on decision-making neglects "key human faculties and individual characteristics" that shape the outcomes at an organisational level. The authors criticise Simon's (1976) notion of the boundedly rational yet still cerebral 'administrative man'. They argue that the administrative man is more 'life-*size*' – but not more 'life-*like*' – than the rational or economic man. To understand the decision-making process from a human perspective, they examine the role of the decision-maker's role as a creator, an actor, and a carrier.

A decision-maker as a creator reflects the ignored role of the decision-maker as the "maker" of the decision. Recall what Simon (1993, p.594) said about solutions not being handed to us in a list. However, literature depicts the decision process as a passive process of finding decisions rather than creating them. Take for instance what

Einhorn (1982, p.269 italics added) says about decision-making: “It is obvious that decision making is action oriented; one has to *choose* what action to take in order to satisfy basic needs and wants.” Choosing an action implies a pre-existing list of options from which one makes a selection. This implication depicts a restricted role of the decision-maker to a passive process of selection. Langley *et al.* (1995, p.268) suggest a need to consider *insight* in the study of decision-making. They propose replacing the ‘rational man’ by the ‘insightful man’ “who listens to the voices emanating from his own subconscious, or perhaps better expressed, who sights the images that well up in his own imagination”.

Research on decision-making has also portrayed the decision-makers themselves as passive: “a receptacle to whom things happen: problems arise, opportunities appear, choices are forced, interruptions occur” (Langley *et al.*, 1995, p.268). However, they argue that sometimes people act in ‘purely voluntary ways’, and decisions can go beyond the ‘satisficing’ notion of Simon’s (1972) bounded rationality. They suggest that research on decision-making lacks consideration of *inspiration* which exceeds the upper bounds of rationality, thus producing insights. Langley *et al.* (1995, p.269) also argue that the decision-makers carry their decisions with them “through their memories, experiences and training, the cumulative impact of the world around them”. They suggest that people rely on the past, the present, and the future to remember, justify, and anticipate decisions. In short, what Langley *et al.* (1995) propose is the inclusion of insight, inspiration, affect, and memories in the study of organisational decision-making to capture the human side of decisions.

Applying this limitation onto risk management processes would show that they are based on objective measures and procedures, reducing – or eliminating – human judgement, thus dehumanising the process of managing risks. They are based on the “decision-maker” following pre-set frameworks and structured guidelines to “take” decisions to manage risks. If this, do that. They deem human intuition, experience, skills, and hunch invalid and incapable of managing risk. On the other hand, and despite the dehumanising aim of risk management strategies, decisions are, in reality, made by humans. Perhaps in a “perfect” world, these decisions are completely based on a predefined process. However, in reality, managing risks is still based on human decisions – whether we use formal risk management strategies or not. Assuming

otherwise (which most research on managing risks does) overlooks a very significant element of the process: the subjective human input.

Langley *et al.* (1995) also suggest that research on decision-making assumes decision-making processes are isolated processes, independent of and distinct from other decisions and the organisation itself. The authors argue that "decisions interact with each other" (p.270), crossing the artificial boundaries given to a decision-making process by researchers. For example, the owner-president's decision to build a new factory is not isolated from the decision to expand the business's product range, or to enter a new market. These decisions are interlinked. For instance, both the new factory and expanding the product range or entering a new market fall under the same strategic umbrella – expanding the business. Thus, both decisions share aims and objectives, and in a way complement each other. Both decisions would also require financing, staff, and other resources. Thus, both decisions compete on the company's capabilities. The owner-president cannot make one decision in isolation of these other decisions.

Langley *et al.* (1995) suggest that the artificial and arbitrary boundaries given to decision-making processes need to be more transparent. They propose a change from 'decision processes' to 'issue streams' and 'issue networks', as decisions are often made to deal with issues. They argue that decisions in organisations revolve around issues. For instance, meetings and files are based on solving issues rather than making decisions. They propose researching decision-making by tracing issues forward, instead of decisions backwards. Risk management strategies tend to handle risks separately. For example, risk registers quite literally separate risks and responses in cells of a table. Risks are evaluated in isolation of other risks, and response actions are made for each risk in isolation. Risks, however, are interlinked. Decisions to manage a particular risk might on one hand manage several risks and could on the other hand create other risks. For example, holding stock to protect the company against the risk of losing a major supplier would also protect it from fluctuation in product costs, but the same decision would also create other risks associated with keeping stock. Formal risk management models do not take this interconnection of risks and decisions into account.

4.4.2 **Decision errors or bad judgement?**

In addition to the limitations identified by Langley and colleagues, decision-making and risk management literatures attribute errors and bias to human judgement. For decades, human judgements have been blamed for their inconsistencies with the 'normative' probability-based models (Gigerenzer and Selten, 2002b). Such inconsistencies and discrepancies have been labelled 'fallacies' and are attributed to human limitations. Human judgement are, more often than not, considered suboptimal or even irrational (Gigerenzer and Selten, 2002b). They are considered errors (Funder, 1995). Breakwell (2007), for example, calls human judgement a distortion. Kahneman, Slovic and Tversky's (1982) book is called *Judgement under uncertainty: heuristics and biases*; they associate human judgement with biases, suggesting that it is usually lead by sever and systematic errors.

Funder (1987), however, discusses the difference between systematic errors (those based on experiments in a laboratory) and judgement mistakes made in real life. Bowen (1987) holds a similar discussion on escalation of commitment, considering some escalation decisions as dilemmas instead of decision errors. Funder (1987) distinguishes between errors and mistakes, arguing that what could be a laboratory error, reflecting discrepancies between subjective estimates and objective measures, are shaped by controlled and clear stimuli. However, in most cases these stimuli do not translate into the real world. Entertaining this argument further, although these errors might reflect human fallacies under certain stimuli and circumstances, human judgements in the real world are not shaped by these stimuli or circumstances alone.

Funder (1987, p.76) argues that, in psychology, the focus on error in research "stem[s] primarily from its apparently dramatic applications for accuracy in daily life […] not for its value for understanding the mechanisms of judgement". Over time, the excessive focus of some major works on errors has been translated to indicate that human judgement and decisions are more wrong than right. For instance, the work of Kahmeman and his colleagues has provided insight into how people use their cognitive powers to generate estimates. However, their focus on errors and bias has created a greater interest in how correct (or wrong) people can be in their estimates. However, recall, from Chapter Two, what de Finetti (1974) said about probability: "all these things matter in so far as they determined that unique thing that matters, and that is the evaluation of probability to which, in the end, they have given rise" (de Finetti, 2017,

p.7). The same can be said about human judgement: what matters about human judgement is the judgement itself, and not how accurate or correct it is.

The point to make here is that considering human judgement as biased, erroneous, or fallible – although might sometimes be so – would deviate the research focus from understanding these judgements to measuring their accuracy compared to normative models. Funder argues that what might be an error compared to 'laboratory stimuli' could still be correct or acceptable within the context in which the judgement was made. Such judgements, he adds, could reveal and reflect processes of judgement in ordinary circumstances. For instance, in a research studying how the perception of heart attacks impact people's behaviours, the person's estimate of the risk of heart attacks is what matters. It can tell us how the person's perception of that risk shapes their beliefs, attitudes, and behaviours. Describing this estimate as biased or an error would shift the interest to how correct, or incorrect, this person is about their estimates. Thus, considering human judgement as biased, or deviant from the norm, implies accepting the 'norm' as the 'correct' way to do things, and the judgement itself as an error.

4.5 An overview and theoretical conclusions

In this chapter, decision-making theories and concepts were explored to build a theoretical understanding of the owner-manager's decisions on managing risks.

It was highlighted that research on risk management in SMEs should not be based on rational models. Doing so would only create research that compares human judgement to the normative models of risk management. Embracing the non-rationality of the owner-managers allows us to descriptively understand the process of managing risks based on the owner-managers' judgements, including their insights, inspirations, affects, and memories, as well as their cognition, environment, history, and context.

I argue that managing risks in SMEs should not be studied only as a rational process, but also as a non-rational process, one that does not conform to normative models. This process is not independent of the person(s) involved in making decisions (Langley *et al.*, 1995). Thus, it is not independent of the person's perceptions (Sitkin and Pablo, 1992), values, memories (Kahneman, 2011), and emotions (Slovic *et al.*,

2005). Managing risks is not independent of the environment (Gigerenzer and Selten, 2002a; Simon, 1972) , culture (Slovic, 2010), history (Sitkin and Pablo, 1992), and context. Human judgement in managing risks should not be always treated as an error or a distortion (de Finetti, 1974; Funder, 1987), but a tool. More specifically, to understand human judgement in real-life, we should avoid measuring its accuracy in conforming to normative models. Managing risks should not be studied in isolation of other decisions nor as a linear process that has a clear beginning and end (Langley *et al.*, 1995).

Additionally, based on the theoretical exploration of decision-making and risk management bodies of literature, I would suggest some theoretical conclusions on how owner-managers of SMEs make their decisions on approaching risks (Table 4). The owner-managers would approach their risks heuristically. They would approach their risk based on their cognitive knowledge (Simon, 1972), their perception (Tversky and Kahneman, 1992) of risk and their evaluation of their decision. They would have some tendencies in how they approach risks (Sitkin and Pablo, 1992), which would shape their decisions. The owner-managers' knowledge, perception, and evaluation would be bounded by their cognitive limitations (Simon, 1972). Additionally, their knowledge and perception would be shaped by their experience (Kahneman *et al.*, 1982). They would utilise their limited knowledge and experience from previous decisions to make their new decisions. Their experience and knowledge would also shape – intentionally (Gigerenzer and Goldstein, 2011) or unintentionally (Kahneman *et al.*, 1982) – how they perceive risks and how they approach them. The way the owner-managers would approach their risks would also be shaped by social influences, either by imitating others (Goldstein *et al.*, 2002) or by being influenced by how others perceive risks (Sitkin and Pablo, 1992). The owner-managers would also be influenced by irrational forces, where inconsistencies in their beliefs, views, and behaviours would lead them to seek consistency (Festinger, 1962).

Table 4: Theoretical conclusions

Theoretical concept	Key authors	Theoretical conclusions
Prospect theory	Kahneman and Tversky (1979) Sitkin and Pablo (1992)	Problem framing suggests that the owner-manager's conceptualisation of risk would shape how they would approach that risk
Risk perception heuristics	Kahneman (2011) Kahneman *et al.* (1982) Breakwell (2007)	Owner-managers of SMEs evaluate risks heuristically. Availability of risks shape how owner-managers perceive risks. Risks are evaluated by similarity to other risks or events. Past experiences and their significance to the business shape how the owner-manager perceive and make their decision about risks
Risk propensity	Sitkin and Pablo (1992)	Owner-managers would develop some tendencies or patterns on how they approach risks. Influenced by past experiences, and preference to maintain familiarity
Bounded rationality	Simon (1972)	A decision-maker would not consider and evaluate all available alternatives, but rather rely on structures of the environment and his or her cognitive limitations. Similarly, the owner-manager would not evaluate all alternatives to choose the optimal one
Decision-making heuristics	Gigerenzer and Selten (2002a)	Heuristics such as Take The Best or Take The First suggest that owner-managers would consider a few alternatives to approaching risks and choose the most convenient one. Sometimes, the owner manager would take the first alternative that comes to mind in approaching risks
	Goldstein and Gigerenzer (1999)	Heuristics such as Recognition heuristic suggest that the owner-manager would choose to approach risks in a way he or she is familiar with, they would choose an approach they have taken before (Goldstein and Gigerenzer, 1999).
	Goldstein *et al.* (2002) Hogarth *et al.* (1980) Sitkin and Pablo (1992)	Heuristics such as imitation heuristic, and Sitkin and Pablo's (1995) model suggest that these subjective norms play a role in shaping the decision. Thus, it can be proposed that approaching risks is shaped by imitating others, and by the social context.
Cognitive dissonance	Festinger (1962)	There is a possibility of irrationality in approaching risks. The owner-manager might have conflicts in their beliefs, attitudes, information, and behaviour. This would create a case of cognitive dissonance. To reduce this dissonance, the owner-manager would rationalise their decisions by altering their beliefs or behaviours, or favouring certain information about risks

Chapter Five:

Methodology

5.1 Introduction

In the previous chapters, literature and theories on managing risks in SMEs and the owner-managers' decisions on approaching risks were discussed. I proposed the need to understand how SMEs approach their risks by listening to how they do so in practice. I also emphasised the need to acknowledge the subjective nature of risk, and the informality of SMEs. More significantly, I highlighted the pivotal role of the owner-manager in managing risks. In the previous chapter, I explored theories and concepts of decision-making for a theoretical insight into how owner-managers make their decisions on managing risks. I concluded that owner-managers would approach their risks heuristically. They would be bounded by their cognitive limitations, and they would utilise the structures of their environment to make their decisions. I also explored the possibility of the owner-managers' decisions being influenced by irrational forces such as cognitive dissonance.

In this chapter, I present the methodology of the research, and the procedures of the empirical study conducted to answer the research questions:

Research Question 1: How do owner-managers of small- and medium- size businesses approach their risks? Specifically, what approaches do they take towards risks in their businesses?

Research Question 2: Why do owner-managers approach risks the way they do? Particularly:

1- **How do owner-managers decide on how to approach risks?**

2- **What shapes and informs the owner-managers' decisions on how they approach risks?**

The chapter consists of three parts:

The first part (section5.2) consists of defining the research strategy. This involves identifying the research philosophical positioning and selecting the research approach and methods. Empirically, a qualitative approach is found most appropriate as it allows an exploration and understanding of the owner-managers' experiences and subjective thoughts.

The second part (section 5.3) describes the design of the qualitative study. This entails selecting data collection methods, defining the study scope, acknowledging the researcher's role in the study, and handling the ethical side of the study. In this study, I used semi-structured interviews for data collection to allow flexible conversations with the participants while maintaining control. An interview schedule was designed based on the reviewed literature and theory in the previous chapters. The study focused on the context of Jordan. The participating companies were chosen based on criteria discussed later in the chapter.

The third part (section 5.3.4) involves the procedures for conducting the study. Interviews were conducted with owner-managers of 26 SMEs in Jordan. The interviews took place during the period between 21st December 2016 and 16th March 2017. The average of the interview length was 55 minutes, totalling to 1431 minutes. Before data collection, a pilot study was conducted during the period between 26th April 2016 and 16th May 2016. The pilot involved semi-structured interviews with owner-managers of five SMEs (333 minutes in total). The purpose of this pilot study was to investigate the research ideas, interview schedule, and the tools used. The collected data were analysed thematically as suggested by Braun and Clarke (2006). The analysis phase was iterative, where data were interpreted, and themes were created.

5.2 Research Strategy

5.2.1 Research Philosophical Positioning

> *"Questions of method are secondary to questions of paradigm, which we define as the basic belief system or world view that guides the investigation, not only in choices of method but in ontologically and*

epistemologically fundamental ways" (Guba and Lincoln, 1994, p.105).

Guba and Lincoln (1994) defined a spectrum of inquiry paradigms: sets of basic beliefs representing one's world view defining the nature of the world at an ontological (assumptions of reality), epistemological (assumptions of knowledge), and methodological (validity of approach to reality and knowledge) levels. The spectrum has two ontologically and epistemologically contradicting paradigms on each end: positivism and constructivism.

Positivism is considered the starting point of social sciences. It is based on natural sciences (Bryman and Bell, 2011), as natural sciences were the dominant approach to research and knowledge during the period in which social sciences started to blossom (Guba, 1990). Having an enormous authority amongst scholars and policy makers, researchers in social sciences were obliged to adopt a positive stance and follow a natural sciences approach. A positive ontology is one of a realist: the social world, like the physical one, exists. Reality exists, with the truth existing independent of those observing it. Epistemologically, this truth is out there, waiting to be objectively measured and found. Both the existence of the world, and our knowledge of it are real, and independent of those living or observing them (Guba and Lincoln, 1994). Positivism is based on facts. These facts are measured, tested, and verified using systematic and standardised objective methods (Bryman and Bell, 2011).

On the other end of the paradigm spectrum is what Guba and Lincoln (1994) call constructivism. Constructivism, like other philosophical paradigms, emerged as an opposition to the extreme positive view on research (Guba and Lincoln, 1994). For a constructivist, reality is relevant to those living it. That is, there are multiple realities that are intangible and mentally and socially constructed (Guba and Lincoln, 1994), based on the social and experimental experiences of the individual. In this reality, unlike positivism, there is no 'truth' to be grasped, as reality is dependent on the individuals holding it. A constructivist inquiry would hold a subjectivist approach to knowledge (Lincoln *et al.*, 2011). Within a constructivist paradigm, knowledge, and 'findings' of inquiry, are "literally the creation of the process of interaction between [the inquirer and the inquired into]" (Guba, 1990, p.27). Meaning is constructed based on interactions with the surroundings (Lincoln *et al.*, 2011).

These different paradigms, or traditions, dictate the assumptions of the research (Crossan, 2003) – thus drawing its methodological nature. Research on risk management mostly adopts a positivist tradition. It assumes a real social world – that is: it assumes an organisation is real, with its hierarchy, structure, and systems. It assumes that the people within the organisation would follow the system and procedures. It also assumes that risks are real and only have an objective dimension. Therefore, this positivist positioning of risk management research dictates its methodology, making it rigidly rejecting alternative perspectives. This research, however, does not adopt a positivist tradition.

According to Guba and Lincoln (1994, p.108), the ontology of a research lies in the answer to the question: "What is the form and nature of reality and, therefore, what is there that can be known about it?". This research adopts a realist ontology. That is, it assumes the social world is real, and what can be known about it is how things really are and how things really work. However, this reality is not "naïve reality" where it is fully apprehendable and driven by natural laws to extrapolate causal-effect relationships. The research holds what Guba and Lincoln (1994) call a critical reality (not to be confused with critical realism as described by Archer *et al.* (2013)). According to Guba and Lincoln (1994), critical "reality is assumed to exist but to be only imperfectly apprehendable because of basically flawed human intellectual mechanisms and the fundamentally intractable nature of phenomena". What the authors mean is that although the social world is real, we cannot fully understand it – or find a certain truth – because our knowledge of reality will always be drawn through the perceptions and interpretations of those living and observing it.

In this research, critical reality is coupled with a subjective epistemology. A question of epistemology is one that relates to the nature and validity of knowledge that can be gathered about the reality: "What is the nature of the relationship between the knower or would-be knower and what can be known?" (Guba and Lincoln, 1994, p.108). A subjective epistemology would suggest that knowledge about reality is limited to the interpretation of the observations made about it. It is influenced and shaped by the interpreter – in the case, the researcher, and the those living and shaping reality through their own interpretation. Therefore, although risks might be real, and although there might be an optimal procedure to managing them, our knowledge of managing risks should be shaped by understanding and interpreting the practice from

the owner-managers' perspective. What matters is their own interpretations and experiences of the reality they live in. All knowledge and meaning about that reality is socially constructed (Belfrage and Hauf, 2017). Therefore, "The best we can hope for is to uncover approximate evidence of tendencies rather than proofs allowing predictions" (Oliver, 2011, p.5).

Adopting this philosophical positioning implies that the outcomes of this research would not be particularly generalisable, predictive, or provide objective proof. The outcomes would generate a general idea of the complex and multi-layered reality of how SMEs manage their risks, providing evidence of tendencies and forces that shape this reality. These outcomes are shaped and informed by the interpretations of the researcher and of the subjects of the study.

5.2.2 Quantitative and qualitative approaches

The research applies a qualitative approach to study how risks are approached in SMEs. To understand the choice of a qualitative approach, it is necessary to understand the merits and disadvantages of both qualitative and quantitative methods. The difference between the two approaches is not only in their methods, but also in the philosophical traditions from which they stem (Bryman, 2016). Cronbach (1982) suggests that "there is no single best plan for an evaluation". The choice of approach should reflect the research philosophy, questions, and aims. This study is based on understanding risk and managing risks from the lived experiences and perceptions of the owner-managers. In the previous chapters, an emphasis was placed on the subjectivity of risk, the importance of human judgement, and the lived experiences, perceptions, attitudes, and beliefs of the owner-manager. Understanding this subjectivity could not have been done using a quantitative approach. A qualitative approach, however, allowed the exploration of the owner-managers' own interpretations of their experiences and perceptions.

Quantitative research is based on a positive view. The aim of quantitative research, as is a positive perspective, is to build models that allow the prediction of the future. These models are based on a cause-effect relation between variables. To achieve such models, quantitative research adopts a deductive approach, and is based on measuring facts and testing hypotheses. In a deductive approach, hypotheses are built based on theory and are tested empirically (Bryman, 2016). As the name

suggests, quantitative methods emphasise the need and necessity of quantified data collection and analysis (Creswell, 2012). A quantitative approach adopts an objectivist view (Bryman and Bell, 2011). Objectivity implies reality 'exists' independent of the people and their subjective views and beliefs. It also implies that our knowledge of the world should be independent of those observing it. Thus, quantitative data collection and analysis methods are structured, predefined, and designed to quantitatively assess different variables with optimally no influence from the researcher and the researched (Bryman, 2016). Subjectivity in quantitative research, being considered a bias, is rejected. Acceptable knowledge for a quantitative research must come from a model, which can be generalised on a population, reflecting a cause-effect relation among its variables, based on objective and structured measurements. Methodologically, the study resulting in the model must be replicable on the population, regardless of the researcher and the study sample (Bryman, 2016). Quantitative research, being objective and value-free, often fails to distinguish between the *social* and the *natural* – between the human and institutional behaviour and the physical behaviour (Bryman, 2016).

A qualitative approach, on the other hand, is interpretive (Bryman, 2016). Qualitative research aims to understand social phenomena by interpreting meaning and experiences of the people living them (Patton, 1990). A qualitative research often adopts an inductive approach, focusing on theory building based on the understanding of the lived experiences (Bryman and Bell, 2011). Unlike quantitative research, a qualitative study does not focus on generalisation. Qualitative methods aim to produce a deeper understanding of a much smaller number of cases (Patton, 1990). Subjectivity is the base of qualitative research. In qualitative research, reality is constructed by the people living it. For a constructivist qualitative approach, 'truth' does not exist to be sought. Knowledge can only be acquired through the interpretation of the people constructing these realities (Creswell, 2012). A qualitative approach emphasises the need of maintaining meaning. It allows an understanding of human and institutional behaviour. The flexibility of qualitative research allows us to appreciate the meanings behind experiences. In the words of Guba and Lincoln (1994, p.106), "Human behaviour, unlike that of physical objects, cannot be understood without reference to the meanings and purposes attached". Thus, rich insight into human behaviour can be

achieved through a qualitative approach to research, so can the insight into the decisions, perceptions, and experiences of the owner-managers.

Thus, I found a qualitative approach more appropriate to studying how risks are approached in SMEs because it allowed me to have an insight into how the owner-managers think about, experience, and make their decisions about risks and managing them. A quantitative approach might have provided an objective measure of how risks are approached, but would have – like quantitative risk assessment – stripped the study from understanding the meaning the owner-managers assign to their experiences.

Additionally, and as a secondary reason, I chose a qualitative approach because there is a limited amount of qualitative studies in the field of managing risks in SMEs. This, in itself, is a methodological gap in the literature and in our knowledge of how risks are approached in SMEs.

5.2.3 **Research Approach**

Qualitative research often adopts one of five most commonly used approaches: narrative, ethnographic, phenomenological, grounded theory, and case study research (Creswell, 2012). Narrative research focuses on the life of individuals aiming to tell the stories of their experiences. Ethnography describes and interprets a group that shares a culture, describing its patterns and how it works. Phenomenological research focuses on understanding the essence of the experiences, thus describing the lived phenomenon. Grounded theory focuses on building theory that is grounded in data, mostly studying a process, an action, or an interaction. A case study develops in-depth description and understanding of a case (or multiple cases), such as an event, a programme, or an activity, and thus developing a detailed analysis of the case(s).

Although these research approaches are often claimed to be used in different studies, authors, such as Sandelowski (2000, 2010), Thorne *et al.* (1997), and Lambert and Lambert (2012), suggest that many studies have failed to actually follow the fundamentals of these approaches. Sandelowski (2000) suggests that many studies label themselves with one approach or another even though they might not include anything more than one or two features of the approach. Thorne *et al.* (1997, p.171) suggest that this 'false' labelling is caused by the dominance of positivist research in social sciences, which influences qualitative researchers to feel obliged to defend their efforts – fearing of it being described as a "mere description" (Sandelowski, 2010,

p.334). This, as Sandelowski (2000) describes it, somehow forces qualitative researchers to find epistemological credibility by labelling their work as one of the commonly used approaches. In nursing research, for instance, Thorne *et al.* (1997, p.171) suggests that "In order to place their research within the context of established scientific inquiry, most early qualitative nursing researchers of any caliber aligned with the coherent logic of one or another of these approaches".

The research can be best described as an adaptation of a qualitative descriptive approach described by Sandelowski (2000). The approach departs from what Caelli *et al.* (2003) call a 'generic qualitative approach' and inspired, in parts, by 'interpretive description' described by Thorne *et al.* (1997). As Sandelowski's peper was published in *Research in Nursing and Health* journal, qualitative descriptive research has mostly been used in nursing and healthcare research (e.g. Mackintosh (2006), Marwaha and Johnson (2005), and Skårderud (2007), to name a few). However, it has also been used in other disciplines such as management (e.g. Mocke *et al.* (2016) and Meyer *et al.* (2017), social studies (e.g. Firmasari *et al.* (2019) and Warsini *et al.* (2015)), decision-making (e.g. Dunn *et al.* (2018)) and education (e.g. Julie *et al.* (2016)). However, many other studies, in various disciplines, do indeed implicitly apply a qualitative descriptive approach but label it differently (Sandelowski, 2000).

Sandelowski (2000) describes qualitative descriptive approach as a 'basic' or 'fundamental' approach. She does so to differentiate it from other description approaches such as phenomenology, grounded theory, or ethnography – which are, as she suggests, not exclusively descriptive, but can also be used to explain a phenomenon. By no means does her use of the word 'basic' or 'fundamental' denote inferiority to other approaches. She emphasises that the use of the words does not imply superficiality or simplicity. Lambert and Lambert (2012, p.255) explain that "The goal of qualitative descriptive studies is a comprehensive summarization, in everyday terms, of specific events experienced by individuals or groups of individuals". They suggest that qualitative descriptive studies do not require high level of abstraction of the data, compared to other qualitative approaches. That is, a qualitative descriptive study aims to present a phenomenon rather than "re-present" it the way other approaches do (Sandelowski, 2000). Sandelowski (2010) explains that this does not mean lack of interpretation and analysis of the data, nor a justification of failure to do so.

Lambert and Lambert (2012) and Sandelowski (2000) explain that this approach, compared to other qualitative research approaches, is the least theoretical. Sandelowski (2010) clarifies that this does not mean qualitative descriptive studies are atheoretical, but rather that they may begin with a particular theory of the phenomenon or a framework for collecting the data, but do not need to commit to stay with that theory or framework. That is, the theory may evolve and change throughout the study, where the researcher would hold an open-mind while being mindful of the preconceptions they have entering the field of study, and approaching the data (Sandelowski, 2010).

In her paper, Sandelowski (2000) describes the design features of qualitative descriptive study, such as sampling, data collection and data analysis. In the next section, I discuss the design of the qualitative study conducted, reflecting on features as described by Sandelowski (2000) and supported by other qualitative methods literature.

5.3 Designing the empirical study

This section describes the procedures and methods used for the empirical part of the research. These procedures and methods were designed and chosen in accordance to the previously discussed research strategy. The empirical study was based on the theoretical exploration discussed in the previous chapters. The study took a non-rational perspective on managing risks, thus it focused on the cognitive and environmental aspects of managing risks. The study was focused on understanding managing risks from the owner-managers' perspective. Thus, it was designed to capture their perceptions, attitudes, beliefs, and behaviours towards risks in their businesses.

5.3.1 Data collection design

5.3.1.1 Unit of Analysis

Identifying the unit of analysis for a study is important to identify the appropriate selection of participants of the study (Patton, 1990). The unit of analysis in this study is the individual – in this case is the owner-manager of an SME. This was chosen as the unit of analysis because the study focuses on the experiences and perceptions of these individuals.

5.3.1.2 Selection of data collection method

Semi-structured interviews were used to collect data for the study. Interviews provide a path to the perceptions and values of the research subjects (Patton, 1990). Semi-structured interviews provide a predefined path for the interview, with areas to discuss that would help answer the research questions (Bryman and Bell, 2011). However, they keep a flexibility allowing the participants to have some control over the interview, exploring different areas the participants might find important.

The choice of interviews as a method for data collection was consistent with the philosophical positioning of this research which assumes that although reality exists, our knowledge about it is socially constructed and has meaning through the lived experiences of those observing it. Interviews were a proper method to capturing those lived experiences, as they provided an account of managing risks from the owner-managers' perspective. The choice of semi-structured interviews is also consistent with a qualitative descriptive approach, where "minimally to moderately structured open-ended individual and/or focus group interviews" (Sandelowski, 2010, p.338) are suggested.

5.3.1.3 Interview Design

An interview schedule was designed to guide the interviews (Appendix 2). The schedule aimed to be explorative, allowing the participants to reveal their own experiences and perceptions of risks and managing risks. The interview questions were designed to investigate how risks are approached from the owner-managers' perspective. The questions were based on the literature and theory discussed in the previous chapters. These questions were based on the argument that risk is subjective: although it might exist as a reality, this reality is shaped by the perceptions, beliefs, and experiences of the owner-manager. The interview schedule was designed to capture the owner-managers' perceptions, beliefs, experiences, and thoughts by inviting them to tell stories about their risks.

Table 5 shows the generic questions and the purpose and theoretical justification for them. The questions in interview schedule in Appendix 2 were used as probing questions to capture the answers to these generic questions.

Table 5: Generic questions of interviews

Generic question	Question purpose

What risks?	Identify the risks
How do you approach this risk?	Identify risk approaches
How would you evaluate this risk?	Targeting risk perception (Sitkin and Pablo, 1992), attitude to risk, perception of consequences (Sunjka and Emwanu, 2015), experiences (Gilmore *et al.*, 2004), further forces that shape perception (Festinger, 1962) Identify risk-perception heuristics (Kahneman *et al.*, 1982)
How does your approach manage the risk?	Understand how owner-managers evaluate how they approach risks Explore structures of environment (Gigerenzer and Selten, 2002a) Explore experiences, social influence (Sitkin and Pablo, 1992), and other forces that shape perception of approach
Why did you choose this approach?	Understand the decision-making process (Simon, 1972) Understand the heuristics used Explore perception of structures of environment Explore irrational forces (Festinger, 1962) Understand the dynamics of how risks are managed (Langley *et al.*, 1995)

5.3.2 **Pilot Study**

An explorative pilot study was conducted. The purpose of the pilot study was to explore the fieldwork to develop the thought process identifying new areas and to validate and refine the study plan. The pilot study tested the research questions, the methods used, and the interview schedule. It also explored whether the data could answer the research questions and explored the identified theoretical concepts and identify further ones (**Error! Reference source not found.**). For instance, the pilot study highlighted the possibility of irrational forces influencing how the owner-managers approached their risks. It also revealed that the way in which the owner-managers make their decisions on risk is not particularly linear but dynamic.

The pilot study included five interviews in Jordan. The study identified further improvements to the interviewing approach. For the first two interviews of the pilot study, participants were given the choice of language to be used (Arabic or English). However, the use of English language in the first interview showed a limitation in the participant's story-telling abilities, as the participant was using a second language. Therefore, a decision was made to use the participants' mother-tongue for the rest of the interviews.

An added benefit of the pilot study was to test the equipment and tools used to collect, transcribe, and analyse the data. A computer software, NVivo, was used to analyse the pilot study. The software is designed for qualitative analysis. It enables a better handling of research documents, keeping all research documents, such as transcripts and notes, within easy access. The software also facilitates the process of having a consistent coding process and provides a simpler approach for clustering while keeping the original texts in view. However, the software caused me to drift away from the research aims. For the pilot study, around 200 codes were identified, some relevant, but most were not. This created some chaos, not being able to see the wood from the trees. Thus, it was decided not to use the software for analysing the rest of the data but take a manual approach as discussed later in section 5.4.4.

5.3.3 Researcher as an instrument

By the nature of the research, the researcher plays a significant role as an instrument for the research. The effectiveness of the researcher plays a part in the reliability of the study results. Skills, personal biases, and preconceived ideas are important as well. Creswell (1998) suggests that importance of providing background information about the researcher and revealing any biases to be considered as part of the research.

I, the researcher, have a degree in electronics and telecommunication engineering. This allowed me to have smoother conversations with participants from engineering or technical-based companies, as there was a common level of knowledge with the participants. I have also worked in an engineering-based company for three years and was involved in the managerial aspects of the company. Thus, I had experience in strategic and operational aspects of business. In other words, I had an understanding of the risks discussed by the participants from my own experience.

As mentioned earlier, the researcher's skills are important. One of these skills is interviewing skills. I had some experience conducting interviews prior to this research, and I also attended several workshops on conducting interviews and verbal communication skills prior to collecting data to improve my skills.

The importance of my involvement is my awareness of the Jordanian culture, which enabled me to interpret the experiences of the participants within the Jordanian context. Such context could be cultural, economic, social, or linguistic. For example, in several interviews, participants would talk about a social issue or norm in Jordan and follow it with "you know how it is". This level of mutual understanding of the social life in Jordan built a sense of mutual understanding of a shared experience, contributing to the rapport between me and the interviewee. It also reduced the time spent during interviews explaining the social life of Jordan, which would not have added much value coming from the participants themselves. In addition, during the interviews, some participants used certain expressions that would have different meanings in different contexts, and it was my role to understand the appropriate meaning within that context. In most cases, the understanding of the expression was repeated back to the participant to insure proper understanding of what they have said.

Another key role of the researcher as an active instrument lies in the analysis of the data. Braun *et al.* (2014, p.97) suggests that "the need to determine your particular version of [Thematic Analysis] … draws attention to the *active* role of the researcher in performing analysis" (italics in original). He describes the researcher using thematic analysis within the qualitative paradigm as a "sculptor, chipping away at a block of marble" (p. 96), where the research is the product of the researcher interactions with the research and the raw data.

5.3.4 **The context of Jordan**

Since the research scope is focused on Jordan, this small section is aimed to give a brief background of the country. The purpose of this section is to give the reader an understanding of the cultural, economic, political, and geographical context of the data.

Jordan, a country in the Middle East and officially known as The Hashemite Kingdom of Jordan, has gained its independence from Great Britain in 1946. However, until this day, the legal, economic, and educational systems in Jordan are still

influenced by the British heritage. Since its independence, Jordan has continued to develop in all aspects of life. Today, Jordan is amongst the leading countries in the region in both emerging and developed markets.

According to the Department of Statistics (2017) Jordan has a population of 10.05 million people in 2017. Amman, the capital city of Jordan has 42% of that population. Consequently, Amman holds and attracts the largest share of investments and businesses in Jordan (over 42% of the economic establishments of Jordan in 2011 (Department of Statistics, 2011)), making Amman the economic centre of the country.

Jordan, being an Arab country, has strong links in the Arab world and is part of the Arab business environment politically, economically, and culturally. The culture in Jordan is highly influenced by Islam and tribalism – both of which create some limitations to businesses. In Jordan, many see the family – immediate and extended – to be one of the key pillars of society (Metz, 1991). In the Arab world, Jordan included, more than 90% of the businesses are family owned. Tribalism, or the concept of the family in general, has its influence on the business environment resulting from its cultural influence. For example, sometimes business deals or collaborations would favour a tribal or a family-based relation. Business owners often feel obliged, culturally, to hire (extended) family members within their company.

However, organisations in Jordan face several risks at a macro-level. A major disruption in Jordan is the political situation in the region. Jordan is bordered by politically and economically unstable countries (see Appendix 5). To the west, Jordan is bordered by Palestine and Israel, where the Israeli-Palestinian conflict has been going since the occupation of Palestine by Israel in 1948. To the east is Iraq, which has become unstable politically since the 2003 invasion of Iraq, which resulted in the fall of the Saddam Hussein's regime. Syria is to the north. In 2011, the Syrian civil war started and disrupted the political situation there. The political instability in Syria and Iraq allowed the raise of multiple terrorist groups in the region, such as the Islamic State of Iraq and Syria (ISIS) – an extremist terrorist self-claimed 'state' in the two countries, which peaked in power and spread in 2015. In addition, even prior to the political instability in Syria and Iraq, terrorism in Jordan has existed for a while – such as the terrorist attacks in Amman in November 2005, which was carried out the Al-Qaeda, and the infiltration of terrorist cells and the raise of radical Islamic views in the county.

The political instability in the region was one of the key factors in disturbing – or worsening – the economic situation in Jordan. In the past, Jordanian businesses mostly relied on Syria and Iraq for imports and exports. The exporting market became challenging as the borders with those countries were closed. Businesses also had to rely on importing from different countries. Importing from and exporting to other countries were also disrupted as transportation by land was not possible as the east and north Jordanian borders were closed. For instance, in 2007, the total exports to and imports from Syria were $307 million and $364 million respectively (World Integrated Trade Solutions, 2018). In 2016, those numbers were nothing higher than $67 million and $89 million. The case is similar for imports from Iraq, which was at $750 million in 2002 and only $2 million in 2016 (World Integrated Trade Solutions, 2018). Bordering Jordan, importing from, and exporting to these two countries meant, among other things, lower transportation costs and shorter delivery times.

In addition, the political situation in the region has led an ever so increasing number of the dislocated millions of people seek refuge in Jordan (around 750 thousand registered refugees in June 2018 (UNHRC, 2018)). For a country with a population of 10 million (Jordan Investment Commission, 2018), the refugee-situation added a burden to the emerging economy in Jordan (Malkawi, 2016). Notwithstanding the economic burden, the increased population of Jordan allowed growing the local market and resources.

Having said that, business in Jordan cannot be defined by these temporary turbulent environments. The economy in Jordan has been growing steadily over the years, and the business environment has been maturing rapidly. In 2017, Jordan's total GDP was $40.07 billion (The World Bank, 2018). Until 2009, the World Bank had classified Jordan as a lower-middle income country. In 2010, Jordan has raised to become steadily an upper-middle income country. Since 1990, after a major devaluation of the Jordanian Dinar in 1988, the GDP per capita in Jordan has been steadily increasing from $1,168 in 1990 to $4,129.75 in 2017 (The World Bank, 2018). However, Jordan relies on financial aids. The World Bank had classified the country as Significantly Indebted from 1993 till 2005 – the year in which the World Bank stopped classifying countries by indebtedness level. In 2017, Jordan's public debt was estimated at 27.269 billion Jordanian Dinars ($38.43 billion), a significant 95.3% of that year's GDP (The Jordan Times, 2018).

Notwithstanding the financial difficulties Jordan has been going through, Jordanian organisations have expanded internationally, be it in presence, or international

trade, in the last few decades. The country has limited resources, which causes difficulties for local industries. Major exports from Jordan are textiles, fertilizers, potash, phosphates, vegetables, pharmaceuticals (Central Intelligence Agency, 2018), totalling at $7.58 billion (Jordan Investment Commission, 2018) mostly to US (24.9%), Saudi Arabia (12.8%), India (8.2%), Iraq (8.2%), Kuwait (5.4%), and UAE (4.6%) (Central Intelligence Agency, 2018). On the other hand, Jordan's imports a total of $20.70 billion (Jordan Investment Commission, 2018) mostly focusing on crude oil, refined petroleum products, machinery, transport equipment, iron, and cereals from China (13.6%), Saudi Arabia (13.6%), US (9.9%), UAE (4.9%), and Germany (4.4%) (Central Intelligence Agency, 2018).

Focusing on Jordan in this research comes from several reasons. First, the researcher is Jordanian and is accustomed to the Jordanian context and culture. As discussed in the previous section, this gives an advantage to the research to understand Jordanian customs, expressions, and the background to how things work in Jordan. Additionally, Jordan can be considered an interesting case to study from a risk perspective, as it has been surrounded by political and economic instability over the past couple decades. However, although the instability in the region has had some negative and positive impact on the economy in Jordan, business in Jordan should not be defined by this temporary instability. Afterall, the study does not focus only on the turbulent period (mostly created by the growth of ISIS), and the findings of this study would not have been affected by such turbulence.

5.3.5 **Research Ethics**

The University of Liverpool research ethics guidelines and protocols and Jordanian research and cultural ethics were followed during this research. Before conducting the study, I was granted an ethical approval by the University of Liverpool Management School Committee on Research Ethics. Participants were provided with a participant information sheet (see Appendix 3), and a consent form (see Appendix 4). The interview schedule (Appendix 2) and the forms were reviewed by the committee. The participant information sheet provided the participant details about the research and their role in the study. The consent form insured the participant's consent to take part in the study.

At the beginning of each interview, I reminded the participants of their confidentiality, and that they are free to stop the interview or withdraw from the study at any time – even after the interview. I also informed them that they may ask me to

redact any part of the interview they do not wish to be used in the study. None of the participants withdrew from the study or asked to remove parts of their interview.

During data collection, I encountered a number of incidents that I had to ethically deal with. Although the interview questions were not targeting sensitive issues, I made sure to avoid driving the participants into discomfort. In one interview, the participant started talking about a distressful period and I sensed that the topic was making him emotional. Therefore, I took the decision to change the topic immediately. In two other cases, two potential participants who have agreed to participate decided otherwise just before the interview. In both cases, I accepted their withdrawal without attempting to persuade them otherwise. Additionally, all the participants were informed that the interview would take about an hour to an hour and a half prior to scheduling a meeting. Therefore, I aimed to keep all my interviews within the time limit, accepting to end them earlier when requested, and only continued longer when the participants offered to.

Another ethical concern was the confidentiality of the information provided by the participants. To maintain confidentiality, companies and participants were given pseudonyms. Identifying details were redacted from transcripts. Stories that could identify the participants were analysed within the context of the interview but presented anonymously in this thesis. All audio recordings and transcripts were stored on encrypted password-protected hard-drives. Printouts of transcripts were stored under lock-and-key.

5.4 Procedures of the study

In this section, I describe the procedures that I took in the qualitative study.

5.4.1 Collecting the data

5.4.1.1 Selecting the participants

Sandelowski (2010) suggests purposeful sampling for qualitative descriptive research. Patton (1990, p.169) suggests that the "logic and power of purposeful sampling lies in selecting *information-rich cases*" which allow learning a great deal about "issues of central importance to the purpose of the research". In other words, purposeful sampling focuses on selecting participants in a way that purposefully provide value to the research. Sandelowski (2010) proposes maximum variety

sampling, allowing the research to explore the common and unique manifestations of the phenomenon studied. Therefore, criteria for participant selection was made to gather most information from the interviews. These criteria were based on the literature and some conclusions made during the pilot study.

The selection criteria were as follows: a participating company should be an SME, managed by its owner or one of the partners (Simon, 1972; Sunjka and Emwanu, 2015) and have fewer than 250 employees (Stokes and Wilson, 2006). This criterion is based on the definition of SMEs described in Chapter 3. The definition of SME also suggests that the participating company should be independent, and not belong to a chain, parent, or group company. In addition to the definition, the purpose of this criterion is to eliminate procedures, resources, or policies inherited from a parent company, thus making the business operate as a 'department' rather than a business. For instance, Bates (1995) suggests that when a company aligns with a parent company, it gets access to managerial assistance, financial capital, and market from the parent company. This kind of access dilutes the SME's own role in approaching risk. Furthermore, the participating company should have been in business for at least two years. Cressy (2006) suggests that most companies go through a critical risk within its first two years. Additionally, the study is not interested in new-born companies but rather relatively mature ones. The participant should be the owner-manager or the managing partner of the company. Morse (1991, p.132) suggests that "Informants must be knowledgeable about the topic and experts by virtue of their involvement in specific life events and/or associations". Therefore, it was decided that the participant should have been in their position for at least two years (to align with Cressy's suggestion) to have captured the risks and incidents in the company. Table 6 shows a list of these criteria along with their reasoning.

Table 6: Criteria for selecting participants

Criterion	Reasoning
1- The company should be owner-managed or managed by one of the partners.	The focus of the study is owner-managed companies.
2- The company should be an SME (with 1 - 249 employees).	The focus of the study (Stokes and Wilson, 2006)
3- The participant should be an owner-manager or managing partner of the company	The study focuses on the owner-manager's cognitive process of making decisions (Simon, 1972; Sunjka and Emwanu, 2015).
4- The participant should have been an owner-manager or a managing partner of the company for at least two years.	Previous experiences are important to capture (Morse, 1991; Sitkin and Weingart, 1995). Having a new owner-manager would not capture such experience.
5- The company should have been in business for at least two years.	Literature suggests that most companies go through a critical risk within their first 2 years (Cressy, 2006).

6- The company should be independent, and should not belong to a chain, parent, or group company.	To eliminate procedures, resources, or policies inherited from a parent company (Bates, 1995), thus making the business operate as a "department" rather than a business.
7- The company should be profit-based. Charity, not-for-profit, or social enterprises would be excluded.	Although this study could be applied to those excluded companies, their exclusion is mainly to reduce heterogeneity among the studied cases.
8- The company should be in Amman - Jordan.	Scope of the study.

Participants were selected from a database of companies by a database provider called HOOVER and from my personal network. HOOVER provides a worldwide company information list, including various details about many companies (such as number of employees, ownership status, line of business, and often contact details). I filtered that database according to the selection criteria. I also visited the companies' websites (when available) to double-check the database and to get a better view of the companies. This left me with a shortlist of potential participants. I contacted the potential participants, explained the nature of my research, briefed them on their role in the study shall they accept to participate, and arranged an interview if they did.

At this point, I must acknowledge the convenience and accessibility element of the participant selection. The participating companies are limited to those who accepted the invitation to participate. However, only a small number of the companies invited did not respond or refused to participate – mostly due to lack of time or interest, one invitee feared sharing private and sensitive details about their business, and one did not want to share some past issues in their business with me personally. Having said that, the selection of the participating companies was not limited to my own convenience, and extra effort was made to ensure that the participating companies had a high level of variety (be it industry, apparent success, market size, etc.) to for allow information rich data.

Authors such as Patton (1990) and Lincoln and Guba (1985) explain that the number of participants in qualitative inquiries does not follow specific rules. The amount of participants in a qualitative study depends on the nature of the research questions, techniques and analysis used, and the purpose of the study. They also suggest that "sampling" (in a qualitative sense) should be "to the point of redundancy" (Lincoln and Guba, 1985, p.202), where more participants should be recruited until little new information is obtained and a point of saturation is reached. Nonetheless,

studies using similar approach (e.g. Braun and Wilkinson (2003); King (2004)) have proposed having between 20 and 30 interviews. Therefore, the plan was to conduct 30 interviews after the pilot study; however, a point of saturation and redundancy was reached at 26, and therefore data collection was terminated.

5.4.1.2 The participants

In total, I collected data from 31 companies in Jordan, including five pilot interviews. For six of these interviews, two key people were present. All companies were either owner-managed, privately owned by a small number of individuals, or family businesses. The participating companies covered five industries: production and manufacturing, construction and contracting, trade and commerce, software development, and services. Interviews ranged between 29 minutes and 105 minutes, with an average of 57 minutes per interview.

This section provides a background to the data. Table 7 provides key information about the participating companies and the interviews. The table is followed by a description of each company for a background context. These descriptions are based on the owner-managers' accounts of their businesses and are based on the interviews. Some details from the participating companies' background descriptions were emitted to maintain confidentiality and unidentifiability of these companies.

Table 7: Participants' details

	Company Name	Participant's pseudonym	Field of business	Length of interview	Age of Company	Number of Employees
P1	Alpha	Kevin	Electromechanical systems	46 min	36 years	50
P2	Beta	Martin	Software	105 min	23 years	32
P3	Gamma	Andy	Tourism	36 min	20 years	90
P4	Delta	Thomas	Carpentry	60 min	25 years	48
P5	Epsilon	Mike	Clothes Production	86 min	65 years	19-25
1	Eta	Adam	Production: Cooking Oils	52 min	13 years	~40
2	Theta	Nader	Services: Shipping	53 min	17 years	13
3	Iota	Aiden	Trade: Telecom equipment	56 min	24 years	20
4	Kappa	Khaleel	Trade: Electromechanical equipment	29 min	30 years	4 to 30
5	Lambda	Michael	Manufacturing: Foam and sponge	57 min	14 years	~60
6	Mu	Maher / Firas	Development: Software	49 min	35 years	~22
7	Nu	Rami	Trade: Chemical Raw Material	72 min	20 years	13
8	Xi	Rafat / Yousef	Production: Office Furniture	56 min	7 years	25
9	Omicron	Mohammad	Gardening and nursery	28 min	15 years	6
10	Pi	Hadi	Contracting: Road safety contractor	41 min	24 years	12 + casual
11	Rho	Ghaith	Development: Media and telecom	72 min	6 years	20
12	Sigma	Osama	Development: VR programming	56 min	10 years	25
13	Tau	Fadi	Contracting: Environmental isolations	56 min	30 years	15 + 20-50 casual
14	Upsilon	Rida / Khaled	Services: Computer systems	76 min	8 years	3
15	Phi	Kareem	Contracting: Electromechanical contractor	87 min	11 years	22
16	Chi	Alaa	Trade: Lighting	45 min	34 years	18
17	Psy	Reyad	Trade: Lighting	48 min	16 years	23
18	Omega	Wisam	Manufacturing: Paper bags	47 min	50+ years	30 to 35
19	Macron	Issa	Manufacturing / Trade: Electric boards	46 min	36 years	~60
20	Tilde	Elias	Production: Steel building	70 min	52 years	200 to 250
21	Breve	Nabeel / Ibrahim	Development: GSM Services	56 min	7 years	6 to 15
22	Diaeresis	Nadeem / Faisal	Production: Printing Press	41 min	20 years	10
23	Caron	Nasri / William	Production: Abrasives convertors	70 min	13 years	15
24	Abjad	Firas	Trade: ATM and PoS resellers	72 min	12 years	12
25	Hawwaz	Fouad / Kholood	Development: IT developers	65 min	5 years	17
26	Hotti	Bashar	Trade: Electrical supplies trade	31 min	11 years	10

Pilot Interview 1: Company Alpha

Alpha is an engineering and trading company, representing electromechanical equipment manufacturers in the local market. Alpha targets existing industries in Jordan, contractors for new projects, and government projects. Additionally, Alpha has an assembly line in which they build control panels. The company has been in business for 36 years and has 50 employees.

Pilot Interview 2: Company Beta

Beta, established in 1993, is a software house, build and sell software systems that are related to business operations, such as Loan tracking, accounting systems, HR systems, and payroll systems. The company has 32 employees. Martin, the owner-manager, is a very conservative person – as per his own account, often avoiding risky opportunities. His strategy is to build on systems his company already has; thus growing its product range without the need of starting from scratch. Martin also prefers to stay on the safe side of risks. Risk is a main part of his decisions. He does not take projects that he believes to have some risk. Martin sees and describes himself as a clever person, he has strong confidence in his capabilities and judgement.

Pilot Interview 3: Company Gamma

Gamma is a travel and tourism company. The company organises holidays and tourism trips. Gamma was established in 1996, and has several branches in Jordan with around 90 employees. The company provides destinations around the world, and several travel services. To manage its operations, Gamma has offices in 2 other countries, and collaborates with other agencies around the world. Andy has a background in accounting, thus his focus was mostly on financial risks.

Pilot Interview 4: Company Delta

Delta is a carpentry and wood-works company. The company works in construction projects, wooden furniture such as closets, offices, and cabinets. Most of their work is based on tenders; however, they also work as sub-contractors based on their reputation. Delta has been in business for 25 years, and Thomas started his career in carpentry before that as an independent carpenter. The company has 48 employees. Thomas, as discussed later, was found to often be reactive to risks. Although the company has the ISO9000 certificate, most of its operations do not follow the standard.

Pilot Interview 5: Company Epsilon

Epsilon is a fabrics trade and clothes production company. The company is well-established in the market, and has been in business for 65 years, with between 19 to 25 employees. Epsilon imports fabrics, sell in retail and wholesale, and produce clothing for their customers. They mostly produce customers and professional clothing. The company is located in down-town of Amman, where many other similar shops and companies are located. Mike focused in his interview on the political and economic situation in the region and in the country. Most of the risks he discussed were based at a macro-level.

Interview 1: Company Eta

Eta mainly works in production of cooking oils. The company has around 40 employees and has been in business for 13 years. They import and process the raw materials, fill the oils, and sell it to the market. The owner considers his company to

be the best within their league. The participant sees that the advanced machinery he has gives the company a competitive advantage over other companies, by allowing the company to stay small yet have capabilities for production. The participant also emphasised the importance of the quality of their products, and how they rely on that quality, their honesty with the customers, and their reputation to keep their business going. The participant has also built a sales documentation system to control their sales, where sales and delivery can only be done through this system.

Interview 2: Company Theta

Theta is a cargo services company, shipping vehicles and heavy machinery from abroad. The company ships items the customer has bought abroad, and sometimes they aid their customers in the procurement process due to language differences. Shipping happens through shipping companies. Theta oversees the transportation process, customs, and on-land shipping. Nader is the owner-manager of two similar companies, each specialising in certain regions of the world. One of these companies is co-owned by an international cargo company, while the other is fully owned by Nader. The focus of the interview was on the latter. Theta is 17 years old and has 13 employees.

Interview 3: Company Iota

Iota is a company specialised in telecom equipment. They import, install, and maintain telecom towers. The company has been in business for 24 years, and has 20 employees. Over the life of the company, Iota has ventured in different scopes and product lines, some irrelevant to its main scope. The company targets markets inside and outside Jordan and has branches in some other countries. Aiden, the owner-manager of the company, has a background in Engineering, and has wide connections across the industry.

Interview 4: Company Kappa

Kappa is a company that deals in electromechanical supplies. The company has at least 4 permanent employees, but depending on the projects they are working on, they could have around 30 employees. Kappa has been in business for 30 years. The company works on a wide range of projects and covers a broad range of construction electromechanical products. Kappa relies on part-time and casual workers, thus being able to adapt to the market.

Interview 5: Company Lambda

Lambda is a sponge and foam products manufacturer. The company has around 60 employees and has been in business for 14 years. The company starts with the raw materials and produce the end products. They focus their sales on industrial markets, supplying sponge and foam to other factories. As per the participant, the company produces high-end products, sometimes causing price obstacles with the low-end demanding market. Michael has suffered major losses in his business in the past, a topic that seemed emotionally sensitive to discuss.

Interview 6: Company Mu

Mu is a company that works in developing software. The company has around 22 employees and has been in business for 35 years. The company operates in a systematic way, they have obtained an international certification that allows having a systemised monitored operations within the company, including risk management.

The company values privacy and protection of customers information, as they consider such security crucial for their business and reputation. The company also has a system to control any leaking of information or company secrets; where all communications and actions within and without the company are monitored and documented. The company is also selective with their customers, and only work with customers they choose. Mu also has several certifications and standards upon which they operate.

Interview 7: Company Nu

Nu is a trade company, specialised in importing chemical raw materials. The company has been in business for 20 years and has 13 employees. Nu imports and supplies raw materials for industries such as pharmaceuticals, cosmetics, food production, and other factories that require chemical raw materials. At the time of the interview, the company had recently gone through an expansion.

Interview 8: Company Xi

Xi's business is in production of office furniture. The company has 25 employees and has been in business for 7 years. The company produces the furniture from raw materials, they design, produce, and sell their own products, and they also import finished products. The main market of the company is wholesale for furniture showrooms. It also sells retail. One of the most interesting issues discussed in the interview was workers smoking in the production area that is filled with flammable materials. Rafat was protective and defensive of the company during the interview, trying to portray it in a good image.

Interview 9: Company Omicron

Omicron is a plant nursery. The company imports seeds, and sells them to other nurseries, farms, or individual customers, or propagate and grow them and sell them as plants. The company also does landscaping for houses and villas. Omicron has been in business for 15 years and has 6 employees. Mohammad started working in the business before starting the company as an individual trader. During the interview, a customer was present in the room, and kept interrupting and participating in the conversation. His part of the conversation were dismissed due to lack of participation consent and because he was not part of the company.

Interview 10: Company Pi

Pi is a contracting company, specialised in road safety contracting. They work in finishing roads, traffic signs, guard rails, and all road safety products. They also work in airports, planning and maintaining runways. They supply equipment from their manufacturers, mostly importing, and mostly work through tenders within the public sector. They also work with private customers such as factories and warehouses. The company has 12 employees, mostly technicians, and rely on casual workers for labour work in projects. The company was established in 1993.

Interview 11: Company Rho

Rho is a company that provides IT telecom services. The company provides these services to a sector where telecom services have not yet been fully served. It develops and sells these services based on annual or monthly payments. It operates in Jordan as well as other countries around the world. Rho has been in business for 6 years, and has 20 employees. The interview was conducted with Ghaith, the operations manager,

instead of the owner of the company due to unavailability. However, Ghaith was part of the foundation of the company and is involved in all the decisions made.

Interview 12: Company Sigma

Sigma is a technology-based company, focusing on Virtual Reality and 3D technologies. The company develops and supplies software for VR and 3D modelling at an industrial level. Sigma targets customers interested in 3D modelling for mechanical parts, architecture, advertisement, and others. The company has been in business for 10 years and has 25 employees. Osama, the owner-manager, considers the company's business model different to other competitors in the market. The main strategy of Sigma is to develop frameworks on demand for reduced cost, while keeping the ownership of the framework and selling it as an off-the-shelf product to others.

Interview 13: Company Tau

Tau is a contracting company, specialised in geotechnical engineering and waste management and environmental systems. They supply and install the systems in projects such as water treatment, landfills, fish-farms, and other. They operate in Jordan and the Middle East. The company has a branch in another country, and work through agents in other countries. The company has around 15 technicians for projects in Jordan and hire local workers when working abroad. Based on the projects, the company could have between 20 to 50 workers - mostly casual or part-time workers. The company started in 1987. Fadi believes that the environmental industry in the region is growing, and awareness is increasing.

Interview 14: Company Upsilon

Upsilon is a company specialised in computer and IT services. Upsilon has 3 employees. The company has been in business for 8 years. The company's focus is building infrastructure and provide computer software to companies. The company was built out of personal interest of the owners. The owners consider themselves the core of the company, and they are fully involved in technical work of the company. The company finds itself to be struggling to survive in a very competitive market.

Interview 15: Company Phi

Phi is a construction contracting company, they specialise in electromechanical contacting. They supply and install electromechanical systems in construction projects. The majority of their work is based on tenders and as sub-contractors. Phi relies on its relations and reputation with Civil contractors to get involved as sub-contractors in new projects. The owner-manager of Phi has an engineering background, and a work experience in different contracting companies. The company has been in business for 11 years, and has 22 employees – mostly engineers.

Interview 16: Company Chi

Chi is a company that works in lighting. They design, supply, and install lighting systems for a wide range of customers. The company focuses on high-end projects and products, dealing with international manufacturers. Alaa, the owner-manager of Chi, has a high confidence in his and his company's competence. The company has been in business for 34 years and has 18 employees. Chi does not sell in retail, and has received several complaints from retails customers about their high prices. Alaa was not a forthcoming person.

Interview 18: Company Omega

Omega works in production of paper bags and paper wraps. The participant considers the company as one of the biggest in the country within this domain. The company has between 30 and 35 employees, and has been in business for over 50 years. The company was founded by the current owner-manager's father, who passed away several years ago, at which time Wisam took over the company. Wisam made major changes in the structure of the company due to the disturbances caused by the death of his father.

Interview 19: Company Macron

Macron is specialised in electrical distribution boards. The owner of the company, Issa, started with simple contracting jobs before establishing the company 36 years ago. The company has around 60 employees. When starting the company, Issa focused on local products. With time, the company shifted its focus to imported electric boards, building a partnership with a major manufacturer. Macron is a main distributor of the manufacturer in the region. The company's main focus is trade and supply of electric boards, but they also started a workshop to produce local boards.

Interview 20: Company Tilde

Tilde works in production of hangars and steel buildings. The company is the largest amongst the participating companies, with 200-250 employees. Tilde has been in business for 52 years, although the family has been in the steel industry for much longer. Tilde does custom-made builds, imports its steel from abroad, and has had several big projects.

Interview 21: Company Breve

Breve is a mobile service software company. It sells its products and services to different mobile operators inside and outside Jordan. The company has been in business for seven years and has between 6 and 15 employees based on the size of projects they have. The company signed an exclusive contract with one of their customers to use and promote one of its major products. However, the customer – although fulfilling their side of the contract – did not put the effort for the product to succeed. This incident caused major disruption to the business from which they eventually recovered.

Interview 22: Company Diaeresis

Diaeresis is a printing house, producing a wide range of printed products such as business cards, booklets, leaflets and printed bags. They deal with a wide range of customers, such as hotels, insurance companies, retailers, and individual customers. The company has been in business for 20 years and has 10 employees. The company is owned and managed by two brothers, Nadeem and Faisal. During the interview, both participants were occupied with work; thus, the conversation was moved from one person to another based on their availability. Additionally, a supplier was in the room, and he was often used as an example in several stories. He also gave some input to the conversation, which was dismissed due to lack of consent and not being part of the company.

Interview 23: Company Caron

Caron is an abrasives production company. The factory is a conversion facility for adhesive tapes, such as masking tape, packaging tape, insulating tape and such. They import adhesive rolls from abroad, and convert them into usable products. The company also trades in a small range of products that are used by their adhesives customer base. The company targets a wide range of customers, from big customers and distributors, to small individual car-distributors. Caron has been in business for 13 years, and has 15 employees. Several years ago, there was a big fire that burnt down the majority of the factory. The owners had to rebuild.

Interview 24: Company Abjad

Abjad is an IT company, specialised in cash registers and points of sales. The company is 12 years old and has 12 employees. The company represent international companies in Jordan. Abjad supplies hardware and software for their customers. The company does not develop the software in-house, but also supplies it from their international suppliers. Abjad is a family business, and one of the family members was previous an employee of one of their international suppliers.

Interview 25: Company Hawwaz

Hawwaz is a software systems and solutions company. The company represents international software companies, specialised in Enterprise Resource Planning software. The company focuses on small businesses as its target market, and the sell, implement and maintain the sold software. Hawwaz has been in business for five years and has 17 employees. Throughout these five years, Hawwaz has experienced major disturbances that endangered the company, such as saddling with economically poor contracts for three years.

Interview 26: Company Hotti

Hotti is an electrotechnical contracting company, they import electromechanical equipment from abroad for construction projects. They work in products such as uninterrupted power supplies, generators, lighting poles, and so on. The company is 11 years old, and has 10 employees. Hotti's work is focused on supply and installation.

5.4.2 Interview structure

The interviews had a generic structure that followed the interview schedule. The structure, however, adapted based on the flow of the conversation.

I started the interviews by introducing the study and its aims to the participants, and their role in it. I then asked the participants to give a description of their business and explain how it operates (Q1 in Appendix 2). This understanding was to help form a basis for the interview and ensure a common ground. This part of the interview also provided me an entry point to the next parts, as the participant started talking about certain key issues and risks within their business. I also asked the participants to talk about themselves, their educational background, previous experiences, and their role

in the company (Q2). Then, I asked them to describe what they found to be the strength and weaknesses of their company, and to talk about the aim of the company and how they see its future (Q3).

After establishing the context and background to the interview, I asked the participants about future expected risks in their business (Q4). They were asked about their views on risks they expect in their businesses, and to describe what and why they are or will be doing to approach those risks, if at all. The key questions aimed to answer in this part were what might happen, why it might happen, how they would deal with it, why they would deal with it that way, and why not deal with it in another way. I also asked the participants about risks that they do not approach (Q5), exploring why they do not approach them.

For the third part of the interview I used Critical Incident Technique (CIT) by Chell (2004). CIT is a retrospective approach based on interviewing people regarding certain incidents, and allowing them to tell the story (or anecdote) of what happened (Bradley, 1992). The advantage of using CIT is that it relies on the natural tendency of people telling stories (Bradley, 1992). It also gets the interview focus on the interviewees' experience rather than it being driven by the interviewer. The advantage of using CIT in this research is that it uses the participants as observers of incidents that occurred in the past. At some point in the interviews, critical incident technique was introduced and explained to the participants. They were asked to identify and focus on two or three incidents from the past. They were then asked to talk in detail – telling a story – about previous incidents that were a threat to their business - whether that threat realised or not (Q6). They were asked what, when and why actions and decisions have been taken. I steered the conversation using probing questions like what happened, why did it happen, how did you think about it, how did that affect the company, and so on.

Finally, I asked the participants about the opportunities they take and the risks associated to them (Q7). I focused on questions that explored what kind of opportunities they take, and how they consider their risks.

The interview was then concluded.

5.4.3 **Preparing the Data**

All interviews were audio-recorded with participants' approval. I used two recording devices, mitigating the risk of a corrupt recording. I saved both recordings on two locations: the university's server (M: Drive), and an encrypted external hard-drive.

Interviews transcription was verbatim, maintaining any incorrect grammar, misuse of words, and filler words. I also took notes during the interview to highlight the key points discussed. I used the transcripts for the analysis, but I also added my notes to capture my initial impressions of the data.

After I transcribed the interviews, I gave each company and participant a pseudonym for confidentiality purposes. I kept a password-protected spreadsheet that linked the pseudonyms to the real names for any future reference. The transcripts included some details that could lead to identifying the participating companies. Therefore, I either redacted such details, or replaced them by more generic details where necessary – without altering the context of the data. For example, participants often mentioned names of their customers, or products, which were changed to [customer], or [product description] in the transcripts. Interview transcripts were proofread and checked for typing mistakes.

King (2012) suggests numbering of lines throughout the transcript for the analysis used in this study. All interview transcripts were given an identification code, and each line of the transcript was numbered. A reference code was given to each line (Interview - Line(s)). For example, a quotation from interview Beta, located on the 145th to 151st line of the transcript was given the code (Beta – L145-151). Using line-numbered interviews made tracking codes and themes back to the location of original text easier. Given the large amount of data collected, such approach was necessary.

5.4.4 **Analysing the data**

Sandelowski (2000, 2010) suggests that qualitative content or thematic analysis are best for a qualitative descriptive approach. I analysed the data using thematic analysis as discussed by Braun and Clarke (2006) and Braun *et al.* (2014). Thematic analysis is a method used to identify and interpret patterns and themes in qualitative data. Braun *et al.* (2014) describe their approach to thematic analysis as a flexible approach, as it is a method instead of a methodology, and its compatibility

with various philosophical views. The procedure of their thematic analysis is centred on coding and development of themes.

To analyse the data, I adopted Braun *et al.* (2014) step-by-step guide for using Thematic Analysis (Table 8). Their approach consists of six stages: 1) familiarisation with data, 2) generating initial codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, 6) producing the report. The following discusses the analysis process in further details.

Table 8: Approach to Thematic Analysis (Braun and Clarke, 2006, p.87)

Stage	Description
1- Familiarizing yourself with your data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2- Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3- Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4- Reviewing themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5- Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6- Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Figure 8 shows a flow diagram that illustrates the analysis process, including the interactions with the data and the literature.

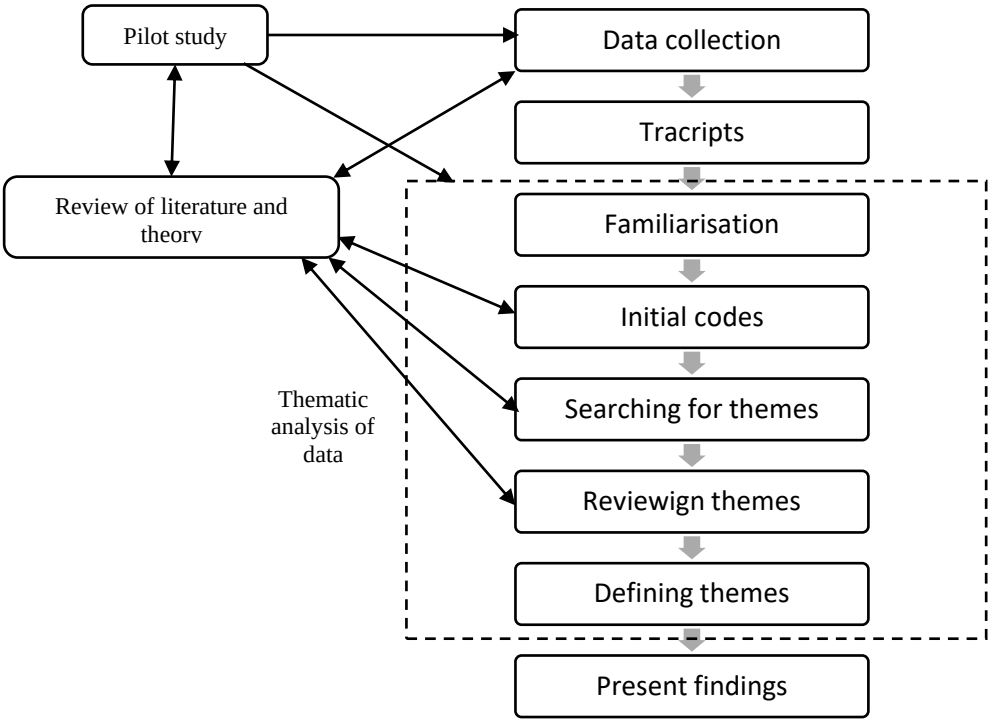
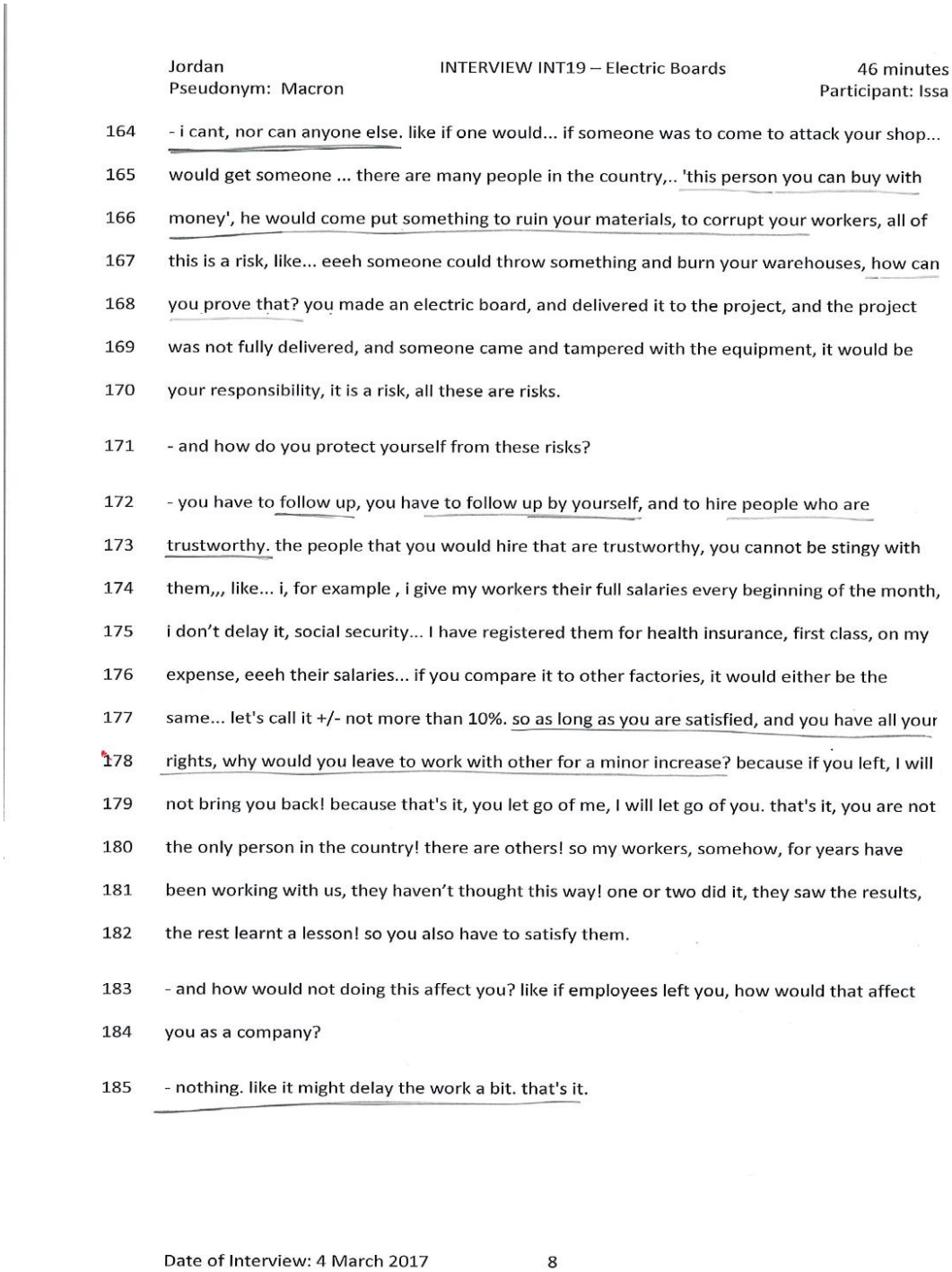


Figure 8: A flow chart illustrating the analysis process

The analysis of the data was conducted manually. That is, the data were printed out, and analysed using pen and paper. As explained earlier, using NVivo for the pilot study was not successful, as the ease at which the data were coded created chaos instead of order. For instance, because of how easy it was to add new codes, the coding process produced a relatively massive amount of codes for the pilot interviews. A large proportion of these codes was mostly irrelevant to the research. Therefore, taking the manual approach forced me to spend more time focusing on interpreting and analysing the data. After all, NVivo is a tool for analysis, and not an analysis in itself.

5.4.4.1 Familiarisation with data

Riessman (1993) suggests that the time-consuming process of transcribing interviews is an excellent way to start getting familiarised with the data. Braun and Clarke (2006) suggest that it is vital for the researcher to immerse him or herself in the data to get familiarised with the depth and breadth of the contents. This allows a better understanding of the data as a whole. Thus, in addition to my familiarity with the data from conducting and transcribing the interviews, I read the transcripts multiple times to have a better undisturbed familiarity with their content and context. During the initial reading, I corrected any remaining errors in the transcripts. Through repeated reading, I highlighted key points and interesting remarks (Figure 9 shows an example taken from the interview with Macron). At this stage, I started to have general ideas, and an overall idea of the outcome of the research started to crystallise.



Jordan | INTERVIEW INT19 – Electric Boards | 46 minutes
Pseudonym: Macron | Participant: Issa

- i cant, nor can anyone else. like if one would... if someone was to come to attack your shop... would get someone ... there are many people in the country,.. 'this person you can buy with money', he would come put something to ruin your materials, to corrupt your workers, all of this is a risk, like... eeeh someone could throw something and burn your warehouses, how can you prove that? you made an electric board, and delivered it to the project, and the project was not fully delivered, and someone came and tampered with the equipment, it would be your responsibility, it is a risk, all these are risks.

- and how do you protect yourself from these risks?

- you have to follow up, you have to follow up by yourself, and to hire people who are trustworthy. the people that you would hire that are trustworthy, you cannot be stingy with them,,, like... i, for example , i give my workers their full salaries every beginning of the month, i don't delay it, social security... I have registered them for health insurance, first class, on my expense, eeeh their salaries... if you compare it to other factories, it would either be the same... let's call it +/- not more than 10%. so as long as you are satisfied, and you have all your rights, why would you leave to work with other for a minor increase? because if you left, I will not bring you back! because that's it, you let go of me, I will let go of you. that's it, you are not the only person in the country! there are others! so my workers, somehow, for years have been working with us, they haven't thought this way! one or two did it, they saw the results, the rest learnt a lesson! so you also have to satisfy them.

- and how would not doing this affect you? like if employees left you, how would that affect you as a company?

- nothing. like it might delay the work a bit. that's it.

Date of Interview: 4 March 2017 8

Figure 9: An example of the initial review of data

5.4.4.2 Generating initial codes

Braun and Clarke (2006) suggest that this stage starts when the researcher has read and got familiarised with the data. At the previous stage, initial ideas about what could come out of the data has started to generate. At this stage, I started to organise data into meaningful groups.

Organising the data was at multiple stages. Initially, I read the interviews, highlighted the relevant parts, and underlined the key points. Then, I re-read the transcripts, and interpreted and coded the highlighted parts, writing my codes on the margin of the paper (Braun and Clarke, 2006). Codes consisted of phrases or sentences describing the key points found, or direct quotes that were found to convey they key points as they are. Table 9 shows the coding of the previously used example from the interview with Macron. Table 10 shows a selection of extracts from different interviews and the codes given to them.

Codes on interview transcripts were checked, and relevant codes were marked. **Error! Reference source not found.** I then built a list of the codes for each interview. Samples from these lists are shown in Table 11, the rest of these codes is shown in Appendix 6. Each code was associated with the interview and lines to which it relates. The interview number and the numbers of the lines each code refers to in the transcripts were written next to each one. I did this to keep reference of each code, as the analysis process was based on both the codes and their corresponding raw data. I refrained from including the data corresponding to each code to keep the theme building process tidy, but I consistently and regularly referred back to the raw data. I printed the lists on A3 paper and cut them into individual codes (see Appendix 7) as a preparation for next stage. This was a take on a suggestion by Braun and Clarke (2006) to use visual representations in the next stages.

The process of coding the data was done systematically and consistently. Full and equal attention was given to all the data items (Braun and Clarke, 2006), even the parts I considered irrelevant or repetitive.

Table 9: Coding of example

Transcript (Issa from Maccron)	Code
Yazan: And how do you protect yourself from such risk?	
Issa: I can't, nor can anyone else. Like if one would... if someone was to come to attack your shop... would get someone ... there are many people in the country,.. 'this person you can buy with money', he would come put something to ruin your materials, to corrupt your workers, all of this is a risk, like... eeeh someone could throw something and burn your warehouses, how can you prove that? You made an electric board, and delivered it to the project, and the project was not fully delivered, and someone came and tampered with the equipment, it would be your responsibility, it is a risk, all these are risks.	"I can't, nor can anyone else." – Relating to others Risk can be easily, therefore it can happen. Risk out of control
Yazan: And how do you protect yourself from these risks?	Follow up yourself
Issa: you have to follow up, you have to follow up by yourself, and to hire people who are trustworthy. The people that you would hire that are trustworthy, you cannot be stingy with them,,, like... i, for example , I give my workers their full salaries every beginning of the month, I don't delay it, social security... I have registered them for health insurance, first class, on my expense, eeeh their salaries... if you compare it to other factories, it would either be the same... let's call it +/- not more than 10%. So as long as you are satisfied, and you have all your rights, why would you leave to work with other for a minor increase?	Trustworthy employees Pay good salary and benefits
Because if you left, I will not bring you back! Because that's it, you let go of me, I will let go of you. that's it, you are not the only person in the country! There are others! So my workers, somehow, for years have been working with us, they haven't thought this way! One or two did it, they saw the results, the rest learnt a lesson! So you also have to satisfy them.	Employees who leave for a small raise, cannot come back.
Yazan: And how would not doing this affect you? Like if employees left you, how would that affect you as a company?	Employees leaving could cause a delay in work. It is nothing.
Issa: Nothing. like it might delay the work a bit. That's it.	

Table 10: A selection of extracts and the codes given

Interview	Quote	Code
Alpha	"we try, we try that there is always somebody else as a helper, so every employee there is somebody helps him, but we cannot hire redundant employees just in case the major one leaves.so it is too costly. eeem, it's not frequent thing, but it happens." (L206 -208)	Hire redundant employees
Beta	"I mean, I want 4 , I hire 7, how? Now, if one, after a week, said I don't want, they become 6. This one is from the extra. The other day one of the women employees came and said she wants to go do her Masters, we told her no, we don't have that, I mean work is work, we don't have masters or whatever, we don't have time! Because we have a lot of projects." (L200-203)	Hire redundant employees, if an employee, someone else would be available
Beta	"the Financial management, [name], he's been with me since '99, the secretary is a pivot by the way. The girl outside has been with me 7, 8 years, she takes 800jd, 900 jd, I don't know, but is a pivot." (L823-825)	Rely on competence of employees. Trust employees
Iota	P: i dont know what's gonna happen, but there is no.. there isn't any indication that tell you that things are going to be better. Y: and how did you deal with it? P: you expand! you go, you leave the country.. you dont leave the country, here it is our base, but you spread. that's the only way! (L119-122)	Protect the company from economic situation by expanding to different countries
Iota	"that's one of the things that I would've done, eeeeh I ... dont know, but I dont think I have ever taken risk, I am a very conservative person, in my nature, i dont take risk" (L245)	Being conservative: I do not take risks
Lambda	"I cant say I have internal issues, because mainly 70-80% of those who work with me have experience, frankly, in this area" (L192), "and this is a positive, frankly, for your work, for the situation that we are going through" (L195)	General low perception of risk, due to high perceived competence of employees
Lambda	"So if one of the machines broke, I have alternatives, you know how? I would stop production, now it might reduce production, but only temporarily, until we fix the other machine […] and the repair process is like 15 minutes, not that major issue. Additionally, instead of 1 [machine], I have 4!" (L238-244) "it is not major, nothing major" (L246)	Has several machines, can use them if one machine was broken
Lambda	"Now due to what happened, it forced us to do this. Maybe it was my fault, that I didn't have restrictions, because I relied on this person who works with me,, his experience was higher than mine, you know how?" (L329-331)	Previous experience forces taking a different approach to risk.
Xi	"we only have one thing that we struggle with, smoking for example, this I can say I consider a risk! We say like smoking is not allowed, but eeeeh…. Some people smoke. Like so as not to have a fire, like I consider fire to be a risk for us. We of course asked them at least the last half an hour not have smoking, because if any fire would happen, to be detected within …. Like not to have someone smoking a cigarette before 5 minutes of closing time. Because if there was a fire to happen, it wouldn't be detected. So the last hald an hour there is no smoking." (L109-114)	As long as we are here, we can control any fire. Problem is when we are not here (controllability of risk)
Xi	P: there is of course a very big risk that happens sometimes, like there are hackers that go into the email of the source factory, […] Now what would he do? He would write a letter with the same script, […] and would ask you to transfer the payment to a different account! Usually we cannot tell if this is a hacker or not, so we would transfer the money for example to the bank that he asked us to transfer to, and at the end it would turn out it was a fraud. Y: did this happen to you before? P: it did not happen with us, it happened with eeeeh like sister companies let's say, or friends. (L286-296)	Perceiving risk as a "big risk" because it happened with other people
Diaeresis	"no, I guarantee it, because the technician downstairs, I trust him, and I know what he does. It wouldn't be that you have a technician, that you brought yesterday or the day before, the technician I have has been working with me for 10 years. And I know, and sure, that anything he receives would check it" (L287-290).	Competence of employees leads to lower percpetion of risk likelihood.

Table 11: Selected codes from interviews

Interview	Codes
Pilot Interview 1: Company Alpha	- Hire redundant employees
	- Reputation brings business
	- Political and economic instability create a high impact risk
	- No one else is doing anything
	- Risk is not controllable
	- We cannot control risk, therefore we have to adapt
	- we cannot do anything, it is not easy to do something regarding instability in the region
	- Product diversification protects against low market demand
Pilot Interview 2: Company Beta	- Keep backup of source code at different places
	- Pay good money and provide good work environment for employees so they would not leave
	- Things that are not under your control are problematic
	- Avoid risk when there are signs of failure
	- Build relations with customers
	- Risk as a problem, and has a solution
	- Rely on competence of employees. Trust employees
	- Take projects that can be easily implemented. Build up future projects.
	- Hire redundant employees, if an employee, someone else would be available
	- Strategy to manage risk has worked for several years. What worked in the past will work in the future
	- Build relationships with customers
	- Hiring redundant employees is a strategy that has been working for many years
	- I am a conservative man
Pilot Interview 3: Company Gamma	- Considers risk of market demand high because it has high consequences (L89)
	- Monitor the situation in destinations to plan the future (L108)
	- External disturbances are out of control (L112), cannot do anything about them (L149)
	- Adapt to political disturbances (L151)
	- Risks are in small patches. Consequences are isolated (unsold seats on a plane), easy to limit
	- Accept risks (L180) because their return is good.
Pilot Interview 4: Company Delta	- Risks happen, risks are problems that will be solved
	- risk as a mistake
	- Risk happens regularly
	- previous experience of risks
	- mistakes create waste, however this waste can be used in other ways.
	- Despite dire consequences of risks (losing fingers), he considers these consequences "part of the job".
	- You cannot prevent it: nature of work. Nothing can be done.
	- mistakes in measurements are usually easy to fix
	- Reputation and relations with contractors: continuity in business
	- When luck plays its role
	- Accidents cannot be prevented.
	- You cannot prevent accidents, they are something from god
	- knowing the employees lowers the risks
	- Accidents happen, it's in the hand of god
Pilot Interview 5: Company Epsilon	- Confidence in quality of products, low risk on reputation
	- Other risks are "solvable": risks are problems
	- Exporting is not safe, risks are high, we cannot rely on it.
	- Staying small has lower risks
	- Low perception of risk
	- Train employees to increase competence.
	- Financial risks have low impact, money will be collected eventually
	- Collaborate with other companies / competitors: Lower costs, increase capacity, faster production, lower risks for the company itself.
Interview 1: Company Eta	- Redundancy, Extra cost, (L103-108)
	- It happened before (L157) (L183)
	- Rely on employee competence to reduce risk (L161)

Interview	**Codes**
	- Ask the market about new customers (L198) our market is small, it is easy to know (L362)
	- Stay away from small businesses as they are considered risky, unless paying in cash (L210)
	- Unmonitored sales through cash-car: stopped the whole thing to eliminate the risk of theft (L215)
	- Risks that are not in his own control cannot be managed (L278)
	- Collaborate with other factories / competitors, rely on good will (l322)
	- Diversify products to reduce product and market demand risk (L404)
Interview 2: Company Theta	- We do not have a lot of risk, because we have a long experience. (L137)
	- Belief that there is no risk they cannot overcome (L192)
	- Experience = knowing the risks (L202)
	- Loyalty of employees. Rely on loyalty to reduce possibility of risks from employees (L202)
	- Rely on relations and communication with customers to overcome issues with customers, "it makes things smaller" (L210-214)
	- Personal involvement to reduce chaos mistakes, despite entrusting employees (L317)
	- When an employee wants to cause damage: they can (L329)
	- Shared knowledge/skills. Move employees within departments (L362-370), in case anything happened, employees can replace each other (L382)
Interview 3: Company Iota	- Mentality of employees, no trust (L72-79)
	- Run the company as a one man show (L85)
	- One man show is extremely dangerous (L89)(L95)(L103)
	- Employees do not follow procedures (L90)
	- Protect the company from economic situation by expanding to different countries (L119-122)
	- Very conservative (L133) gather information before taking risks (L134)
	- A learning curve that you have to go through (L140)
	- Having redundant employees is because of the "learning curve", mistakes happened several times in the past (L226)
	- Being conservative: I do not take risks (L245)
	- Calculate risk based on facts and probability (L327) (L431-459)
	- Limit risk of diversification by starting small and end it when things go wrong (L367)
Interview 4: Company Kappa	- Such risk has no solution (L191)
	- We have to accept the loss (L194)
	- Act reactively, but usually things happen when it is too late to act (205)
	- Communication with customers to explain circumstances (220)
	- Continue projects in loss to save reputation (230)
Interview 5: Company Lambda	- Trying the market with imported finished products to study the market.
	- Diversifying products to overcome competition risks and low market demand.
	- General low perception of risk, due to high perceived competence of employees. (L192-195)
	- Spare transformer is an unnecessary cost (L 233)
	- Has several machines, can use them if one machine was broken. (L243)
	- Previous experience forces taking a different approach to risk. (L329-331)
	- Minor issues are dealt with as they happen. (L343)
	- Giving power to marketing team could be risky, due to market competition, thus: personal (one-man-show) involvement in marketing and sales. (L381-383)
	- No trust in customers, due to previous incidents. (L391-400)
Interview 6: Company Mu	- Involvement of partners
	- Not relying on employees (115-117)
	- Not being vulnerable to employees leaving
	- Systemisation: rely on tools rather than people (138) to reduce human risks (180)
	- Build tools to replace employees quicker (147) to reduce period of impact.
	- Involvement of key people, able to replace vacant positions (160)
	- Extreme consequences are when a risk becomes a "no no" (404)
	- Don't put all your eggs in one basket (515)
Interview 7: Company Nu	- Servers to monitor information leakage → lowered perception of risk (148)
	- Eliminate risk of unpaid exports, take cash up-front (286)
	- Transfer risk of abroad transport to customer, by delivering only to local ports (288)

Interview	**Codes**
	- Learning from experience (290)
	- Personal involvement, losing employees would not affect the business because he is the face of the company (340-343)
	- Knowing that the customer can trust him because the company has good references in the market to support their trustworthiness (477)
Interview 8: Company Xi	- Trivialisation of consequences (86)
	- Belief that control can be exerted (87)
	- Perception of risk, risks are small (88)
	- As long as we are here, we can control any fire. Problem is when we are not here (controllability of risk) (109-114)
	- Taking actions would have negative and "certain" consequences (117)
	- Prioritisation of production over safety (120)
	- Perceived lack of control or ability to imply measures (151)
	- "paying attention", "being careful" (179-183)
	- Perceiving risk as a "big risk" because it happened with other people (286-296)
Interview 9: Company Omicron	- Risk of losing customers due to economic situation (L86)
	- You cannot protect yourself from payment risks and returned checks (L118)
	- Weather affects sales, cannot predict weather, wait until February to gather more information about the weather, then import seeds (L124-132)
	- Fraud and returned cheques, 40 thousand JD (10-15% of revenue) each year (L155)
	- Collect information about new customers (L166) because risk kept occurring (L179) consequences are high (L180)
	- Hasn't taken actions against returned cheques before because he was expecting things to be better (L184)
Interview 10: Company Pi	- Work injury risk: insurance, every project is insured.
	- It is rare for work injuries to happen because of precautions.
	- Preventative maintenance for equipment, based on manufacturer's instructions, to avoid unnecessary costs.
	- Deal only with known suppliers and avoid unknown ones: based on previous experience with a bad quality supplier.
	- Limit risk of new supplier, instead of buying 40 tonnes, they bought 15 tonnes as a trial.
	- Has spare machines, bought for the purpose of being a back-up in case of malfunctioning.
	- Payment risks, take a big payment in advance, despite losing opportunities.
	- Ask others about new customers
Interview 11: Company Rho	- You never know. Risk exists although it is not here now (99)
	- All people see the risk (98)(105), a risk that everyone sees (236)
	- Be part of professional community to get more information about the market & customers (157) however, this is risky as you are also sharing your information with competitors (172)
	- Risk as a problem (224)
	- Risk of market not accepting or not being ready for technology, eliminate risk by customising technology to the market (264-279)
	- Selective hiring (281)
	- Approach to risk has consequences that cannot be controlled, still took the approach because of its necessity (316)
	- Actions/change triggered by an accident (544)
	- Hiring people you already know/worked with, less uncertainty about the quality of employees (561)
Interview 12: Company Sigma	- Out of experience you start learning (L193)
	- Don't have a rigid plan, be flexible (L194)
	- Have different targets, end-user, developers, provide components (L195)
	- Having good reputation makes customer trust them (L220-227)
	- Stay away from low-end products to avoid competition (L265)
	- Rely on company competence (L270)
	- Seeing the problems of others makes your problems seem less problematic (L294)
	- Improve employees' lifestyle to reduce employee turnover despite higher cost (L303)
	- Diversify in technologies (L 327) (L425)
	- Hire more employees than needed to protect the company from employees leaving (L333)

Interview	**Codes**
	- Employees leaving has high consequences (L333)
	- Rely on experience, risks wouldn't happen because of experience (L365)
	- Things under my control vs. things not under my control (L428)
Interview 13: Company Tau	- risk of losing trained employees due to competition
	- lack of loyalty. You cannot do anything about it.
	- You cannot protect yourself from losing employees.
	- risk is lower because they are specialised in one scope, risk happen when scope is expanded.
	- Keep a certain budget for changes in regulation.
	- day-to-day risks are very negligible, because the company is small and has limited scope. Having a limited scope means clear operations and strategies.
Interview 14: Company Upsilon	- It is hard to find qualified and trustworthy people (employees) (94)
	- Personal involvement and knowing what the employees do (152)
	- Having the owners as the core of the company creates the risk if they were unable to work (203)
	- Not entrusting employees due to lack of skills (210)
	- Control employees work using task/check list/guidelines (243)
	- Knowing that such things happen regularly, yet not knowing WHEN they will happen stops them from doing anything (522)
Interview 15: Company Phi	- It never happened before (250)
	- Things happen (406)
	- Looking at the past to see the future (414 -417)
	- Hired in-house drafter to control quality compared to outsourcing the job (470-474)
	- Reject projects that do not have a system, because they could create chaos (495-501)
	- Reading signs from the beginning (510)
	- Risk as certainty (512)
	- Bad projects could affect reputation, even if not caused by them (579)
Interview 16: Company Chi	- No one can control the risk (126)
	- Belief that employees can easily be replaced. Confidence that candidates could easily come and apply for a job at the company (141-152)
	- Perception that there is no risk because company scope is limited, so perception that they know all the risks (202) (329)
	- Having strict payment terms for projects. Knowing that they have enough projects enables them to have strict terms, even if they lose opportunities (208-213) If terms are too strict, we wouldn't have any business (221)
	- Customers trust him, they work without security checks/bank guarantees (215)
	- "I trust myself", confidence he can do the job (237)
	- Strong confidence in the company, himself, and their knowledge (291)
Interview 18: Company Omega	- Doesn't consider it a risk because it would affect them for a month, then they would hire new people (265)
	- Other places have risks (307)
	- Employees leaving: retrain other employees (353)
	- Personal involvement: observing only. Micro-management does not allow employees to develop themselves (398-404)
	- Managing risk has its costs, but you have no other options (441)
Interview 19: Company Macron	- Things will be back to normal, in a month, 6 months, a year, 2 years (77)
	- Personal involvement is a strength (124)
	- No one can manage the risk (164)
	- Employees leaving could cause a delay in work, "that's it!" (185)
	- Rely on income from other projects to cover no-payment projects (229)
	- Deal with large contractors (large = less risk) (301)
	- Haven't had a problem thus far (302)
	- "Why would I make a mistake?" (323)
Interview 20: Company Tilde	- There is always a way to have work (202)
	- Prevent technical risks by investing in high-end technologies, lower likelihood of down-time, reduce down time, investment is worthwhile (P7)
	- Investment risk: have controllable impact (P9)(354)
	- Conservative way of working (P9)

Interview	**Codes**
	- Confidence employees would not leave.
	- Use one thing as a sign of another (405)
	- Lack of product diversity creates risk (436)
	- Being conservative (499)
	- Controlling risk by introducing limited risk (499)
	- Controlling risk despite losing opportunity (518) avoiding risky opportunities despite losing benefits.
Interview 21: Company Breve	- Generate ideas and gamble on them (86)
	- You have to take this decision. What other options do you have? there are no other options (241)
	- Relationship within the company reduces risk of employees leaving or leaking secrets (304)
	- Happy employees and employee loyalty make their employee turnover zero (317-320)
	- They cannot eliminate the risk, but they try to (344)
Interview 22: Company Diaeresis	- Avoid risky business (88)
	- Having multiple machines compensates machine down. Despite reduced capacity (164)
	- Outsourcing when needed for trusted print houses (competitors) (171)
	- Injuries, insurance, only happen if worker did not pay attention. Has only happened once in 20 years (182)(198) Insurance.
	- Risk as a mistake (261)(430)
	- Affects them for a day, not a big deal. Low perception of consequences (338)
	- Dealing with multiple suppliers. if one was out, others will have they want (355)
Interview 23: Company Caron	- Having a guard to protect the factory. It is the norm (79)
	- Export is very high risk. Eliminate financial risk by taking money up-front. High risk with high likelihood of happening. (112)
	- Risk of QIZ, perceived as high risk, can easily materialise. (P12)
	- Not deal with QIZ, despite losing market share
	- Deal with QIZ through intermediaries, despite losing profit. Transfer risk
	- Perception of risk is based on "hearing about it" (483)
	- Upgraded firefighting system after fire has happened. (646)
Interview 24: Company Abjad	- If they don't work like this (i.e. sell in credit). they will not get customers, necessity of risk (262)
	- Confidence in product → lower risk of damage (266)
	- It has never happened before, therefore it might not happen (277-279), it gets tight, but things work out fine. You plan forward, so you do see it coming (282), things solve themselves, because: business (288)
	- Customer care = preventive method to prevent customers saying bad things about the company (331)
	- Risk of employees being head-hunted: rely on loyalty, rely on employees coming and telling when receiving an offer (493), try to convince them to stay. Rely on company environment and good salaries.
	- Replacing an employee is easy because a lot of new people are available, everyone is replaceable. can be temporarily replaced by key people. "it makes the impact lower" (444)
Interview 25: Company Hawwaz	- Aftersales and good service = reputation = relations and new business (94)(446)
	- Relying on one or two people could turn into a disaster if they left (132)
	- Personal knowledge: could replace employees leaving (139)
	- All employees are replaceable by another person (155) other employees have the knowledge to replace. Yet shared knowledge is divided, so no single person knows the whole system. (160)
	- Dividing shared knowledge requires additional resources and cost (179), however: costs are worth it (188)
	- Keep customers happy so they would be understanding when we face problems, relations (234)
Interview 26: Company Hotti	- Accept risk, take consequences (136)
	- Carefully pick suppliers, trial (150)
	- Having multiple suppliers in case one closes (164)
	- Personal involvement protects against employees leaving (164)
	- Justification: "this is a proof" that we he is doing is good (195)

5.4.4.3 Searching for themes

Braun and Clarke (2006) call this stage "searching for themes". Although their description of this stage does not imply so, the use of the word 'searching' implies the pre-existence of these themes, that are hidden and to be sought for. Themes are created through an interpretive prolonged iterative process of the data based on the understanding of the codes, the data, and the context. Thus, it would be more appropriate to call this stage "creation of themes".

As Braun and Clarke (2006) describe it, at this stage, the focus of analysis is shifted to the broader level of themes. Analysis of codes and how they might combine into overarching themes starts at this stage. By design, the generated codes were divisible into two groups: those that relate to how the owner-managers approach risks, and those that relate to the story of why they approach risks the way they do. I grouped codes of similar meanings together – both positive and negative meanings. For example, "we can control this risk" and "we cannot control this risk" were both placed in the same theme: "controllability of risk".

At the previous stage, preliminary themes started to emerge based on the general understanding and familiarity with the data. Thus, I build a list of these themes with a brief description of each one. This preliminary list allowed me to collate the codes into further themes. I wrote each theme on a piece of paper and attempted to sort the codes into the relevant preliminary theme. The remaining codes were then analysed, and new themes were generated. This process was done manually (that is, using paper) (Images of this process are in Appendix 7). At this stage, I generated over 40 potential themes and sub-themes.

When generating the themes, I focused on capturing the owner-managers' perspective on managing risks. In other words, the themes generated were to explain how the participants approached their risks, and to understand their decisions. For example, some participants suggested that they eliminate the source of the risk, generating the theme 'risk elimination'. Some participants said they considered the consequences of a risk to be negligible, others considered the consequences to be high. These were placed under 'perception of risk consequences'. Several talked about their employee – such as impact of employees leaving, or entrusting employee. Initially, I

placed those under a theme called ‘employees’. However, later on, I came to see that the theme ‘employees’ was – as it is – irrelevant to the research questions. Thus, the theme was regenerated in a different form: for example, entrusting employees was placed under ‘trust’, and impact of employees leaving under ‘perception of risk consequences’. Table 12 shows a sample of the themes identified using the codes generated from the data. Appendix 6 shows the complete list of themes and codes.

Theme	Source	Notes from interview
Avoid Risk	Eta	Stay away from small businesses as they are considered risky (L210)
	Mu	Avoid taking risks with customers (L352)
	Tilde	Controlling risk despite losing opportunity, avoiding risky opportunities despite consequences (L518)
Prevent risk	Macron	Pay good salaries to keep employees (L177)
	Caron	Help a major customer in sustaining their business (due to their lack of management capabilities) by being heavily involved in that business (P18)
	Hawwaz	All employees are replaceable by another person through shared knowledge (L155), yet divide shared knowledge so no single person knows the whole system (L160)
Rely on what is available (Ad-hoc)	Theta	Rely on relations and communication with customers to overcome issues with them "it makes things smaller" (L210-214)
	Mu	Involvement of key people, able to replace vacant positions (L160)
	Macron	Having patience with customers, and building a good reputation (L233)
	Abjad	Everyone is replaceable, and can be temporarily replaced by a key person, "it makes the impact lower" (L464)
Transfer risk	Nu	Transfer risk of abroad transport to customer by delivering to port only (L288)
	Caron	Deal with a risky sector through intermediaries only, despite losing (or sharing) profit
Perceived likelihood of risk	Rho	You never know, risk exists although it is not there now (L99)
	Theta	When an employee wants to cause damage they can (L329)
	Caron	Risk of QIZ perceived as high, can easily materialise (P12)
Perceived Controllability of risk	Hawwaz	Service relies on input from consultant which cannot be controlled. Error from consultant means the customer would not accept the service (L484)
	Breve	We cannot eliminate the risk, but we try to (L344)
	Xi	As long as we are here, we can control a fire, the problem is when we are not here (L109)
The Past as a Heuristic	Eta	It happened before (L157) (L183)
	Phi	It never happened before (L250)
	Diaeresis	Trust technician, has been working with them for 10 years, worker's previous lack of mistakes mean no future mistakes (minimal mistakes) (L287-292)
	Beta	Things were good, things will be good.

Table 12: A selection of themes and their respective codes

Themes were placed in a thematic map: that is, I placed themes in a way that reflects my interpretation of the relationships between them. This thematic map reflected the stories told by the participants and provided a visual understanding of the data. The thematic map was continuously developed and modified based on the development of the analysis (Appendix 7 shows pictures that demonstrate the progression of the analysis).

5.4.4.4 Reviewing themes

After repetitively and iteratively generating the themes, I spent some time reviewing and revising them. As Braun and Clarke (2006, p.91) suggest, at this stage some candidate themes "are not really themes". I revisited the codes and raw data in each theme to insure their relevance to them. Additionally, sub-themes were identified where appropriate. Sub-themes are themes that are related, yet different, and come under a parent theme. For example, 'previous experiences' and 'the past as a trigger' were both created as themes but were found to fall under one parent theme: 'The past'. These sub-themes provide a more in-depth understanding of the parent theme yet were separate to convey their own meaning. In other cases, sub-themes were created by splitting the parent theme into two or more themes or sub-themes. Some themes were removed completely, and codes were reassigned to other themes.

Patton's (1990) criteria for categorisation were considered in the revision of the themes. These criteria suggest that categories should be internally consistent and homogeneous, and externally different, connected, and heterogeneous. As Braun and Clarke (2006, p.91) put it, "data within themes should cohere together meaningfully, while there should be clear and identifiable distinctions between themes". Thus, I reviewed the coherence and distinction of the themes, making sure that each theme consistently captures the meanings of the codes it encloses, and is distinct in meaning from other themes.

The thematic-map was starting to gain its final shape. At this stage, after revising the themes, the thematic map started to evolve and show clearer meaning and relations between the themes. This stage was carried out multiple times until the identified themes were found satisfying.

5.4.4.5 Defining and naming themes

Braun and Clarke (2006, p.87) describe this stage as an "ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme". At this stage, themes started becoming clearer and more defined, identifying the essence of each of them. I revisited the raw data and codes related to each theme to refine the specifics of themes and to ensure that the theme captures the meaning in the data. I refined and renamed the themes based on their final meaning.

The thematic analysis of the data resulted in 26 themes. Table 13 shows a list of these themes. The next section discusses these themes in detail. Where possible, themes that relate to how owner-managers approach risks were (intentionally) named using labels similar to those used in risk management literature. Nonetheless, as described in Chapter 6, these sub-themes pertain the non-formality of approaching risks, unlike risk strategies. The purpose of this is to speak to the existing risk management literature, allowing researchers to relate to the findings of this study.

Table 13: A list of identified themes

Avoid Risk	Eliminate risk	Being careful / Vigilant	Prevent risk
Limit risk	Protect against risk consequences	Rely on what is available	Transfer risk
Accept risks and their consequences	Act reactively as things happen	Adapt	
Perception of risk likelihood	Controllability of risk	Perception of consequences	Characterisation of risk
Perception of managing risks	Cost of managing risks	Ability to take approach	Consequences of managing risks
The past as a heuristic	A trigger	Perception of competence	Trust, Relations and Reputation
Normative Pressure	Cognitive inconsistency and justification	Tendencies and Propensities	

Braun and Clarke (2012) propose building a list consisting of the definition of each them. They explain that the definitions should "clearly state what is unique and specific about each theme" (p.66). They suggest that themes a) should have a singular focus, b) should be related, but should not overlap, and c) directly address the research questions. The themes identified in this study fulfil Braun and Clarke's suggestion.

Table 14 shows a selection of the list made for theme definitions. The descriptions of themes discussed in the next chapter and the review of the themes are based on these definitions.

Theme	Definition
Avoid Risk	Approaching risks by not engaging in activities that could create risks
Prevent risk	Approaching risks by taking actions or engaging in activities that would lower the likelihood of risk materialising, targeting the causes of risk.
Rely on what is available (Ad-hoc)	Approaching risk indirectly by relying on certain aspects of the business that, if needed, may be used to handle the risk. These aspects are not particular to the risk but to the business.
Transfer risk	Approach risk by including another party to share or take the risk
Perceived likelihood of risk	How likely the owner-manager believes the risk could occur.
Perceived Controllability of risk	The participant's view on and belief of whether the risk can be controlled. May talk about risk as act of god or beyond their own power, or is made internally or they make it themselves.
The Past as a Heuristic	The participants refer to or use the past (consciously or unconsciously) to evaluate the future.

Table 14: A selection of theme definitions used during data analysis

The themes identified could be described as sub-themes to broader overarching themes. These overarching themes became clearer as the thematic map matured. For the first group (later called approaches to risk), the data were grouped into several themes (explained in detail in Chapter 6). Most of these themes clustered around two main broader themes: approaching the potential consequences of risks and approaching the possibility of risks occurring. Therefore, I constructed a theme using the codes, and data relating to owner-managers approaching the consequences of risks, and another theme using those relating to approaching occurrence. A third broader theme was also identified consisting of codes and themes relating to being relatively reactive to risks, and dealing with risks as they occur. Figure 10 shows these the final thematic map demonstrating these themes.

For the second group, I attempted multiple iterations of identifying themes (for example, in one of the iterations, I identified themes based on the topic, such as employees, customers, reputation, etc.). However, I always saw that the data clustered around perceptions, elements of the environment, and the outlook of the owner-manager; thus, constructing three broader themes. Figure 11 demonstrates the thematic map showing these themes.

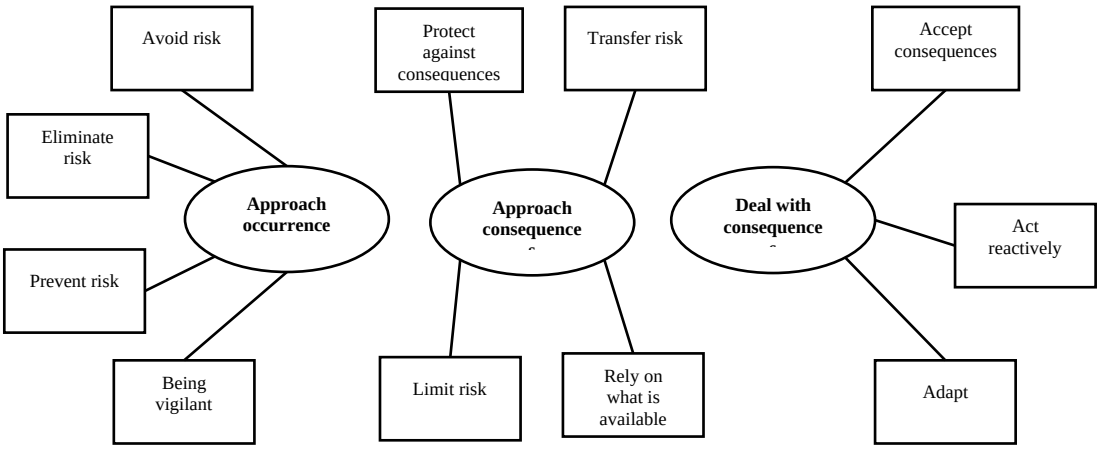


Figure 10: Thematic mapping of approaches to risk

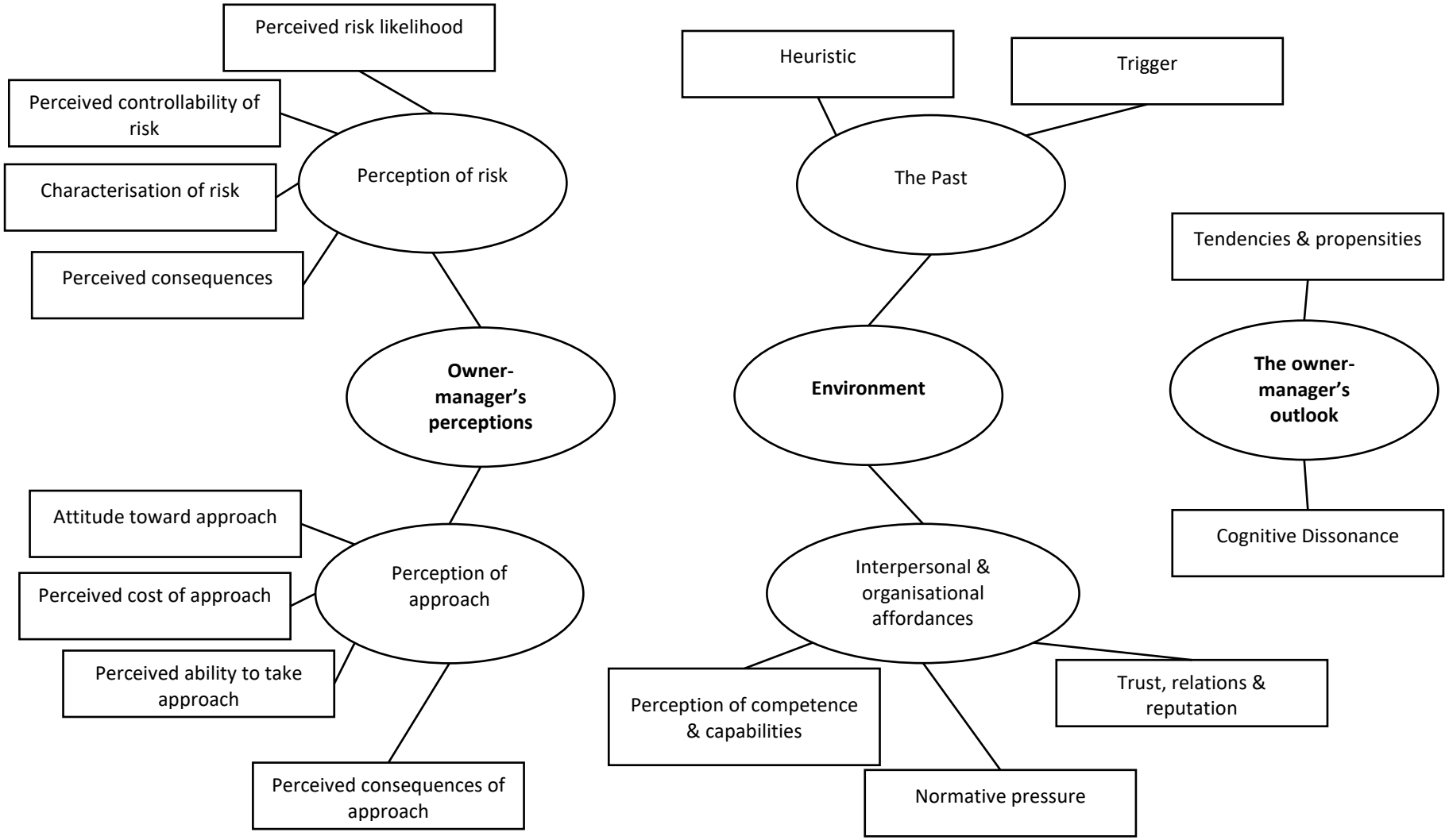


Figure 11: Thematic mapping of making the decision on how to approach risk

5.4.4.6 Producing the report

The final stage of Braun *et al.* (2014) guideline is producing the report of the study. At this stage, the data were analysed into themes and a thematic map that tells a story of managing risks. The themes, thematic map, and codes were finalised, and documented. I created finalised lists of themes and codes. The findings of the study are presented in the next chapter. The chapter presents a large amount of evidence from the data. Extensive quotes are used in discussing the identified themes where possible, allowing the participants to speak for themselves (Wolcott, 1994). Extracts were chosen for being vivid examples that reflect a theme, or for explicitly and concisely presenting the idea behind the theme. For example, taking two extracts from the same theme, coded similarly, one extract would be fragmented on different pages of the transcripts, while the other was concise and fitted in a single paragraph. Although both extracts conveyed the same meaning and told a very similar story, the second extract would have been chosen as it is more presentable, concise, and coherent. As mentioned earlier, interviews were transcribed verbatim. Throughout the analysis process, the transcripts were kept in that state to maintain meaning and to capture vocal but non-verbal communication – such as hesitation, regret, or prolonged thought process. At this stage, however, extracts were cleaned up. Filler words such as 'ummm', 'eeeh', or 'like' were removed for a cleaner presentation.

5.4.5 Limitations of methods

The methods used in this study are not without limitations. Data were collected through interviews. Interviews are an effective and reliable method of data collection. However, they mostly rely on memory, or prediction of future scenarios. In this study, the use of interviews was the most appropriate given the limited time and resources, and given the explorative nature of the research. Additionally, the study relied on participants sharing their memories of risky events. However, memories can sometimes fade and become blurry or be subjected to different biases, such as selective memories, or overlapping with other memories. Memories could also be evaluated in hindsight, a case in which these memories would not reflect what "actually" happened in their mind, but a new evaluation of how things should have happened. All these limitations were taken into consideration in the analysis process. Stories that were felt to be inconsistent, or those where hindsight was clear were treated carefully.

The analysis process also had its limitations. Thematic analysis is a renowned qualitative analysis method. However, the analysis process was conducted by one person. Although this gave the advantage of a consistent analysis and understanding of the data, it could have limited new ideas that could have been identified in the data. To overcome this limitation, the analysis process was also conducted at multiple iterations, separated by periods of time to allow a fresh mind when doing the analysis. Additionally, an open mind was always kept as an objective of the analysis process. Being aware of the possibility of a pre-determined analysis results allowed avoiding it.

5.5 Chapter summary

In this chapter, the methodology of the research was discussed. The chapter started by describing the research strategy. The philosophical positioning of the research was discussed. The study adopts a critical reality ontology and a subjective epistemology. The research approach was discussed. The study adapted a qualitative descriptive approach. The empirical study was conducted in Jordan to investigate managing risks in Jordanian SMEs. The study adopted a qualitative approach, as it allows a deeper understanding of the participant's meaning, perceptions, and experiences. A pilot study was conducted to validate and test the study approach. Overall, data were collected through semi-structured interviews with owner-managers or managing partners of 31 Jordanian SMEs. Data was analysed thematically. In this chapter, the data collection and analysis procedures were discussed.

Chapter Six:
Data Analysis

6.1 Introduction

The qualitative study resulted in identifying several themes. This chapter presents the analysis of the empirical study. The chapter is divided into two parts, each part aimed to answer a research question. The analysis of the data focused on the owner-managers' account on approaching risks. Thus, in this chapter, I describe the identified themes using the owner-managers' narratives. The first part (section **Error! Reference source not found.**) consists of themes that represent risk approaches. These approaches are themes that describe how the owner-managers approach their risks. The second part (section **Error! Reference source not found.**) describes the owner-managers' decisions on how to approach risks. It consists of themes that reflect what shapes the owner-managers decisions on what approach they take toward risks. In this chapter, I use extracts from the interviews based on the coding process I described in the previous chapter. The list of codes for each theme is presented in Appendix 6.

6.2 Approaches to risk

The first set of themes represents ways in which the owner-managers approach risks. These themes relate to the first research question:

How do owner-managers of small- and medium- size businesses approach their risks? Specifically, what approaches do they take towards risks in their businesses?

In this section, I describe 11 themes that show how owner-managers in SMEs approach their risks. These themes demonstrate that owner-managers of SMEs do indeed approach their risks – albeit informally.

Avoid risk

Participants commonly talked about avoiding risks. For example, some owner-managers, such as Adam from Eta, perceive working with small companies to be risky,

as they often lack stability. Although working with small companies would yield business and profit to the company, owner-managers would choose not to pursue such opportunities to avoid the risk of not collecting their money. Maher and Firas from Mu explained that they are selective with their customers, avoiding risks that could be caused by unwanted customers. Many participants explained that they often gather information about new customers from the market. Adam from Eta explained that he avoids risky customers, and added *"how would I know they are high risk? Through the market, I asked about them. Through the banks, I ask about them"* (L198).

Kareem from Phi talked about avoiding projects that do not have a clear system. He explained this by talking about a customer who has projects but

> *"His approach would be as I told you, he wants to work, but he doesn't want to have supervision, or doesn't want to have the natural correct work system. So in this case, maybe we might not reject it from the beginning, we would try to go ahead with him, we try to see where we can add to convince him to change […]. If we saw that the process would be not correct, then we would apologise [i.e. Reject the project]" (L496-501).*

Kareem avoids these projects because he is certain *"there would be errors in managing the projects"* (L513), which would reflect badly on the company's work, and thence affect their reputation.

Participants such as Adam from Iota, and Martin from Beta, described themselves as "Conservative" – that is, they try to avoid risks at any cost. For example, Martin suggested that he only takes projects that have a 100% success certainty. Being conservative is not a specific approach to a specific risk, but more of a tendency to avoid risks, a tendency to be perhaps overly risk-averse with opportunities.

Eliminate risk

Some owner-managers talked about eliminating a risk by ceasing the activities that could cause it. In some cases, participants suggested taking actions and making changes to eliminate the risk all together. Adam from Eta had a vehicle that sells products, receiving money in cash.

"A cash-van representative, cash! He puts the cash in his pocket and tell me [the customer] didn't pay. When we discovered him later […] I stopped the whole thing. I don't want a cash-van. So as not to have such risk, I cancelled the whole idea" (Eta – L216-218),

Thus, he lost the sales, but eliminated the risk of future thefts. Another example of eliminating risks, which several participants suggested, is switching from accepting cheques and post-sales payments to payments in advance, thus eliminating the risk of customers not paying.

Prevent risk

Several participants talked about preventing risks. For instance, several owner-managers, mostly within technology-based companies, prevent the risk of leaking company secrets by dividing knowledge amongst employees such that no single person can have the whole body of knowledge of the company. Kholood from Hawwaz explained that

"No one [employee] can know the whole system. We divided the people based on modules. Like, you are finance: that's it, you know everything about finance. He is supply chain, everything in supply chain. But no one knows everything. So that no one […] can know your secrets and compete with you, which has happened a lot before" (L160-165).

In other cases, participants talked about counteracting the causes of risks. Several participants discussed the risk of losing employees. Thus, they try treating their employees well, providing a comfortable environment, with good salaries, along with building a level of loyalty. As Firas from Abjad explained it:

"I think it is a big risk in my mind, but it never really materialised... Which is: the good people we have ... To be [headhunted by others]. They tried once, but because […] it is a family business and we are all family! Even the employees: we ARE [like] family! […] Once, a customer tried to take two of our technical people. They refused and came and told us! Directly! This this this happened. We do have loyalty, the way we treat our employees, they do feel like family, they

do have very high loyalty, and they say it, they say it amongst each other" (L401-410).

Issa from Macron gave a different perspective,

"I give my workers their full salaries every beginning of the month, I don't delay it. Social security. I have registered them for health insurance, first class, on my expense. Their salaries... If you compare it to other factories, it would either be the same: let's say plus/minus not more than 10%. So as long as you are satisfied, and you have all your rights, why would you leave to work with others for a minor increase?" (L174-178).

William from Caron shared an interesting story about how he prevents the risk of losing one of his main customers. William invests a two-hour period every morning visiting the customer, overseeing their managerial operations, and advising them on how to stay in business. William explained that this customer is one of his best distributors with a large customer base but lacks management capabilities. Therefore, he believes that investing time and effort into the customer's continuity could prevent them going out of business, keeping their own main distributor.

Adam from Eta has a set of valves that control filling different oils in containers, opening the wrong valve could cause spillage or unwanted mixing of oils. After such incident has occurred in the past, Adam dedicated an employee to control these valves, preventing unwanted operation of valves by other employees.

Being vigilant

Thus far, the approaches discussed have focused on actions and decisions made in advance to risks materialising. However, some participants suggested that they try to prevent risks from happening when they sense them about to happen. As Nader from Theta puts it, *"There are a lot of risks, but because we are awake [they do not happen]"* (L282). Martin from Beta suggested that the political situation in the region could potentially cause political instability in the country. However, he explained that his company is carrying business as normal, and he is not taking any actions towards that risk. He suggested that "*if we felt some heat, we [would] take action immediately"*. The essence of this approach lies in reading signs and being vigilant of subtle or

unusual changes in the status quo and how these changes could unfold in the near future.

Protect against consequences of risk

Several participants talked about taking actions to reduce or control the impact of risk on their business. A few participants suggested hiring additional employees to protect the company in the case of employees leaving it. Martin from Beta sees this as the best approach to handle the risk of employees leaving the company,

> *"One of the ways that you would say I [chose to use] and it worked for me in several years, it is that if I need three employees, I [hire] five. And I increase the resources in general, so as to be on the safe side" (L133-135).*

He suggested that

> *"Now risk at employee level: I don't have. I mean, I want four [employees], I hire seven, how? Now, if one [of them], after a week, said I don't want, they become six. This one is from the extra" (L199-201).*

Other participants chose to train and involve their employees to be able handle most positions in the company to be able to replace any employees leaving. Kholood from Hawwaz suggested that *"frankly, everyone is replaceable, like every person should have someone else to replace him"* (L155). Nader from Theta takes a similar approach to the risk of employees leaving, he suggested that

> *"It is a risk, but we all know the work of others. We all trained together. Now if anyone is absent, everyone [can] work, now obviously, it would not be 100% replacement, but in a short period, [the replacement] would be able to know. Like whoever is working in sales, he works sales, but he was in operations before. So he knows the operations work" (L362-365).*

He explained that he rotates the employees around the different departments. Maher from Mu also reduced the impact of the risk of employees leaving, explaining that

*"We built a process that we call [*audio not clear*] template, […] a pre-built library, training manuals, et cetera. This way, if one of the employees left, and a new person came, [we would] be able to replace them quickly" (L140-143).*

A few participants suggested having multiple suppliers, some saw that when one supplier was unable to supply, another would have what they need. Others saw that having multiple suppliers would protect the company in case one of them went out of business. Faisal from Diaeresis explained that

*"Me by nature I deal with six [suppliers]. I don't like to deal with one. […] because, when I … Look, now when you deal with more than one, and you deal with them for a while, that's it, everyone would trust you and know what you are. This is one. For example, I talked to the man here [*referring to the supplier in the room] and told him I want [type of paper], he would tell me I don't have it. I call the second, I'd find it" (L353-358).*

Bashar from Hotti puts it in a slightly different way,

"So I would have two sources for every product. I can't put all my capabilities in one company. Tomorrow this company had a problem, my work stops" (L163-165).

Some participants suggested having a diverse product range or scope would protect the company against risks of low market demand. Some participants saw that having a narrow range of products would create risks, by being vulnerable to market demand, and having a broader scope and product range could protect the company against fluctuations in market. For example, Kevin from Alpha talked about diversification in products. He explained that the company has a diverse range of products is mainly caused by the small size of the local market. He suggested the purpose of this diversification was to manage market risks, as it helps the company when the market demand on certain products is limited.

Elias from Tilde emphasised the last point made by Kevin:

"I told you there is risk of custom-made, it is not something I can produce and sell! That is something I always think that: beside my

work, I should have another line of a product in the same company, in the same line, for example, that you can start selling… produce and sell. […] if the custom-made business […] stopped, what products do I have to produce and sell?" (L438-442).

Limit risk

In a few cases, the owner-managers talked about limiting the risk. Limiting risk mostly meant limiting the impact on the company. In many of these cases, these risks were described as "calculated risks" – not in a quantitative sense, but in a sense that the potential losses are precalculated, controlled and known. Mike from Epsilon limits the risk of outsourcing a job by 'testing' the quality of work with a sample:

"You tell them take this stack of lab coats and work them for me, and this is our quality, did you see it? Take it with you. […] you give him like 10 pieces to try them" (L417-428).

He added that if the quality was not up to standard, he would *"throw them in the bin"*. In this case, the loss is minimal, or limited, and known. Elias from Tilde ventured with the company's own money when the prices of steel were dropping. Although eventually the venture was a loss, *"we lost our OWN money, we did not lose the banks' money"* (L504). He added that

"A lot of people got greedy! […] they went and borrowed money from the bank and bought material, when [the price] went down: they owed the bank money! They could not [repay] the bank" (l504-509).

In Elias' case, the risk (or the loss) was 'calculated' and limited to the invested capital. Tilde was able to consider that year a loss and move on, without having on-going debts.

Another way of limiting risks that some participants described is restricting credit sales to potentially risky customers. Caron for example sells its products to a range of customers. On the lower end of that range are individual unregistered distributors. These individuals take small quantities, in credit, and distribute them to the market. When asked about the risk of these customers, Nasri explained that *"there is risk, but very calculated risk, very limited risk"* (L414), William added that

"Someone like this [i.e. Customer], I would not give him credit more than 1000JD. Eventually he will run away with the 1000JD! He can very easily disappear! Where am I going to look for him?" (L419).

Adam from Eta, and Rami from Nu take a similar approach for dealing with new customers. Rami from Nu limits the risk of credit by limiting the payment period for new customers,

"He pays, he receives. Once, twice, until I know that he has some sort of sustainability [in his business] […], then I might give him 30 days, then 60 days. […] but the first orders: no" (L488-491).

Adam from Eta takes a slightly different approach to limiting risks,

"When I see the customer is becoming a high-risk, […] his credit limit, […] if he usually takes 100,000, I immediately reduce that to 20,000. […] So instead of giving him [products] for 100,000, I give him for 10,000, 20,000 […] so as to guarantee that the risk is not high" (L359-370).

Transfer risk

In a few cases, owner-managers talked about transferring risks associated to business opportunities. Instead of losing an opportunity, owner-managers would transfer the risks to other parties. For example, Nasri and William from Caron discussed the risks of working with businesses in what is called Qualified Industrial Zone (QIZ). QIZ are special free-trade industrial parks in Jordan that house manufacturing operations mostly for exports to the US. According to William, working with businesses in QIZ is particularly risky, as these businesses can go out of business without paying their debts. Thus, instead of working with these businesses directly, they work with intermediaries. Caron sells to the intermediary, and the intermediary sells to the QIZ company. In this case, *"if [QIZ company] defaulted [i.e. Went out of business], it isn't my problem. [The intermediary is] the one I know" (L496).* William described it as *"a cushion"* (L495). In another case, Rami from Nu discussed export risks, mostly to countries such as Iraq and Syria. With the political situation in these countries being unstable, delivering products to customers poses high

risks. Therefore, Rami only delivers products to Jordanian ports, transferring risks of transportation (amongst others) outside Jordan to the customer.

Rely on what is available (ad-hoc)

'Relying on what is available' was a popular approach to risks. The owner-managers would appear to be reactive to risk, as they would not have predetermined or distinct actions or decisions to manage the risk. However, they do so because they rely on certain aspects of their business that are at their disposal to manage it. For example, Michael from Lambda relies on having multiple machines to deal with a malfunctioning machine,

> *"Our work consists of a group of machines, and these machines do the same job, like if I have a malfunctioning machine, I have alternatives! You see how? I would not stop the work. Now my production my go down, but only temporarily" (L238-241).*

The purpose of having multiple machines is not to handle this risk, but to increase the production capabilities. However, Michael relies on having multiple machines to overcome any issues a faulty machine could cause. He proceeds with his business as if the risk has been managed.

Similarly, most participants rely on their reputation and relations to deal with risks, such as communicating with customers if and when a certain risk materialises causing issues with delivery. For instance, Kholood from Hawwaz explained:

> *"We deal with the customer, it's like trust and brotherhood relationship. Sometimes [if] we face any problem, […], let's say something happened, and the project delivery was 1 or 2 weeks late, so I would [have a good relation] with the customer to say pardon me, and he would understand […] so we always try to have a very good relation with [the customer]" (L229-235).*

Kholood did not develop these relations to approach the risk. However, since these relations are at her disposal, she knows that she can utilise them to resolve issues of delayed delivery.

Several participants also talked about the risk of losing employees. Some suggested that losing an employee would not have high consequences because one of the key people can take over temporarily. Firas from Abjad explained this:

> *"Let's say, one of the sales left, I can replace him! I can redistribute the work, such that I go out to do sales. [If] a technical guy left, we have people, for example, as I told you, my mother, is knowledgeable about this, so she would get more involved, […] this thing is what's good, of course, there is an effect, but it makes this impact lower" (L464-469).*

Again, the knowledge of the key people is not there for the purpose of managing the risk of losing employees, it is simply there. Similar to relations, networks, and reputation, this knowledge, and the involvement of key people are there for the purpose of conducting business. However, being there allows the owner-manager to proceed with their business knowing that some risks can be overcome.

Act reactively as things happen

SMEs do sometimes act reactively to some risks. In a way, risks are left to be dealt with when they do happen, shall they happen. For example, Michael from Lambda suggested that *"a broken machine, a broken saw, one of the delivery cars broke down, needs maintenance, like these normal every-day things"* (L343) are dealt with as they happen. In some cases, participants showed a clear pattern of being reactive to risks. Thomas from Delta is an example of such participants. Thomas was found to be mostly reactive to risks. In most cases, Thomas suggested that *"there is nothing [that can be done]"* about risks. Unlike being reactive to specific risks, Thomas seemed to have a tendency to be reactive to risks. For instance, he only reacts to work injuries, delayed shipments, project delays, damages or mistakes in production or projects, and so on.

Accept risks and their consequences

Several participants talked about accepting risks. Participants would accept risks due to their insignificance or uncontrollability. Accepting risks could sometimes be out of perceived necessity, where the risks are crucial to business, and attempting to mitigate them could do more harm to the company than the risks themselves. As an

example, most participants accept the risk of selling for postponed payments, knowing that the risk of not getting paid on time is higher than they would prefer. The participants accept that risk and accept delayed payments, out of necessity. As Mohammad from Omicron puts it, *"if we don't work this way, we will not work at all"* as according to Nasri from Caron, not accepting cheques and relying only on payments in advance would bring down their business to 10%.

Adapt

Another way the participants talked about was adapting to risks. This was often talked about when risk is major or inevitable and has an impact on the company as a whole. Adapting is reactive and happens after a risk realises. These risks seemed to be changes rather than incidents. As an example, companies would adapt to changes in regulations; several participants suggested that the government often and regularly change regulations and issue new ones, and nearly all the participants suggested that all they can do is adapt to these changes. As Michael from Epsilon said:

> *"We adapt, we adapt. How? We have to adapt and adjust ourselves with the new legislations. We finish and we adapt and we sort things out, they issue a new legislation!" (L130-131)*

Kevin from Alpha expressed it with more anger:

> *"Also we cannot do anything, we have to ADAPT to the new regulations, like every other company. […] We suffer from the frequent changes of the laws in this country. One of the problems of doing business in Jordan is that they keep changing laws and regulations, they issue a law, after few months they change it, after two months they re-change it, and re... It's a trial and error system. It affects us, but it affects not ONLY us, not only [Alpha], it affects everybody else. We cannot do anything about it" (L178-183).*

Similarly, when losing a key employee, or a key partner, some companies would go through some sort of a turmoil, to which they adapt.

Similarly, some companies had to adapt to losing a key employee or partner. For example, two of Alpha's owning partners decided to leave the business, Kevin described the first event as a *"small problem, but we managed, immediately we*

managed" (L138), and the second as *"some pack of temporary turmoil, temporary chaos, that's it, but for very short period"* (L156) to which the company adapted.

6.3 Making the decision on how to approach risk

The second set of themes was related to how the owner-managers of the SMEs came to make their decisions on how they approach risks. These themes aim to answer the second research question:

Why do owner-managers approach risks the way they do? Particularly:

1- **How do owner-managers decide on how to approach risks?**

2- **What shapes and informs the owner-managers' decisions on how they approach risks?**

In doing so, 15 themes that relate to understanding why the owner-managers approach risks the way they do. This section describes these themes using extracts from the data demonstrated in Appendix 6.

Perception of risk likelihood

Participants were found to evaluate risks based on their perception of risk likelihood, or how likely they believe the risk could materialise.

Participants talked about degrees of possibilities to describe their perception of likelihood. Often, however, participants talked about these possibilities by relying on their perception of the past or how things have been. Take for example Nader from Theta: he believes that *"we do not have risks, like it is very very very rare for something to happen and not be able to overcome it"* (L192); or Elias from Tilde, he believes that he does not have a high risk of employees leaving the company because *"They would not leave the company! I do not have a big employee turnover".*

In other cases, perceived likelihood was based on how easy the participant believes the risk can materialise. For instance, recall Nasri and William from Caron discussing the risk of working with businesses in the QIZ (Qualified Industrial Zone). They relied on previous incidents to evaluate the likelihood of that risk, *"it happened more than once, you come the next day, and you don't find anyone!"* (L439). However,

they also see that industry as risky because it has low exit barriers. William explained that

> *"Because the location is rented, the cost of machines is peanuts […] [the owner] would have taken a very big credit from the market […] and the owner is not local, he would put himself in a plane and go back to his country!" (L441 – 445).*

In other words, they believe the risk is very likely because it can happen easily.

One of the participants suggested he bases his perception of likelihood on probabilities or statistics. Aiden from Iota, who has a background in engineering, described it using the concept of gambling: *"you are playing the roulette, it's how much? 1 over 36, right? That's your probability! Alright?"* (L443). Aiden suggested that he calculates probabilities based on the information and facts he has and acts accordingly. Nonetheless, despite the probabilistic assessment of risk, Aiden still relied on his subjective evaluation of the situation. He continued his example by saying:

> *"So what do you do? You spread! Or not? Then you have a hunch,,, like, number 13 for example, so you put mostly on number 13!" (l444).*

Characterisation of risk

Participants seemed to characterise risks in different ways. When talking about their risks, they describe them, and address them, differently. Risks were not always discussed as 'risks'. In some cases, participants called a risk 'a problem', 'a worry', or 'a mistake'. For instance, Rafat from Xi explained that *"there are things that we consider as problems, not risks, nothing that would be a big danger to the company, or to those in it"* (L106). Although he was still talking about risks: potential events in the future, he chose to characterise them as 'problems'. Characterising risk as a problem denotes a solution. As Martin from Beta described losing employees: *"this is risk. I solved it; in more than one way I solved it"* (L132).

On the other hand, in several cases, participants characterised risks as certainty. That is, they did not perceive risk as an event that could potentially happen, but an inevitable one. Nasri from Caron described the risk of currency devaluation as a person knocking on the front door: *"now look, the currency devaluation is at the door, like,*

it's knocking, and I can see it!" (L785). When talking about technology change, Maher from Mu described the change as *"obviously"* happening (L271). In the case of Nasri, for example, he had no doubt that the actions he was taking to protect the company from the 'risk' of currency devaluation were absolutely necessary.

In contrast, some risks were described as 'unknown' or oblivion, where participants had no certainty about what could happen. Elias from Tilde talked about the political risks in the region:

> *"That's another risk that nobody knows. […] i don't know what next year will bring, i don't know! And this is another risk that we have... We cannot plan forward for the coming 10 years" (l421-426).*

What Elias said reflects complete ambiguity of the future. Contrary to risk as certainty, any actions taken towards that risk are full of doubt, constraining Elias from planning the future of the company.

In several cases, participants described risk as a gamble. Nabeel from Breve described the risk of new technologies as a gamble,

> *"Look, this has no science to it. Like you have to come up with an idea, and gamble on it, it is this way" (l86).*

Also recall Aiden from Iota, who related his probabilistic assessment of risk to a game of roulette. Although Aiden explained that

> *"of course I am not going to go and gamble in business with million dollars on roulette" (L450),*

both him and Nabeel characterised risks – perhaps to some extent – as a game of chance with no way to manipulate it.

In contrast, some participants talked about risks of mistakes. Faisal from Diaresis described risks that happen unintentionally as mistakes: *"now look, we don't have mistakes that are like... The probability of mistakes here is not big"*. Mistakes are often related to skills and capabilities of people. For example, Faisal from Diaeresis described the risk of defect prints as a technician mistake; however, he added that this risk is low because

> *"the technician downstairs, I trust him, and I know what he does... […] the technician I have has been working with me for 10 years, and I know, and sure, that anything he receives would check it, because... It would appear in the work! The mistakes are very minimal" (L287-291).*

Characterising risk as a mistake also came with a sense of control. Take for instance Issa from Macron, when asked about the risks associated with suppliers' trust; his response was *"Why would I make a mistake?"* (L323), implying that he has the control and ability not to make the mistake.

Controllability of risk

Another aspect of risk participants talked about was controllability of risk. Controllability of risk is the perception of whether one can control the risk, to control when and how the risk would realise, to control its consequences, but more importantly, whether it is possible, from the owner-manager's perspective, to stop a risk from happening. Ghaith from Rho explained that they outsource their development jobs because although their own developers can do the job, they can easily sell the project to their competitors. He added that *"this is a risk, and we cannot control, frankly"* (L3216). Similarly, recall Thomas from Delta being mostly reactive to risks. He believes that

> *"You cannot prevent it! Someone walking and accidently hit a board of wood: How am I to prevent it? […] Like these things happen! You cannot prevent… like it is, it is… like it is something from god, what am I going to say?" (374-378).*

In contrast, recall Rafat from Xi talking about smoking within the production premises. He explained that although he allows the workers to smoke during working hours, he has a strict rule of not smoking within the last half-hour of the day. He believes that if something caught on fire during working hours, the fire can be controlled and stopped, but not when no one is around. For Rafat, he can control the risk of fire during working hours.

Additionally, some owner-managers described risks as fatalistic – that is, it is the outcome of fate. Some also showed belief in luck. These concepts reflect a belief

that random events are not particularly random, or that events that are independent of the individual are indeed controlled or changed based on the individual. Thomas from Delta for example suggested several times that risks occur based on luck, explaining that things go well *"when luck plays its role with the person"*. Thomas believes that his luck is what allowed him to prevent a particular incident. William from Caron explained that one should be *"lucky every time"* to get away with tax evasion, while the customs department should be *"lucky one time to catch you"*. Thomas also believed that

> *"You cannot prevent [work injuries]. Someone walking and accidently hit a board of wood. How am I to prevent it? He fell off the stairs, how am I going to prevent it? He didn't see that the machine, or he didn't see that there is something on the machine or these things and he put his hand on it, or.. Like these things that happen… You cannot prevent…"*

describing these incidents as an act of a supernatural hand. Belief in destiny, or the 'supernatural hand', reflects a belief that the future is predetermined – things will happen the way they are meant to happen. When describing risks of low market demand, Thomas explained that *"everyone would take his 'share', more than this word, we say that everyone gets his destiny"* (L352-354). In Arab culture, 'share' refers to one's destined share in the world.

Perception of consequences

Another theme that was seen in the data is the participants' perception of consequences of risks. When describing consequences of risks, participants sometimes talked about direct impact – risk and impact. However, sometimes, they described them as a chain of consequences. As an example, the risk of customers not paying would affect the company financially. However, this also affects the company's other projects due to lack of finance, sometimes causing the risk of inability to deliver to other customers or to pay their suppliers, thus affecting the company reputation, and so on. Such and similar chain effects and consequences of risks were discussed many times in the interviews. As Adam puts, *"it is a domino effect"* (Eta – L195). Owner managers take these consequences into consideration when evaluating risks. Sometimes, when the consequences of risk are perceived to be high, some participants

perceived the risk itself to be high. For instance, Adam from Eta discussed the risk of human error on the production line that could cause losses in raw material. For Adam, the cost of this loss is too high. Despite him describing it as a *"one in a million"* risk, he explained that *"this risk still exists"* (L159) and has taken precautions to prevent this risk from happening.

Contrarily, when the participants perceived the consequences of risks to be low, the risk for them was low as well. Nadeem from Diaeresis explained that they have the risk of their suppliers mixing up their orders. However, he explained that this mix-up could be sorted out in a day or two. When asked about the impact of such mix-up, his partner Faisal responded *"it affects me for a day. Not a big deal!"* (L338). For them, this risk was insignificant, because a delay in work for a day or two would not affect them.

Attitude towards managing risk:

Some participants suggested that there was no value in managing risks, or that managing risk has a lower priority than other activities within the business. Rafat from Xi suggested that he prefers to have higher productivity over managing fire risks, thus allowing his workers to smoke near flammable materials. Kevin from Alpha believes that hiring redundant employees would protect the company from the risk of losing employees; however, he suggests that he does not see a value in redundancies *"waiting for that person to leave"*. Rafat also finds using Letter of Credit (LC) *"annoying"*, despite their usefulness in protecting the company – financially – from import risks. Ghaith from Rho suggested that managing some of the risks they have is not a priority. In contrast, some owner-managers suggested that managing risk is worthwhile, Firas from Abjad explained that managing risk takes effort, energy, and resources, but "*I think at the end of the day, it is worth it"* (L376). Ghaith from Rho explained that his employees work in teams and not as individuals to protect the company if an employee left, he described this as a necessity. Elias from Tilde invested large amounts of money in new technologies that would reduce production down-time, suggesting the investment was worthwhile.

Perceived cost of managing risk

Firas from Abjad explained that the company puts extra effort to satisfy their customers to prevent risks to their reputation. He explained that this effort is high, and

comes at high costs, but as he puts it *"at the end of the day, it is worth it"* (L376). This reflects back to the owner-managers' attitude towards the approach. The costs are often balanced with the – not necessarily tangible – benefits of the approach.

Perceived ability to take approach

Thomas from Delta expressed his inability to have his workers use safety equipment:

> *"Like now for example, the painters, I brought them masks, […] They would say 'I wouldn't wear a mask', although I force them, he would say 'I don't wear [a mask]'. […] Like, safety boots for example, a while ago I brought safety boots to all the workers, [but it rendered useless and hopeless]" (L387-383).*

Thomas' ability to manage work hazards is limited to his ability to get his workers to implement these measures.

Ability to take approach could sometimes be related to the ability to cover the costs of taking an approach. For example, in the case of Nabeel and Ibrahim from Breve, a particular software could generate financial and business reports without the need of employees having access to them. However, the cost of such software is too high, *"you have to pay like 200,000 dollars for this platform, we cannot afford it!"* (L327). Being able to take an approach also seemed to be related to its feasibility. For example, the owners of software companies, such as Beta and Rho, suggested that they would relocate to a different country if the political situation in Jordan became unstable. Martin from Beta explained that

> *"One of the scenarios that I agreed on with my partner is that in case, because we work through VPN [Virtual Private Network], we think if it became close, we close, and open an office in Egypt […] I mean those are the exits *laughs*" (L178-182).*

In other words, the fact that the majority of software companies' assets are digital means it is feasible to move the whole company without difficulties.

Perceived consequences of managing risk

Participants also described how managing or taking actions towards risks could create other risks or have other consequences. As an example, Rafat from Xi had a strong opinion about stopping his workers from smoking within the production area, despite them working near highly flammable materials, leaving a very high risk of fire. Rafat allows them to smoke because he believes that enforcing a no-smoking policy would have a negative effect on the workers productivity and behaviour:

> *"To raise production, because if he smokes, he would be comfortable, and he… how it is when he listens to music for example? I allow him to for example bring a stereo or a radio, if this thing makes him happy while he is working! Same goes for the cigarette. These things I am not strict about a lot, for the productivity, and for his comfort and the company environment" (L120-124)*

In other cases, the consequences of managing risks, although sometimes high, did not stop the owner-managers from attempting to manage them. For example, Alaa from Chi has very strict payment terms to prevent the risk of customers not paying. Although these strict terms could lead to losing new potential customers, Alaa still takes these measures, suggesting that *"if they are too strict, I wouldn't have any work, would I?"* (L220). On the other hand, sometimes these consequences are positive, and taking actions is seen not to only deal with risks but have additional benefits as well. For example, when Martin from Beta hires redundant employees to manage the risk of employees leaving, he also sees that these employees would be available if he seeks new projects or update old ones.

The past as a heuristic

The participants often talked about or referred to the past, often using it as a tool to justify what they believe. Recall for instance Kholood from Hawwaz who divides the knowledge within the company to prevent leakage of company secrets. When asked about why she takes such measures, she answered,

> *"From the slaps we took! We practically hired people, taught them from a to z, and some of them left, and took our source code […] and*

made their own business! Or went and sold it to our competitors" (l169-171).

In contrast, several participants suggested their low perception of risk is because they have not realised in the past, despite them understanding that these risks could actually realise. For example, Faisal from Diaeresis discussed the dangers of the machines they have,

> *"it is possible, if the person did not pay attention, he could harm his hand, cut his finger, cut his hand, he could kill himself, from a mistake" (L182).*

However, he suggested that this risk is unlikely to happen because *"the business has been running for 20 years, this has happened only once"* (L198). Nader from Theta suggested that a major incident was not expected to happen because *"I've been in this [industry] since 85, I've never heard [of such an incident]! […] it happened […] and it incidentally happened to us"* (L254-255).

Martin from Beta, for example, talked about the past to demonstrate that what he will be doing will succeed by suggesting that his approach has been successful in the past. He mentioned several times that he adopts certain approaches to manage and deal with risks,

> *"Now, this is risk. I solved it, in more than one way I solved it. One of the ways that you would say I [chose to use] and it worked for me in several years, it is that if I need 3 employees, I bring [hire] 5" (L132-134)*

suggesting that because this approach has worked for several years, it will continue to work in the future.

The past as a trigger

Some participants talked about the past as a critical event, one that has caused change in perception or in behaviour. An example of this is how the Abrasives Production company Xi upgraded its basic firefighting system to a high-end system after a major fire took down most of their factory. Faisal and Nadeem from Diaeresis and Kareem from Phi left their companies for an extended period of time. In both

cases, the businesses struggled without their management, and they had to suffer the consequences. The owner-managers were not expecting these consequences before leaving the businesses. They explained that they would never leave again. Faisal from explained that *"when [Nadeem] got married, I took control, and things went well by itself. But both of us leaving [again]: impossible"* (L323). Their previous experience made them realise the dangers and risks associated with not being involved in their business. Adam from Eta dedicated an employee to control certain valves in the production line. This employee's job is to monitor, secure, and operate these valves. Adam took this action after a major spillage has occurred due to an employee mishandling the valves.

Perception of experience, competence and capabilities

Participants also talked about the experience, competence, and capabilities within the company, both positively and negatively. For instance, recall Faisal from Diaeresis talking about his trust in the competence of the technician on the printing line,

> *"no, I guarantee it, because the technician downstairs, I trust him, and I know what he does. It wouldn't be that you have a technician, that you brought yesterday or the day before, the technician I have has been working with me for 10 years. And I know, and sure, that anything he receives would check it" (L287-290).*

The perceived competence of this technician makes Faisal perceive the risk of faulty products lower. Michael from Lambda explained that

> *"I can't say I have internal issues, because mainly 70-80% of those who work with me have experience, frankly, in this area" (L 192).*

In contrast, Rida from Upsilon explained that lack of competence in the company creates a lot of risks,

> *"I cannot rely on [the employee] […] when he does not want to develop himself! At the end of the day, the level that I have is the most important thing for the service I provide! […] I see this is our risk. We are unable to reach a point where I can find a [capable] replacement*

for myself or [Khaled] to cover us. We are relying on [employees] to some level only" (L192 – 213).

Similarly, Michael from Lambda described that giving power to the marketing team could be risky due to market competition, thus he is personally involved in sales, suggesting that

"Sometimes you would be afraid of certain commitments! If [the employee] has a commitment with a [customer], then that's it! You have to get your guy to keep his word! So you get burdened by the costs of this problem" (L381-383).

Although Michael suggested that his employees are competent and experienced, the risk of getting committed to a risky opportunity makes him doubtful about that competence.

Trust, Relations, and Reputation

Trust and relations (within and without the company) were topics that most of the participants referred to. For instance, several participants saw that lack of trust in their employees increased their perception of risk. Aiden from Iota described the people in his company as *"idiots"*, as they do not follow procedures and rely on their own initiatives. Aiden does not trust his employees, although they are competent and many of them have been working in the company for as many as 20 years. For Aiden, relying on employees' initiative is very risky. Thus, he relies on running his company on his own – which he describes as *"extremely risky"* (as the company depends on his own ability to run it).

This was seen across several interviews; Maher from Mu emphasised the need of personal involvement in business due to lack of trust. Kholood from Hawwaz suggested that trusting the employees is, in itself, a risk, as it has backfired in the past, and employees took advantage of that trust.

In some cases, the participants talked about trusting the customer. Michael from Lambda takes extra measures when dealing with customers, he believes risks caused by customers are high. He relates these risks to lack of trustworthiness of the customers. Michael has suffered major losses in the past often due to trusting the customers. These incidents made Michael lose his trust towards all his customers:

"Like frankly,,, let me say it to you in plain words, there is fear! Because there is no longer trust in the buyer himself! […] he is not losing! The damage is mine!" (L391-400).

Some participants also talked about trust and competitors, Adam from Eta and Issa from Macron collaborate with co-competitors when needed based good will and trust. As Adam describes it:

> *"It's cooperation, it depends on your relations with the businesses around you. Now, I for example, my relation with one of the manufacturers in the country is good. We help each other, if he has a delay in supply, I send him materials from mine, or the other way round. So it is based on good will, let's say" (L322-324)*

Collaborating with co-competitors allows business continuation, and it is trust that allows Adam and Issa to consider such collaboration. When asked about the risk of collaborating with co-competitors, the participants emphasised the established mutual trust between themselves and the others, often suggesting that this trust is built based on long experience and years of trustful relationships.

Similar to Adam talking about relations with competitors, participants like Kholood from Hawwaz talked about relations with the customers, and how these relations could help them handle some risks, such as a delay in delivery. Martin from Beta described how he builds such relations,

> *"I care that the customer is satisfied. Other than that, we also communicate. Like, we go to the customers. Like the software manager makes meetings with them, sometimes I go, do you need anything? What do you want? What? Like I would tell them I am coming to have a coffee. So this is public relation, it is very very very very very, especially in our country, very important." (L466-470)*

Many participants talked about their reputation in the market. For example, Martin from Beta suggested that

> *"Because I sell projects, and these big projects rely on the company's reputation, you should notice, 60% of my customers come through the*

customers. I mean those are a great sales tool. Other than that, relations relations relations" (L369-372).

Kevin from Alpha explained that

"We are an old company in the market so we are well known, our name is very well known among all our clients, people contact us sometimes we feel without doing any [advertising] for the products that [we sell]....." (L62-65).

However, Firas from Abjad talked about reputation differently, focusing on the damage the company's reputation could take, suggesting that

I will have to repeat myself a bit... risks that exist, reputation, you cant tell how your reputation could..... especially when you are doing the right thing, you are doing well with the customers, this would stay in your mind, perhaps,,, you could call it paranoia, for example, but i dont like to get a bad reputation that we did something wrong, when we actually didn't" (L625-629).

Normative pressures

In several interviews, the participants referred to "others", mostly talking about other people or organisations in general. For example, Ghaith from Rho talked about the political and economic situation in Jordan,

"we have a risk that everyone has, not only us or our sector, which is ISIS […] [which is] the risk that all the people can see (L105) […] there is a risk that everyone knows, which is the situation in the country, the situation in the country is not stable (L236)".

At several occasions, participants have said *"we cannot do anything, no one can"* (Alaa – Chi L126), *"this is everyone's problem"* (Martin – Delta L146) or *"There are much bigger companies also, I am sure, that have the same feeling and same worries, and cannot do anything"* (Kevin – Alpha L175-177). In some cases, the owner-managers showed explicit imitation of others in managing risks. For instance, William and Nasri from Caron explained that they have a guard for their factory to protect it against theft and bandits. When he was asked about the reason for having a

guard, William explained that *"it is a standard to have a guard"* (L76) – by standard, he meant a norm that has become an informal standard procedure. Rafat from Xi suggested that he does not use Letter of Credit as *"all traders"* within their industry find it *"annoying"*.

Tendencies and propensities

Some participants showed tendencies in how they approach risks. Adam from Eta, and Martin from Beta described themselves as conservative. Martin's interview in particular showed that he tends to take the safer approaches to risks. He suggested that he would almost always avoid risks. Thomas from Delta on the other hand showed tendencies of being reactive to risks. Rafat from Xi and Nadeem and Faisal from Diaeresis were found to often give a sense of trivialisation of consequences, while Firas from Abjad was found to often over-state the consequences of risks.

Cognitive inconsistency and the need for justifications

Some participants showed cognitive inconsistencies or ambivalence. For instance, during one of the interviews, the participant suggested he tries to make his workers to wear the safety shoes he provides. After the interview, the participant commented that it is better for the company when workers do not use their safety shoes, as it saves the company money. The participant also asked to keep this comment anonymous. This comment, however, reveals the inconsistency of the participant: on one hand, he does what he *should* and handles the risk of injury by making the worker wear safety shoes. On the other hand, he would rather the employees not follow the rules, as he prefers to save money.

Similarly, recall Rafat from Xi allowing his workers to smoke near flammable material. He showed inconsistencies in his beliefs and his decisions and actions. Additionally, he altered his perception of the risk to reduce the inconsistency of his decision. At first, he described the risk smoking could cause as high. However, when he explained that he allows his workers to smoke, he changed his perception of the risk.

One other interesting finding in the interviews was the justifications participants made to defend how they approach risks. These justifications were often accompanied by cognitive inconsistencies. Although these justifications were found

in most interviews, they were most clear and obvious in the interview with Rafat from Xi. Rafat explained that he knows that using a Letter of Credit (LC) is the best way to protect the company from risks of fraud and risks of imports not being delivered. However, he justified not using LC by saying *"its procedures, of the LC, are a bit annoying for traders"* (L313). However, justification was not always used to explain why the participant is not taking a particular approach, but why they are taking it. For example, Martin from Beta explained that he hires extra employees to manage the risk of employees leaving the company, which he finds effective; however, he also kept justifying such additional costs, explaining that he can always find extra work for these additional employees when being idle.

6.4 Chapter summary

In this chapter, I presented the data analysed into 26 themes. These themes were presented in two sets. The first set consisted of themes that related to describing how the owner-managers approached risks. This set included 11 themes. The second set, which included 15 themes, consisted of themes that described the owner-managers' decisions, and what shapes these decisions. Generating these themes was based on the coding process of the data. For brevity, the list of codes for each theme was not included in the body of the chapter but presented in Appendix 6. The themes were described in a way that presents the data, where intensive use of extracts from the interviews (where possible) were used to describe the themes.

Chapter Seven:
Findings

7.1 Introduction

In the previous chapter, I described the analysis of the data and presented the themes that emerged from that process. In this chapter, I draw on these themes to highlight the findings of the study.

This chapter consists of three sections. Section 7.2 relates to the first research question. It discusses the findings of the study that demonstrate how owner-managers of SMEs approach their risks. Three findings (or as I call them "broader themes") are described. The second and third sections relate to the second research questions. In section 7.3, I describe the findings that demonstrate what shape the owner-manager's decisions on how they approach risks. I describe five broader themes, presented in two groups. Finally, in section 7.4, I present a thematic map, constructed over the process of the data analysis, that visually displays the findings of the study, along with the relationship among these findings based on the interpretation of the data and stories told by the participants.

7.2 Approaching risks in SMEs

In the previous chapter, I described 11 themes that describe how owner-managers approach risks. These themes were aimed to provide an answer to the first research question:

How do owner-managers of small- and medium- size businesses approach their risks? Specifically, what approaches do they take towards risks in their businesses?

These themes, however, can be taken into a further level of abstraction, and three broader themes can be constructed: approaching occurrence, approaching consequences, and dealing with consequences. These broader themes revolve around the focus, or target, of the owner-managers' approach. In other words, the 11 themes

presented earlier describe how the owner-managers approach risks, but the three broader themes describe the commonality among groups of the 11 themes.

Broader theme	Risk Approach
Approaching occurrence	Avoid risk
	Eliminate risk
	Prevent risk
	Being vigilant
Approaching consequences	Protect against consequences
	Transfer risk
	Limit risk
	Rely on what is available (ad-hoc)
Dealing with consequences	Accept risk and consequences
	Act reactively
	Adapt

7.1.1 Approaching risk occurrence

The first broader theme consists of themes that focus on approaching the occurrence of risk. It consists of four themes: avoiding risks, eliminating risks, preventing risks, and being vigilant. Data within these themes suggest that owner-managers make decisions and engage in activities that primarily aim to lower the possibility of risk realising. For instance, participants would identify risky actions and opportunities and avoid them all together. Risks created by actions, decisions, or opportunities are avoided by avoiding the opportunity or action itself. For example, Kareem from Phi avoid the risk of a poorly managed project by rejecting it, suggesting that *"If we saw that the process would be not correct, then we would apologise [i.e. Reject the project]"* (L501).

Participants would also identify activities in which they engage and could create risks and cease them, thus eliminating the risk. Adam from Eta eliminated the risk of a hard-to-monitor sales method, suggesting that *"I don't want a cash-van. So as not to have such risk, I cancelled the whole idea"* (L218). Similarly, some participants try to prevent risks by taking actions aiming to reduce the possibility of risk materialising. Preventing risks could sometimes be by handling the potential causes of risks or by counteracting these causes. Issa from Macron explained that *"So as long as [the employees] are satisfied, and [they] have all [their] rights, why would [they] leave to work with others for a minor increase?"* (L178) – thus preventing the

risk of his employees leaving the company. In all these examples, the focus of the owner-managers is the occurrence of the risks. In all these examples, the decisions and actions the owner-managers talked about target the risks not happening.

7.1.2 Approaching consequences of risk

The second broader theme consists of themes focusing on approaching the consequences of risks. That is, the owner-managers aim to lower, eliminate, or control the potential impact of the risk before it materialises. These approaches do not focus on the possibility of risk realisation – the risk could still materialise all the same – but on its consequences. This broader theme consists of four approaches to risk: protect against consequences, limit risk, rely on what is available, and transfer risks. the owner-managers would not quantify the impact of risk – except for financial impact – but rather build a scenario of what could happen if the risk has occurred and attempt to control it.

For instance, in several cases, the participants were found to approach risk by protecting the company against its consequences. That is, the actions and decisions they make would create some sort of a safe-guard shall the risk occur. Many participants talked about redundant hiring, where the company would hire more employees than it needs, to allow business to continue shall an employee decided to leave. As Martin puts it:

> *"One of the ways that you would say I [chose to use] and it worked for me in several years, it is that if I need three employees, I [hire] five. And I increase the resources in general, so as to be on the safe side" (L133-135).*

Such protective measures are often applied as part of the business, and usually having continuous costs to the company. Protecting against consequences of risks is usually creating an alternative or back-up route.

Similarly, rather than taking protective measures, some owner-managers would approach the consequences of risk by transferring the risk (or part of it) to someone else, a third party or the customers themselves. Alternatively, they might limit these risks by limiting the potential impact – often by limiting the opportunity associated by the risk. In both these cases, although the owner-managers lower the

possible negative consequences of risk, they also lower the potential positive ones. For instance, when Nasri and William from Caron discussed the risks that come with dealing with QIZ businesses, they suggested that they work through intermediaries who share the risk, but William emphasised that by doing so they share the profit with the middle-man.

Approaching the consequences of risk does not necessarily mean that the owner-manager would engage in activities specifically targeted at the risk. Many participants talked about how they would use the resources available at the time, be it internal or external, to manage the risk when needed. The owner-managers would rely on utilising the resources, connections, and other elements of their environment to manage and control risks. As mentioned in the previous chapter, this approach to risk is usually dismissed as a reactive approach. However, I found that owner-managers seemed to proceed differently in their business when relying on what they have available to them to manage risks than when they react to risks. As suggested in the findings chapter, owner-managers seemed to consider these risks to be managed or controlled – despite not taking any actions or explicit decisions regarding them. For example, Kholood relies on her relations with the customers to manage risks of delayed projects. William suggested that the risk of a malfunctioning machine is managed because he can use one of the other machines. For them, these risks are managed – or manageable, and they have no concerns about it. Previous research considers such approach to be reactive, as actions and decisions are apparently made in reaction to risks. However, the essence of this approach lies within the sense of security it gives the owner-managers. That is, although the owner-managers act reactively to risk, they believe that the risk has been managed or controlled. As shown in the extracts from the data, all these participants regarded their risks to be managed and controlled – and thus have proceeded with their business accordingly.

7.1.3 **Dealing with consequences of risk**

The third broader theme consists of approaches for dealing with consequences. Participants talked about how they would not approach the risk but rather deal with (or sometimes simply bear) its consequences when, or if, they happen. This broader theme consists of three themes: accepting risks, adapting to risks, and acting reactively to risks. These approaches are – in a sense – reactive to risks, and the owner-managers would not proactively take any actions or decisions toward them except for letting

things be and allowing the future to unfold as it shall, dealing with the consequences then.

In some cases, the owner-managers would accept the risk, and its consequences. Sometimes bearing these consequences, but most times they end up turning to other approaches when the risk actually happens – often adapting or acting reactively. For example, while Mohammad has accepted some losses due to unpayable cheques, Nasri suggested that they have adapted to the risk and take it into consideration when planning their own payments.

Adapting to risks could be considered a part of an acting reactively approach to risks. However, acting reactively would be taking specific actions towards the risk, while adapting is more of a change, be it minor changes, or a substantial reforming. For instance, the original owner of Omega ran the company on his own. When he passed away, Wisam had to adapt. Knowing that he could not run the company the way his father did, he made substantial organisational restructuring in the company – distributing responsibilities to a management team.

7.3 The owner-manager's decision

In the previous chapter, I also described 15 themes that related to understanding what shapes the owner-managers' decisions on how to approach risks. These themes were related to answering the second research question:

Why do owner-managers approach risks the way they do? Particularly:

1- **How do owner-managers decide on how to approach risks?**

2- **What shapes and informs the owner-managers' decisions on how they approach risks?**

These themes clustered around five broader themes: perception of risk, perception of approach, the past, interpersonal and organisational affordances, and the owner-manager's outlook. I grouped these broader themes into two groups: the owner-manager's perceptions, and the environment of the decision. For the remainder of this chapter, I use these themes to provide an answer to the second research question.

7.3.1 **The owner-manager's perceptions**

The data show that owner-managers approach risks based on their perception. Specifically, their perception of risk and their perception of how they would approach risk was found to shape how they approach the risk. Figure 12 shows the themes that form the owner-manager's perception.

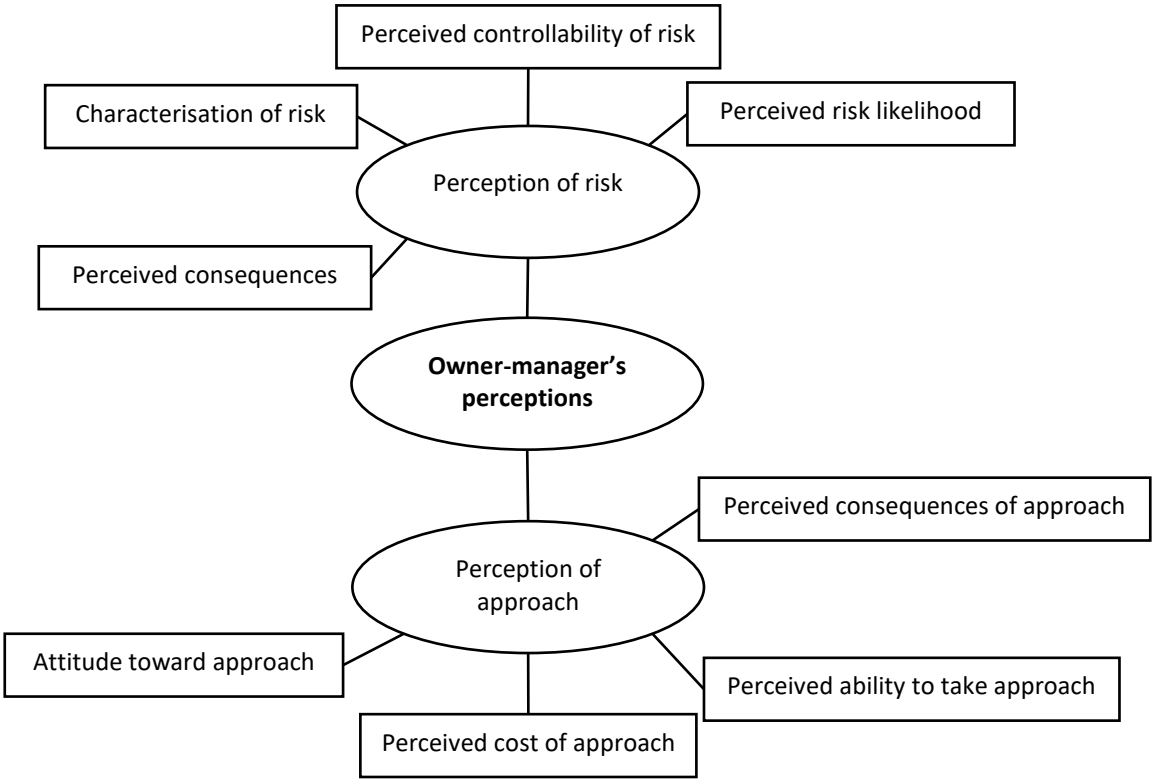


Figure 12: Broader themes of owner-manager's perceptions

7.1.3.1 The owner-manager's perception of risk

Participants often expressed how they perceive risks when talking about how they approach them. That is, they often talked about, described, or alluded to their beliefs about how likely the risk would realise, what they believe the consequences of the risk would be, how they conceptualise the risk, and how controllable they believe the risk to be.

These themes were informed by the literature on managing risks (e.g. Gilmore *et al.*, 2004), risk-taking (e.g. Sitkin and Pablo, 1992), and decision-making. Risk Management standards emphasise the assessment of risk – often quantitatively

(Hopkin, 2010). Quantitative assessment of risk is based on the likelihood and impact of risk (Rausand, 2011). Thus, it was expected to see that the assessment of risk plays a major role in how it is approached. Sunjka and Emwanu (2015) also found that the informal risk management practices in SMEs are directly based on the owner-manager's perceptions. Sitkin and Pablo (1992) explicitly signify the role of risk perception as a determinant of risk behaviour.

As expected, the owner-managers were found to evaluate risks and how to approach them subjectively. There was very little and questionable evidence suggesting quantification or measures of probabilities. The data have shown that the owner-managers do not deal with risks in numbers, they do not quantify them, but they deal with them based on their perception and hunches. Although a few participants talked about "calculated risks" or, in some cases, assigning percentages to them, these numbers were not based on mathematical or probabilistic calculations.

As expected, the owner-managers seemed to evaluate risks and how to approach them subjectively (Smit and Watkins, 2012; Sunjka and Emwanu, 2015). There was very little and questionable evidence suggesting quantification or measures of probabilities. Consistent with findings in literature (e.g. March and Shapira, 1987), I found that the owner-managers do not deal with risks in numbers, they do not quantify them, but they deal with them based on their perception and hunches. As Aiden put it:

> *"you have to have the feel, to have the hunch, to have the intuition, you have the I don't know how to explain it, but like to have the gut feeling to be able to say well, […] based on the information that you have of course, and on your hunch so I guess you work that way" (L422-425)*

Although a few participants talked about "calculated risks" or, in some cases, assigning percentages to them, these numbers were not based on mathematical or probabilistic calculations. Participants either related these numbers to the potential monetary consequences of risks or costs of managing them, or arbitrarily put a number to reflect their perception of risks. For example, Adam from Eta described the risk of oil spillage as one in a million; however, this number was arbitrary, suggesting the likelihood of oil spillage as very low.

However, I was expecting to find that the subjective estimate risks would lead to providing rough numbers or risk levels that resemble probabilities or risk measurements. However, interpreting the data, I would presume that owner-managers build a qualitative image of risk that they would describe (sometimes emotionally), rather than a detailed numerical description of it. These images, or perception, of risk are shaped, and not estimated, based on their perceived likelihood, consequences, and controllability of risk.

Being able to control risk, altering its possibility of materialising or its consequences, was evidently found to influence how the owner managers evaluated risks, and thence approach them. *"There is nothing you can do about it"* was said several times by several participants, referring to their belief that nothing can be done to control that risk.

Additionally, risk management frameworks assess and propose strategies based on the likelihood and impact of risk. They do not, however, take into consideration the perceived controllability of risk and the consequences of managing them. However, I showed in my study that the perceived controllability of risk and the consequences of managing it could play a primary role in how the owner-managers approach risk. Recall for instance Kevin talking about the political risks in the region. He, and several other participants, expressed that – at the time – political disturbance in the country were very likely to happen, which would have major impact on their companies. Nonetheless, because they believed they cannot control such risks, they chose to wait for the future to unfold, hoping things would remain safe. Similarly, Thomas was adamant that he cannot control work-injuries; making him accept these risks. On the other hand, Rafat was convinced that forcing his workers to stop smoking near flammable materials would affect their productivity the quality of his products. Thus, he chose to accept the risk to avoid the potential consequences of managing it.

Being able to control risk, altering its possibility of materialising or its consequences, was evidently found to influence how the owner managers evaluated risks, and thence approach them. *"There is nothing you can do about it"* was said several times by several participants, referring to their belief that nothing can be done to control that risk.

7.1.3.2 The owner-manager's perception of risk approach

Their perception of how they would approach the risk consists of their attitude toward managing the risk, the perceived cost of how they would approach it, whether they believe they can take the approach to approach the risk, and what they believe would be the consequences of taking actions towards it.

Participants' evaluation of an approach seemed to be influenced by their attitude toward managing risk and the approach. This attitude is the relationship between the perception of risk, the cost of managing it, and the impact of managing it on other activities of the company. The owner-managers' attitude toward managing risk is also shaped by how the approach to approach risk is envisioned – how simple or complex it is perceived to be. Martin from Beta suggested multiple times that managing different risks is simple – not necessarily in terms of cost or effort, but in the straightforwardness. In contrast, Thomas from Delta explained that preventing work injuries and accidents is not possible, he asked multiple times *"how am I going to prevent it?"* to express his incapability of envisioning measures to prevent or reduce work accidents.

The perceived costs of managing risks (such as financial, effort, or time) play a role in how risks are approached. The owner-managers would apply some sort of cost-benefit analysis. However, most of the time, considerations of cost are based on priority. In a way, although the company can afford to take a particular approach to risk, and the owner-manager would prefer to take it, other activities could have higher priority to the resources. However, in many cases, these costs were only a matter of consideration, but not an obstacle. In several cases, the participants discussed the costs of the approach, and described them as high. Still, they explained that these costs are worth allocating to managing the risk.

One other factor that was found to influence participants' approach to risks is their perception of their ability to take such approach. In other words, one would more likely take actions if they think they are capable of taking them. As such, participants seemed to adopt certain risk approaches when they believed they are capable of doing so. More importantly, they seemed to avoid these strategies when they believed they were incapable of adopting them. Owner-managers seemed to take these consequences and consequential risks into consideration when making their decisions. Sometimes

these consequences are perceived to be more negative than the perceived consequences of the risks themselves – that is, the medicine is more harmful that the disease.

It was also found that participants do not perceive the likelihood of risk in isolation of the approach taken towards it. Take for example what Faisal from Diaeresis said about the risk of one of his suppliers going out of business: *"there are many suppliers, it is not logical! If one closed, I have 10"* (L346). Although he perceived the likelihood of a supplier going out of business as high, the believes the likelihood of his supply being interrupted is low because he works with other suppliers. Similarly, going back to what Elias said about employees leaving the company, his perceived likelihood of that risk is low because of the preventive approach he is taking towards it (that is paying good salaries, and providing a good work-environment).

7.3.2 The environment and the owner-manager

The study has shown that the owner-managers' decisions on managing risks is shaped by the structures of their environment. What is meant by the structures of the environment is the different aspects and elements of the businesses that surround the risk and the decision on how to approach it. I identified three groups of structures of the environment: the past, interpersonal and organisational affordances, and the owner-manager's personal outlook (see Figure 13). These structures of the environment would inform the owner-manager's decisions, where the owner-manager would utilise – consciously or unconsciously, their knowledge or beliefs about the environment to make their decisions.

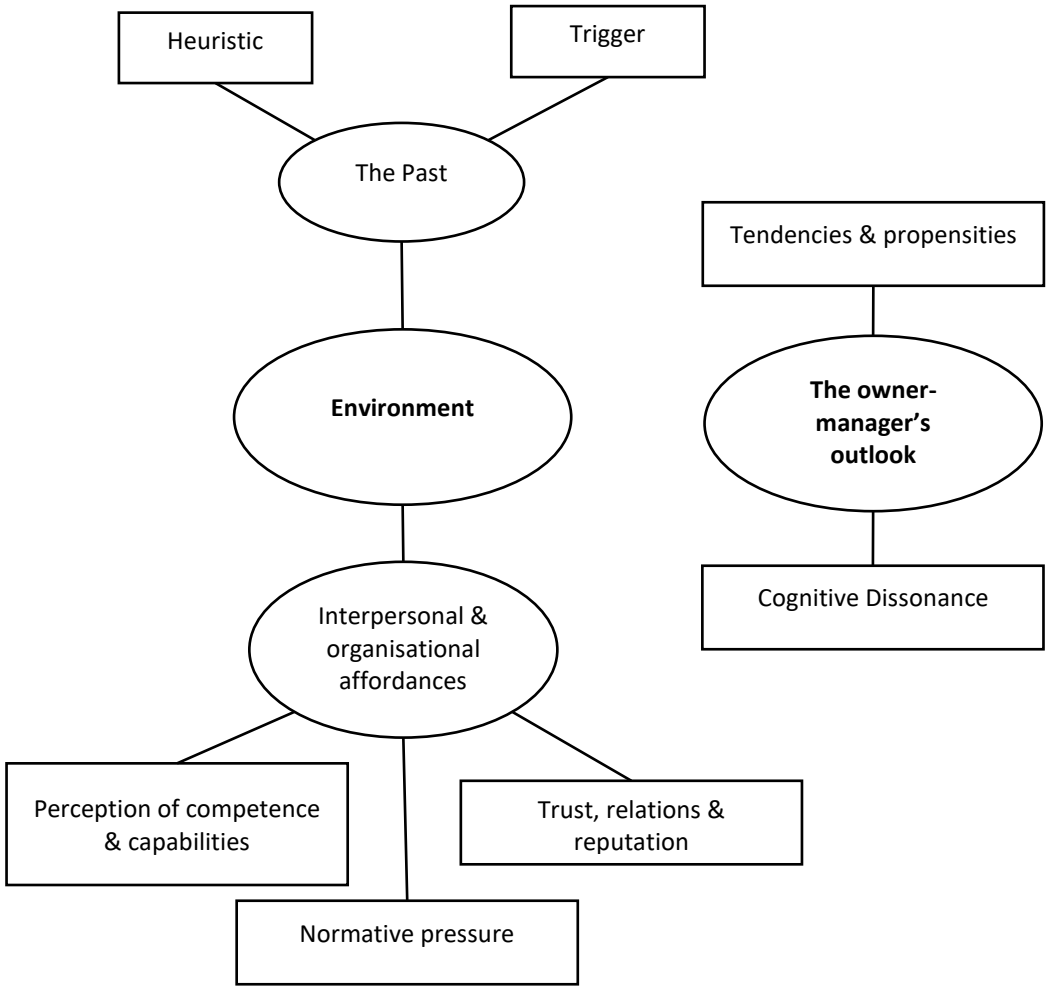


Figure 13: Broader themes of the environment and the owner-manager's outlook

7.1.3.3 The past

The past could, consciously or unconsciously, reshape the owner-managers' beliefs and perceptions about risks, the way Kahneman and Tvesrky describe the heuristic of availability (Tversky and Kahneman, 1974) or the way Breakwell describes how people would have beliefs about some food contamination shaped by

previous knowledge about another (totally different) contamination (Breakwell, 2007). The owner-managers would sometimes utilise the past as a tool to draw an image of the future, in a way assuming the past would represent the future. Participants often evaluated risks by recalling the past. The owner-managers' cognitive evaluation of the likelihood of risk is informed by their recollection of previous occurrences of similar risks. In several cases, participants have shown a belief or expectation that future events will be similar to past ones. Participants would rely on how events and risks have unfolded in the past to draw their expectations of the future, using their recollection of the past as a mental tool to draw an image of the future.

Data also showed that the owner-managers would continue or change their approach to risk based on outcome history of that approach. In some cases, the perceived 'failure' of an approach would lead to changes in perceptions and approach to risk. In most cases, the success of the approach, or more precisely how the approach has not failed, seemed to enforce the choice of approach. In short, the participants seemed to believe that their experience with how they approach risk can be fairly reliable.

The data also showed that owner-managers change their perception of risks and start approaching them differently after an incident occurs. Incidents – often materialisation or near-materialisation of a risk – seemed to trigger a change in approach. This was evident in many interviews; several participants started taking actions towards a risk only after an incident has occurred. Previous experiences of risks – or lack thereof, were found to influence the owner-managers' perceptions. Going through an incident sometimes altered the owner-managers' views of their companies, and the risks they face. We can see this kind of trigger in many occasions in everyday life: a smoker quitting only after having been diagnosed with cancer, a street-crossing is considered dangerous only after a deadly accident has happened, creating multiple back-ups to important computer documents only after a computer malfunctions and all the documents are lost, and so on. Although these incidents are part of the past and contribute to one's experience, they also act as an abrupt (so to speak) change to one's perceptions and behaviours. For instance, Adam from Eta might had always known that the oil valves could very possibly be mishandled by one of the employees, and such an incident would be costly, yet this risk had remained

ignored until such an incident actually happened triggering a change in how these valves are operated.

7.1.3.4 Interpersonal and organisational affordances

The second group of themes represent interpersonal and organisational affordances. This group consists of three themes: perception of experience, competence and capabilities; trust, relations and reputation; and normative perceptions.

The owner-managers would utilise their beliefs about their company, be it in reputation, competences, trust, or relations, to decide how to approach risks. For example, they approach their risks based on how strong they believe their reputation to be, or perceive risks based on their trust toward their employees or customers. Alternatively, the owner-managers would imitate others in how they perceive or approach risks, the way William and Nasri have a guard to their warehouses because everyone else in the area has a guard, or the way Kevin believe the political risks in the region is high believing everyone else has the same perception.

The owner-manager's perception of the competences and capabilities, or lack thereof, within the company seemed to shape their perception of risk and approach to risk. On one hand, some owner-managers saw that competence, or incompetence, within the company are the cause of risk. While in contrast, perception of lack of competence created a high perception of risk for some participants.

The experience of the company, as a whole, also seemed to play an important role in how participants perceive risk. More specifically, several owner-managers seemed to believe that their time and experience in business gives them an edge on judging whether they have risks or not. For example, Nader from Theta suggested that *"look, now we, frankly, don't have a lot of risks, why? Because our experience is very long"* (2-137), he also explained that *"from our experience, these 17 years, we know [the risks]"* (2-202). In a way, participants suggested that their experience in business informs their perception of risks and gives them confidence in the way they approach them. Aiden from Iota called this experience a learning curve. The experience of the company was found to form some confidence that the company's capable to overcome risks.

Trust also shapes the owner-managers perception of risk, sometimes leading them to personally get involved in the operations of the company. Normative and social perceptions were found to shape the owner-managers' perceptions of risk. Owner-managers were found to conform to subjective norms in their perception of risks and attitudes. They were also found to justify their own perceptions by creating a perceived social perception. They were also found to imitate others or learn from them by example, suggesting an imitation heuristic (Gigerenzer and Selten, 2002a). Trust, or lack thereof, was one of the main topics discussed by the participants. Trust was found to play a role in perceiving risk. Trust also plays a role in seeing how risk would be dealt with. Participants talked about trust in relation to employees, customers, and suppliers. Trusting employees played a clear role in the owner-managers' perception of risk. Similarly, trusting the customer shaped the participants' perception of risk, where they believed that risk is higher when they cannot trust the customer.

Doing business, especially as a small business, requires building relations – with customers, suppliers, employees and as demonstrated earlier, competitors. However, relations were found to play a big role in both perceiving risks and managing them. Recall 'relying on what is available' approach, participants relied on their relations with customers, employees, or suppliers to manage risks. Similarly, participants gather information through their relations, which in turn informs their perception of risk. For example, Adam from Eta and Ghaith from Rho gather information about customers through their relations in the market.

The reputation of the company also seemed to shape the owner-managers' perception of risk. For example, some participants see that they would not be affected by risks associated by new competition because of their good reputation. Several participants, such as Nabeel and Ibrahim from Breve, discard the risk of competition believing that customers would always choose to work with them instead of others due to their reputation. In the case of Breve, it went to the extent that Nabeel and Ibrahim believed they do not actually have any competition because of their reputation. In other cases, such as Hawwaz, Fouad and Kholood, suggested that their reputation not only brings more customers but also helps when they have issues delivering projects to their customers; where customers would understand the circumstances because of their reputation.

An interesting theme that was found at several instances in the interviews was the influence of perceived normality. Participants often seemed to dip into the sense of 'normal' to 'benchmark' their perceptions and decisions to what they believe is 'normal'. For instance, In many interviews, although unprovoked, participants referred to 'others' when discussing their risks and their approaches. In some cases, mentioning others seemed more of a justification for one's perceptions, attitudes, and approaches. Mentioning others was often based on belief, or speculations, rather than knowledge: What would others do, and how would others perceive this risk. Despite this often being based on uneducated expectations of others, it seemed to 'inform' or enforce the participants' decisions and perception of risk. In a way, reference to others was often to suggest that they are not the only people to think that way; perhaps making it easier to accept the risky decisions they made. Kevin from Alpha used an Arabic idiom that translates to "you are like others", which is used to say one should accept things that happen when they happen to everyone else too.

7.1.3.5 The owner-manager's outlook

The third group of themes reflects the personal outlook of the owner-managers themselves, and their influence on the decision-making process. That is, the data has shown that (sometimes) despite any information the owner-managers have, they would often revert to their own beliefs, objectives, or attitudes, which might themselves be irrelevant of the risk or the overall situation. Two themes related to this kind of behaviour: tendencies and propensities (Goldstein and Gigerenzer, 1999; Sitkin and Pablo, 1992), and justifications and cognitive inconsistencies (Festinger, 1962).

Sitkin and Pablo placed risk propensity at the centre of their risk-behaviour model, Slovic (1972) suggested that people tend to revert to certain habits and routines. This means that decision-makers would often have certain tendencies in their decision-making process. I did find some clear tendencies in approaching risks in certain ways, like Thomas from Delta being generally reactive to risks, or Martin from Beta and Aiden from Iota being more conservative and avoiding risks. Some other owner-managers showed less defined tendencies to take particular approaches, like Nadeem and Faisal from Diaeresis and Kholood from Hawwaz often relying on their relations and reputation to approach their risks.

In a different sense, the owner-managers could sometimes have inconsistent objectives when managing risks, making their decisions on managing risks seem irrational. For instance, Rafat preferred to increase the productivity of his workers over managing the risk of fire, thus allowing them to smoke near flammable materials. The interesting part of Rafat's case is the inconsistencies in the stories he told, where, one minute, he would emphasise the dangers of smoking in the workshop, and another minute he would justify his actions and trivialise the risk of fire. The theory of cognitive dissonance implies that people would attempt to rationalise, justify, and seek validation when they have inconsistent beliefs and behaviours. Rafat's case in particular, and the way he justified his actions, made me believe that he is in a state of cognitive dissonance. He altered his beliefs (when used in the context of managing the risk) to be consistent with his behaviours.

7.4 A thematic map

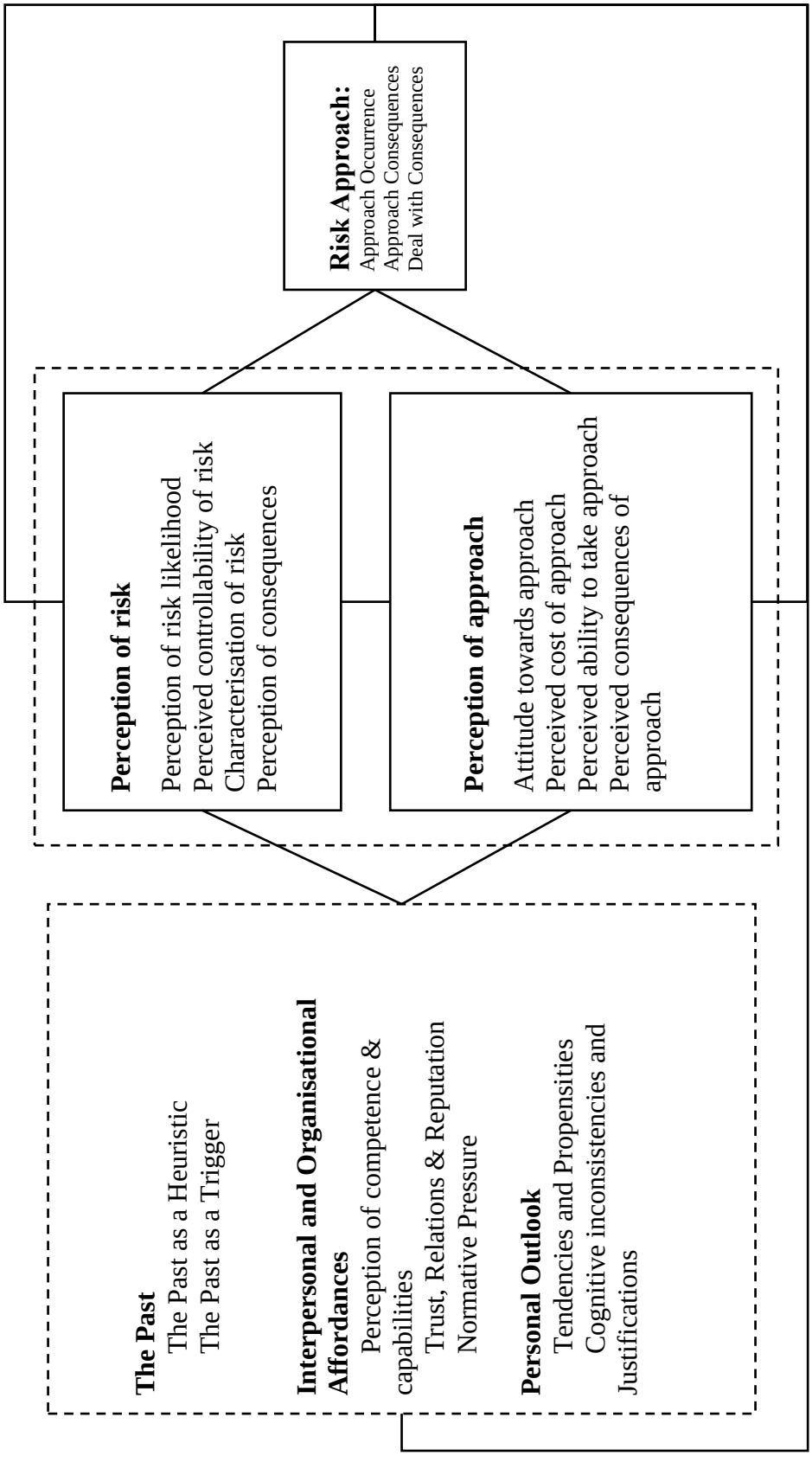


Figure 14: Thematic map demonstrating how the owner-managers of SMEs come to approach risks

Throughout the analysis of the data, and in conjunction with further exploration of the literature, a thematic map that reflected the relation between themes was developed. This map, shown in Figure 14, was constructed based on the stories told by the owner-managers using the themes identified.

Managing risks in SMEs is a dynamic process, be it in the approaches they take toward risks or the decisions the owner-managers make. This study has shown that managing risks in SMEs and the owner-managers' decisions are multi-layered, multi-causal, and complex. The forces that shape the owner-managers' decisions are interlinked. The relationship between these forces is multi-dimensional and multi-causal: all the forces identified in the study influence and shape each other and are shaped and influenced by each other. In the framework I intentionally did not place different structures of the environment in separate boxes. The past, interpersonal and organisational affordances and personal outlook were all in one box. This is to indicate the dynamic and interlinked nature of these forces. The connections between different elements of the framework represent two-way relationships. That is, these elements shape each other. I intentionally did not use arrows in the framework to avoid suggesting a causal-effect relationship, or a predictive model. Although future research could utilise this framework to generate hypotheses, the use of such approach to present the findings is mostly to allow the reader to visualise my interpretation of the relations between the identified forces.

Additionally, the owner-managers did not seem to take one approach to manage a risk or manage one risk with an approach. Sometimes, they would approach risks in multiple ways, or handle multiple risks with the same actions. For instance, when Martin hires extra employees, he protects the company from potential employees leaving, and would prevent being understaffed for new projects. Adam has a dedicated worker to control oil valves to prevent accidental oil spillage and prevent intentional sabotage. Alternatively, Nader prevents undocumented release of shipments by having a clear system for shipment release, and by holding the release documents in his own office.

7.5 A summary of findings

This chapter has presented the findings of the study. The findings were targeted to answer the two research questions. For the first research question, three broader

themes were presented describing how the owner-managers of SMEs approach their risks. It was found that SMEs are not reactive to risk. Instead, the owner-managers of SMEs would either approach the occurrence of risk, where they would make decisions and engage in activities targeting the likelihood of the risk materialising. They would also approach the consequences of risk, where they the decisions they make and activities they engage in would target the possible outcomes and impact of the risks shall they happen. Third, the owner-managers were found to sometimes deal with the consequences of risks. Table 15 summarises these three broader themes, along with their definitions and the themes that they include.

Table 15: A summary of how owner-managers of SMEs approach risks

Broader theme	**Definition**	**Theme**	**Definition**
Approaching occurrence	Make decisions or engage in activities that target the likelihood of risk occurring.	Avoid risk	Not engage in activities that could create risks
		Eliminate risk	Cease activities that could create risk
		Prevent risk	Taking actions or engaging in activities that would lower the likelihood of risk materialising.
		Being vigilant	Monitor risk and be prepared to take actions.
Approaching consequences	Make decisions or engage in activities that target lowering the impact of risk should it happen.	Protect against consequences	Engage in activities that would counteract the impact of risk
		Transfer risk	Include another party to share or take the risk
		Limit risk	Limit the impact of risk by limiting what could be at risk.
		Rely on what is available (ad-hoc)	Approaching risk indirectly by relying on certain aspects of the business that, if needed, may be used to handle the risk. These aspects are not particular to the risk but to the business.
Dealing with consequences	Not engage in any activities prior to the risk happening but deal with the impact when it does.	Accept risk and consequences	Accept that risk could happen, and bear the consequences
		Act reactively	Not engage in any activities towards risks until they happen.
		Adapt	When risk happens, make changes within the business to accommodate the risk.

The chapter also presented the findings that related to understanding the forces that shape the owner-manager's decisions. These findings were presented in two groups. The first group revolved around the perceptions of the owner-managers. The study found that the owner-managers make their decisions on how to approach risks based on their perception of risk, and their perception of the approach they would take. Table 16 shows a summary of these findings. The second group revolved around structures of the environment that shape how the owner-managers make their decisions. This group consisted of the past, interpersonal and organisational affordances, and normative pressures. Table 17 shows a summary. Finally, a thematic map that was developed throughout the study was presented, demonstrating the findings of the study and the relationship between these findings.

Table 16: A summary of the owner-manager's perceptions

Broader theme	Definition	Theme	Definition
Perception of risk	How the owner-manager perceives the risk, which relates to how they would evaluate it and prioritise it.	Perception of risk likelihood	How likely the owner-manager believes the risk could occur
		Characterisation of risk	The form in which the owner-manager views the risk.
		Controllability of risk	The participant's view on and belief of whether the risk can be controlled.
		Perception of consequences	What the owner-manager believe the impact of the risk would be.
Perception of approach	How the owner-manager perceives approaching the risk, which relates to how they would evaluate whether they would approach risk in a certain way.	Attitude toward managing risk	How the owner-manager values managing risk
		Perceived cost of approach	What the owner-manager believes taking the approach would cost
		Perceived ability to take approach	Whether the owner-manager believes they can take the approach
		Perceived consequences of managing risk	What the owner-manager believes would happen if they manage or approach the risk

Table 17: A summary of the structures of the environment

Broader theme	Definition	Theme	Definition
The past	Past experiences that shape the owner-manager's decisions	As a heuristic	Use the past (consciously or unconsciously) to evaluate the future.
		As a trigger	Incidents and events that cause a change in behaviour and perception
Interpersonal and organisational affordances	Elements of the environment that complement the owner-manager.	Perception of experience, competence, and capability	How the owner-manager perceives the company and its employees in terms of experience and competence
		Trust, relations, and reputation	The owner-manager's evaluation of trust, relations, and reputation
		Normative pressures	The impact of "others" on the owner-manager's perceptions and behaviours.
The owner-manager's outlook	The owner-manager's own input to the decision-making process	Tendencies and propensities	General routines and tendencies in how risks are perceives or approached.
		Cognitive inconsistencies and justifications.	Inconsistencies in the owner-manager's beliefs, attitudes, and behaviours.

Chapter Eight:
Discussion

8.1 Introduction

The main purpose of this study was to investigate managing risks in SMEs. Its purpose was to provide a descriptive understanding, from the owner-managers' perspective, on approaching risks in SMEs. In the previous chapter, I presented the findings of the study. The objective of this chapter is to deliberate on these findings, explaining how they support or refute previous studies. That is, the findings are discussed with respect to the existing literature. The chapter shows how this research develops knowledge to the literature on managing risks in SMEs. This chapter contains four sections. Before delving into the findings of the study, in section 8.2 I propose rethinking our approach to how we study managing risks in SMEs. This section builds up to understanding the positioning and the perspective from which the findings of the study are discussed. The different perspective highlights how the findings of the study contribute to the existing knowledge. Section 8.3 discusses the findings of the study that relate to the first research question. In it, I discuss how owner-managers in SMEs approach their risks. The third and fourth sections relate to answering the second research question. In the third section 8.4, I discuss the answer to the second research question, reiterating on the findings that describe what shapes the owner-managers' decisions on how to approach risks. In section 8.5, I discuss the non-rationality of the owner-managers in how they approach risks and how they make their decisions on the approach they take.

8.2 Rethinking risk management

In the previous chapters, I reviewed the literature on risk and risk management in SMEs. The review showed that the body of literature on risk management in SMEs is limited, and places great emphasis on formal risk management process. There is a consensus in literature that SMEs often do not apply such processes (Blanc Alquier and Lagasse Tignol, 2006; Brustbauer, 2014; Islam and Tedford, 2012a; Smit and Watkins, 2012; Verbano and Venturini, 2013). This is often attributed to the

incapability of SMEs to adopt risk management frameworks; specifically, due to their resource, financial, and time limitations. Nonetheless, suggesting these limitations are the main reason why SMEs do not apply risk management strategies can be logically questionable. Sunjka and Emwanu (2015) describe this as a "perception" of risk management incapability. For instance, resource limitations are often interpreted such that SMEs do not have the resources to apply risk management. Nonetheless, it can also be interpreted as a low perceived priority (or value) of such strategies, where these resources are preferred to be allocated to other activities. After all, if, say, regulations forced the company to have such strategies, then these limitations would stop being an issue.

Risk management is indeed resource draining and requires a restructuring of the organisation. Being able to identify, assess, mitigate, and monitor risks requires a system embedded within the structure of the organisation. However, the growth of risk industry is dragging all organisations to adopt a risk management strategy and, in many ways, forcing them to subscribe to the industry. However, what about those organisations that are not in favour of such restructuring and resource allocation? What about those who want to *build city-walls* and are not much concerned about responsibility and accountability?

Risk management is a methodical, objective, and bureaucratic process that aims to manage and control risks. This process eliminates – or attempts to reduce – human errors and subjective judgement. In large organisations, such processes might be valuable to maintain control and accountability within the organisation. Nonetheless, SMEs tend to neither be strictly systematic, nor explicitly follow established procedures (Vossen, 1998). As Corvellec (2009, p.301) argues, mechanically implementing risk management models could "destabilise and disturb existing practices of risk management", and could even increase the risk to which the organisation is exposed. In organisations susceptible to risks, such as SMEs (Smit and Watkins, 2012), Corvellec's argument is even more likely to hold. SMEs tend to be resilient (Coltorti, 2006; Sullivan-Taylor and Branicki, 2011) and plastic (Bartz and Winkler, 2016; Poon and Swatman, 1995) and are likely to recover from disturbances easier than large organisations (Falkner *et al.*, 2015). However, these characteristics are a result of their own operational, strategic, and structural nature (Sullivan-Taylor and Branicki, 2011). Changing these natures, by mechanising management of risk,

would make these small organisations more rigid and large-firm-like, losing their resilience and plasticity; thus, increasing the damages caused by improper implementation of risk management, and probably disturbing how they operate – leading them to failure.

However, several studies have suggested that small businesses often fail due to their lack of risk management planning (Islam and Tedford, 2012a; Virdi, 2005; Zacharakis *et al.*, 1999). Exploring the impact of managing risks on the businesses was not the focus of this study. However, an observation can be made regarding this matter. Many of the participating companies have been in business for more than 20 years – which, within the Jordanian context, makes them established companies – and most of them are doing relatively well or well-enough, according to the owner-managers. Thus, for the owner-managers, their companies are not failing despite not having risk management strategies.

Reiterating on this point, I discussed in this thesis the philosophy of risk. The objective view dominates the literature on risk and risk management. Thus, I intentionally emphasised the subjective nature of risk to contrast the dominating objective view with what I believed – supported by several studies – to be more adept to speaking to risks in SMEs. To clarify, although the literature on risk and risk management is dominated by the assumption that risks are real and should be objectively and probabilistically measured, risks – I believe – are more subjective and socially constructed in real life. I argued that, for a non-specialist like most owner-managers of SMEs, the notion of probability and probabilistic risk could have little or no meaning outside complex and sophisticated objective models. More importantly, studies have shown that people tend to reject these objective models when they perceive risks differently. That is, when the owner-manager of an SME has a certain perception of risk different to what probabilistic measures would suggest, they are likely to reject these measures and the normative models of risk management.

Nonetheless, the literature on managing risks in SMEs showed several gaps and problematic assumptions. As I discussed in Chapter Three, the literature mostly focuses on formal Risk Management strategies in SMEs. For example, Islam and Tedford (2012a), Kim and Vonortas (2014) and Gao *et al.* (2013) focused on studying the implementation (and failures in implementations) of risk management strategies

in SMEs. Authors such as Marcelino-Sádaba *et al.* (2014), Pérez-Ezcurdia and Marcelino-Sádeba (2012) and Turner *et al.* (2012), tried to modify and simplify risk management strategies tailored to the needs and abilities of SMEs. Nevertheless, most studies have ignored the informality and subjectivity of such companies – thus imposing a formal process onto informal organisations.

I would argue that holding the same objective view of risk and prescriptive approaches used in risk management research might not be an appropriate approach to understand management of risk in SMEs. Suggesting that SMEs are reactive to risk simply because they do not conform to the normative and rational assumptions of risk management would limit our knowledge about management of risk in SMEs, and restrict research from actually learning such knowledge. Existing research tells us that SMEs often eschew adopting risk management strategies – not formally, at least. However, it is limited in understanding how they actually behave toward risks. Gilman and Edwards (2008, p.531) explain that "it is now widely accepted that small firms need to be studied in relation to how they behave, rather than contrasting practice with an idealized image of what they should do". The question that can be asked here is: why is research trying to 'impose' formal methodologies on organisations that are not particularly formal? The answer does not lie in asking whether they could apply such formal approaches, but whether they would do so. Most studies on managing risks in SMEs are focused on what SMEs '*Should'* do and are based on the answer to the *'Could they'* question, instead of the '*Would they'*. When studying managing risks in SMEs, we should, I argue, rethink the assumptions held by risk management research, such as the objectivity of risks and the rationality of managing them.

Understanding the subjectivity and non-rationality of how SMEs manage their risks could help us build some guidance for those companies to *adapt* and use as a base to build their own suitable methodologies for managing risks; methodologies that not only they 'could', or 'should', but also *'would'* adopt. In other words, research on managing risks in SMEs should, like I did in this research, question the assumptions of risk management, and acknowledge that these assumptions do not hold in practice.

Corvellec (2009) recommends and emphasises the necessity of "listening to the practice of risk management, even if it is silent or close to it" (p.301). By 'silence', Corvellec refers to the inapparent nature of how some organisations manage risks. To

use Corvellec's (2009, p.300) words, "management of risk in organisations is richer in forms and nuances than as thus far conceived in risk management". Focusing on how managers apprehend, and comprehend, risks in real-life would give new insights for risk management research and practice (Corvellec, 2009). Most studies on managing risk in SMEs adopt a top-down approach, testing and applying theories for large firms on small firms. However, "a small business is not a little big business" (Welsh and White, 1981). Penrose (1959) describes the difference between small and large firms as the difference between a caterpillar and a butterfly. Although a small firm can grow into a large one, the latter is not simply a larger version of the former (Curran and Blackburn, 2000). Large and small companies do not only differ in infrastructure or resources, but they also differ in perception, understanding, and perceived value of both risks and managing them. What happens in a large business through bureaucratic procedures through layers of organisation often happens through a small team, or even a single person in small businesses. Managing risks in SMEs is part of doing business, done by the owner-manager, shaped by their perceptions and structures of the environment, and it should be studied as such.

8.3 Approaching risks in SMEs

In Chapter Three, I discussed studies attempting a 'descriptive' approach to identify different techniques small businesses use to manage their risks. Authors such as Smallman (1996) and Henschel (2010) have developed descriptive typologies of managing risks in SMEs. However, their studies do not look beyond the formality risk management; beyond its abstraction and into the experience of managing risks. Other studies have identified some 'most used methods' SMEs use to deal with risks (e.g. Gilmore *et al.* (2004) show that small businesses rely on their networks, and Thun *et al.* (2011) identified some common supply chain risks in SMEs along with the common methods used to deal with them.). Others, such as Islam *et al.* (2012) have identified some 'disturbances' manufacturing SMEs face, and their major root causes and consequences. However, those studies assume that those methods should fit all companies (within the scope of their study) regardless of their context. This study attempted to take a different approach to understanding how risks are approached in SMEs. It focused on the owner-manager, acknowledging that managing and approaching risks go beyond the limits of formal risk management strategies.

A few previous studies (e.g. Gilmore *et al.*, 2004; Kim and Vonortas, 2014; Thun *et al.*, 2011) have identified some methods and techniques SMEs use to manage risks, but none have looked into how these methods and techniques are used (outside the formal processes of Risk Management (e.g. Henschel, 2010)). Nonetheless, these methods and techniques can be industry, situation, circumstances, company, and risk specific. They also assume managing risk is a static process where one risk is statically managed in one way – and vice versa.

In this research, I conducted a qualitative study on approaching risks in SMEs, focusing on the owner-managers' account. Interviews with 31 Jordanian companies were conducted, and the data were analysed thematically and presented in the previous chapters. The first part of the analysis focused on answering the first research question:

Research Question 1: How do owner-managers of small- and medium- size businesses approach their risks? Specifically, what approaches do they take towards risks in their businesses?

In Chapter Five, I provided a description of the nuances of how owner-managers of SMEs approach their risks. I focused on *approaching* risks, because I describe how the owner-managers think about, make decisions, and take actions toward these risks instead of describing specifics of methods, techniques, or strategies. Focusing on *approaches* allowed me to understand the flow from thought, to decision, to action, while a method or technique would have restricted me to the actions of managing risks.

Contrary to the consensus in previous research (Brustbauer, 2014; Islam and Tedford, 2012a; Smit and Watkins, 2012; Verbano and Venturini, 2013; Virdi, 2005), the findings of the present study have shown that SMEs are not particularly reactive to risks; and when they are, they are not always oblivious to them. SMEs often approach risks informally, and from the owner-managers' perspective, these approaches are part of their business. In the previous chapter, I identified three broader themes that cover 11 approaches to risks that owner-managers take.

The study has shown that owner-managers of SMEs would approach risks by approaching the possibility of them occurring. That is, they would avoid risk or

eliminate risk by not allowing the company to engage in activities that could create them. Risk management frameworks propose risk avoidance or risk elimination as strategies to mitigate risks (Hopkin, 2010; Moosa, 2007). However, what these frameworks suggest often refers to a formal decision made within the company. For example, the owner-manager would make a decision not to participate in a particular project based on the probabilistic measures of risk. However, although the owner-manager might make such a clear decision, they might also avoid risky projects without actually making that decision. They might, for instance, only choose projects that do not have high risks – without having a decision to avoid risky ones. They might also choose to prevent risk, not necessarily by lowering any probabilistic measures, but by taking actions that lowers their subjective evaluation of risk. These actions might not be documented or explicitly declared as actions targeting the likelihood of risks. This finding supports what has been implicitly suggested in some previous studies. For instance, Gilmore *et al.* (2004) suggested that SMEs check new customers by gathering information from their network to make their decision on whether to make business with them. Thun *et al.* (2011) suggested that some SMEs deal with high-quality suppliers which prevents the risk of poor supply. Sunjka and Emwanu (2015) found that owner-managers of SMEs create a sense of 'family' environment within the company to increase employee loyalty and prevent risks such as employee turnover or misconduct.

Similarly, this study has shown that owner-manages of SMEs approach risks by approaching their consequences. That is, they engage in activities – whether purposefully or not – that could lower the impact of the risk on the company. For instance, they might hire extra employees to protect the company from an employee leaving and interrupting the work. They might have redundant employees or workers doing the same job, like operating a machine, thus on one hand training the employees and keeping them occupied, and on the other hand ensuring that if one of these workers left the company or took a leave the work would not stop. Some studies have found SMEs taking some approaches which relate to the findings of this study. For example, Thun *et al.* (2011) found that SMEs would keep safety stock, or would have over-capacity in production or storage, or would have multiple suppliers. The authors called them 'reactive instruments', not acknowledging the actions and decisions required proactively. Alternatively, the study has found that, in many cases, the owner-

managers would rely on some aspects of the company to deal with the consequences of risk. What is special about this is how the owner-managers do not specifically designate these aspects, or resources, to manage the risk, but they rely on them being available to them as part of their business. For instance, when own-managers reply on their relations to deal with risks such as a delay in delivery, these relations are not dedicated to dealing with the risk. There are no planned actions or decisions. The owner-managers, however, believe these risks are 'managed' or 'controlled' because they believe that what they have, for example these relations, would be sufficient to deal with the risks should they happen. Gilmore *et al.* (2004) found that SMEs use relations and connections to deal with risks, while Sunjka and Emwanu (2015) found that SMEs use their relations and collaborate with competitors when needed to ensure business continuity. The findings of the present study expand on these existing findings by highlighting the 'pre-determined' and the 'undetermined' ways in which owner-managers of SMEs approach the consequences of risks.

Nonetheless, the study has shown that SMEs can indeed be reactive to risks. The owner-managers would sometimes choose not to deal with the risk until it actually happens. This is consistent with what is suggested in the literature, but, as I have shown, SMEs mostly not reactive to risks. In the cases where the owner-managers would react to risk, they would either believe that the risk is unlikely to happen or that taking any actions towards the risk would not be useful – either because the cost of taking any actions would be higher than the consequences, or because they believe the risk cannot be controlled and what is meant to happen will happen. In a way, this is similar to what Smallman (1996) described as event push – where actions are 'pushed' reactively based on events, which he also related to a fatalistic view on risk (where risk is an outcome of fate).

The study has shown that owner-managers would sometimes accept the risks, whether by accepting that the risk could occur and not do anything about it, or by accepting that the risk has consequences and they choose to bear them. This is consistent with one of the risk response strategies suggested in the different risk management frameworks (Hopkin, 2010; Hubbard, 2009). However, the difference here is that this acceptance is not formalised and finalised. That is, when following a formal risk management framework and accepting the risk, this risk and its consequences will be accepted and accounted for in the company records. For

instance, accepting the risk of losing a customer becomes part of the losses, and usually no further actions are taken. The study has shown that, in many cases, although the owner-manager would accept the risk before it happens, they would attempt to react to it when it does. They might also adapt, and make changes within the company to accommodate the consequences of the risk.

It is important to clarify that these findings do not suggest which approach to risks are successful, effective, or best to take. These findings describe what owner-managers do in the real world, their success or effectiveness are beyond the interests of this research. In Chapter 4 I discussed Funder (1987, 1995) and Bowen (1987) talking about comparing judgement to rational decisions. I argued that such a comparison would divert the focus from the subjective judgement to a focus on the accuracy of those judgments. Similarly, focusing on the successfulness or effectiveness of these approaches would have diverted the focus of this study from describing how owner-managers of SMEs approach their risks to judging and evaluating these approaches – be it in data collection or data analysis.

8.4 Shaping the owner-manager's decision

In the previous section, I discussed the findings of the study that related to describing how owner-managers of SMEs approach their risks. In this section, I discuss what shapes these decisions. In the following section, I discuss how the owner-managers make their decisions on how to approach risks. In these two sections, I aim to answer the section question of this research:

Research Question 2: Why do owner-managers approach risks the way they do? Particularly:

1- **How do owner-managers decide on how to approach risks?**

2- **What shapes and informs the owner-managers' decisions on how they approach risks?**

I will start by discussing the second part of this question, as it would help in the discussion of the first part. The research aimed to understand how owner-managers of SMEs make their decisions on how to approach their risks. I was interested in understanding what shapes these decisions. There is a lack in literature on the role of an SME's owner-manager in managing risks (Sunjka and Emwanu, 2015). When

saying the role of the owner-manager, I do not mean their role in the execution of managing risks but in the making of the decisions on how to manage them. This study was designed to delve into the thought process of owner-managers, allowing me to have an insight into how they come to these decisions, and what influence them to approach their risks the way they do.

I have shown in the study that owner-managers approach risk based on their perception. Owner-managers perceive risks and the way they would approach them subjectively, and these perceptions shape how they approach these risks. This finding supports what Sunjka and Emwanu (2015) found in their study on informal risk management practices. They found that the informal risk management practices in SMEs are directly based on the owner-manager's perception of risk. Research on risk-taking also place risk perception at the core of risk behaviour. Sitkin and Pablo (1992), for example, explicitly signify the role of risk perception as a determinant of risk behaviour, and March and Shapira (1987) found that managers often do not rely on quantitative measures of risks to make their decisions but rather on their subjective judgement.

As expected, the owner-managers seemed to evaluate risks and how to manage them subjectively (Smit and Watkins, 2012; Sunjka and Emwanu, 2015). There was very little and questionable evidence suggesting quantification or measures of probabilities. Consistent with findings in literature (e.g. March and Shapira, 1987), I found that the owner-managers do not deal with risks in numbers, they do not quantify them, but they deal with them based on their perception. Although a few participants talked about "calculated risks" or, in some cases, assigning percentages to them, these numbers were not based on mathematical or probabilistic calculations. Participants either related these numbers to the potential monetary consequences of risks or costs of managing them, or arbitrarily put a number to reflect their perception of risks. Risk Management standards emphasise the assessment of risk – often quantitatively (Hopkin, 2010). Quantitative risk assessment is based on the likelihood and impact of risk (Rausand, 2011), which is consistent with the findings of the present study that the owner-managers' perception of risk likelihood and consequences shape how they manage risks. Thus, it was expected to see that the assessment of risk plays a major role in how it is approached. However, the findings show that what matters – for the

owner-manager – is their evaluations and perceived views of risks (de Finetti, 1974) instead of the accuracy of these views (Funder, 1987, 1995).

The owner-managers' decisions and their own perception of risks and of how they would approach them are shaped by the structures of the environment that surround the decision. That is, as suggested by bounded rationality (Gigerenzer and Selten, 2002a; Simon, 1972), the owner-managers use these structures of their environment, knowingly or unknowingly, to shape their decision.

The owner-managers rely on the past to make their decisions. That is, the owner-managers' knowledge about the past would shape their perception of risk. They would, for example, recall previous incidents to evaluate the risks, or assume that the past would repeat itself. This is consistent with what Kahneman and Tversky (1979), Sitkin and Pablo (1992), and Aven (2018) propose, which is that past experiences affect decisions and risk-taking behaviour. Kahneman *et al.* (1982) specifically described Availability heuristic, in which one would evaluate risks based on the ease at which they can recall past or similar incidents. This can also relate to what Goldstein and Gigerenzer (1999) called Recognition heuristic, or what Sitkin and Pablo (1992) called familiarity, where one would relate to past experiences with which one is familiar, or can recognise. This is what we saw when participants like Martin explaining that his approach to risk will work because it has been working for several years.

The past is the historical environment which shapes perceived regularities (Kahneman, 2011; Kahneman *et al.*, 1982; Sitkin and Pablo, 1992). Kahneman (2011, p.137) suggests that "Societies have tracked the high-water mark of rivers that periodically flood – and have always prepared accordingly, apparently assuming that floods will not rise higher than the existing high-water mark. Images of a worse disaster do not come easily to mind". In other words, we are both limited and informed by our past experiences and knowledge of history. Literature on risk and risk analysis also often use frequential probabilities (Hopkin, 2010; Hubbard, 2009), which measure probabilities based on how many times an incident has happened in the past.

The owner-managers' decisions on how to approach risks is also shaped by interpersonal and organisational affordances. I use the term *affordances* as coined by Gibson (1979, p.127), who suggests that "The affordances of the environment are what

it offers the animal, what it provides or furnishes, either for good or ill. […] I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment". I use the term affordances the way Breakwell (2014) uses it, meaning what the structures of the environment can provide the owner-manager – or the complementarity of the owner-manager and the structures of the environment – at interpersonal and organisational levels. The affordances that I found in the study were grouped in three groups. The first group relates to the competence and capabilities of and within the company – that is, the perceived abilities within the company to deal with, create, or prevent risks. The second group relates to interpersonal two-way connections, such as relations, trust, and reputation, be it within or without the company. The third group relates to the influence of others, who are relatively unrelated to the business or the risks (such as social and normative pressures), on the decision – which is mostly a one-way connection.

I found that owner-managers gather information through their relations and networks (Gilmore *et al.*, 2004; Kim and Vonortas, 2014; Sunjka and Emwanu, 2015), and that they build trust and maintain transparency with employees and customers to approach risks (Sunjka and Emwanu, 2015). I also found that subjective norms shape how the owner-managers approach and perceive risks (Sitkin and Pablo, 1992). As suggested in literature, these findings show that these elements, or affordances, whether interpersonal or organisational, are sources of information and knowledge. However, I also found that they can be perceived as causes of risks, solution to them, or models to observe and learn from. For instance, Gilmore *et al.* (2004) found that SMEs rely on their relations to gather information about the market and new customers. However, the findings of this study show that owner-managers rely on these relations to approach risks as well. On one hand, they rely on these relations to deal with risks when they happen, but also their decisions are influenced by these relations.

I found that trust and transparency are not only used for gathering reliable information, or as a mean to reduce risks (Sunjka and Emwanu, 2015). Trust and transparency also influence the owner-managers' perception. Owner-managers who trust their employees would lower their perception of related risks and believe that their employees would indeed be able to put the effort to deal with certain risks. In

contrast, when there is lack of trust, the owner-managers find themselves personally involved in the business operations, not only worrying that their employees would not be able to handle the risks, but sometimes cause them. Several owner-managers in the study suggested that they are personally involved in or keep a close eye on their business and workers – mostly because they do not trust their employees, or they do not consider them competent. This finding expands on what Gilmore *et al.* (2004), Sunjka and Emwanu (2015) and Sitkin and Pablo (1992) have found by expanding our understanding of the role of these affordances.

Finally, the owner-managers' decisions are shaped by their own outlook. That is, the owner-managers themselves influence how they approach risks (often irrelevantly to the risks considered). The influence of the owner-manager (or risk manager), beyond their perception, is dismissed in risk management research. Yet, the owner-managers were found to influence their decisions in two ways. First, by having certain tendencies or propensities, which lead them to have certain patterns in how they perceive and approach risks. For instance, some might have a tendency to perceive risks as high, believing that if something could happen then it will (Smallman, 1996). This reflects Sitkin and Pablo's (1992) model of risk behaviour – where they suggested that risk propensity influences risk behaviour and risk perception, or Slovic (1972) suggesting that people sometimes revert to certain routines and habits. Therefore, the owner-manager might elevate or lower their own perceptions based on their tendencies and propensities (Sitkin and Pablo, 1992), or they might routinely lean towards or avoid certain ways to approach risks (Goldstein and Gigerenzer, 1999; Slovic, 1972).

The second way in which the owner-manager might influence how they approach risk is by certain cognitive inconsistencies (Cooper, 2007; Festinger, 1962). That is, they might perceive risks one way, concluding how they should approach them, but such conclusion might conflict with other beliefs, attitudes, or objectives. They might also make their decision based on that conclusion, yet find the need to justify it and explain that the decision was the right one to make. This kind of inconsistency mostly related to the financial cost of how the owner-managers think they should approach these risks, where certain approaches to risk might be in conflict with the aim of making or saving more money. This kind of inconsistency was found to sometimes cause a level of denial (so to speak), like it was seen in the case of Rafat

who, to some extent, trivialised the risks caused by allowing his workers to smoke near flammable materials, which can be objectively described as very dangerous.

At this point, I have to acknowledge two findings that appeared in the data but were not presented in the study. These findings were not presented as I did not have sufficient evidence to support them, mostly because the study was not designed to capture such evidence, not because these 'pseudo-findings' are invalid. First, I saw that how they owner-managers approached their risks, and the decisions they made, might have been influenced by their culture. That is, the culture of Jordan might have played a role in how they perceived risks, or in elevating the influence of the other findings. For example, in cultures where trust is a virtue, and an insult not to give the benefit of the doubt, trust might have played a positive role in approaching risk. In contrast, in cultures where trust is hard to earn, it might have had a more negative impact. Relations in Jordan, for example, are very important, and, as I explained in earlier chapters, family plays a big role in Jordanian culture. However, as this study was not a comparative study and as it did not have a cultural perspective, it was not possible to isolate the cultural element to fully understand it.

The second pseudo-finding pertains to the political and economic instability in the region. At the time of the study, Jordan was surrounded by political and economic turmoil in its neighbouring countries. This turmoil had created a level of turbulence in Jordan, having some negative effects (such as affecting exports and imports) and positive effects (such as growing the local market due to jumps in the population). However, I was unable to present this as a finding as the study would have needed to be designed in a way to focus on these turbulent times. I would argue that these two findings would be an addition to the findings of this study with further research. Factors such as the political and economic instability would not have affected the results of my study. They might have elevated the relationship between the different findings (such as increasing the perception of risk or the importance of saving money) but they would not have altered the findings themselves. That is, the owner-manager might, for example, perceive risks differently, but their decision will still be shaped by their perception of risk regardless of the stability in the region.

8.5 The non-rational owner-manager

The findings of this study have shown that owner-managers of SMEs do not approach their risks rationally – that is, they did not conform to the notion of rationality. They cognitively evaluate the situation based on their perception of risk and how they would approach it within the extends of their cognitive limitations. Authors such as Aven (2018); Aven and Krohn (2014), Hansson (2010), and Corvellec (2010) have criticised research on risk management for dismissing that subjective element of managing risks. The context and environment of the risk, the company, the industry, and the owner-manager play a major role in shaping how these risks are approached. I constructed a framework that demonstrates what shapes the owner-managers' decisions and the relationships between the findings.

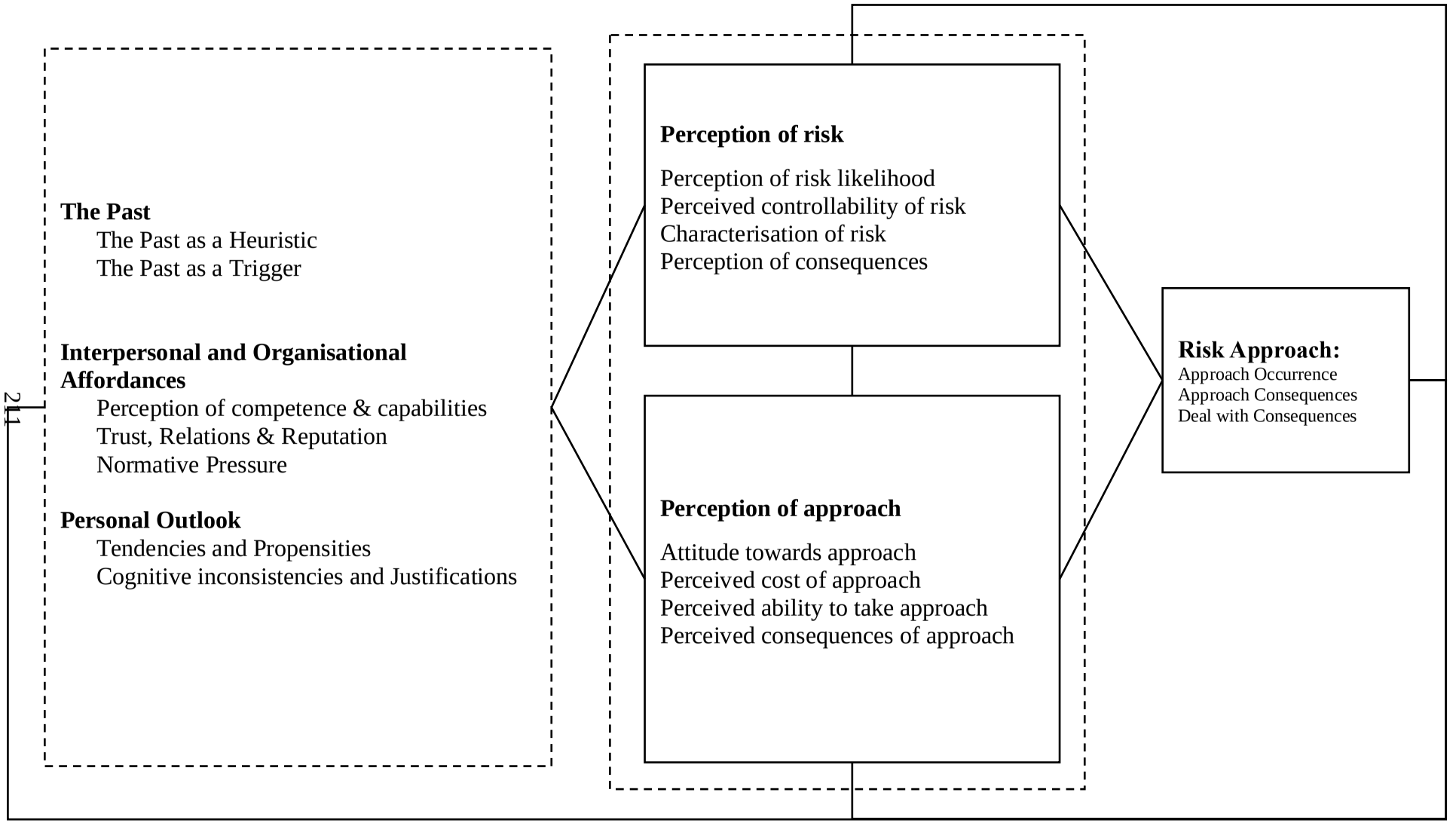


Figure 15: Thematic map presenting the findings of the study and the relationship between them

The findings of the study have shown that owner-managers make their decisions on managing risks heuristically: that is, their decisions are subjective, and based on their perceptions, beliefs (Kahneman *et al.*, 1982; Sitkin and Pablo, 1992), and experiences (Gigerenzer and Goldstein, 2011), and regularities and patterns in their environment (Gigerenzer and Selten, 2002a; Simon, 1972) – be it interpersonal, organisational, or social. It has also shown that sometimes the owner-managers make decisions that lean toward irrational forces, created by inconsistencies in or misled perceptions, information, beliefs, or objectives (Festinger, 1962).

Referring back to Langley *et al.* (1995), the study has shown that approaching risks and the decisions to do so are not reified: they not necessarily made at a specific moment of time (Langley *et al.*, 1995), but were being developed in the minds of the owner-managers, shaped by their experiences, perceptions, and environment. They are a continuous development of thought – leading to actions. They are also not isolated. The owner-managers do not consider risks or their decisions in isolation of each other, nor in isolation of other activities and decisions of the organisation, or the organisation itself. Approaching risks and the decisions on how to approach them are embedded within and woven into the organisation, the owner-manager, and their environment. Thus, research on managing risks should not assume that these processes are isolated or identifiable by a beginning and an end but are rather dynamic and continuous processes. The decision-making process is not a one-way process; that is, although decisions are shaped by perceptions and beliefs, the latter are also shaped by the decisions such that their perceptions, beliefs, decisions, and behaviours would have a level of consistency. This dynamic, multi-layered and multi-causal nature of how owner-managers approach their risks highlights the complexity of managing risks in SMEs. This complexity – as I argued earlier – surpasses the dismissive assumption that SMEs are reactive to risks simply because they do not apply risk management strategies.

8.6 Chapter Summary

In this chapter I discussed the findings of the research. I started the chapter by providing a discussion for taking a different perspective when studying management of risk in SMEs. I highlighted the criticism in literature on risk management, and emphasised that the existing risk management research does not take into

consideration the characteristics of SMEs. I proposed rethinking risk management when researching it in SMEs. I discuss acknowledging the informality of SMEs in managing risks, and the need to understand the subjective judgement of the owner-manager in approaching them. I then discuss the qualitative study conducted to answer the two questions of this research relating the findings to the existing literature. I discuss how owner-managers of SMEs approach risks, I describe three approaches to risk and how these approaches relate and add to the existing literature. I then discuss the second research question, focusing on why owner-managers of SMEs approach risks the way they do. Relating the findings to the existing literature, I discuss how the owner-manager's perception of risk and of how they would approach risk shape the owner-manager's decision. I also discuss how the past, interpersonal and organisational affordances, and the owner-manager's outlook shape how owner-managers of SMEs approach their risks. Finally, I use the findings of the study, and the thematic map developed during the analysis of the data to describe the relationships between the findings, thus demonstrating the non-rationality of how the owner-managers approach risks and make their decisions.

The discussion in this chapter highlighted how the findings of this study expand the existing knowledge in the literature. On one hand, by providing a different perspective to studying risks in SMEs, the study draws a different picture to how SMEs approach their risks. On the other hand, by acknowledging the informality and subjectivity in SMEs, the study provides broader understanding of managing risk that is often overlooked by risk management research.

Chapter Nine:
Conclusions

9.1 Conclusions and recommendations

A few conclusions and recommendations can be made based on the results of this research. Previous literature on risk management in general, and within the context of SMEs in particular, has mainly been focused on the use of formal procedural risk management tools. Such tools, and studies, aim to reduce the complexity of practice and real life to (overly) simplistic mathematical constructs. Such reduction limits our understanding of the reality of how SMEs approach their risks. However, based on the outcomes of this research, it can be concluded that Small- and Medium- sized Enterprises are not reactive to risk. Literature on managing risks in SMEs should acknowledge the informality and subjectivity of the processes in SMEs. Acknowledging the informality and subjectivity of SMEs allowed this research to look beyond the limits of formal risk management. By doing so, I have shown that owner-managers of SMEs approach risks – informally – by approaching their occurrences, by approaching their consequences, or by dealing with their consequences. The way the owner-managers approach their risks becomes part of their business, not necessarily explicitly and overtly expressed in terms of risk.

It can also be concluded that owner-managers of SMEs do not conform to the notion of rationality when approaching risk or when making their decisions on how to approach them. Instead, they make their decisions non-rationally. They base their decisions on their subjective perception of risk and of how they would approach it. They would lean towards using heuristics – intentionally or unintentionally. The owner-managers rely on elements and structures of their environment to make their decisions. These structures of the environment would – consciously or unconsciously – shape their perceptions, and the decisions they make. Such structures of the environment could include the past, interpersonal and organisational affordances (such as trust, relations, experience, competence, and normative pressure), or the outlook of the owner-managers themselves. It is possible, however, to identify further structures of the environment that would play a role in the owner-managers decisions.

Dismissing these findings and the subjectivity and informality of SMEs in researching management of risk in SMEs by (only) focusing on the formal and objective risk management strategies (as the existing literature does) could lead to detrimental consequences in practice. As the outcome of such research would result in producing knowledge and models that are not compatible with the nature of these smaller organisations. Thus, research on risk management in general, and within the context of SMEs in particular, should expand its knowledge and perspective beyond the limits of risk management.

In this research, I proposed a shift in perspective for the study of managing risk, especially within the context of SMEs, and attempted to take a few steps into this new direction. Such shift aims to initiate new debate in the still-young literature, which currently seems to be monotonic and single-view pointed. I argued that to understand managing risks in SMEs we need to build a descriptive understanding of how SMEs manage risks in practice. That is, building knowledge on managing risks in SMEs requires us to start and listen to how they actually *do* manage them. Focusing on the owner-manager with respect to managing risks, I was concerned with how and why owner-managers of SMEs actually approach their risks, rather than focusing on how they should approach them.

9.1 Research contributions

In this thesis, I have provided criticism of the existing assumptions and views of the existing literature. Specifically, I emphasised the need to treat risk as a concept that is socially constructed, conceptualised and approached based on the observer's perceptions instead of being an objective entity independent of those observing it. I also emphasised the need to study management of risk in SMEs not as a formal bureaucratic process, but as a thought process of making decisions. My research speaks to Corvellec's (2009) invitation to listen to the practice of managing risk. It expands the studied conducted by Sunjka and Emwanu (2015), and Gilmore *et al.* (2004). It also complements the study by Henschel (2010) by providing an informal perspective to the typology he proposes. I contribute to the risk management literature by providing an argument to rethink the notion of managing risks in SMEs. I have provided a conceptual argument and empirical evidence that approaching risks in

SMEs goes beyond the hard-evidence limited to documents and formal processes of risk management.

This study contributes to the literature of managing risks in SMEs by providing a descriptive account of how SMEs approach their risks, describing several nuanced approaches to risk. Particularly, it demonstrates that SMEs are not particularly reactive to risks, but informal in how they approach them. I identified 11 ways in which SMEs approach risks, which I abstracted into three broader approaches. The informality of these approaches, and the knowledge the study has presented about them, is an addition to the risk management literature, specifically within the context of SMEs. These findings contribute to expanding our knowledge about how SMEs approach their risks, which – at the time of this research – has remained mostly limited to the views of formal risk management. The study has shown that SMEs make decisions and take actions to mitigate their risks. The importance of this lies in our appreciation of the inapparent – or silent, to use Corvellec's (2009) word – processes of managing risks.

The study has also provided an understanding of the owner-manager's decisions on how to approach risks. It provided a detailed account of the owner-mangers' decisions on how to approach risks. It highlighted the subjective judgement of the owner-manager and identified forces that shape their judgement. I demonstrated that the owner-managers approach risks heuristically and non-rationally, which suggests that the approach to studying management of risk in SMEs in existing research often dismisses a major aspect of the managing risks processes in SMEs. This kind of knowledge has remained alien to the literature on risk management and has not been used to better our understanding of managing risks, despite it being part of risk-taking and decision-making literatures. Thus, I contribute by bridging the study of decision-making and risk-taking to the literature of risk management, generating new – or different – knowledge for the latter. This is important, I would argue, because understanding what drives the owner-managers in making these decisions would allow us to understand the decisions themselves and provide adequate and relevant guidance – be it practical or theoretical – to improve them.

This research also contributes to the broader literature on risk management, by complementing and supporting the small body of research that takes a critical

perspective on risk management. This research acknowledges and embraces Aven (2018) proposal to understand the cognitive side of managing and assessing risks. It provides evidence supporting Van Asselt (2005, p.abstract), highlighting the broader knowledge that can be learnt by empirically researching the "logics, manners and strategies" actually adopted in practice. It also sides by Corvellec (2009) who criticises the focus of risk management research on documentations and records as evidence of managing risks.

This research has some implications to practice of managing risks in SMEs. Recounting in depth the informal practices of managing risks and the forces that shape owner-managers' decisions will allow policy-makers, consultants, researchers and others to design or redesign tools and frameworks for managing risks based on what SMEs actually do and how their owner-managers think, instead of what they think SMEs should be doing. Consultants, for example, could make owner-managers of SMEs aware of how they have come to their decisions on managing risks, persuading them to reconsider these decisions rather than spoon-feeding them prescriptive actions that might conflict with the owner-managers' own judgement. Owner-managers of SMEs could also utilise the findings of this study to understand their own decisions, guiding themselves through their decisions and understanding the approaches they are taking.

The practice of managing risks in large businesses also benefits from this research. Although large organisations apply formalised processes of risk management, it is human beings that implement these processes – often called risk managers. These risk managers still have to make decisions on how to manage risks, albeit guided by a standardised process. This research benefits the broader research on risk management by providing a framework that, with some modifications, could explain these decisions. That is to say, the outcomes of this research help understand how and why would risk officers make certain decisions within the standardised processes of risk management. Rather than relying only on these systemised processes, organisations should also train and educate their risk-managers to be able to understand how they make decisions on managing risks.

Additionally, large organisations are increasingly requiring small businesses within their supply chains to have some sort of risk management. However, large

businesses should accommodate the informal nature of SMEs, and acknowledge that they manage their risks informally. Thus, it is recommended for large businesses, since they have more resources and capabilities than small firms, to take the initiative of translating the practice of managing risks in SMEs into their own bureaucratic risk management rather than requiring SMEs to adopt their own formal processes. This would allow SMEs to operate the way they do and be able to remain in business, thus benefiting both them and the large organisations that rely on them in their supply chains.

9.2 Limitations and future research

The outcomes of this study have implications for future research. In addition to providing evidence for the arguments criticising the assumptions of existing research, it highlights the significance of the owner-manager and their environment in approaching risks. Future research should entertain the evidence that SMEs approach risks in their own ways; which do not align with but are not too alien to the formalised risk mitigation strategies. Approaching risks in SMEs is not solely a matter of the risk itself, nor is it about the capabilities and limitations of the SME. It is also shaped and informed by the environment and the owner-managers' perceptions of it. That is to say, failure to understand the owner-manager and their environment would most probably result in incomplete, if not incorrect, knowledge, conclusions and theorisation about managing risks in SMEs.

This research was not without its limitations, be it in its design, methods, scope, or approach. These limitations should be acknowledged to provide the reader with transparency. However, these limitations do not reduce the efficacy or value of the research, but rather enhance the study by highlighting directions for further research.

My engineering background meant that my knowledge of theories in social sciences prior to starting this research was very limited. This was challenging because I had to work with little sense of direction exploring the literature – be it theories on management or organisations, or the more challenging (to me) discipline of psychology. Nonetheless, and despite the challenge, this meant that I got to acquire a great deal of new knowledge during my journey. I also got to reinvestigate the core theories of the existing literature.

Furthermore, like most qualitative research, the findings of this study are not, and were not meant to be, generalisable. The study aimed to explore the practices of managing risks, building a general understanding of the decision-making process, and identifying different concepts that play a role in it. Further research could build on this study to generate generalisable models to explain how SMEs approach their risks. Although this contradicts my advocacy for understanding meaning and the experiences from the owner-managers' perspective, future research could take a quantitative approach to measure how SMEs approach their risks, and how the forces I have identified would play in this process, thus testing the findings of the present study. A quantitative survey could generate data about the approaches used, the owner-managers' perceptions and beliefs, and the structures of the environment. Factor analysis, for instance, could be used to test the identified risk approaches, and possibly provide a new, or different, categorisations. A different categorisation could allow different interpretations of the findings. The outcomes of this study could also be used to hypothesise management of risks in SMEs. Regression analysis or Structural Equation Modelling could be used to measure the influence and significance of the identified forces on the decisions made. For instance, the risk approaches would be used as the dependent variable, while the owner-manager's perceptions and the structures of the environment would be the independent variables. Some propositions could include:

1- The decision of the owner-manager is directly based on their perception of risk.
2- Previous experience and encounters of risks influence how owner-managers of SMEs approach their risks, mediated via their perception of risk and perception of how they would approach it.
3- Owner-managers' perception of risk is influenced by social and normative influences.

Another limitation to the study stems from its scope. This research focused on SMEs in Jordan (Amman to be specific). Future research could study how risks are approached in other regions of the world. The findings of such research could be compared to those of this study; perhaps highlighting the role of culture and economic environment in managing risks. A replication of this study within a similar or different scope would also be useful. On one hand, a similar research would provide further

validity to the findings of this study. On the other hand, different interpretations of the raw data could provide a different perspective or compensate for the limitation of a single-researcher analysis. It would be interesting to see what Sunjka and Emwanu (2015) have found in their research. The findings of my study could be expanded as well. Other risk approaches and forces that shape the owner-managers' decisions could have been overlooked either in the analysis or by the design of the study. Such expansion would aim to draw a fuller picture of managing risks in SMEs. Additionally, the study focused on Jordan as its context. Nonetheless, in the past years, Jordan has gone through some turbulent times given the political and economic instability in the region. Yet, business in Jordan cannot be defined by this turbulent environment. Future research would focus on the role of such turbulent environment on how SMEs approach their risks.

Additionally, all but one of the participants were males – mostly due to the male-oriented culture in Jordan. Future research could conduct a similar type of research focusing on female owner-managers. Research on risk-taking (Byrnes *et al.*, 1999; Charness and Gneezy, 2012) and risk perception (Flynn *et al.*, 1994; Gustafsod, 1998) based on gender shows some differences between men and women. It would be interesting to conduct this study with a female focus – or gender-diverse focus. A comparative study could be used to identify any patterns or differences between male and female owner-managers.

Additionally, in this study I focused on how SMEs approach their risks solely from the owner-managers' perspective. That is, the outcomes of the study demonstrate what the owner-managers believe they do or would do to approach risks. The study, by design, did not focus on the actions and behaviours of the SME to approach risk. That is, it did not focus on the operational activities of the SMEs that lead to the management of risk. Future research would study these activities to provide an account of the behaviours of SMEs on how they approach risks. Such research would need to be longitudinal or involved in the activities of the SME observing the owner-managers' decisions materialise. Focusing on documentations and recorded decisions or actions would not provide sufficient understanding of these activities, given that, as demonstrated in this study and as suggested in literature, these activities are often informal and do not make it into the companies' records. Furthermore, the study did not focus on the outcomes of how these SMEs approach their risks. That is, it did not

focus on whether the owner-managers succeed or fail in controlling their risks. Therefore, the outcomes of this study cannot be used as an instructive guideline for SMEs on what would be effective methods to approach risks. Future research could focus on the effectiveness and factors of success for the approaches owner-managers take that could guide owner-managers toward taking effective approaches.

9.3 Final remarks

To conclude, there is a lot more to be done. This is both the end and the beginning. My research is but a few steps toward building an adequate body of research on managing risks in SMEs: a body of research that is both theoretically sound and is befitted to speak to the practice of managing risk in SMEs. If nothing else, my research should be seen at least as a proof of concept that is looking at managing risks in SMEs differently and will notably show us things we were not able to see before. Hopefully, future researchers would pick on the findings I presented in this thesis. I hope that some researchers might be intrigued by some of the arguments I made. I also hope that more researchers, like I did, would feel challenged to take a step into the dark (Langley *et al.*, 1995) and avoid uncritically accepting the assumptions of mainstream literature. Taking this challenge allowed me, I believe, to build deeper understanding of managing risks in SMEs compared to what I would have built had I abided by the rules. Questioning the assumptions of risk management literature allowed me to provide evidence that SMEs are not reactive to risks, and that their limited resources and capabilities do not prevent them from managing their risks. Breaking the fascination with accuracy, optimisation, and objectivity allowed me to understand how owner-managers of SMEs think about risks. Challenging the assumptions of existing literature and conducting this research made me believe, with confidence, that Small- and Medium- sized Enterprises should not be driven to subscribe to the growing risk industry as it currently stands. The owner-managers of SMEs should be aware of their perceptions of risks, their organisations, and other elements of their environment when they commit to their decisions on managing risks. Finally, a more diverse research philosophy is needed in the literature on managing risks in SMEs.

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Appendix 1 Key Literature Summary

Authors	Methodology	Key focus	Key findings	Key points and remarks
Brustbauer (2014)	Quantitative	Structural model for ERM in SMEs	* Entrepreneurs perceive risk as a negative outcome not as a probability. * Perception of risks and ability to manage them influence approach then for risk-management. * Many SMEs face difficulties implementing ERM * Classify managing risk as Active (offensive) or Reactive (defensive) * Implementation of ERM is mostly driven by firm characteristics	* managing risk has become a prerequisite as organisations are operating in a more dynamic and complex context.
Henschel (2010)	Mixed: Questionnaire (314) and interviews (38) Study based on Smallman 1996 proposal	Used Miles & Snow's typology of scheme (Reactor, Defender/Prospector, Analyser). This typology was at firm level. It adopted a holistic risk management view. Management behaviour, Business planning, Performance management, and risk management (process, organization, projects). The study is based on the paradigm that good business planning is vital for managing risks	* Three types of management practices: reactor, defender/prospector, and analyser * provided propositions to how to overcome each type's risk management deficiencies * a significant relationship between ATO (and size) and risk management organisation * Being part of a group has a significant (at 0.1) relationship with RMO * Being audited has a sig rel. with RMO * Early warning system has a significant relationship with RMP, RMO, and PRM. But, although having an established system has a higher average than planned and not planned systems, not having a planned system scored higher than planned for both RMP and PRM.	Evaluated the use of RM based on 2 aspects, process and organisation, and a third (project) if the company was project based. Process was evaluated based on 5 questions: types of risk, how often risks are identified and evaluated, time horizon for reviewing risks, how the BoD is informed, and link between RM and business planning. Organisation is evaluated based on 6 questions, The study focused on categorising firms into types based on the level of applying a systematic RM process (mainly focusing on formalisation and standardisation in approach), it also linked the application of RM process to higher sophistication of business plans and performance management. The study categorised the firms based on clustering them, identified patterns within each type, and provided suggestions to improve the application of formalised RM processes based on the characteristically patterns of each type. * Study is made at Firm level, yet a firm might deal with different types of risks differently. * It has many assumptions. It assumes a coherent and consistent perception of risk and risk management across the sample. It assumes that all companies have a job positions in the questionnaire (i.e. if a company does

				not have a board of directors, they would not choose board of directors). * The study mainly focuses on having an established process. The evaluation measures mainly focus on formal issues (such as the reporting system used to inform the BoD). It also MAINLY evaluates RM based on the identification and evaluation of risks, with much less focus on the response/treatment process (except for the planned RM investment, * The study does not investigate why would a firm belong to one type or another
Hollman and Mohammad-Zadeh (1984)	Conceptual		Hollman's paper discusses risk management in SMEs. "Risk management […] involves the application of a logical decision-making process that is designed to enable the small business owner to cope with the risk of accidental loss." (p.55) "The effective functioning of a small business requires that loss exposures be identified, measures, and treated. The way that these exposures are handled is called risk management, and the decision-making process that is followed in finding the least costly way of protecting the firm against accidental losses is called the risk management process." (p.47) Described Risk Management as a logical and orderly process.	Provided a framework for the process, which is more or less consistent with other frameworks. The framework considers multiple types of risks (yet not holistic), and includes financial risks along with operational risks (yet not specified as the concept had not existed yet). The paper claims to focus on Risk Management in Small businesses, however it does not provide any insight or consideration of small businesses characteristics (in comparison to large businesses). and eventually proposes that small businesses that are unable to handle risk management processes should seek assistance in the process; which defies the whole purpose of the paper.
Islam *et al.* (2006)	Theoretical	* Develop a framework for SMEs to apply. Followed by 3 papers in 2012 (not based on this paper though!) * Industry: Manufacturing * Still uses probabilities and objective evaluation of risks and consequences		* Developed a theoretical framework to guide SMEs in managing disturbances. * The framework consisted of 5 steps. Identification of disturbance, Identification of root causes, classification of origins of disturbance causes, risk identification (where the consequences are evaluated), and risk reduction / control / acceptance / avoidance. * Their main focus is on the first step, and decreases as the steps go further. * The last step is barely discussed in the paper. "On the basis of the severity of the consequences, appropriate handling methods will be developed and applied in terms of reduction, control, acceptance or avoidance".
Islam *et al.* (2012)	Questionnaire (31).	* industry: Manufacturing of ready-made garments in	* Identified that the 5 major operational disturbances are: absenteeism, machine	The study proposes an interesting approach to managing risks. Although it does not explore "How" those risks are (or should be) managed or dealt

		Bangladesh * Identified typical disturbances, general root causes, and consequential effects on the business.	malfunction, unexpected Work in Process (WIP), defective products, and frequent changeover in production schedule. * most 6 significant root causes of disturbances are: lack of employee sincerity, inappropriate flow of information, incorrect information, lack of skills, employee turnover, and conflict in priority settings. * identified some consequences of the disturbances, such as losing customers and delayed delivery (to name just a couple).	with, it takes an approach that breaks down potential disturbances into more specific details of what could cause the disturbance, and what would the disturbance cause. Such approach could be used to deal with risks as a combination of cause-disturbance-consequences, rather than risks as holistic abstraction. Nonetheless, in addition to the fact that the study sample was too small for generalisation, the findings and results of the study are too context dependent; utilising a unified "checklist" independent of context to manage risks could be misleading, where risks would become what is on the list, rather than what might actually happen (DRUMMOND)
Islam and Tedford (2012a)	Case Study (5 cases) Developed a model, applied it in the 5 cases, Structured interviews (and other records)	* Industry: Manufacturing * New Zealand * Focus on operational risks * Reconceptualised model based on case study.	* Misconception of operational risk, it is only focused on health and safety hazards * weak recognition of operational risks * lack of information, weak data collection, high focus on business needs rather than potential disturbances, lack of recognition of potential risks and consequences, lack of staff development?, reactive approach to disturbances, no records of previous incidents, no categorical risk assessment * poor knowledge and understanding of risk, and tools and techniques available to manage risks. * executives' perception of operational risks is not clear. * Poor implementation of strategies * Poor evaluation of anticipated disturbances * Poor monitoring of operations * Conclusion: their conceptual model is supported by literature, however the issues that raised from the case studies were not integrated into the model, and no further improvement or justifications were made.	* Most of the findings in the research show poor management of the cases in general. Some measures are taken to manage risks, but those measures are not implemented properly, reflecting poor control and management skills, rather than risk management. * Researchers identified that the organisations perceive "Operational risk" as health and safety hazards (only), and based their analysis on this perception, without digging further (given that risk could be understood in different ways by different people, a deeper understanding should have been established). The use of structured interviews and questionnaires limited the possible findings of the study. * Analysis and data collection were limited to the researchers' definition of "Operational risks". Provided the lack of awareness and understanding of such terminologies, the researchers should have kept an open-mind. One of the cases called risk management "so-called risk management", which reflects strong disbelief in its value, and described it as "health and safety hazards". Yet the same participant showed high appreciation of Crisis management, and described it the same way the researchers defined risk management itself. Yet, this was not even acknowledged in the study, let alone being taken any further. This finding shows that in SMEs, the misconception of risk and lack of differentiation between types of risks implies that risk should be studied as a whole, rather than being divided into types and categories.

			* The conceptual model is based on another paper (Islam 2008, cannot get access to). The paper developed the model based on literature.	
Kim and Vonortas (2014)	Quantitative - Regression. Used AEGIS survey (large database). Across different countries. Focus on Young firms (2-8 years).	Investigate the relationship between being part of a formal network and the perceived level of four types of risk (technology, market, financial, operational (HR only)). And the relationship between adopting a risk strategy for the 4 types, and the perceived level of risk. Considered a firm to have "Network" if it has been involved in formal agreements with other companies (strategic alliance, R&D, technical, licensing, subcontracting, marketing, research). Network, as used in this study, does not refer to "networking" and "building relationships". It refers to FORMAL collaborations and alliances. Evaluated "level of risk" for the four types by direct questioning of the extent to which those risks have been an obstacle to growth and expansion of business activities ("not at all" to "to a great extent"). No consideration of impact on "survival". Considered firms to have a strategy only if it is formal.	Technology and financial risks are positively related to have strategic action and networking HR risk positively related to strategic action but not networking Market risks positively related to networking, but not strategy Founder education: positively related to network, and strategy. Introduction of new products: positive relation to network and strategy short life-cycle: positive with market strategy, and in low-tech: to networking and tech strategy. founder's previous employment: not related to any. High tech and knowledge-based firms are more likely to have strategic alliance and strategy than low-tech	Formal only. Focus on growth and expansion. Some firms might not aim for that in the first place. Others might not aim for expansion, yet already have strategies. Lack of consideration for context. For example, founder's previous employment: where? In a small company or a large one?
Leopoulos *et al.* (2006)	Quantitative	* Analysis of RM software / tool to be applied for SMEs	Identified advantages and disadvantages of the analysed tools, and proposed the most appropriate tools for SMEs to adopt.	

		Mostly focused on project risk management		
Marcelino-Sádaba *et al.* (2014)		Focus on Project risk management Propose a project risk management methodology for SMEs along the project timeline.	Developed a PRM methodology for SMEs, implemented in 5 projects. In one project, the methodology was implemented fully by the company, in 1 project it was implemented fully by the research team, and in 3 implemented by company with research team assistance. Feedback was gathered through documentations during the project (through the same template). Meeting with project managers at the end of the project.	Proposed that risk assessment should be more qualitative than quantitative. The methodology is only applicable for projects (of course). The implementation of the methodology is questionable. The paper does not report the amount of assistance the Research team provided to the project team. The methodology was implemented in companies that were involved in the development of the methodology, therefore they are more likely to have an understanding of the methodology. (especially those with smaller number of staff). They would also be more willing to adopt the methodology for testing. The question would be whether another companies would be willing to implement it - without assistance; and whether the research sample would continue to implement the methodology in the future. A follow up research should be implemented to investigate this issue. Projects, more often than not, follow structured and "methodical" processes. Therefore, it would be reasonable to implement a structured and methodical methodology. The paper proposed using "qualitative" risk assessment, yet risks were evaluated as "highly unlikely" to "highly likely", and "negligible impact" to catastrophic impact"; which are transformed into quantitative numbers (1 - 4), and used in a formula to calculate the Risk Priority Index. The paper does not report the cost added due to the implementation of the methodology.
Smallman (1996)	Research proposal	Linking Risk/risk management with Organisational performance and risk perception. Combined Miles & Snow's typology with the 2 risk management paradigms (reactive and proactive or fatalistic and holistic).	-	emphasised the influence of risk perception on RM risk management philosophy: "there are three factors that effectively define an organisation's approach to managing risks, those relating to: structure, strategy, and culture" A debate on subjective/objective risk. Provides a model for the formation of risk perception, and other interactional forces that influence one's private thoughts. Organisational types (Miles and Snow) with risk paradigms (fatalistic/holistic).
Smit and Watkins (2012)	Literature review	Role, success, and problems of SMEs. Risk management for SMEs	* SMEs manage risks inadequately. * SMEs should realise the importance of RM. * Entrepreneurs have implied, inconsistent unique objectives influencing management	

			* Non-financial factors / client loyalty, employee satisfaction, internal processes attribute to financial sustainability. * RM is lost amongst other managerial tasks in SMEs * Risks are managed reactively in SMEs * SME owner-managers are not versed in the availability and use of risk reduction (treatment) techniques. * Entrepreneurs prefer risk avoidance. * Most risk assessments are linked to a specific discipline, not necessarily known by the owner-manager. *Managers might be able to identify obvious risks, and not hidden ones. * Strategic risk management has the effect of reducing the possible over management of insignificant risks.	
Thun *et al.* (2011)	*Quantitative / Survey * Data collected from large and small companies in a pervious study. * German companies, but followed the American categorisation (500 emp)???	* Supply Chain risks * German manufacturing plants / automotive (67) * Key focus on Lean production.	* SMEs focus on reactive instruments that absorb risks through the creation of redundancies instead of preventing risks. * Large businesses do not consider themselves less vulnerable to SC risks than SMEs (justification given to dependence of SMEs on large) * No difference between L & S in evaluation of key drivers of SC. * No difference in evaluating RM instruments. * Sig. difference in the suitability for the kind of instruments (whatever that means), SMEs focus on reactive instruments, Large focus on preventive instruments.	* Sample consisted of 67 companies. 17 are SMEs (16 are 100-500 emp) and 50 are large! Totally not representative of SME/large ratio, not representative of Micro/Small/Medium ratio. Not sure about automotive manufacturing ratios though. * Impact reduction instruments are considered "reactive".
Verbano and Venturini (2013)	Literature review	Verbano (2013) did an analysis on literature published between 1999 and 2009 on risk management in SMEs Review included 33 articles	* an increasing interest in publications on RM in SMEs since 2006, where very few publications between 1999 to 2005. This shows both an increasing interest and focus on the topic, and also the novelty	

		Categorised risks into 4 categories: Hazard, financial, operational, and strategic. Categorised RM into 9: Strategic, financial, enterprise, insurance, project, engineering, SC, Disaster, Clinical. Excluded Eng, Disaster and Clinical (and insurance?) Categorised the focus of the papers as total when the "whole process" is in focus, "identification", "evaluation" and "treatment" when only one stage is in focus. The review mostly focused on categorisating publication. It did not discuss the findings or key points discussed in the literature.	and maturity to the area. * The review shows that about 64% of the publications are empirical. However, the paper does not explain the approach those empirical studies, yet after further investigation of the included publications, it was clear that the majority of those studies were quantitative. * Only 6% (that is 2 publications) focused on risk treatment, one of them was a literature review focused on financial risks, and the other was a conceptual paper on operational risks. The majority of the papers (42%) focused on risk evaluation. The second majority (36%) focused total risk management (i.e. the whole process). However, the authors emphasised the fact that although those paper focused on total RM, risk treatment was only mentioned in most of those publications as the four options of risk treatment discussed earlier in RM section of this document.	
Gilmore *et al.* (2004)	Semi-structured interviews (40 in the UK, 10-250 emp), no specific industry. 20 follow-up interviews.	Build an understanding of owner-managers' perspective of risk to further understand how they manage or cope with risky situations. The study focused on the relation between risk perception and Risk-Taking in small businesses, however the focus of the study seems to focus on managing risks rather than the decision to take risks.	Their findings were categorised into two main categories: risky situations encountered, and management of those situations. Risky situations: Cash flow, Company size (growth), entering new market or area of business, and Entrusting staff with responsibilities. Management of risk: through networking, and using managerial competencies.	A clear confusion between risk-taking and management of risks. As discussed in the Risk section, risk-taking is part of a decision-making process (where risk is the outcome of decisions). However, some of the findings of the study mostly focus on risks that exist within the business. For example, the risk associated with entrusting staff is implicit within the nature of any business, and is not created by a "risk-taking" process. Similarly, they describe "cash flow" as a risky situation. However, it can be argued that such risky situation is not related to "risk-taking"; especially when they later describe the threat to cash flow to be lack of business, and the way it is managed is through networking and nurturing relationships with existing customers. In such situations, it can be argued, risk can neither be taken nor averted, but naturally exists as part of business. Having said that, the approaches taken by the owner-managers identified in the study: networking and competencies (experimental knowledge) reflect a "heuristic"??? approach in managing risks.

Gao *et al.* (2013)	Case Study - Interviews Construction company in China	Focus on the factors that influence the learning process of adopting RM capabilities. Focus on Social Capital factors (Structural, Relational, Cognitive).	* SMEs build risk management capabilities without formal structure and knowledge * SMEs are more likely to adopt informal processes for developing risk management capabilities RM capability is built by SMEs	Cognitive capital plays a significant role in building RM capabilities. Cognitive capital plays a significant role in accumulating structural and relational capital. They propose a model of cognitive capital-based risk management capability building.
Herbane (2015)	Survey (215) - Regression UK Regression model:	Focus on Crisis Management, however: risk management is a keyword, and C.M is not. The definition of "acute business interruption" is consistent with the def of risk used in my study. dep: Threat Orientation. Indep: Recent Experience, Perceived likelihood, Ability to intervene. Control: Emp & Age	Study shows that threat orientation is positively influenced by having recent experience and the ability to intervene.	
Rostami *et al.* (2015)	Questionnaire (153) Focus on construction SMEs in UK	Identify difficulties of implementing RM in SMEs.	in their literature review, they identified that the difficulties in implementing formal RM processes in SMEs are categorised into three groups: People, Organisation characteristics, and the process of RM. Top difficulties: Scaling RM process, tools & techniques adoption, cost challenges, and inappropriate culture of practising.	The three categories they identified in literature, and the five difficulties they identified in their study suggest that getting SMEs to adopt formal RM processes would take more than just developing a simplified framework for RM. In other words, SMEs would require a tailor-made framework for guidance that would fit their context and characteristics, rather than down-scaling the existing frameworks. The findings of this study focus on implementation of formal RM processes. However, they can also be used and reinterpreted to understand the informal practices and processes SMEs use to manage their risks.

Appendix 2 Interview Schedule

Context: Understand the business

Q1: Tell me about your business.

(Understand what they do, how they do it, why they do it.)

- Q1a: What do you do? What products/services do you provide?
- Q1b: How does the company operate? (Note: Seek formality, bureaucracy, style of operations, etc.)
- Q1c: What market do you target?
- Q1d: How spread is the company in terms of location?
- Q1e: Tell me more about the structure of the company. Who does what.
- Q1f: How many employees? Departments? Specialists?
- Q1g: For how long has the company been in business?
- Q1h: Who started the business? How did it start / grow?
- Q1i: How many owners does the company have? Who of them are involved in the management of the company?
- Q1j: What would you say is the aim of your business? Where do you see your company going? (i.e. grow? Survive? Sustain?) How do you work towards that? What risks can affect that?

Q2: Tell me more about yourself.

- Q2a: What level of education do you have?
- Q2b: Have you had previous work experience before here?

Q3: What do you consider to be the strengths / weaknesses of the company?

Prospective

Q4: What risks do you have in your business? (talk about 2 or 3, focus on strategic and operational)

Q4a: Tell me more about them.

- Q4b: What risks are you expecting to occur in the future? What risks do you anticipate?
- Q4c: So what?
- Q4d: How likely do you think is it to occur?
- Q4e: What makes you think this could happen?
- Q4f: What are the expected consequences? Why do you think that?
- Q4g: What would these consequences cause? So what? Are you willing to take these consequences?
- Q4h: How do you think this problem would affect your business?
- Q4i: What are you basing your judgment on?
- Q4j: How will you handle these risks?
- Q4k: Are you doing / going to do anything about it? What? Why?
- Q4l: On what basis do you think this would work out as you want? Why not something else?

- Q4m: How would that help you deal with such event?
- Q4n: Do you think this is what is stopping it from happening?
- Q4o: Do you think you are prepared for if the threat realised? [Yes: How? / No: Why not? Why aren't you doing anything more?]
- Q4p: Has such thing occurred in the past? What happened? How does that relate to this? What have you learnt from it? How do you think your experience has affected your approach to this?
- Q4q: How would such event affect the company? What would change if it happened? How would what you (would) do towards that event change the company?
- Q4r: How would such event affect the aim of the company? How would what you would do towards it align, or change, the aim of the company? [aim: as defined in the Context section]

Q5: Are there any expected risks you have in mind, yet you are ignoring? Tell me more.

Probes: Similar to previous.

- Q5s: What other threats do you think might occur, yet you "ignore"? Why do you ignore them? What if they occurred? (Note: Try to get risks that are NOT very improbable or very low impact. Something expected and possible to happen, probably controllable, with some significant consequences.)
- Q5t: Why do you think this could happen?
- Q5u: Why do you think it isn't important to consider?

Retrospective:

Q6: I would like you to take a minute, and think about 3 or 4 risks or threats within the company that occurred in the past.

(Note: Provide pen and paper for participants to put notes, time-line, etc.)

Q6a: One by one, Tell me what happened.

- Q6b: What happened (details of threat/event)?
- Q6c: Was it expected to happen? What was expected to happen?
- Q6d: How likely do you think it was to happen?
- Q6e: How was it [not] expected to happen?
- Q6f: How did you handle that event?
- Q6g: What actions and decisions were taken?
- Q6h: How [when] were these decisions taken?
- Q6i: Why were those actions/decisions taken?
- Q6j: Did you consider other decisions or actions? Why didn't you take them?
- Q6k:Before it happening, did you take any measures to prevent such event to happen?

    - YES [NO]: what measures? Why did you take those measures? Why did you choose [NOT] to take measures? What could have happened have you not [HAVE YOU] taken prevention measures? Why didn't those measures prevent the event?
- Q6l: Did you have any response plans before it happened?
    - (YES [NO]): what plans? Why did you [NOT] have a plan? How did you decide on the plan? How did the plan help you deal with the event?
- Q6m: How confident were you that you could have done this (i.e. preparedness)? Did you meet your confidence?
- Q6n: What do you think a company similar to yours would have done? (try to get closer to seeing if "they copied their view")
- Q6o: How would you describe the company before that happened? How did that event affect the company? What changed? How did what you have done towards that event change the company?
- Q6p: How did that event affect the aim of the company? How did what you did towards it align, or change, the aim of the company? [aim: as defined in the Context section]

Q7: Opportunities: to be asked as part of the previous parts. Focus on Risks that come with those opportunities rather than the opportunities themselves.

- Q7a: How do you choose the opportunities you take? In terms of projects, strategic opportunities, etc.
- Q7b: What opportunities do you anticipate?
- Q7c: How will you pursue them?
- Q7d: What risks do you anticipate?
- Q7e: How do you evaluate risks that accompany those opportunities?
- Q7f: How do you handle these risks? How will you handle them? What do you do about them? Why? How do they affect your decision to take those opportunities?
- Q7g: Tell me about opportunities you took in the past that created risks to the company. What happened? Were you expecting those risks? How did you deal with them? Why?

Appendix 3 Participant Information Sheet

Title of Study
Managing risks in Small- and Medium- size Enterprises.

1. عنوان الدراسة
إدارة المخاطر في الشركات صغيرة ومتوسطة الحجم

Version Number and Date
Version 1.0 Nov. 2016

2. رقم الإصدار والتاريخ
إصدار 1.0 تاريخ تشرين الأول 2016

Invitation Paragraph
You are being invited to participate in a PhD research study. Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask us if you would like more information or if there is anything that you do not understand. I would like to stress that you do not have to accept this invitation and should only agree to take part if you want to.
Thank you for reading this.

3. الدعوة
أود دعوتك للمشاركة في دراسة لبحثي لرسالة الدكتوراه. قبل أن تقرر ما إذا كنت ستشارك، من المهم أن تفهم الغرض من البحث وعما ستنطوي مشاركتك. يرجى أخذ الوقت لقراءة المعلومات التالية بعناية، ولا تتردد بالسؤال إذا كنت ترغب بالمزيد من المعلومات أو إذا كان هناك أي شيء غير مفهوم. كما وأود أن أؤكد على أنك غير مجبر على القبول هذه الدعوة وألا توافق على المشاركة إلا إذا كنت ترغب في ذلك.
شكرا للقراءة.

What is the purpose of the study?
This study is part of my PhD research. Its purpose is to explore and understand how small- and medium- size companies manage and deal with their business risks and threats, and to get a better understanding of the influences on the company's risk-managing behaviours.

4. ما الغرض من هذه الدراسة؟
هذه الدراسة هي جزء من بحث الدكتوراه، والغرض منها هو استكشاف وفهم كيفية تعامل الشركات الصغيرة مع المخاطر وإدارتها. وفهم العوامل التي تؤثر على مثل هذه السلوكيات، وكيفية تأثيرها.

Why have I been chosen to take part?
You have been chosen to take part in this study because I believe you match the section criteria for this study, and I believe your experiences would add value to my research.

5. ماذا تم اختياري للمشاركة؟
لقد تم اختيارك للمشاركة في هذه الدراسة لأعتقادي بأن معايير الإختيار لهذه الدراسة تنطبق عليك، كما وأن خبرتك وتجاربك العملية ستكون قيمة لدراستي.

Do I have to take part?
No, your participation is voluntary. You are not under any obligation to take part in this study. You are also free to withdraw from the interview at any time without explanation.

6. هل يتوجب علي المشاركة؟
لا، فمشاركتك طوعية. أنت لست ملزم بالمشاركة في هذه الدراسة. كما ولك حرية الانسحاب منها في أي وقت وبدون أي تفسير.

What will happen if I take part?
An interview, which would be conducted by me, will be arranged. It is anticipated to last for about an hour to an hour and a half and would be more like a conversation. I would be aiming to know more

about how you do business, how you deal with anticipated incidents that could hold threats to your business, and how you have dealt with previous incidents that might have or have not affected your business.
With your permission, I would like to record the interview.

7. ماذا سيحدث إذا شاركت؟
سيتم ترتيب مقابلة معك، وستجرى هذه المقابلة من قبلي. من المتوقع أن تستغرق المقابلة مدة ساعة إلى ساعة ونصف، وستكون على شكل محادثة. هدفي في المقابلة سيكون معرفة المزيد حول كيفية عمل الشركة بأعمال، وكيفية تعاملك مع الاحداث المتوقعة التي يمكن أن تسبب مخاطر للشركة، وتعاملك مع الأحداث السابقة التي قد أثرت أو كان من الممكن أن تؤثر على عمل الشركة.
سيتم تسجيل المقابلة صوتياً بموافقتك.

Expenses and / or payments
The interview would be within your premises so as not to add any expenses on your side.

8. المصروفات و / أو المدفوعات
ستكون المقابلة في مقر شركتك كي لا يكون هناك أي نفقات إضافية على جانبك.

Are there any risks in taking part?
Participating in this study does not put you and your company under any risk.

9. هل هناك أي مخاطر من المشاركة؟
لن تضعك المشاركة في هذه الدراسة أو الشركة تحت أي خطر على الإطلاق.

Are there any benefits in taking part?
Although participating in this study does not bring benefits to you directly, in the interview you would be re-visiting your perceptions and the company's operations. This could help you reassess decisions and behaviours within the business. Additionally, this study aims to learn from you to increase our knowledge, and hopefully future research would be able to bring you, as a small business, more benefits based on what this study learns from you.

10. هل هناك أي فوائد من المشاركة؟
بالرغم من أن المشاركة في هذه الدراسة لن يدلي أي فائدة مباشرة لك، ولكنه سيطلب منك إعادة النظر في الشركة. هذا قد يساعدك على إعادة تقييم القرارات والسلوكيات فيها من مظور جديد. بالإضافة إلى ذلك، تهدف هذه الدراسة إلى التعلم منك لزيادة المعرفة لدينا، آملا ان تكون الأبحاث المستقبلية قادرة على توفير المزيد من الفوائد لكم، كشركة صغيرة الحجم، على أساس ما علمت هذه الدراسة منك.

What if I am unhappy or if there is a problem?
If you are unhappy, or if there is a problem, please feel free to let us know by contacting me or my supervisor (see point 15), and we will try to help. If you remain unhappy or have a complaint which you feel you cannot come to us with then you should contact the Research Governance Officer at ethics@liv.ac.uk. When contacting the Research Governance Officer, please use English language, and please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

11. ماذا لو لم اكن راضٍ أو إذا كان هناك مشكلة؟
إن كنت غير راض، أو إن كان هناك أي مشكلة، لا تتردد في إعلامنا عن طريق الاتصال بي أو بمشرفتي (انظر النقطة 15)، وسنحاول المساعدة. إذا كنت لا تزال غير راض أو لديك شكوى تشعر بأنك لا يمكن أن تأتينا بها، فيرجى الاتصال بمسؤول حوكمة الأبحاث في الجامعة على ethics@liv.ac.uk. عند الاتصال بهم، يرجى استخدام اللغة الإنجليزية، كما يرجى تقديم تفاصيل عن اسم أو وصف الدراسة (بحيث يمكن تحديدها)، الباحث المعني، وتفاصيل الشكوى التي ترغب في القيام بها.

Will my participation be kept confidential?
Your participation will be confidential. Neither you nor your company would be identified or identifiable in any reports of this study. Any identifying details would be anonymised or replaced by generic details. You and your company would be given pseudonyms. The interview recording and transcripts would be stored electronically on the university's secure storage. Only anonymised data would be printed as hard copies for analysis purposes, and those would be stored in a secured location. Interview would be stored, and deleted after five years.
Direct quotes from your interview might be used in the final results of the study, and might also be presented in reports for the study, such as the PhD thesis and any publications resulting from this study. Any quotes used would be anonymised and would not have any identifying details.

12. هل ستبقى مشاركتي سرية؟
ستكون مشاركتك سرية. لن يتم التعريف بك و لن يكون هناك أي طريقة للتعرف عليك أو على شركتك في أي تقارير عن هذه الدراسة. سيتم حذف أي تفاصيل تحدد هويتك والاستعاضة عنها بتفاصيل عامة وسيتم استخدام أسماء مستعارة. سيتم تخزين تسجيل المقابلة والنصوص إلكترونيا على

خوادم التخزين الآمنة للجامعة. سيتم طباعة نص المقابلة بعد حذف المعلومات التي قد تكشف هويتك وذلك لأغراض التحليل، وسيتم تخزين هذه في موقع آمن.
سيتم تخزين مقابلة لمدة خمس سنوات، وسيتم حذفها بعد ذلك.
قد تستخدم اقتباسات مباشرة من المقابلة في النتائج النهائية للدراسة، ويمكن أيضا أن تستعمل في تقارير أخرى للدراسة، مثل أطروحة دكتوراه وأي منشورات ناتجة عنها. أي إقتباس مستخدم سيكون مجهول المصدر و لن يكون فيه أي تفاصيل تحدد هويتك.

What will happen to the results of the study?
This is part of a PhD thesis. The results of this study would also be used for publishing academic papers.

13. ماذا سيحدث لنتائج الدراسة؟
هذه الدراسة ستكون جزء من أطروحة الدكتوراه، كما وستستخدم نتائج البحث لنشر دراسات أكاديمية.

What will happen if I want to stop taking part?

Participating in this study is voluntary. If you wished to stop the interview at any time, you may do so without consequences or the need of explanation.

14. ماذا سيحدث إذا أردت التوقف عن المشاركة؟
المشاركة في هذه الدراسة طوعية. إذا كنت ترغب في إيقاف المقابلة في أي وقت، يمكنك فعل ذلك من دون عواقب أو الحاجة إلى تفسير الأسباب.

Who can I contact if I have further questions?
If you have any further questions or comments, please do not hesitate to contact me.
Yazan Al-Lahham
University of Liverpool – Management School
Chatham Street
Liverpool , L69 7ZH
England
Phone: +447745911801
Email: y.al-lahham@liverpool.ac.uk

Alternatively, you may contact my supervisor (in English):

Prof. Helga Drummond
University of Liverpool – Management School
Chatham Street
Liverpool, L69 7ZH
England
Email: drummond@liverpool.ac.uk

15. بمن يمكنني الاتصال إذا كان لدي المزيد من الأسئلة؟

إذا كان لديك أي أسئلة أخرى أو تعليقات، لا تتردد بالاتصال بي.
يزن اللحام
جامعة ليفربول - كلية الإدارة
بريطانيا
هاتف: 00447745911801
البريد الإلكتروني: y.al-lahham@liverpool.ac.uk

بدلا من ذلك، يمكنك الاتصال بالمشرفة على دراسي (باللغة الإنجليزية):
البروفيسورة هيلغا دراموند
جامعة ليفربول - كلية الإدارة
بريطانيا
البريد الإلكتروني: drummond@liverpool.ac.uk

Appendix 4 Participant Consent Form

Title of Research Project:	Managing risks in Small- and Medium- size Firms	Please initial box
Researcher(s):	Mr. Yazan Al-Lahham	

I confirm that I have read and have understood the information sheet dated November 2016 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
أؤكد بأنني قد قرأت وفهمت ورقة المعلومات / تاريخ تشرين الأول 2016 للدراسة المذكورة أعلاه. وقد أتيحت لي الفرصة للنظر في المعلومات وطرح الأسئلة، وكانت الإجابات عليها مرضية.

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline. ☐
أفهم أن مشاركتي طوعية ولي حرية الانسحاب في أي وقت دون إبداء أي سبب دون التأثير على حقوقي. وأن لي حق عدم الإجابة على اي أسئلة لا أرغب الإجابة عليها.

I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide and I can also request the destruction of that information if I wish. ☐
أفهم أنه يمكنني طلب الحصول على المعلومات التي أقدمها ويمكنني أيضا طلب اتلاف تلك المعلومات إذا رغبت.

I understand that confidentiality will be maintained and it will not be possible to identify me in any publications without my written consent. ☐
أفهم أنه سيتم الحفاظ على السرية وأنه لن يكون من الممكن التعرف على هويتي في أي منشورات بدون موافقتي الخطية.

I agree for the data collected from me to be used in future research and understand that any such use of identifiable data would be reviewed and approved by a research ethics committee. ☐
أوافق على أن يتم إستخدام المعلومات التي سأقدمها في البحوث المستقبلية وأفهم أن أي استخدام من هذا القبيل للبيانات التي قد تمكن التعرف على هويتي سيتم مراجعتها والموافقة عليها من قبل لجنة أخلاقيات البحث.

I understand and agree that my participation will be audio recorded and I am aware of and consent to your use of these recordings for the purpose of the study. ☐
أفهم وأوافق على أن مشاركتي ستكون مسجلة صوتياً، وكما أنني على علم وأوافق على استخدامك لهذه التسجيلات لغرض الدراسة.

I understand that my responses will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research. ☐
أفهم أنه سيتم الاحتفاظ بإجاباتي بسرية تامة. وأعطي الإذن لأعضاء فريق البحث في الحصول على إجاباتي بشكل مجهول المصدر. وأفهم أنه لن يتم ربط إسمي بالمواد البحثية، ولن يتم تحديد هويتي أو تمكين تحديدها في التقرير أو التقارير التي تنتج عن البحث.

I agree to take part in the above study. ☐
أوافق على المشاركة في الدراسة المذكورة أعلاه.

Participant Name أسم المشارك	Date التاريخ	Signature التوقيع
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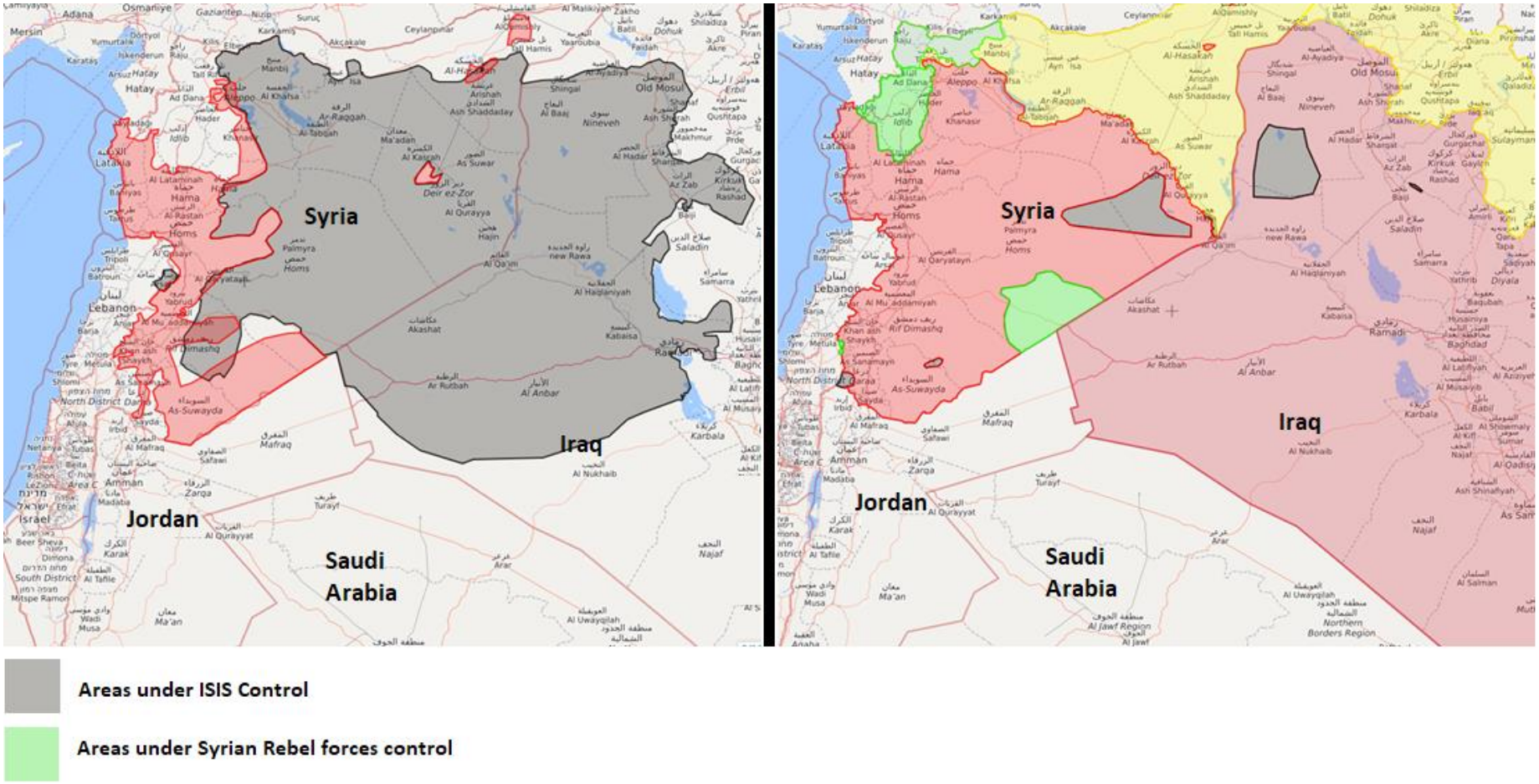
Appendix 5 Geographical Maps of Jordan and the region

The map of Jordan, bordered by Syria to the north, Iraq to the east, Saudi Arabia to the south, and Palestinian territories and Israel to the west. (Google Maps, 2018)



The spread of ISIS in Syria and Iraq (Left: Peak spread in June 2015. Right: July 2018) (Liveuamap, 2018)

Appendix 6 Empirical Data and Themes

Theme	*Source / Interview Notes*
Accept risk	*Alpha: Not doing anything regarding political situation risks* *Alpha: we cannot do anything, it is not easy to do something regarding instability in the region* *Gamma: Bare consequences (L82)* *Gamma: Accept risks (L180) because their return is good.* *Delta: Despite dire consequences of risks (losing fingers), he considers these consequences ""part of the job""."* *Kappa: We have to accept the loss (L194)* *Lambda: Power cuts means no production. No spare transformer.* *Omicron: Hasn't taken actions against returned cheques before because he was expecting things to be better (L184)* *Rho: Be first despite the risk (127)* *Rho: Compromise "you have to accept risks in return for other things" (336)* *Tau: You have to take the risk, if you are going to avoid the risk and put a big budget to protect against the risk you will be out of business* *Caron: You have to / lesser of two evils (29)* *Abjad: "if we don't work like this [i.e. sell in credit]… we will not get customers (262)* *Kappa: Continue projects in loss to save reputation (230)* *Caron: You have to / lesser of two evils (29)* *Abjad: "if we don't work like this [i.e. sell in credit]… we will not get customers (262)* *Kappa: Continue projects in loss to save reputation (230)*
Adapt	*Alpha: Adapt to new regulations* *Gamma: Adapt to political disturbances (L151)* *Sigma: Don't have a rigid plan, be flexible (L194)*
Avoid risk	*Beta: Avoid risk when there are signs of failure* *Beta: Take projects that can be easily implemented. Build up future projects.* *Beta: Reject risky projects, regardless of its size.* *Beta: Target big projects or customers, stay away from having several small ones* *Eta: "I had to not sell high risk customers" (L197)* *Eta: Stay away from small businesses as they are considered risky, unless paying in cash (L210)* *Eta: Expand in trade rather than manufacturing, "manufacturing is a minefield, you don't know when and how a mine would go off" (L390-396)* *Mu: "we don't [take] risks" with customers (352)* *Pi: Deal only with known suppliers and avoid unknown ones: based on previous experience with a bad quality supplier.* *Rho: Competition is strong in traditional business, approach to risk reduces competition, move away from traditional business and bad competition. (108)* *Sigma: Stay away from low-end products to avoid competition (L265)* *Sigma: Dealing with big companies are not a risk (L274)* *Phi: Reject projects that do not have a system, because they could create chaos (495-501)* *Phi: Having external supervision in projects ensures high quality. Thus, refusing projects without supervision (505-507)* *Tilde: Small is beautiful, to be able to accommodate market demand (61) balance capacity with market. Big is risky (83)* *Diaeresis: Avoid risky business (88)* *Diaeresis: Refuse potential risky orders to not have it reflect badly on reputation.* *Caron: Not deal with QIZ, despite losing market share* *Pi: Payment risks, take a big payment in advance, despite losing opportunities.* *Tilde: Controlling risk despite losing opportunity (518) avoiding risky opportunities despite consequences.* *Tilde: No willingness to take a risk because "this again comes from a history of being in the industry" (296)*

	Macron: Deal with large contractors (large = less risk) (301) *Nu: "I am not willing to take the risk again" (290)* *Alpha: Hire redundant employees* *Alpha: Product diversification protects against low market demand* *Beta: Keep backup of source code at different places* *Beta: hire redundant employees* *Beta: Hire redundant employees, if one left, someone would be available* *Beta: Have a system for training new employees, saving time to replace employees* *Eta: Redundancy, Extra cost, "sometimes I do it, sometimes I don't" (L103-108)* *Eta: "protect myself with LC" (L276)* *Eta: · Diversify products to reduce product and market demand risk (L404)* *Theta: Shared knowledge/skills. Move employees within departments (L362-370), in case anything happened, employees can replace each other (L382)* *Iota: Protect the company from economic situation by expanding to different countries (L122)* *Iota: Deal with employees leaving by having redundant employees (L219)* *Iota: Diversify (L347)* *Lambda: Diversifying products to overcome competition risks and low market demand.* *Lambda: Have redundant workers on machines, so there is a replacement (L266)* *Mu: Not being vulnerable to employees leaving* *Mu: Build tools to replace employees quicker (147) to reduce period of impact.* *Mu: Reserve, "risk some money rather than risking the whole business" (299)* *Mu: · Don't put all your eggs in one basket (515)* *Pi: Has spare machines, bought for the purpose of being a back-up in case of malfunctioning.* *Rho: Take actions now to transform into a more flexible form to survive potential issues in the region (103)* *Rho: Industry is based on knowledge: documentation, back-up, shared knowledge (289-290)* *Rho: Work in teams not individuals, less dependency on individuals, protects against employees leaving (290-302), ideas are their assets, thus losing an employee = losing ideas (304), it is necessary (310)* *Sigma: Have different targets, end-user, developers, provide components (L195)* *Sigma: Diversify in technologies (L 327) (L425)* *Sigma: Hire more employees than needed to protect the company from employees leaving (L333)* *Tau: Keep a certain budget for changes in regulation.* *Omega: Risk of delayed deliveries from suppliers: rely on ordering based on projections (423)* *Tilde: Work with own capital, no loans è any loss is from own money, and not bank's. Control consequences (P9)* *Tilde: Contingency reserve* *Tilde: Lack of product diversity creates risk (436)* *Diaeresis: Dealing with multiple suppliers. if one was out, others will have they want (355)* *Hawwaz: All employees are replaceable by another person (155) other employees have the knowledge to replace. Yet shared knowledge is divided, so no single person knows the whole system. (160)* *Hotti: Having multiple suppliers in case one closes (164)* *Rho: Losing employees means losing relationships with customers è centralise relationships, documentation (366-370) after incident has happened (381-384)* *Omega: Losing the original owner created the risk of losing market share. Took measures to make people see that they are still in good business (322-337)* *Macron: Considers relying on employees a weakness because they would leave (127)*
Protect against consequences	*Alpha: Hire redundant employees* *Alpha: Product diversification protects against low market demand* *Beta: Keep backup of source code at different places* *Beta: hire redundant employees* *Beta: Hire redundant employees, if one left, someone would be available* *Beta: Have a system for training new employees, saving time to replace employees*

	Eta: Redundancy, Extra cost, "sometimes I do it, sometimes I don't" (L103-108) *Eta: "protect myself with LC" (L276)* *Eta: · Diversify products to reduce product and market demand risk (L404)* *Theta: Shared knowledge/skills. Move employees within departments (L362-370), in case anything happened, employees can replace each other (L382)* *Iota: Protect the company from economic situation by expanding to different countries (L122)* *Iota: Deal with employees leaving by having redundant employees (L219)* *Iota: Diversify (L347)* *Lambda: Diversifying products to overcome competition risks and low market demand.* *Lambda: Have redundant workers on machines, so there is a replacement (L266)* *Mu: Not being vulnerable to employees leaving* *Mu: Build tools to replace employees quicker (147) to reduce period of impact.* *Mu: Reserve, "risk some money rather than risking the whole business" (299)* *Mu: · Don't put all your eggs in one basket (515)* *Pi: Has spare machines, bought for the purpose of being a back-up in case of malfunctioning.* *Rho: Take actions now to transform into a more flexible form to survive potential issues in the region (103)* *Rho: Industry is based on knowledge: documentation, back-up, shared knowledge (289-290)* *Rho: Work in teams not individuals, less dependency on individuals, protects against employees leaving (290-302), ideas are their assets, thus losing an employee = losing ideas (304), it is necessary (310)* *Sigma: Have different targets, end-user, developers, provide components (L195)* *Sigma: Diversify in technologies (L 327) (L425)* *Sigma: Hire more employees than needed to protect the company from employees leaving (L333)* *Tau: Keep a certain budget for changes in regulation.* *Omega: Risk of delayed deliveries from suppliers: rely on ordering based on projections (423)* *Tilde: Work with own capital, no loans è any loss is from own money, and not bank's. Control consequences (P9)* *Tilde: Contingency reserve* *Tilde: Lack of product diversity creates risk (436)* *Diaeresis: Dealing with multiple suppliers. if one was out, others will have they want (355)* *Hawwaz: All employees are replaceable by another person (155) other employees have the knowledge to replace. Yet shared knowledge is divided, so no single person knows the whole system. (160)* *Hotti: Having multiple suppliers in case one closes (164)* *Rho: Losing employees means losing relationships with customers è centralise relationships, documentation (366-370) after incident has happened (381-384)* *Omega: Losing the original owner created the risk of losing market share. Took measures to make people see that they are still in good business (322-337)* *Macron: Considers relying on employees a weakness because they would leave (127)*
Rely on what is available	*Beta: Rely on maintenance income to cover low sales, based on experience* *Beta: Rely on maintenance income to cover low sales* *Delta: Rely on upcoming projects to use waste* *Epsilon: Collaborate with other companies / competitors: Lower costs, increase capacity, faster production, lower risks for the company itself.* *Kappa: Communication with customers to explain circumstances (220)* *Lambda: Have several machines, can use them if one machine was broken. (L243)* *Lambda: Rely on company experience and being in the industry for years (L349-351)* *Mu: Involvement of partners* *Mu: Involvement of key people, able to replace vacant positions (160)* *Omega: Good quality helps overcome new weak competition, reputation (99)* *Macron: Rely on income from other projects to cover no-payment projects (229)* *Tilde: There is always a way to have work (202)* *Breve: Perception of risk of not having customers, rely on market demand (205)*

	Diaeresis: Having multiple machines compensates machine down. Despite reduced capacity (164) *Diaeresis: "there are many suppliers, it is not logical! If one closed, I have 10!" (346)* *Hawwaz: Personal knowledge: could replace employees leaving (139)* *Hotti: Personal involvement protects against employees leaving (164)* *Sigma: Rely on company competence (L270)* *Breve: Position in market gives them a sense of safety (P15)* *Abjad: Replacing an employee is easy because a lot of new people are available, everyone is replaceable. can be temporarily replaced by key people. "it makes the impact lower" (444)* *Lambda: Broken machine is not a major risk, because it has an alternative (L246)* *Nu: Personal involvement, losing employees would not affect the business because he is the face of the company (340-343)* *Eta: Collaborate with other factories / competitors, rely on good will (l322)* *Theta: Rely on relations and communication with customers to overcome issues with customers, "it makes things smaller" (L210-214)* *Nu: Knowing that the customer can trust him because the company has good references in the market to support their trustworthiness (477)* *Omicron: Reputation: customers refer new customers to them (L218)* *Sigma: Good reputation, good relations, good experience: get new opportunities (L30)* *Phi: Good reputation (169) our work is based on relations (186)* *Phi: Provide good quality to keep good reputation è get more business* *Macron: Relations, contractors grow, they grow with them. Contractor will bring more business (306)* *Hawwaz: Keep customers happy so they would be understanding when we face problems, relations (234)*
Eliminate risk	*Eta: Unmonitored sales through cash-car: stopped the whole thing to eliminate the risk of theft (L215)* *Nu: Eliminate risk of unpaid exports, take cash up-front (286)* *Rho: Risk of market not accepting or not being ready for technology, eliminate risk by customising technology to the market (264-279)* *Omega: Personal involvement: one-man show causes risks, built the company to have lower dependency on owner (364)* *Eta: Built a system to control process, eliminating uncontrolled employees (L232)* *Rho: Risk of shared knowledge is employees leaking ideas. Cannot be controlled. Prevent by keeping employees happy, and outsourcing developing jobs to countries in other regions (320-331)*
Limit risk	*Gamma: Risks are in small patches. Consequences are isolated (unsold seats on a plane), easy to limit* *Eta: Assess customers and sell them only to the limit of the assessment (L202)* *Iota: Calculate risks (L125) i.e. gather information.* *Iota: · Limit risk of diversification by starting small and end it when things go wrong (L367)* *Lambda: Trying the market with imported finished products to study the market.* *Pi: Limit risk of new supplier, instead of buying 40 tonnes, they bought 15 tonnes as a trial.* *Pi: Deal only with 4 or 5 suppliers, have been working with them for years.* *Pi: Payment risks, take a big payment in advance, despite losing opportunities.* *Sigma: Limit investment (L462)* *Tilde: Investment risk: have controllable impact (P9) (354)* *Tilde: Controlling risk by introducing limited risk (499)* *Caron: Limit risk.. "there is risk, but very calculated risk, very limited risk" (414)*
	Beta: Pay good money and provide good work environment for employees so they would not leave *Beta: Hire females as there are less likely to look for opportunities abroad.* *Theta: Personal involvement to reduce chaos mistakes, despite entrusting employees (L317)* *Iota: The best way to predict the future is to create it (L356)* *Mu: Systemisation, rely on tools rather than people (138) to reduce human risks (180)* *Xi: Managing risk by reducing uncertainty (179)(367)*

	Omicron: Collect information about new customers (L166) because risk kept occurring (L179) consequences are high (L180) *Pi: Take precautions to prevent work injuries, provide safety equipment, and instruct workers on how to avoid dangers.* *Pi: Preventative maintenance for equipment, based on manufacturer's instructions, to avoid unnecessary costs.* *Rho: Selective hiring (281)* *Sigma: Improve employees' lifestyle to reduce employee turnover despite higher cost (L303)* *Upsilon: Control employees work using task/check list/guidelines (243)* *Upsilon: Guidelines reduce relying on individuals thinking (251)* *Phi: Be selective with employees to reduce waste (358-362)* *Phi: Hired in-house drafter to control quality compared to outsourcing the job (470-474)* *Chi: Make employees sign commitment agreement before sending them for training. (121)* *Chi: Only hire new graduates and teach them from zero, because experienced people are filled with "rubbish" from elsewhere (131)* *Omega: Listen to employees, and "eliminate" causes of employees leaving (291)* *Macron: Pay good salaries, benefits, yet within 10% of others, to keep employees (177)* *Macron: Cash cheques before deliver to insure they can be cashed (300)* *Tilde: Prevent technical risks by investing in high-end technologies, lower likelihood of down-time, reduce down time, investment is worthwhile (P7)* *Diaeresis: Preventive maintenance for machines (151)* *Diaeresis: Reduce mistakes by multiple checks for errors (263-268)* *Caron: Having a guard to protect the factory. Being the norm is perceived as a standard (79)* *Caron: Help major customer sustaining their business by being heavily involved in that business, despite time and effort (P18)* *Abjad: Customer care = preventive method to prevent customers saying bad things about the company (331)* *Hawwaz: All employees are replaceable by another person (155) other employees have the knowledge to replace. Yet shared knowledge is divided, so no single person knows the whole system. (160)* *Rho: Risk of shared knowledge is employees leaking ideas. Cannot be controlled. Prevent by keeping employees happy, and outsourcing developing jobs to countries in other regions (320-331)* *Eta: Technical mistakes are very costly è have special person in control (L146)* *Nu: Servers to monitor information leakage è lowered perception of risk (148)* *Chi: Having strict payment terms for projects. Knowing that they have enough projects enables them to have strict terms, even if they lose opportunities (208-213) If terms are too strict, we wouldn't have any business (221)*
Act reactively	*Delta: Customers not paying: go to court* *Delta: Supplier risk, supplier not being able to supple: look for a different supplier* *Kappa: Act reactively, but usually things happen when it is too late to act (205)* *Lambda: Minor issues are dealt with as they happen. (L343)* *Xi: · Well aware of possible causes of risks, yet does not take any actions (344-350)* *Xi: Displacement of responsibility to justify not taking actions (155)* *Upsilon: Knowing that such things happen regularly, yet not knowing WHEN they will happen stops them from doing anything (522)* *Omega: I don't consider it a risk because it would affect me for a month, then you would hire new people (265)* *Omega: Losing the original owner created the risk of losing market share. Took measures to make people see that they are still in good business (322-337)* *Omega: Employees leaving: retrain other employees (353)*
Transfer risk	*Delta: Injuries covered by insurance.* *Delta: Rely in insurance for injuries* *Delta: Insurance* *Eta: Insurance (L187)* *Iota: Risk of currency fluctuation: calculate the risk and share it with the customer (L151) or refuse business (L152)*

	Nu: Transfer risk of abroad transport to customer, by delivering only to local ports (288) *Pi: Work injury risk: insurance, every project is insured.* *Chi: Insurance (197) insure based on selling price and not cost to cover profit (360)* *Diaeresis: Injuries, insurance, only happen if worker did not pay attention. Has only happened once in 20 years (182) (198) Insurance.* *Diaeresis: Insurance: because risk is out of control, not my fault: insurance should cover it! (499-501)* *Caron: Insurance company proposed insurance offer, with risk perception, insurance was found a good idea (46)* *Caron: Export is very high risk. Eliminate financial risk by taking money up-front. High risk with high likelihood of happening. (112)* *Caron: Deal with QIZ through intermediaries, despite losing profit. Transfer risk* *Caron: Pay a premium to protect (827)*
Being vigilant	*Beta: Act when they feel things are going bad* *Beta: Monitoring risks* *Beta: Sense the future. If things are going fine, maintain the course. Make changes when things start to happen* *Gamma: Monitor the situation in destinations to plan the future (L108)* *Iota: Refuse government business because they do not have a proper system (L160)* *Iota: Being conservative: I do not take risks (L245)* *Xi: "paying attention", "being careful" (179-183)* *Omicron: Weather affects sales, cannot predict weather, wait until February to gather more information about the weather, then import seeds (L124-132)* *Sigma: Monitor the market (L189) (L191)* *Upsilon: Takeover tasks from employees if signs of bad behaviour was sensed (152)* *Phi: Reading signs from the beginning (510)* *Caron: Being very careful (180)* *Caron: Be careful* *Hawwaz: You read signs (667)* *Iota: · Limit risk of diversification by starting small and end it when things go wrong (L367)* *Theta: "there are a lot of risks, but because we are awake" (L282)* *Rho: Business in Iraq is risky; however it is a massive opportunity despite the risk (193)* *Large market, large demand, high risk, unstable country, "you try to manoeuvre amongst these issues, and you try to leave with minimal losses" (207)* *Mu: Extreme consequences are when a risk becomes a no no (404)*
Cognitive inconsistencies	*Xi: External self-justification (81)* *Xi: Trivialisation of consequences (86)* *Xi: Cognitive dissonance (116)* *Xi: Self-justification (116)* *Xi: Making excuses (151)* *Xi: Displacement of responsibility to justify not taking actions (155)* *Breve: Acknowledge the risk of competition and how possible it is, yet denying competition (P13) (491) (498) (505)* *Abjad: Denial: "why did we put ourselves in this situation? We didn't put ourselves in this situation. The situation came to us" (546)* *Hotti: Justification: "this is a proof" that we he is doing is good (195)* *Xi: · Well aware of possible causes of risks, yet does not take any actions (344-350)* *Xi: Attitude towards LC, although considers "paying and not receiving" a big risk. Acknowledges the value of LC, but describe them as "annoying for traders" (308-310)* *Theta: Entrust key people and gives them authority, however, still has control even after 17 years (L517)* *Delta: Despite dire consequences of risks (losing fingers), he considers these consequences ""part of the job""."*
Consequences of managing risk	*Beta: Hiring females has its drawbacks due to culture (cannot travel much, or stay late)* *Delta: Cannot fire employees because ""you need him""""* *Xi: Taking actions would have negative and "certain" consequences (117)* *Rho: Be part of professional community to get more information about the market & customers (157) however, this is risky as you are also sharing your information with competitors (172)*

	Rho: Approach to risk has consequences that cannot be controlled, still took the approach because of its necessity (316) *Sigma: Hiring extra employees creates other risks (L469)* *Upsilon: Belief that they treat their employees great. Probably too flexible? Sometimes causing problems (195)* *Chi: Having strict payment terms for projects. Knowing that they have enough projects enables them to have strict terms, even if they lose opportunities (208-213) If terms are too strict, we wouldn't have any business (221)* *Tilde: Controlling risk despite losing opportunity (518) avoiding risky opportunities despite consequences.* *Caron: You have to / lesser of two evils (29)* *Abjad: "if we don't work like this [i.e. sell in credit]… we will not get customers (262)* *Abjad: Being too nice to customers could lead to it being the standard, that when treated normally, customers would get angry.* *Tau: You have to take the risk, if you are going to avoid the risk and put a big budget to protect against the risk you will be out of business* *Caron: Not deal with QIZ, despite losing market share* *Diaeresis: Having multiple machines compensates machine down. Despite reduced capacity (164)* *Caron: Deal with QIZ through intermediaries, despite losing profit. Transfer risk* *Iota: One man show is extremely dangerous (L89)(L95)(L103)* *Xi: Prioritisation of production over safety (120)* *Hawwaz: Full flexibility and trust with employees backfired in the past, employees started taking advantage of it (106)* *Pi: Payment risks, take a big payment in advance, despite losing opportunities.* *Xi: · Well aware of possible causes of risks, yet does not take any actions (344-350)* *Lambda: Extra cost of redundant workers is accepted because it has other returns, and it manages risk (L283)*
Perception of competence	*Beta: Rely on competence of employees. Trust employees* *Gamma: Base predictions of sales on experience (L233)* *Delta: Lack of competence of a key employee caused problems* *Delta: Lack of employee loyalty and competence.* *Epsilon: Train employees to increase competence.* *Epsilon: Lack of employee loyalty and competence* *Eta: Rely on employee competence to reduce risk (L161)* *Eta: Rely on employee competence to take decisions (L165)* *Theta: Experience = knowing the risks (L202)* *Theta: "there are a lot of risks, but because we are awake" (L282)* *Theta: · Include employees in decisions (L543)* *Iota: Employees do not follow procedures (L90)* *Iota: A learning curve that you have to go through (L140)* *Lambda: Giving power to marketing team could be risky, due to market competition, thus: personal (one-man-show) involvement in marketing and sales. (L381-383)* *Mu: Confidence in capabilities of the company (96)* *Pi: Some customers delay payments, but out of experience, they know that they will eventually pay.* *Sigma: Shared knowledge, allow employees from different departments to contribute in other departments, increases motivation (L70-76)* *Sigma: Out of experience you start learning (L193)* *Sigma: Rely on company competence (L270)* *Sigma: Rely on experience, risks wouldn't happen because of experience (L365)* *Tau: risk is lower because they are specialised in one scope, risk happen when scope is expanded.* *Upsilon: Employees want more, without giving. Leading to poor behaviour and performance (140-150)* *Upsilon: Not entrusting employees due to lack of skills (210)* *Chi: Strong confidence in the company, himself, and their knowledge (291)* *Omega: Experience is the core of the company (268)* *Macron: Considers relying on employees a weakness because they would leave (127)* *Tilde: No willingness to take a risk because "this again comes from a history of being in*

	the industry" (296) *Breve: Confidence in company and capabilities (371)* *Breve: Position in market gives them a sense of safety (P15)* *Diaeresis: Trust technician, has been working with them for 10 years, worker's previous lack of mistakes è no future mistakes… minimal mistakes (287-292)* *Caron: Rely on experience and competence of the company (199) (217)* *Hotti: Entrusting employees, full authority, yet under full monitoring (202-211)* *Lambda: Rely on company experience and being in the industry for years (L349-351)* *Theta: Personal involvement to reduce chaos mistakes, despite entrusting employees (L317)* *Upsilon: Guidelines reduce relying on individuals thinking (251)* *Upsilon: Takeover tasks from employees if signs of bad behaviour was sensed (152)* *Delta: injuries are caused by mistakes* *Theta: We do not have a lot of risk, because we have a long experience. (L137)* *Lambda: General low perception of risk, due to high perceived competence of employees. (L192-195)* *Chi: Perception that there is no risk because company scope is limited, so perception that they know all the risks (202) (329)* *Macron: "here this doesn't happen, because we are up-to-date" (152)* *Sigma: Bad competition: rely on experience and company competence (L416)* *Upsilon: Company reputation relies on high level service. Employee not knowing what to do could damage that reputation (192)* *Chi: "I trust myself", confidence he can do the job (237)* *Xi: Cutting cost by hiring less qualified workers, yet complaining about the consequences (73)*
Characterisation of risk	*Beta: Risk as a problem, and has a solution* *Delta: Risks happen, risks are problems that will be solved* *Delta: "risk as a mistake* *Delta: Risks are problems that can be solved* *Delta: ""you don't know what could happen""* *Delta: injuries are caused by mistakes* *Epsilon: risk as fear* *Epsilon: Other risks are "solvable": risks are problems* *Theta: "because no one would have expected" Black swan? (L250)* *Iota: Economic situation: cannot know what will happen (L119)* *Kappa: · Talking in third person when describing mistakes (251), switching to first person only after admitting it was his own mistake (257)* *Mu: "it is very obvious [it will happen]", risk as certainty (271)* *Xi: "we consider them problems, not risks" (106)* *Xi: Certainty in uncertainty (119)* *Rho: Risk as a problem (224)* *Phi: Risk as certainty (512)* *Tilde: Risk as a concern (421)* *Tilde: Risk as an unknown (421) (424)* *Tilde: Risk as choice (504)* *Diaeresis: Risk as a mistake (261) (430)* *Caron: Risk as certainty (785)* *Eta: Expand in trade rather than manufacturing, "manufacturing is a minefield, you don't know when and how a mine would go off" (L390-396)* *Mu: Change as certainty, high consequences (255)* *Kappa: Such risk has no solution (L191)Characterisation of risk Beta: Risk as a problem, and has a solution* *Delta: Risks happen, risks are problems that will be solved* *Delta: "risk as a mistake* *Delta: Risks are problems that can be solved* *Delta: ""you don't know what could happen""* *Delta: injuries are caused by mistakes* *Epsilon: risk as fear* *Epsilon: Other risks are "solvable": risks are problems* *Theta: "because no one would have expected" Black swan? (L250)*

	Iota: Economic situation: cannot know what will happen (L119) *Kappa: · Talking in third person when describing mistakes (251), switching to first person only after admitting it was his own mistake (257)* *Mu: "it is very obvious [it will happen]", risk as certainty (271)* *Xi: "we consider them problems, not risks" (106)* *Xi: Certainty in uncertainty (119)* *Rho: Risk as a problem (224)* *Phi: Risk as certainty (512)* *Tilde: Risk as a concern (421)* *Tilde: Risk as an unknown (421) (424)* *Tilde: Risk as choice (504)* *Diaeresis: Risk as a mistake (261) (430)* *Caron: Risk as certainty (785)* *Eta: Expand in trade rather than manufacturing, "manufacturing is a minefield, you don't know when and how a mine would go off" (L390-396)* *Mu: Change as certainty, high consequences (255)* *Kappa: Such risk has no solution (L191)*
Cost of managing risk	*Alpha: Having redundant employees is too costly* *Beta: Moving to another country just in case something happened is too costly.* *Beta: Taking approach is expensive* *Kappa: Continue projects in loss to save reputation (230)* *Lambda: Extra cost of redundant workers is accepted because it has other returns, and it manages risk (L283)* *Xi: Cutting cost by hiring less qualified workers, yet complaining about the consequences (73)* *Rho: Priority: "first the cost, like not the cost, […] I do not want to say the cost, […] but the was no priority" (530) (535-537)* *Omega: Taking the approach has its costs, but you have no other options (441)* *Caron: Firefighting system is a cost. But required by civil defence (331)* *Caron: Pay a premium to protect (827)* *Eta: Redundancy, Extra cost, "sometimes I do it, sometimes I don't" (L103-108)* *Lambda: Spare transformer is an unnecessary cost (L 233)* *Sigma: Improve employees' lifestyle to reduce employee turnover despite higher cost (L303)*
Perceived likelihood of risk	*Alpha: Key employees leaving is not a frequent thing* *Beta: Employees would not leave because he is taking measures for them not to leave* *Beta: Low perception of risk, certain that he has no risks from employees* *Delta: Risk happens regularly* *Delta: "why would I expect problems to happen? No I don't expect problems to happen! No!"* *Delta: accidents happen.* *Eta: Good employees are attracted to work abroad, making finding good ones costly, and losing employees to demand is very possible. There is no way to deal with it (L95-103)* *Theta: We do not have a lot of risk, because we have a long experience. (L137)* *Theta: "We do not have risk. Like it is very very very very rare for something to happen and not be able to overcome it" (L192)* *Iota: Calculate risk based on facts and probability (L327) (L431-459)* *Lambda: General low perception of risk, due to high perceived competence of employees. (L192-195)* *Lambda: Risk of power cut damage is low because of arrangements with power company (L218)* *Xi: Perceiving risk as a "big risk", it happened with others, never with them (286-296)* *Pi: It is rare for work injuries to happen because of precautions.* *Rho: You never know. Risk exists although it is not here now (99)* *Rho: Business in Iraq is risky; however it is a massive opportunity despite the risk (193)* *Large market, large demand, high risk, unstable country, "you try to manoeuvre amongst these issues, and you try to leave with minimal losses" (207)* *Sigma: Quick change in technology (high risk) (L127)* *Tau: risk of losing trained employees due to competition* *Upsilon: Knowing that such things happen regularly, yet not knowing WHEN they will*

	happen stops them from doing anything (522) *Phi: "I cannot imagine this to happen again" because it was caused by him (260)* *Chi: Perception that there is no risk because company scope is limited, so perception that they know all the risks (202) (329)* *Macron: "here this doesn't happen, because we are up-to-date" (152)* *Macron: Risk rarely happens (264)* *Macron: Deal with large contractors (large = less risk) (301)* *Tilde: "they wouldn't leave the company! I don't have a big turnover on the employees"* *Diaeresis: I don't have risk because I work rightfully* *Caron: Risk of QIZ, perceived as high risk, can easily materialise. (P12)* *Abjad: This is not a very big risk but is a risk on my mind. (649)* *Sigma: Dealing with big companies are not a risk (L274)* *Diaeresis: Injuries, insurance, only happen if worker did not pay attention. Has only happened once in 20 years (182) (198) Insurance.* *Caron: Export is very high risk. Eliminate financial risk by taking money up-front. High risk with high likelihood of happening. (112)* *Iota: Refuse government business because they do not have a proper system (L160)* *Sigma: Rely on experience, risks wouldn't happen because of experience (L365)* *Tau: risk is lower because they are specialised in one scope, risk happen when scope is expanded.* *Theta: "because no one would have expected" Black swan? (L250)* *Xi: Certainty in uncertainty (119)* *Eta: "Even if 1 in a million chance", high consequences (L159)* *Mu: "assume the worst" (275)* *Delta: knowing the employees lowers the risks* *Omicron: Collect information about new customers (L166) because risk kept occurring (L179) consequences are high (L180)* *Epsilon: Exporting is not safe, risks are high, we cannot rely on it.*
Normative perceptions	*Alpha: Everyone will also suffer the consequences* *Alpha: No one else is doing anything* *Alpha: changes in regulations affects everyone* *Delta: No one doesn't make mistakes* *Eta: It happens in any company (L385)* *Kappa: Seeing how things went in other places, things went well in other countries, therefore things will go well here (L104)* *Rho: All people see the risk (98) (105), a risk that everyone sees (236)* *Sigma: Seeing the problems of others makes your problems seem less problematic (L294)* *Omega: Other places have risks (307)* *Macron: "these are weaknesses that other companies might have" (133)* *Macron: "neither I, nor others, would be able to maintain their business" (156)* *Macron: "I can't, nor can anyone else" (164)* *Diaeresis: Mistakes happen everywhere (430)* *Caron: Perception of risk is based on "hearing about it" (483)* *Caron: Having a guard to protect the factory. Being the norm is perceived as a standard (79)* *Caron: Insurance company proposed insurance offer, with risk perception, insurance was found a good idea (46)* *Chi: "I cannot control it, no one can" (126)* *Epsilon: Learning from experience of others* *Xi: Perceiving risk as a "big risk", it happened with others, never with them (286-296)* *Xi: Attitude towards LC, although considers "paying and not receiving" a big risk. Acknowledges the value of LC, but describe them as "annoying for traders" (308-310)*
Ability to take approach	*Beta: Moving to another country is easy* *Beta: protecting the company from employees leaving is simple.* *Beta: Keeping employees is simple (good salary, good environment)* *Xi: Perceived lack of control or ability to imply measures (151)* *Chi: Belief that employees can easily be replaced. Confidence that candidates could easily come and apply for a job at the company (141-152)* *Caron: Not having a better fire system due to lack of funds. Belief that they would have upgraded the system have they had the time and money (638)*

	Abjad: Replacing an employee is easy because a lot of new people are available, everyone is replaceable. can be temporarily replaced by key people. "it makes the impact lower" (444) *Alpha: we cannot do anything, it is not easy to do something regarding instability in the region* *Omega: Employees leaving: retrain other employees (353)* *Omega: I don't consider it a risk because it would affect me for a month, then you would hire new people (265)*
Controllability of risk	*Alpha: Risk is not controllable* *Alpha: We cannot control risk, therefore we have to adapt* *Alpha: Things can be beyond our control* *Beta: Things that are not under your control are problematic* *Beta: When others have control over risk, it is a problem.* *Gamma: External disturbances are out of control (L112), cannot do anything about them (L149)* *Delta: You cannot prevent it: nature of work. Nothing can be done.* *Delta: Being able to spot risk is luck* *Delta: When luck plays its role* *Delta: Accidents cannot be prevented. "How am I to prevent it? he fell of the stairs, how am I going to prevent it?"* *Delta: You cannot prevent accidents, they are something from god* *Delta: Destiny, "everyone takes his [share in this world] […] everyone gets his destiny"* *Delta: Accidents happen, it's in the hand of god* *Eta: If I don't have control over it, it is risky (L273)* *Eta: "this is a risk I cannot manage because it is not in my hand" (L278)* *Eta: "There is nothing you can do" (L349)* *Theta: "it happened […] and it incidentally happened to us" (L255)* *Theta: When an employee wants to cause damage: they can (L329)* *Iota: Having redundant employees is because of the "learning curve", mistakes happened several times in the past (L226)* *Xi: Belief that control can be exerted (87)* *Xi: As long as we are here, we can control any fire. Problem is when we are not here (109)* *Rho: Risk of shared knowledge is employees leaking ideas. Cannot be controlled. Prevent by keeping employees happy, and outsourcing developing jobs to countries in other regions (320-331)* *Sigma: Uncertainty of the upcoming technologies "you have no control" (L125)* *Sigma: Things under my control vs. things not under my control (L428)* *Tau: lack of loyalty. You cannot do anything about it.* *Phi: Things happen (406)* *Phi: "I cannot control the quality of the whole project" which could affect the quality of their own work (567)* *Chi: "I cannot control it, no one can" (126)* *Macron: "Why would I make a mistake?" (323)* *Breve: "you have to come up with an idea and gamble on it!" (86)* *Breve: We cannot eliminate the risk, but we try to (344)* *Diaeresis: Both of us leaving: impossible (323)* *Hawwaz: Service relies on input from consultant: error from consultant = customer not accepting service (484)* *Diaeresis: Insurance: because risk is out of control, not my fault: insurance should cover it! (499-501)* *Omicron: Weather affects sales, cannot predict weather, wait until February to gather more information about the weather, then import seeds (L124-132)* *Delta: accidents happen.* *Phi: "I cannot imagine this to happen again" because it was caused by him (260)* *Diaeresis: I don't have risk because I work rightfully* *Macron: "neither I, nor others, would be able to maintain their business" (156)* *Xi: Perceived lack of control or ability to imply measures (151)* *Kappa: Such risk has no solution (L191)* *Omicron: You cannot protect yourself from payment risks and returned checks (L118)*

	Tau: You cannot protect yourself from losing employees. *Diaeresis: Injuries, insurance, only happen if worker did not pay attention. Has only happened once in 20 years (182) (198) Insurance.* *Alpha: we cannot do anything, it is not easy to do something regarding instability in the region* *Eta: Good employees are attracted to work abroad, making finding good ones costly, and losing employees to demand is very possible. There is no way to deal with it (L95-103)*
Past as heuristic	*Beta: Strategy to manage risk has worked for several years. What worked in the past will work in the future* *Beta: Hiring redundant employees is a strategy that has been working for many years* *Gamma: Base future ventures on previous studies of the market and sales (L106)* *Delta: previous experience of risks* *Epsilon: Learning from experience of others* *Theta: "I've been in this since 85, I've never heard!" (L254)* *Lambda: Previous experience forces taking a different approach to risk. (L329-331)* *Phi: It never happened before (250)* *Phi: Looking at the past to see the future (414 -417)* *Macron: "until this day, we haven't had problems with them" (302)* *Abjad: "it has never happened", therefore it might not happen (277-279), it gets tight, but things work out fine. You plan forward, so you do see it coming (282), things solve themselves, because: business (288)* *Hawwaz: Employees knowing company secrets, leaving, and building their own competing company. It happened before, a lot (160)* *Pi: Deal only with known suppliers and avoid unknown ones: based on previous experience with a bad quality supplier.* *Hotti: Justification: "this is a proof" that we he is doing is good (195)* *Pi: Some customers delay payments, but out of experience, they know that they will eventually pay.* *Diaeresis: Trust technician, has been working with them for 10 years, worker's previous lack of mistakes è no future mistakes… minimal mistakes (287-292)* *Xi: Perceiving risk as a "big risk", it happened with others, never with them (286-296)* *Tilde: "they wouldn't leave the company! I don't have a big turnover on the employees"* *Iota: Having redundant employees is because of the "learning curve", mistakes happened several times in the past (L226)* *Omicron: Collect information about new customers (L166) because risk kept occurring (L179) consequences are high (L180)* *Pi: Deal only with 4 or 5 suppliers, have been working with them for years.* *Diaeresis: Injuries, insurance, only happen if worker did not pay attention. Has only happened once in 20 years (182) (198) Insurance.*
Perception of consequences	*Alpha: a few incidents have happened, but they were minor, low perception of impact of risk* *Alpha: losing one of the partners has low impact* *Alpha: Political and economic instability create a high impact risk* *Alpha: if a key employee leaves: a problem, not major problem though.* *Beta: A project failure is very costly* *Beta: Because of small size, costs are low, thus impact of no sales is low.* *Gamma: Risk of low demand is considered high because of high consequences (L89)* *Gamma: Risk increases as work increases (L98)* *Delta: mistakes create waste, however this waste can be used in other ways."* *Delta: "absenteeism is a big problem* *Delta: high consequences of employee absenteeism* *Delta: mistakes in measurements are usually easy to fix* *Delta: Employee absence affects work.* *Epsilon: Exporting is not safe, risks are high, we cannot rely on it.* *Epsilon: Low perception of risk* *Epsilon: Financial risks have low impact, money will be collected eventually* *Eta: Technical mistakes are very costly è have special person in control (L146)* *Eta: "Even if 1 in a million chance", high consequences (L159)* *Eta: Payment issues, people not paying "it is a domino effect", "I rely on this payment for other things" (L195)*

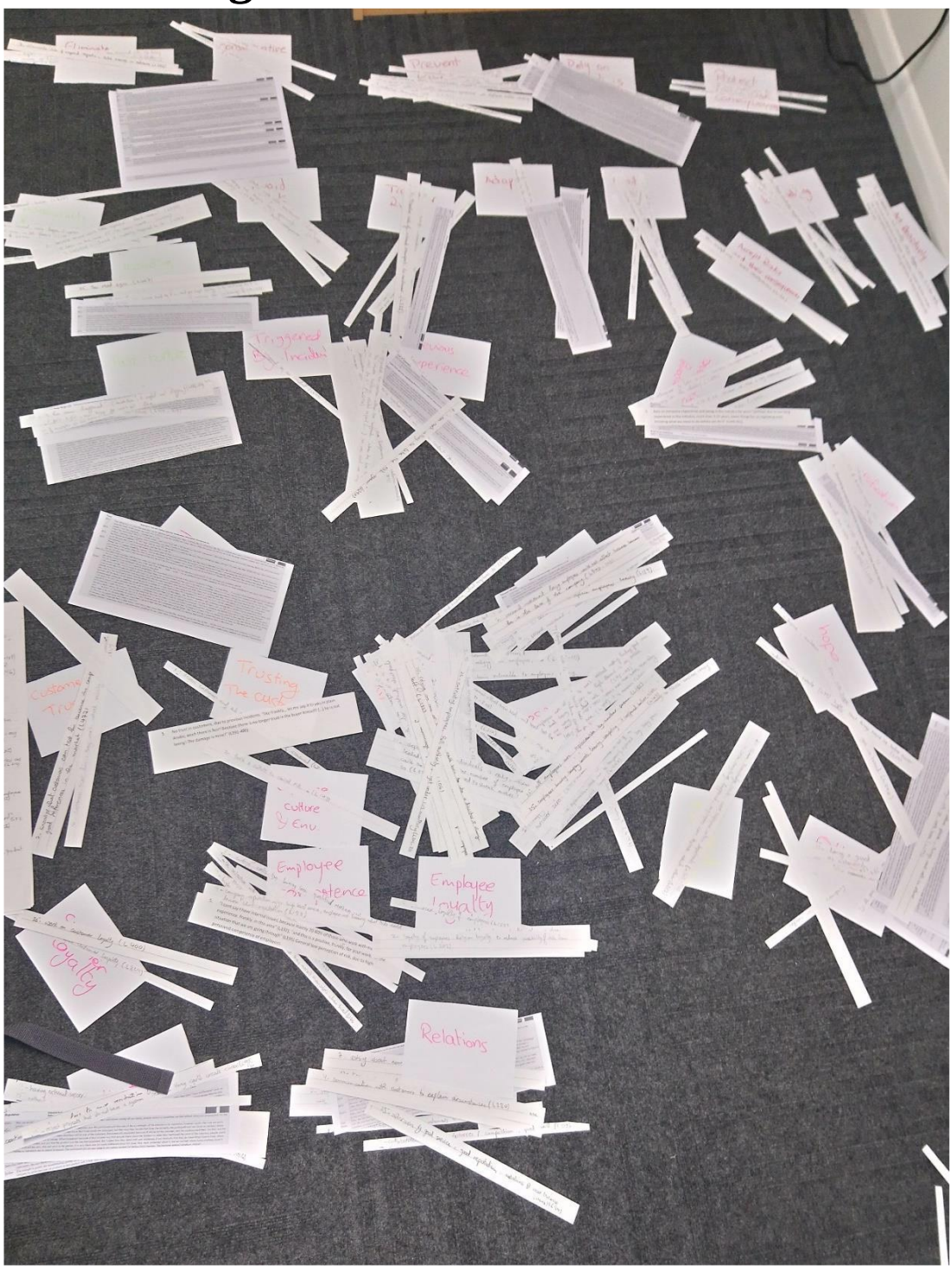
	Theta: Low perception of risk (L137) *Iota: One man show is extremely dangerous (L89)(L95)(L103)* *Lambda: Power cuts during production of foam, consequences are high. (L 207)* *Lambda: Broken machine is not a major risk, because it has an alternative (L246)* *Mu: Change as certainty, high consequences (255)* *Mu: Extreme consequences are when a risk becomes a no no (404)* *Xi: Perception of risk, risks are small (88)* *Omicron: Closing the company is not a big deal, perceived the company as a replaceable business (L95)* *Omicron: Fraud and returned cheques, 40 thousand JD (10-15% of revenue) each year (L155)* *Pi: Poor quality products did not affect the company except financially, because risk was limited* *Rho: Losing employees means losing relationships with customers è centralise relationships, documentation (366-370) after incident has happened (381-384)* *Sigma: Employees leaving has high consequences (L333)* *Tau: day-to-day risks are very negligible, because small company and limited scope. Having a limited scope means clear operations and strategies.* *Upsilon: Company being only source of income for the owners (122)* *Upsilon: Risk of people going toward new technologies, major effect on company business (388)* *Phi: Under-estimating events (79) HOPE that things would get better sooner (112)* *Phi: Bad projects could affect reputation, even if not caused by them (579)* *Omega: I don't consider it a risk because it would affect me for a month, then you would hire new people (265)* *Omega: Employees leaving: retrain other employees (353)* *Macron: Employees leaving could cause a delay in work, "that's it!" (185)* *Macron: Big projects: whoever starts them will finish them (226)* *Diaeresis: Employee resigning, so what? (256)* *Diaeresis: Low consequences of risk (261)* *Diaeresis: "it affects me for a day, not a big deal", low perception of consequences (338)* *Abjad: Confidence in product è lower risk of damage (266)* *Hawwaz: Relying on one or two people could turn into a disaster if they left (132)* *Delta: Despite dire consequences of risks (losing fingers), he considers these consequences ""part of the job""."* *Diaeresis: Refuse potential risky orders to not have it reflect badly on reputation.* *Diaeresis: "there are many suppliers, it is not logical! If one closed, I have 10!" (346)* *Pi: Limit risk of new supplier, instead of buying 40 tonnes, they bought 15 tonnes as a trial.* *Omicron: Collect information about new customers (L166) because risk kept occurring (L179) consequences are high (L180)* *Lambda: Minor issues are dealt with as they happen. (L343)* *Xi: Trivialisation of consequences (86)* *Lambda: Giving power to marketing team could be risky, due to market competition, thus: personal (one-man-show) involvement in marketing and sales. (L381-383)* *Macron: Considers relying on employees a weakness because they would leave (127)* *Eta: Good employees are attracted to work abroad, making finding good ones costly, and losing employees to demand is very possible. There is no way to deal with it (L95-103)* *Iota: Calculate risk based on facts and probability (L327) (L431-459)* *Sigma: Quick change in technology (high risk) (L127)* *Tau: risk of losing trained employees due to competition* *Sigma: Seeing the problems of others makes your problems seem less problematic (L294)* *Eta: If I don't have control over it, it is risky (L273)* *Diaeresis: Personal involvement, leaving = chaos è not leaving together again (P12)* *Epsilon: Confidence in quality of products, low risk on reputation* *Nu: Personal involvement, losing employees would not affect the business because he is the face of the company (340-343)* *Xi: Attitude towards LC, although considers "paying and not receiving" a big risk. Acknowledges the value of LC, but describe them as "annoying for traders" (308-310)* *Caron: Export is very high risk. Eliminate financial risk by taking money up-front. High*

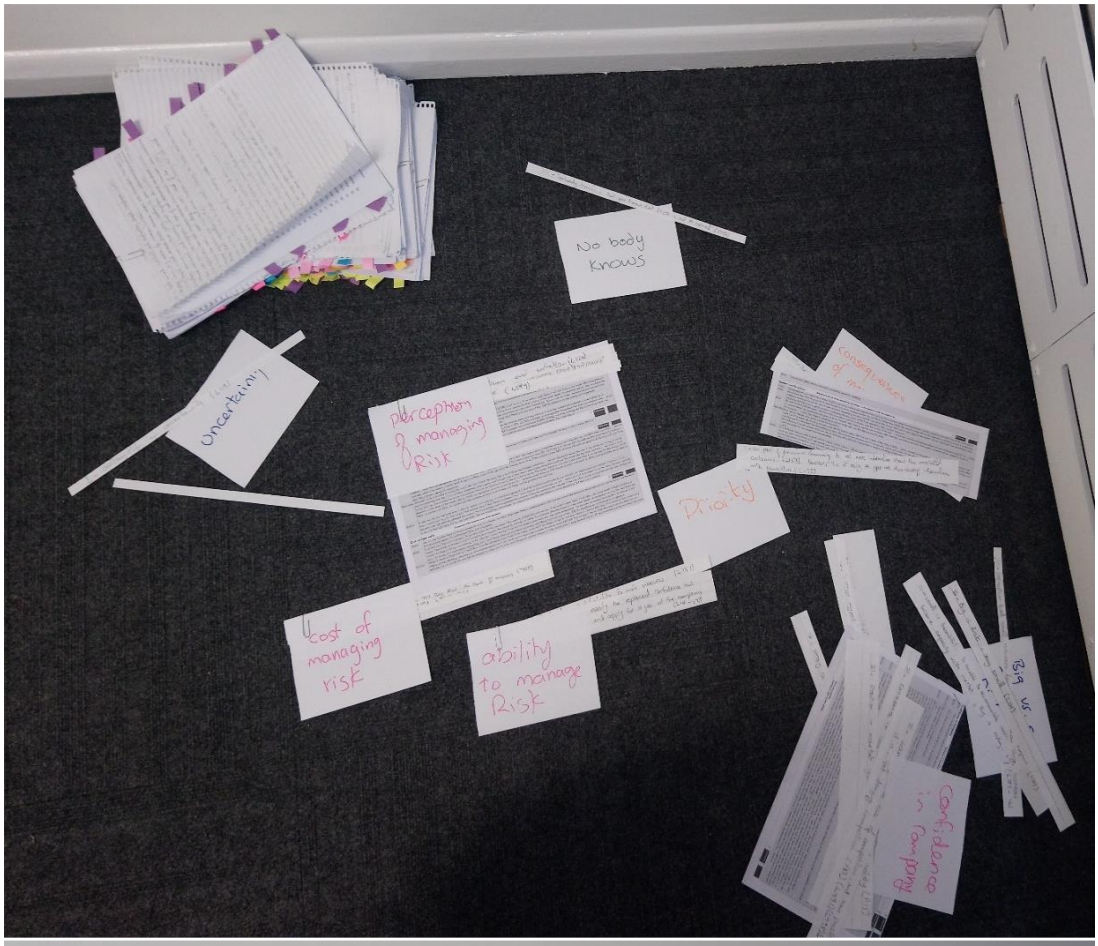
	risk with high likelihood of happening. (112) *Pi: Some customers delay payments, but out of experience, they know that they will eventually pay.* *Diaeresis: Trust technician, has been working with them for 10 years, worker's previous lack of mistakes è no future mistakes… minimal mistakes (287-292)* *Rho: Work in teams not individuals, less dependency on individuals, protects against employees leaving (290-302), ideas are their assets, thus losing an employee = losing ideas (304), it is necessary (310)* *Rho: Approach to risk has consequences that cannot be controlled, still took the approach because of its necessity (316)*
Attitude to managing risk	*Kappa: Such risk has no solution (L191)* *Lambda: Spare transformer is an unnecessary cost (L 233)* *Nu: Servers to monitor information leakage è lowered perception of risk (148)* *Nu: Personal involvement, losing employees would not affect the business because he is the face of the company (340-343)* *Xi: Prioritisation of production over safety (120)* *Xi: Attitude towards LC, although considers "paying and not receiving" a big risk. Acknowledges the value of LC, but describe them as "annoying for traders" (308-310)* *Omicron: You cannot protect yourself from payment risks and returned checks (L118)* *Tau: You cannot protect yourself from losing employees.* *Abjad: "it does.. it does take effort and energy. But I think at the end of the day, it is worth it" (376)* *Hawwaz: Dividing shared knowledge requires additional resources and cost (179), however: costs are worth it (188)* *Phi: Having external supervision in projects ensures high quality. Thus, refusing projects without supervision (505-507)* *Rho: Work in teams not individuals, less dependency on individuals, protects against employees leaving (290-302), ideas are their assets, thus losing an employee = losing ideas (304), it is necessary (310)* *Sigma: Improve employees' lifestyle to reduce employee turnover despite higher cost (L303)* *Tilde: Prevent technical risks by investing in high-end technologies, lower likelihood of down-time, reduce down time, investment is worthwhile (P7)* *Xi: Taking actions would have negative and "certain" consequences (117)* *Rho: Approach to risk has consequences that cannot be controlled, still took the approach because of its necessity (316)* *Chi: Having strict payment terms for projects. Knowing that they have enough projects enables them to have strict terms, even if they lose opportunities (208-213) If terms are too strict, we wouldn't have any business (221)* *Lambda: Extra cost of redundant workers is accepted because it has other returns, and it manages risk (L283)* *Xi: Cutting cost by hiring less qualified workers, yet complaining about the consequences (73)* *Rho: Priority: "first the cost, like not the cost, […] I do not want to say the cost, […] but the was no priority" (530) (535-537)* *Omega: Taking the approach has its costs, but you have no other options (441)* *Caron: Firefighting system is a cost. But required by civil defence (331)* *Caron: Pay a premium to protect (827)* *Pi: It is rare for work injuries to happen because of precautions.* *Caron: Not having a better fire system due to lack of funds. Belief that they would have upgraded the system have they had the time and money (638)* *Iota: One man show is extremely dangerous (L89)(L95)(L103)* *Diaeresis: "there are many suppliers, it is not logical! If one closed, I have 10!" (346)* *Pi: Payment risks, take a big payment in advance, despite losing opportunities.* *Xi: · Well aware of possible causes of risks, yet does not take any actions (344-350)*
Past as a trigger	*Eta: It happened before (L157)(L183)* *Eta: Cash-car stopped after theft has happened.* *Eta: Built a system to control process, eliminating uncontrolled employees (L232)* *Theta: Event was a lesson for all of us, changing the way they work (L309)* *Nu: "I am not willing to take the risk again" (290)*

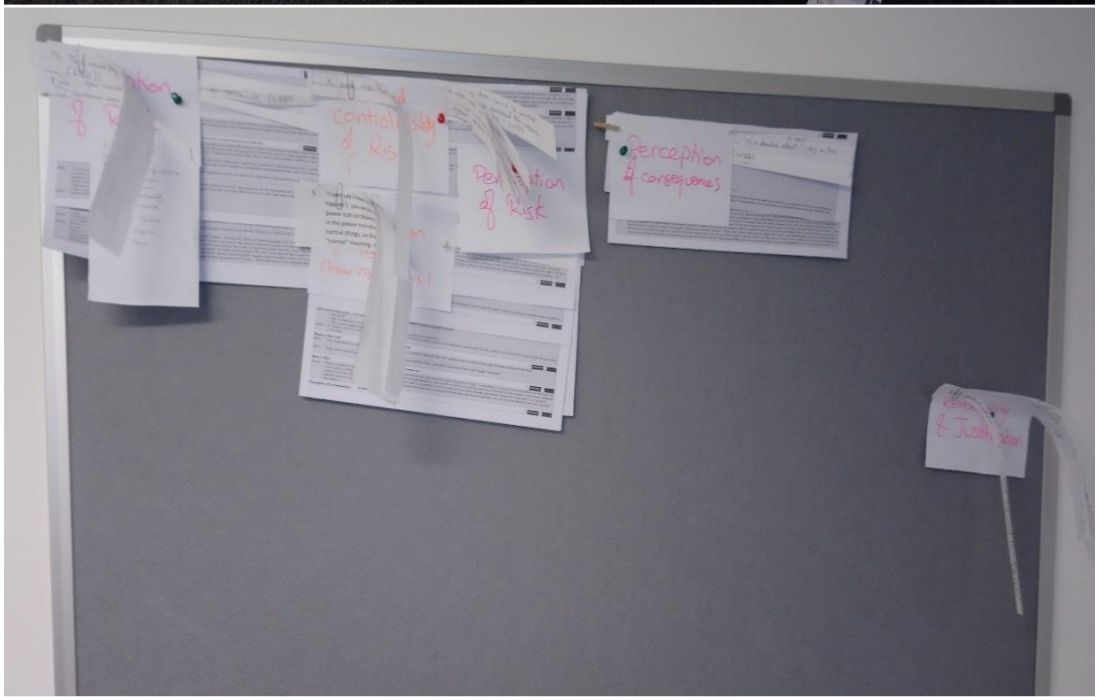
	Rho: Actions/change triggered by an accident (544) *Phi: Not realising the risk of not giving full commitment to business before it was too late t(249)* *Phi: Changes after event (257)* *Omega: One-man show has caused problems in the past, when the original owner passed away (322-337)* *Omega: Losing the original owner created the risk of losing market share. Took measures to make people see that they are still in good business (322-337)* *Omega: After losing original owner, company strategy was changed (322-337)* *Diaeresis: Personal involvement, leaving = chaos è not leaving together again (P12)* *Diaeresis: Not leaving together is based on previous incident (P12)* *Caron: Upgraded firefighting system after fire has happened. "when the fire happened, the whole building needed repair […] so we said we might just as well do it" (646)* *Lambda: · No trust in customers, due to a previous incident. (L391-400)* *Rho: Losing employees means losing relationships with customers è centralise relationships, documentation (366-370) after incident has happened (381-384)*
Tendencies and Propensities	*Beta: I am a conservative man* *Iota: Very conservative (L133) gather information before taking risks (L134)* *Mu: "assume the worst" (275)* *Tilde: Conservative way of working (P9)* *Tilde: Being conservative (499)* *Iota: Being conservative: I do not take risks (L245)*
Trust, Relations, and Reputation	*Trust, Relations, and Reputation Beta: Build relations with customers* *Beta: No outsourcing, due to lack of trust.* *Beta: The company has good reputation and demand to be selective with projects* *Beta: Build relationships with customers* *Beta: Customers trust him* *Beta: Being a small business means knowing all the employees* *Gamma: Business continuity based on reputation* *Delta: Reputation and relations with contractors: continuity in business* *Delta: Trusting employees* *Delta: knowing the employees lowers the risks* *Epsilon: Confidence in quality of products, low risk on reputation* *Epsilon: Reputation and product quality means business continuity* *Eta: Building good reputation by not cheating product (L124-126)* *Eta: Ask the market about new customers (L198) our market is small, it is easy to know (L362)* *Eta: Collaborate with other factories / competitors, rely on good will (l322)* *Theta: Loyalty of employees. Rely on loyalty to reduce possibility of risks from employees (L202)* *Theta: Rely on relations and communication with customers to overcome issues with customers, "it makes things smaller" (L210-214)* *Theta: Try to have trustworthy employees (L328)* *Theta: Entrust key people and gives them authority, however, still has control even after 17 years (L517)* *Iota: Mentality of employees, no trust (L72-79)* *Lambda: · No trust in customers, due to a previous incident. (L391-400)* *Mu: Not relying on employees (115-117)* *Mu: Trust* *Mu: Increase loyalty of employees (152)* *Mu: Trusting the employees, exclusion of employees who break the trust (P11)* *Nu: Knowing that the customer can trust him because the company has good references in the market to support their trustworthiness (477)* *Omicron: Reputation: customers refer new customers to them (L218)* *Sigma: Good reputation, good relations, good experience: get new opportunities (L30)* *Sigma: Having good reputation makes customer trust them (L220-227)* *Sigma: Loyalty of customers (L258)* *Sigma: Bad competition: rely on experience and company competence (L416)* *Upsilon: Company reputation relies on high level service. Employee not knowing what to do could damage that reputation (192)*

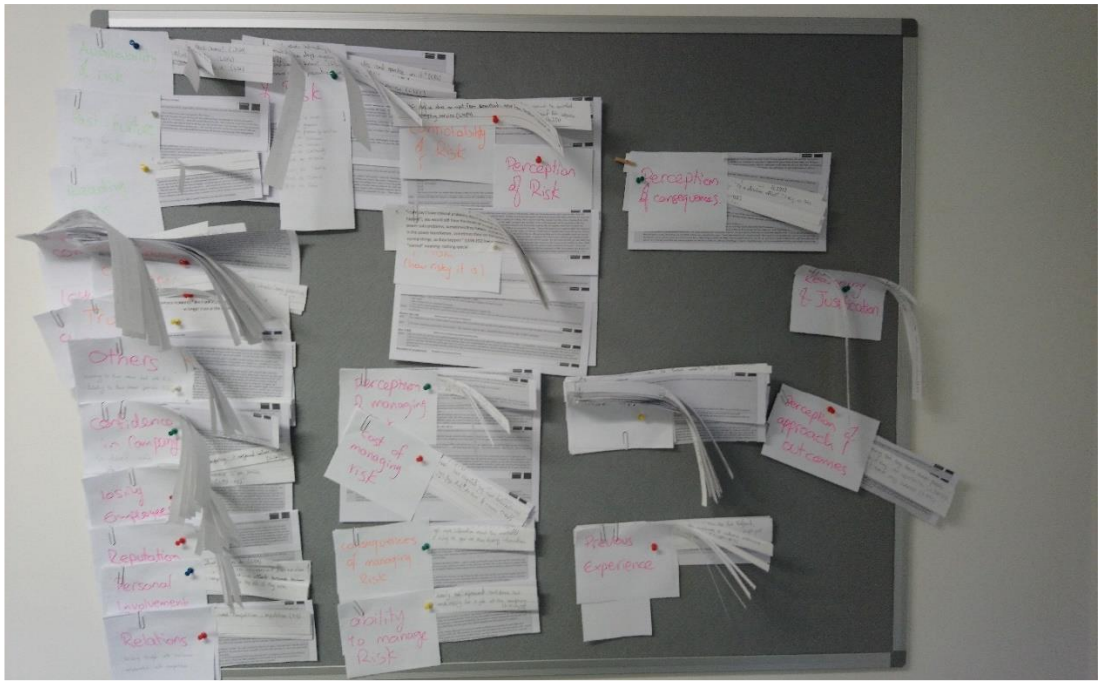
	Phi: Good reputation (169) our work is based on relations (186) *Phi: Provide good quality to keep good reputation è get more business* *Chi: Customers trust him, they work without security checks/bank guarantees (215)* *Chi: "I trust myself", confidence he can do the job (237)* *Macron: "I deal with trusted people, I don't sell only because I want to sell" (85)* *Macron: Have patience with customers, reputation, building bridges with customers (233)* *Macron: Relations, contractors grow, they grow with them. Contractor will bring more business (306)* *Tilde: Relations (323-337)* *Tilde: Employee loyalty (385)* *Breve: Relationship within the company reduces risk of employees leaving or leaking secrets (304)* *Breve: Happy employees and employee loyalty makes their employee turnover zero (317-320)* *Diaeresis: Honesty for good reputation (51)* *Diaeresis: Outsourcing when needed for trusted print houses (competitors) (171)* *Diaeresis: Good service = good customer loyalty (224)* *Caron: Relations (199)* *Abjad: Risk of employees being head-hunted: rely on loyalty, rely on employees coming and telling when receiving an offer (493), try to convince them to stay. Rely on company environment and good salaries.* *Hawwaz: Aftersales and good service = reputation = relations and new business (94) (446)* *Hawwaz: Full flexibility and trust with employees backfired in the past, employees started taking advantage of it (106)* *Hawwaz: Keep customers happy so they would be understanding when we face problems, relations (234)* *Hawwaz: Work on customer loyalty (400)* *Epsilon: Collaborate with other companies / competitors: Lower costs, increase capacity, faster production, lower risks for the company itself.* *Kappa: Communication with customers to explain circumstances (220)* *Omega: Good quality helps overcome new weak competition, reputation (99)* *Pi: Deal only with 4 or 5 suppliers, have been working with them for years.* *Beta: Rely on competence of employees. Trust employees* *Upsilon: Not entrusting employees due to lack of skills (210)* *Hotti: Entrusting employees, full authority, yet under full monitoring (202-211)* *Kappa: Continue projects in loss to save reputation (230)* *Tau: lack of loyalty. You cannot do anything about it.* *Phi: Bad projects could affect reputation, even if not caused by them (579)*

Appendix 7 The manual process of searching for themes




No body knows
Uncertainty
perception of managing Risk
Priority
cost of managing risk
ability to manage Risk


perception of consequences


Perception of Risk
Perception of consequences
Others
Reputation
Relations
Previous Experience

Appendix 8 Development of theoretical perspective

Several theories were investigated during the process of thought-development, such as scenario planning (Schoemaker, 1991, 1995; Schoemaker *et al.*, 2013), real-options (McGrath, 1999; Miller and Waller, 2003; Miller and Park, 2002), sense-making (Weick, 1995; Weick *et al.*, 2005), theory of reasoned action, and theory of planned behaviour (Ajzen, 1991, 2002, 2005; Ajzen and Fishbein, 1969, 1980). Most of these theories, however, became – to some extent – irrelevant to my research. The Theory of Planned Behaviour, however, was initially a major part of my theoretical exploration. Nonetheless, as the research developed, the theory started to lose its relevance, as concepts such as heuristics and bounded rationality were more capable of explaining management of risk in SMEs.

In this appendix, I give a brief overview of the Theory of Planned Behaviour, its impact on the development of this research, and an overview of this development.

Initially, the Theory of Planned Behaviour seemed to be fitting to understand why owner-managers manage their risks the way they do from an approach side – that is: explaining the owner-manager's evaluation of the actions they intend to take. The Theory of Planned Behaviour is an extended version of the Theory of Reasoned Action (Ajzen and Fishbein, 1969, 1980). The Theory of Reasoned Action predicts one's behaviour based on their attitude towards the act and their perceived control of it.

The Theory of Planned Behaviour (Ajzen, 1991) is used to predict intentions to perform behaviours (**Error! Reference source not found.**). Although the theory is based on individual and social behaviours, it has been applied in different other areas relevant to this study, such as organisational behaviour, decision-making, and health risk behaviour. In his paper, Southey (2011) discusses several studies that use the theory of planned behaviour and its parent theory, the theory of reasoned action (Ajzen and Fishbein, 1980), to business decision studies. He also suggested that those theories, although relevant, have not received enough attention in the area of decisions in SMEs.

The theory of planned behaviour is a rational model (Kaiser *et al.*, 2005), it explains behaviour as a rational activity (Kuther, 2002). The theory suggests that behaviour is often the result of reasoned assessment of the positives and negatives of its consequences. It integrates elements of decision theory with the social influence on the decision making process (Kuther, 2002).

The theory aims to predict whether a person would choose to perform a behaviour. For example, it would predict whether one would go on vacation based on the predicting factors. Putting it within the context of managing risks, the theory predicts whether the manager would decide to act or not to act on preventing the occurrence of a risk. It predicts whether the owner-manager would invest in a new factory or not.

The theory of planned behaviour focuses on predicting the intention for the behaviour (i.e. how one chooses to behave rather than how they actually behave). It argues that performing a (planned) behaviour requires the intention to do it. That is, managing a risk requires the intention to manage the risk, and travelling on a holiday is based on the intention to do so. This intention, combined with the ability to perform, would lead the person to perform the behaviour.

The theory suggests that the behavioural intention is influenced by three factors: Attitude toward the behaviour, subjective norms, and perceived behavioural control. **Error! Reference source not found.** shows the relationships between the determinants and performing the behaviour according to the theory.

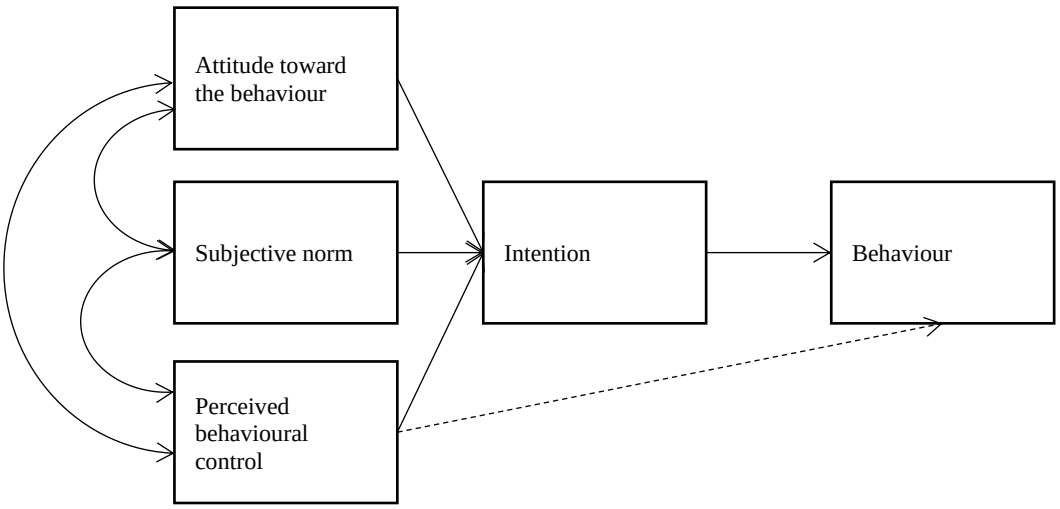


Figure 16: The Theory of Planned Behaviour (Ajzen, 1991, p.182)

The first determinant of behavioural intention is the individual's attitude towards the behaviour. Ajzen (2005, p.123) explains the "[a]ttitude toward a behavior is determined by accessible beliefs about the consequences of the behavior, [… and] is determined by the person's evaluation of the outcomes associated with the behavior and by the strength of these associations", where "[the] evaluation of [the] salient outcome[s] contributes to the attitude in proportion to the person's subjective probability that the behavior will produce the outcome in question" (Ajzen, 2005, p.123). The attitude toward the behaviour is how the behaviour is perceived, the evaluation of performing the behaviour, its outcomes and consequences, the willingness to perform it, etc. This lead to the conclusion that managing risk would be based on the owner-manager's rational attitude toward the approach they would take.

Another determinant of behavioural intention is the subjective norms. Azjen describes subjective norms as "the person's belief that specific individuals or groups approve or disapprove of performing the behavior; or that these social referents themselves engage or do not engage in it" (Ajzen, 2005, p.124). I divided this factor into "counterparts" and "firm" norms. Firm's norms reflect tendencies within the company that could lead the manager to take similar approaches. It can also refer to the company's style and the way it operates, that is the manager might be more likely to adopt an approach consistent with other approaches in the firm. For example, a formalised company could be more likely to adopt a formalised RM approach; a proactive company could be more likely to be proactive in managing the risk.

Counterparts' norms are what the manager believes others do and adopt similar approaches. Some studies showed that SMEs rely on their networks, to obtain information, but also to learn. Amongst what they learn are different techniques, approaches, and tendencies. Thus, they might build beliefs and assumptions about how others behave and adopt similar behaviours. Counterparts' norms also come through social perceptions; where the social perception of a risk shapes the owner-manager's perception of that risk.

These conclusions were, to some extent, consistent with the findings and expectations of the findings. However, as the research evolved, I realised that this consistency was an outcome of my own interpretation of the theory. The theory itself,

as proposed by Azjen and as used in literature, was far less relevant. Heuristics, such as imitation and recognition, were more appropriated to explain these findings.

Finally, the theory suggests that the person's perceived behavioural control influences the behavioural intentions. According to Ajzen (2005, p.125), perceived behavioural control is the "beliefs about the presence or absence of factors that facilitate or impede performance of the bahavior. These beliefs may be based in part on past experiences with the behavior, but they will usually also be influenced by second-hand information about the behavior, by observing the experiences of acquaintances and friends".

The perceived behavioural control reflects whether one believes they have the ability to perform the behaviour. That is, the manager's beliefs on whether the company has the required the finances, skills, know-how, and any other capabilities, resources, and power to adopt the approach and get the desired outcomes. This factor can help identify the different capabilities the managers focus on when adopting an approach, how much they have (or lack) confidence in their capabilities and how that would lead them to different approaches. These determinants were found consistent with risk management literature: risk mitigation strategies are used based on their evaluation and on the organisation's ability to implement the strategy (Hopkin, 2010).

The Theory of Planned Behaviour extends the Theory of Reasoned Action by including a social element to the model. This inclusion covered some speculations that managing risks is shaped by norms and culture. This speculation arose from a casual observation: insurance on mobile phones is an obvious option in the UK, while it is considered odd to consider it in Jordan. This observation led to speculating that managing risk (in this case: mobile phone insurance) is shaped by social norms and a culture enforced by insurance companies. This was also consistent with several theories such as Social Cognitive Theory (Bandura, 1986). Social Cognitive Theory suggests that our knowledge is the outcome of our experiences as well as our observation of the experience of others engaging in different behaviours (Bandura, 2009).

The Theory of Planned Behaviour, however, did not take into consideration the element of risk in a behaviour. Managing risk, as a behaviour, would revolve around risk. Therefore, I turned to the work of Sitkin and Pablo. I discussed their

model in the body of this thesis. Combining the Theory of Planned Behaviour and Sitkin and Pablo's model resulted in a framework that could explain how owner-managers of SMEs manage their risks. The Theory of Planned behaviour would explain their behaviours, and Sitkin and Pablo's model would explain the risk element of this behaviour. This initial framework is presented in **Error! Reference source not found.**. The framework identifies five main concepts: risk perception and willingness to take consequences of risk, and attitude toward risk approach, subjective norms, and perceived control. This framework was the base for the pilot study.

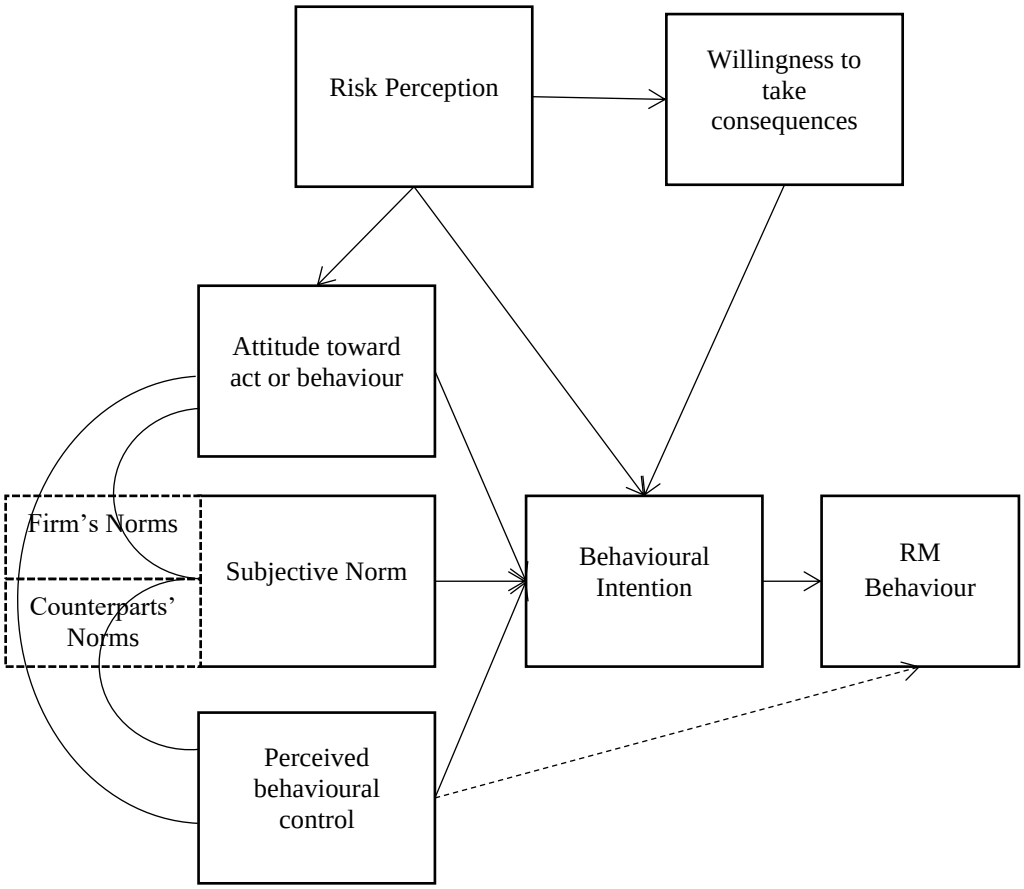


Figure 17: Initial Conceptual Framework (Adopted, with modification, from Ajzen (1991); and Sitkin and Pablo (1992))

Proceeding in the research lead to modifications in the framework. During the initial fieldwork (the pilot study), I identified several concepts, and refined the initial exploration of theory (**Error! Reference source not found.**). For instance, the decision-making process of managing risks was found to be continuous, as opposed to the linearity predicted in the initial conceptual framework. This continuity was found to be in evolving the decisions, and in reshaping different perceptions, attitudes, and beliefs. For example, when a risk is managed in a particular way, the outcome – that is its success or failure in managing the risk – would either enforce the owner-manager's decisions or make them change them. It was also found to shape the owner-

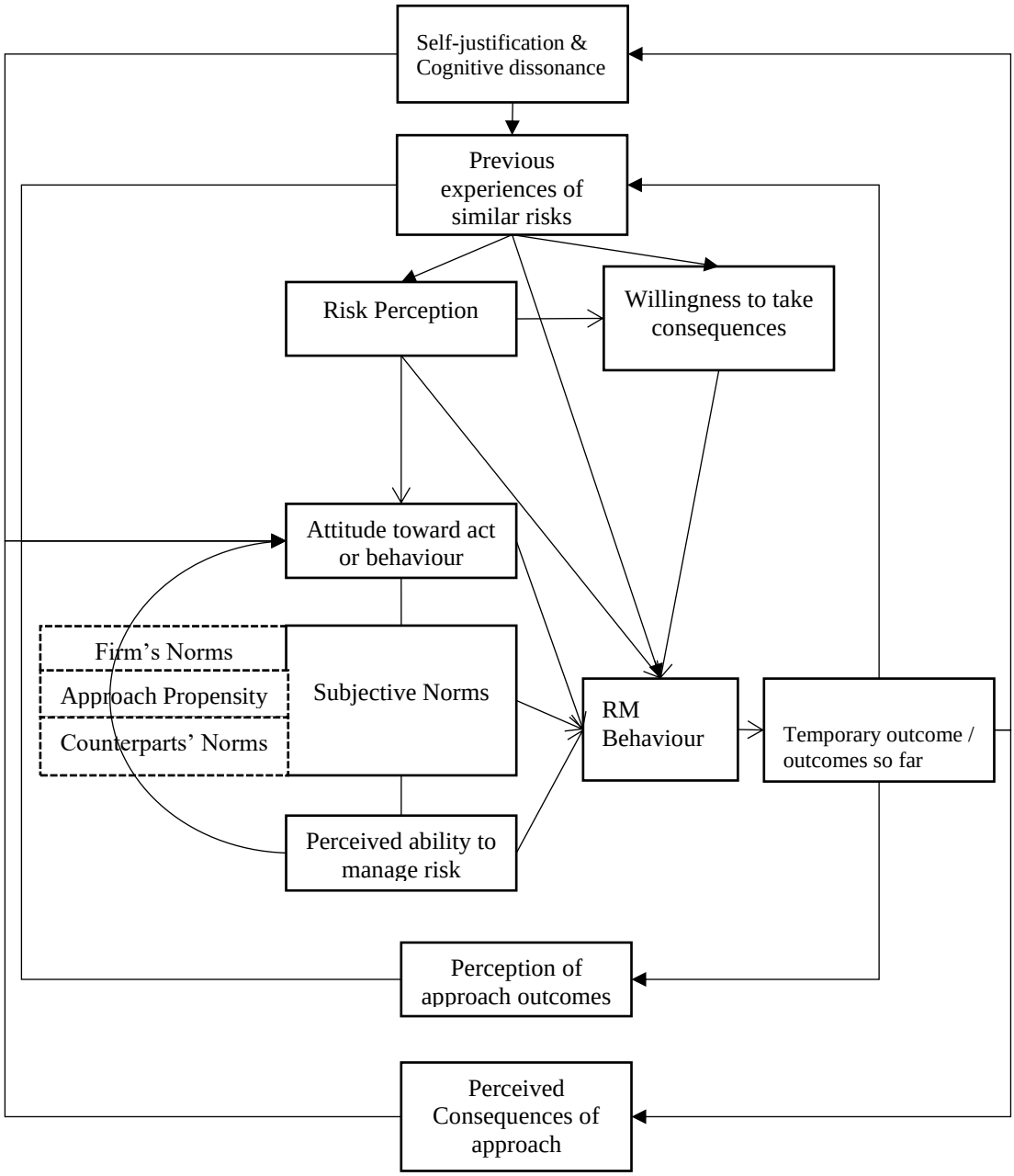


Figure 18: Pilot study conceptual framework

managers' perception of other risks. That is, when the owner-managers find themselves capable of managing risks, they would perceive them to be less risky and more manageable. Recall for instance Martin's confidence in his capability to managing risks – he often cited his ability to manage other risks to support his claims. The opposite was also found to – sometimes – be true: when the owner-manager has been incapable of managing risk, they would perceive other risks to be higher and less controllable. Nevertheless, this finding was not always consistent, in some cases the incapability or failure to manage risk would lead to the opposite effect where risks are perceived to be lower due to the inability to manage them. Recall Thomas from Delta discussing work injuries and his inability to get his workers to wear safety gear. Despite the fact that he explained that the risk of losing a finger on a machine is very likely, and – obviously – losing a finger is not some walk in the park, Thomas' attitude to this risk was not as expected. For Thomas, this risk was part of being in the carpentry industry, suggesting – multiple times – that he cannot control it.

The general outcome of the pilot study was that how owner-managers of SMEs approach risks evolves with every encounter to different issues. It evolves with their experiences of managing risks, and any information they come across. This evolution is not linear, but rather a multi-layered thought process that is shaped by these encounters, experiences, and knowledge.

These findings steered the research into exploring non-rational theories and concept, such as the work of Daniel Kahneman and Amos Tvserky (Kahneman *et al.*, 1982) on heuristics and judgement, Slovic (1987, 2016) on perception of risk, and Langley *et al.* (1995) on criticising the limitations of decision-making literature. Data were also collected with more flexibility, allowing the participants to steer the conversation with the aim of reaching deeper into their thoughts.