

The management object in risk management approaches: How risk management frames the possible actions for managing risks

Working Paper By

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2013

Abstract

Using a systematic review of the last 55 years of research within risk management this paper explores how risk management as a management technology (methodologies, tools and frameworks to mitigate or manage risks) singles out risks as an object for management in order to make action possible. The paper synthesise by developing a framework of how different views on risk management enable and constrain the knowledge about risk and thus frame the possibilities to measure, analyse and calculate uncertainty and risk. Inspired by social studies of finance and accounting, the paper finally develops three propositions that illustrate how the framing of risk establishes a boundary for how managers might understand value creation and the possible future and how this impacts the possible responses to risk.

“We live only by knowing something about the future; while the problem of life, or conduct at least, arises from the fact that we know so little” (Frank Knight, 1921, p. 199).

1. Introduction

The search engine Google finds the information most relevant to our search criteria. Instead of showing a complete and accurate search with all the information from the internet available to us, it shows a partial search with the most relevant information depending on our choice of search criteria. As such the algorithm behind the search engine uses a definite type of calculation that frames our attention to the available information in a certain way. Correspondingly to risk management technologies (methodologies, tools and frameworks to mitigate or manage risk) enable managers to know something about risk in a certain way depending on the measure, calculation and economic representation of risk (Kalthoff, 2005). Whether this knowledge is useful and relevant or impractical and unrelated will be determined by the future (Holzer and Millo, 2005).

Following this line of thought the purpose of this paper is to understand how risk management technologies enable and constrain certain actions for mitigating and managing risk. Thus, this paper explores the question of how risk management approaches single out risk as an object for management in order to make action possible. The paper analyses what issues are taken into account in relation to identify, measure and calculate the expected risk of a possible future. The object of management refers to any kind of physical, cultural or social artifact that can be delineated and singled out for management (Boholm and Corvellec, 2010). Furthermore the paper addresses the circumstances for managing risk that different risk management approaches have developed over time and how these circumstances have changed within the last 55 years of risk management research. This paper is not a classical literature review in order to *develop a taxonomy* of risk management for *integrated reference* (Verbano and Venturini, 2011) or to *integrate risk concepts* (Renn, 1998) to propose avenues for future research. Rather this paper takes the notion that risk only makes sense when it is connected to humane activity (Renn, 1998 p. 50) literally and claims that risk management technologies create a context for generating certain knowledge about risk and that this knowledge serves certain possible actions for humane activity.

To support this claim the purpose of the paper is to do a comprehensive overview and conceptual analysis of how different risk management approaches seek to single out risk as an object for management and what issues are taken into account in relation to identify, measure and calculate risk and how this influences ideas about the future and the possible value creation. The assumption is that the definition of risk shapes the

possible knowledge that different risk management approaches might create. The paper is based on a systematic review of the risk management literature from the last 55 years using the Social Sciences Citation Index (SSCI) of the ISI Web of Knowledge to find 116 empirical papers exploring the managerial and organisational effects of implementing and using some sort of structured process to risk management. These papers all reveal different aspects between the risk management approach and the possible actions for managing risk. These differences are used in the synthesis to propose a framework conceptualising four different views on risk management, and to develop three propositions of the relationship between risk and actions for managing risk.

This study contributes in several ways. First, risk management supposes that an object of risk can be identified or calculated and singled out as an object for management. Most researchers agree that the definition of risk impact on the practices of managing risk (Merkelsen, 2011; Slovic, 1999) although there is no agreed risk definition and there has been an ongoing debate about the definition of risk (Aven and Renn, 2009, 2010; Merkelsen; 2011; Rosa, 1998, 2003, 2010). Despite this only few attempts have been made to understand how the object of risk frames the knowledge and possible actions for managing risk (Corvellec, 2010). Second, it adds to the work of Verbana and Venturin (2011) who calls for clarifying research to understand the complexity and breadth of risk management. Likewise Renn (1998) calls for social science perspectives on evaluating the performance of risk management and the context it creates for managing risk. Third, the paper progressively adds one nuance to Ulrich Beck's thesis that risk shapes society (1992) and the claim of Hutter and Power (2005) that risk re-organises organisations by suggesting that risk management frames the possible actions for managing risks depending on the object of management - derived from the definition of risk - and that this relationship has consequences for the outlook of the future.

The paper is organised as follows. First in section 2, I introduce the methodology of the review. In section 3, I present the results from the review and analyse them using a concept-centric approach (Webster and Watson, 2005). I first examine the circumstances for managing risk and second I scope out the possible actions for managing risk. Inspired by the approach suggested by Rousseau et al. (2008) I conduct a theoretically inspired synthesis of the insights from the review in section 4. The synthesis is theoretical inspired by social studies of finance and accounting (Vollmer et al., 2009) to understand the impact of risk management approaches on the actions for managing risk. The synthesis first develops a framework for understanding the relationship between risk and risk management and the possible actions for managing risk. Second, it develops three propositions based on the framework and analysis. Finally conclusions are drawn in section 5.

2. Description of methodology

In this section I discuss and argue for the methodological considerations on how to ensure validity and a high level of quality when conducting reviews. Furthermore I address and discuss the main criteria for synthesising the existing body of knowledge following the approach suggested by Rousseau et al. (2008).

2.1. Methodology

Combining a systematic literature review with a synthesis of the existing body of knowledge is an important first step to identify where research findings are clear, unclear or ambiguous (Rousseau et al., 2008). Furthermore it is a vital part of finding and analysing productive lines for future research (Ibid) and future field studies (Edmonson and Mcmanus, 2007). While this is not the main ambition of this paper, it also enables the researcher to develop new propositions about the relationship of different constructs within a specific field of research based on the variation of the substantial empirical work conducted by others (Ibid). Literature reviews are often blamed for being positioning papers (Fink, 1998, Tranfield et al., 2003) including implicit biases of the researcher (Hart, 1998) and claiming their novelty of contribution to the management field (Locke and Golden-Biddle, 1997). Some even go as far as Rousseau et al. (2008) calling them “...*cherry picking studies*...” (p. 476) trying to advocate specific points of view. Furthermore, it has been debated whether literature reviews should be concept-centric (Webster & Watson, 2002), paradigm-centric (Burell and Morgan, 1979; Hopper and Powell, 1985; Puxty, 1993; Ryan, Scapens and Theobald, 2002) or author-centric (Salipante et al., 1982), with the later being heavily criticised (Bem, 1995; Levy and Ellis, 2006). Nevertheless a literature review is a good starting point for analysing and synthesising the diversity of a specific body of knowledge within an academic field (Levy and Ellis, 2006; Tranfield et al., 2003; Webster and Watson, 2002). Against this backdrop my aim is to apply a systematic review methodology inspired by (Levy and Ellis, 2006; Tranfield et al., 2003) using a concept-centric approach as the main inductive analytical tool (Webster and Watson, 2002) and synthesise the emerging concepts using social studies of finance and accounting (Volmer et al., 2009). This is done to insure a transparent and reproducible procedure inspired by Crossan and Apaydin (2010) and Rashman et al. (2009) with the aim of “...*counteracting bias by making explicit the values and assumptions underpinning a review.*” (Tranfield et al. 2003, p. 208).

The methodology is inspired by a systematic review (Tranfield et al. 2003) and uses a systematic data collection procedure, a descriptive and qualitative data analysis technique, and a theoretically grounded synthesis of the data. The methodology is limited to a descriptive rather than a statistical method in the analysis of the results. In other words depth is to some degree sacrificed for breadth in order to apply a methodology that deals with the span and fragmented field of risk management with many different paths of development as described by Verbano and Venturini (2011). The review process consists of three parts: data

generation, data analysis and data synthesis. Individually the three parts are explained in the following and summarised in **figure 1**.

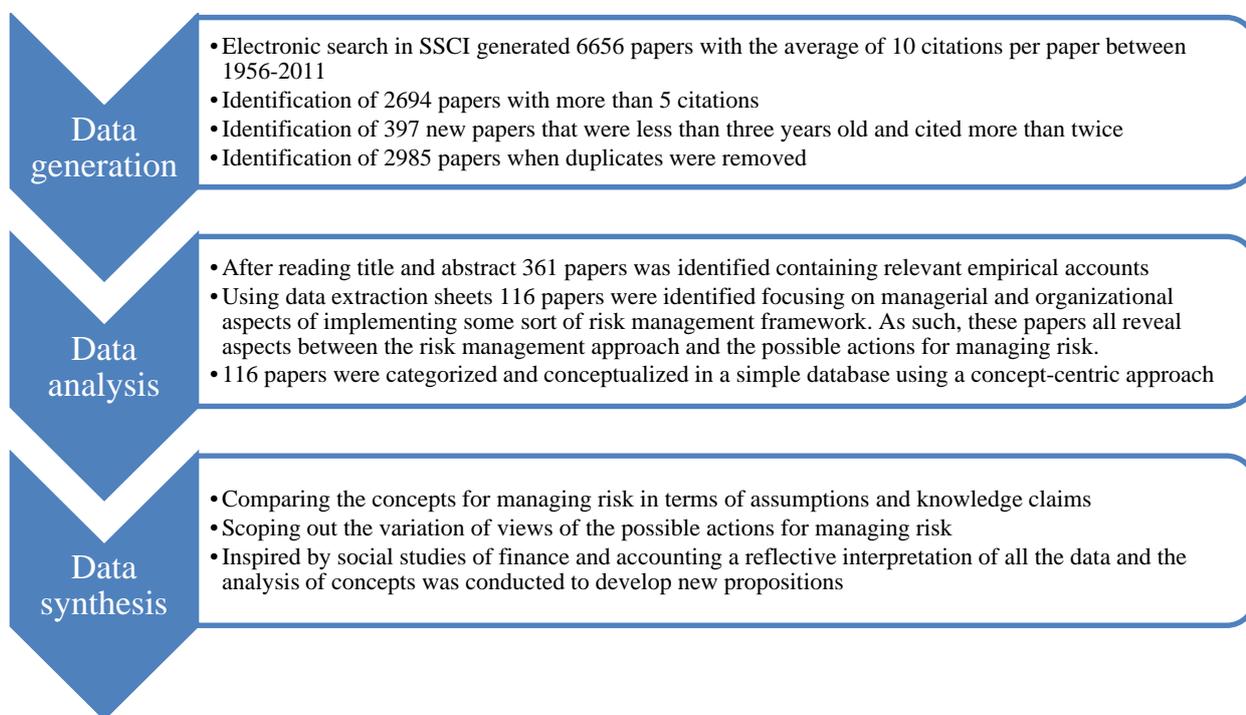


Figure 1. Summary of systematic review process (own creation inspired by Rashman, Withers and Hartley (2009)).

2.2. Data generation

Following the systematic review approach (Tranfield et al., 2003) data were collected using a predefined selection algorithm determined by the objective of the review. Thus, the review was limited to peer-review journals with validated knowledge about risk management and the highest possible impact within the field of risk management (Podsakoff et al., 2005). Therefore the Social Sciences Citation Index (SSCI) of the ISI Web of Knowledge database was chosen as the database for data generation in order to span the field of risk management and to conduct a comprehensive review of peer-reviewed journals. Furthermore, SSCI objective measure of citations counts allows filtering a large sample of papers based on this criterion (Crossan and Apaydin, 2010). To cast the net wide I used all the years offered by SSCI at the time of the review, which meant from **1956 to 2011**. Risk management is used in many different ways (Verbano and Venturini, 2011) and there is a plurality of meanings associated with the term (Power, 2007). Thus, to secure the inclusion of relevant studies I only used the basic keyword risk management or its derivatives in the initial search (e.g safety studies, precautionary principles, risk research). Furthermore document type was set to “*article*”, language was set to “*English*”, subject area was set to “*business*”, “*management*”, “*economics*”, “*finance*”,

“*operation research management science*” and “*public administration*”. These settings resulted in an initial sample of 6656 papers.

2.3. Data analysis

The analysis of the data was done by first organizing the initial pool of papers into a relevant set of papers. This organization was done using the citation count from the SSCI for each paper. Paper citations serve as a *de facto* vote of the knowledge contribution of the papers (Saha et al., 2003) and its impact on the field (Podsakoff et al., 2005). The average citations per year were 10 in the initial pool. Thus, I identified 2694 papers of the initial pool, which had more than 5 citations per year. To incorporate new papers that might be less cited, I identified 397 papers that were less than three years old and cited more than twice (giving a total of 3091 papers). This refinement resulted in a sample of 45% of the papers from the initial pool after removing the duplets (2985 papers of 6656). After going through the abstracts from this sample I identified a total of 361 papers containing empirical accounts focusing on the managerial and organizational aspects of implementing some sort of risk management frameworks or approaches. Because of the main ambition of the paper I only focused on empirical papers having some sort of empirical account of the possible impact of using risk management as the main criteria for relevant papers. These papers were read using a data extraction sheet as a template to cover the essential details of each paper, inspired by Rashman et al. (2009), focusing on knowledge claims and findings. I identified 116 relevant and empirically sound papers, which were included in the study and organised into a simple database by inductive categories for deeper and deeper analysis using a concept-centric approach, inspired by Webster and Watson (2002). This approach is an inductive method to categorise the sample of papers into a concept matrix depending on the risk management approach in the paper. The approach is qualitative and corresponding to the nature of the generated data. Furthermore in order to be able to synthesise the literature the concept-centric approach offers a starting point for discussing the variation of approaches to risk and risk management (Ibid).

2.4. Data synthesis

The objective of the synthesis is to execute a reflective interpretation of the knowledge claims within the field of risk management studies (Rousseau et al., 2008). As such, the goal is to synthesise in order to create explanations for the possible management object in the different risk management approaches. This is done by discerning the patterns behind the claims for using different definitions, calculations and measurement of risk in each approach. The synthesis falls in two steps. First, the insight from the analysis is used to explore the connection between risk management approaches, management objects, possible actions for managing risk, revealing the contextual factors that different views on risk management create (Rousseau et al., 2008). The insight from step one is then used to develop a framework for the view on risk and the possible actions for managing risks. Finally, in order to do a theoretically inspired synthesis the concepts from the analysis and the insights from the framework are compared and discussed, inspired by social studies of finance and

accounting (Vollmer et al., 2009). This final step focuses on the role of economic calculation (Justesen and Mouritsen, 2011) and the central role of economic knowledge and representation of risk (Kalthoff, 2005) in order to identify possible propositions about the impact of risk management.

3. Findings, concepts and analysis

The analysis of the reviewed papers falls in four steps. First in section 3.1., I look at the development of risk management research and the circumstances for managing risk by focusing on what issues have been taken into account. Second in section 3.2., I scope out the possible actions for managing risk by using the concept-centric approach (Webster and Watson, 2002) and illustrating four conceptualised categories of the findings from the review – these are; *The ambiguity of defining, measuring and calculating uncertainty and risk, the risk and value paradox, seeing or creating the future, the possible actions for managing risk.*

3.1. The development of risk management and the circumstances for managing risk

The longitudinal development of risk management research

To illustrate the longitudinal occurrence of publications within the fields of *business, management, economics, finance, operation research, management science and public administration* (as reported by the Subject Category field of SSCI), **Figure 2** graphs the number of papers referring to risk management published each year since 1991. Between 1956 and 1991 the number of papers published each year was between 5 and 15 and therefore they are not graphed in **figure 2**. After 1991 the number of papers referring to risk management grew at an average 20 percent per year from around 35 in 1991 to around 900 in 2011. As such, the scholarly interest in risk management has increased dramatically since 1991 and measured by the number of publications the interest has yet to peak. The recent global financial meltdown in 2007 and the following consequences have provided plenty of opportunities to ask what risk management actually is, how it works, and how it should work which is mirrored in the number of papers doubling between 2007 and 2011.

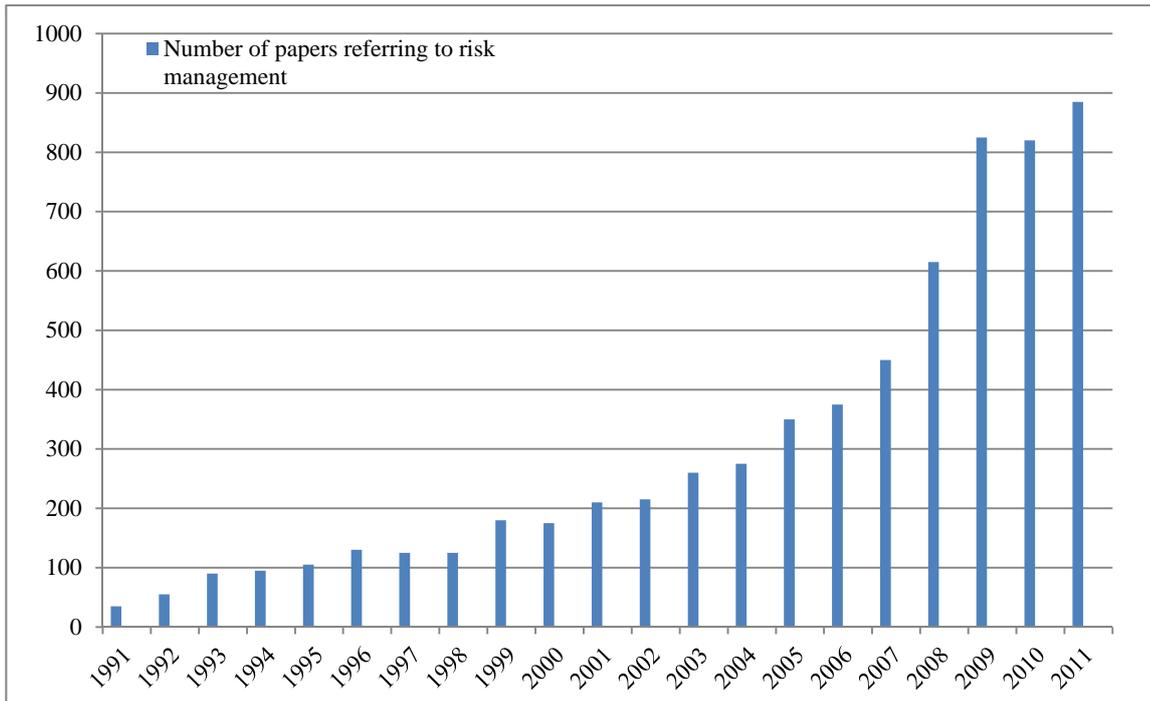


Figure 2. Number of papers referring to risk management year by year since 1991 (own production)

The risk management escalation

The study of risk and the technologies to govern, assess and manage risks have been a focus for a multitude of research across the social sciences (Taylor-Gooby and Zinn, 2006). In the line of management studies the perspectives range from audit (Skærbæk and Vinnari, forthcoming), finance (Andersen, 2006), insurance (Acharyya, 2006) to strategy (Meulbroek, 2002), accounting studies (Mikes, 2009) and organisational studies (Corvellec, 2010).

This expansion in the scholarly interest in risk management is mirrored in the number of organisations implementing and using some sort of risk management (Gephart et al., 2009, Power, 2007). Although risk management is not a new thing (Gallager, 1956, Covello and Mumpower, 1985) there is a mounting development and use of contemporary risk management frameworks, information and control systems in order to handle risk and uncertainty (Andersen, 2009). Risk management has emerged as an attempt to work systematically and strategically with the consequences of threats and opportunities (Andersen, 2008; Deleoach, 2000; Clarke and Varma, 1999; MacCrimmon and Wehrung, 1986). In sum, there are now numerous procedures for identification, analysis, evaluation and classification of risk and uncertainty (Lam, 2003; Klinke and Renn, 2011; Miller and Waller, 2003). Nevertheless, Enterprise Risk Management (ERM), as suggested by the COSO framework (COSO, 2004), is increasingly seen as the main form to organise uncertainty (Arena et al., 2010). This portfolio approach to risk tries to link risk, strategy and organisational

objectives (Kleffer et al., 2003). As such, risk management has “...moved from the peripheral functions areas of the organization to the corporate level” (Arena et al., 2010, p.).

In connection risk management is increasingly seen as the main focus to govern the development of organisations (Rao, 2009), and Knight (2006) even goes as far as saying “...corporate governance may be regarded as the glue which holds an organization together in pursuit of its objective. Risk management provides the resilience” (Knight, 2006, p.). Thus, the contemporary use of risk management in organisations is increasingly featured as a marker of good corporate governance (Power et al., 2009) in both the public (Young and Fone, 2000) and the private sector (Drew and Kendrick, 2005). Some scholars suggest that organisations should be categorised depending on their risk management maturity (Olsen, 2007) or ability to look collectively at all the risks beyond a disciplinary silomentality (Kleffner et al., 2003). Likewise critics of the risk management explosion also highlight how risk management can vary in its calculative practices (Mikes, 2005; 2009; 2011) and level of embeddedness (Power, 2007; 2009) across the organisation.

While some scholars see this development as a purely signal effect of internal control systems (Simons, 1990, 1991) and a culmination of the risk management explosion (Arena et al., 2010) that just increase the isomorphic pressure on organisations (Power et al., 2009), the majority of scholars agrees that the complexity of modern organisations and their surrounding world means that failures have greater consequences for the organisation (Corvellec, 2010; Muelbroek, 2002; Power, 2007; Renn, 2006). Thus, decision makers and policy makers continuously search for certainty and security, which is visible in an escalating interest in risk and responsibility (Beck, 1992; Douglas, 1992; Luhmann, 1993). In this process man-made disasters (Turner and Pidgeon, 1997), normal accidents (Perrow, 1984), or high-reliability organisations (Weick and Sutcliff, 2001) are all examples of risk management concepts that have entered the standard managerial vocabulary of organisations (Power, 2004). Additionally, also more formalistic risk management approaches have been developed as managerial tools to decide how to avoid, transfer, mitigate or accept risks (Andersen, 2009; Crouhy *et al*, 2006; Reason, 1997). Business risk scorecards (Wu and Olsen, 2010) or value at risk (Rao, 2009) are both examples of the ongoing professionalization of risk management (Mikes, 2011) trying to move beyond the failed model-based risk management (Power, 2009).

From a more organisational perspective risk management is by some scholars understood as the implementation of operational planning and control systems with a rational, economic and logic control frame (DeLoach, 2000; Lam, 2003; Young and Fone, 2000). Others scholars argue for a more holistic approach to the challenges of risk trying to balance risk and opportunity towards the organisational processes (Andersen, 2009; 2008; McGee *et al*, 2005; Wu and Olsen, 2010). Nevertheless, most of these risk management approaches have developed in the fields of insurance, finance and accounting in the private sector, and most research within these disciplines takes the formalistic approaches for granted (Power, 2007). Furthermore these approaches use data from past performances to calculate for the future as an evaluative

approach (De Bakker, 2009) facing backwards (Mikes, 2011). Furthermore, the focus is still on downside exposure – counteracting downside losses (Andersen, 2008) with little focus on how to pursue upside potential – gains (Andersen, 2008). Interestingly, Corvellec (2009) found that silence is not absence – or just because risk management is not formalised, it does not mean that risk is not taken care of.

Level of analysis, theoretical approach and methodology considerations

Risks often involve technology, politics, nature, culture, cognitive schemas and many other phenomena (Arnoldi, 2009). Although risk and the management of risk can be seen as a multilevel phenomenon, only few papers from the sample apply a multilevel framework in their approach to understand the dynamics and effects of risk management approaches (e.g. Shimizu, 2009). Most of the papers from the sample focus on one level of analysis paying attention to either the industrial level (e.g. Andersen, 2009), the organisational level (e.g. Corvellec, 2009) or the individual level (e.g. Bazerman and Moor, 2008). The choice of focus is often determined by the disciplinary orientation to risk (Mythen and Walklate 2006; Taylor-Gooby and Zinn, 2006) where risk is understood from very diverse theoretical backgrounds within the social sciences such as: anthropology (Douglas, 1992), sociology (Beck, 1992), psychology (Slovic, 2000) or economics (Aven, 2003). Likewise, the precise definitional characteristics of risk diverge across disciplinary perspectives as well as level of analysis and create different contexts for producing knowledge about risk management.

The relation between risk definition and risk management is mirrored by Verbano and Venturini (2011) who argue that research on risk management has developed along distinctive paths and contexts focusing on different but sometimes overlapping types of risk and levels of risk management. Often these differences also mean different methodological approaches and epistemological considerations (Merkelsen, 2011; Renn, 2009; Verbano and Venturini, 2011). This pluralism of perspectives reveals diverse aspects of risk management such as calculative cultures (Mikes, 2009), institutional dynamics (Arena et al., 2009) or the Bowman paradox of the risk-return relationship (Andersen et al., 2009) and increases the body of knowledge about risk management. By the same token this pluralism or fragmentation of the risk management field also result in the uncertainty around what constitutes risk which lends it the capacity to define and reshape management activities in diverse ways (Bhimani, 2009). Furthermore, following Edmonson and Mcmanus (2007) this pluralism and fragmentation of the field prevent the ability to relate between perspectives, aspects, constructs and different theoretical contributions and may limit further progress within the research of risk management.

There is a growing interest and conceptual understanding that risk needs to be considered from a broader perspective beyond disciplinary silos (Dickinson 2001; Meulbroek 2002a, 2002b) in order to achieve a holistic view on risk and risk management (Mehr and Hedges, 1974; Power 2004, 2005; Ward 2003). Interestingly, there are only few studies taking a multidisciplinary approach to study risk and risk management in practice (e.g. Shimizu, 2009). Additionally, Renn (1998) has analysed the strengths and

weaknesses of risk assessment and risk perception in order to integrate them. Despite this the number of papers scrutinizing the managerial impact and effect of risk management approaches is few in numbers (e.g. Mikes 2009) and the use of regulatory frameworks (e.g COSO, 2004) and approaches for “...*analyzing and managing organizational risk still go unabated*” (Bhimani, 2009, p. 3).

In sum, risk management have taken many forms across organisations (Mikes, 2009, Power, 2007). Furthermore there are many different frameworks, regulations and technologies (e.g. AS/NZS ISO 31000 or COSO ERM intergraded framework) pointing to how risk management should be applied to organisations. This has resulted in a wide variation in the actual use of risk management within similar industries (Acharyya, 2006) as well as in the public sector (Woods, 2009; Collier and Woods, 2011) and across contexts (Chenhall, 2003) suggesting a fluidity of risk management practices (Arena et al., 2010). As such, the circumstances for managing risk have changed from a specialized function to organisational wide approach and have been studied through various approaches. Despite the scholarly interest and increased use of risk management by practitioners the last twenty years of development have not led to a greater control and oversight of risk. The field is fragmented taking different paths of development (Verbano and Venturini, 2011). Likewise, the risk management practices have taken many forms becoming the risk management of nothing (Power, 2009).

3.2. Scoping out the actions for managing risk

The ambiguity of defining, measuring and calculating uncertainty and risk

All humane endeavours involve uncertainty and risk (Olsen and Wu, 2010) and coping with uncertainty is a challenge to most organisations (Thompson, 1967, Weick, 1969, March and Shapira, 1987). Although the concepts of both risk and uncertainty have been widely used in finance, economics and strategic management (Zsidisin et al., 2005) there is no generally accepted definition (Miller, 1992; Aven and Renn, 2009). Despite this researchers agree that risk definition and risk management are interdependent and that the way risk is defined has a substantial impact on the practice of managing risk (Merkelsen, 2011; Rosa, 2003 Slovic, 1999) or as Slovic points out: “*Attempt to manage risk has to confront the question of what is risk?*” (1999). As such, how risk is defined shapes the study of risk and how it might be managed suggesting that the concept of risk cannot be separated from its application (Merkelsen, 2011).

Many scholars refer to Frank Knight’s (1921) distinction of risk and uncertainty (Mikes, 2011; Olsen, 2007; Power et al., 2009) suggesting that uncertainty means that we have no information about possible future states of the world and their probabilities, while risk implies a partial knowledge of such probabilities (Holzer and Millo, 2005) - there are uncertainties without risk but no risk without uncertainties. Power et al. (2009) suggest that most contemporary risk management in fact in Knightean terms is really uncertainty

management of one kind or another and that uncertainty is frequently framed and discussed as risk. Similarly Mikes (2011) argues for the relevance of Knight's classical typology of uncertainty to distinguish between different uncertainties while Holzer and Millo (2005) find it useful for normative theories about risk and uncertainties but useless for empirical research because: "*Many situations entail some information about probabilities, while some aspects are completely uncertain*" (p. 225). Likewise, Miller (2009) argues that risk cannot be reduced to quantifiable uncertainty.

Despite the ambiguity on how to measure uncertainty, the starting point for most risk management frameworks is the classifications of uncertainties into categories of risk (Mikes, 2011) but to turn uncertainties into risk categories requires investments and effort (Vries et al., 2011). Risk is often seen as a central component of strategic management by both practitioners and researchers (Andersen, 2008) although there is a big difference in the way scholars try to understand risk (mostly as variance) and the way practitioners understand risk (mostly as lack of information) (Ruefli et al., 1999) which is related to the idea of uncertainty management of Power et al. (2009). Additionally, most of the measures and techniques to capture risk are borrowed from adjacent disciplines (e.g. financial economics and statistical decisions theory) (Ruefli et al., 1999).

Bernstein (1996) suggests that managers have moved from taking decisions about risk on superstition and instinct to using rational risk management to support their decisions (Berstein, 1996). Additionally risk can be measured more precisely with the development of advanced computer software and sophistication of statistically and economically analytical models (Kleffner et al., 2003). The underpinning assumption here is that information about risk can be categorised, generalised and compared (De bakker, 2009) mirroring the economic activities in quantifiable terms which are often found useless by practitioners (Ibid). On the contrary this: "*...probabilistic notion of risk abstracts from time by lumping together historical events into frequencies without a history.*" (Holzer and Millo, 2006). Millo and Mackenzie (2009) suggest that such representations of risk are partial at best. Likewise, Kalthoff (2005) suggests that they are not hard facts but ambivalent representations that can be used for different things in the process of decision making. Risk measures might reduce complexity (Ibid) and as such shorten the decision making process but at the same time the abbreviation of uncertainty and risk may deliberately be used for underestimating risk and uncertainty (Flyvbjerg et al., 2003). With connotations to Bakhtin's (1984) notion of *polyphony* Mikes (2011) puts this ambivalence of risk measures represented as numbers beautifully "*While there is no question that numbers are a means of communication, they are not the building blocks of a language but rather of several possible languages*" (p.226).

Nevertheless, Arena et al. (2010) claim that the translation of risk can be revealed by analysing the risk rationalities of individual risk experts and their embedded actions: "*... it is through the experts' embedded actions and their mutual entanglement that translations are revealed. Constrained by organizational space*

found within control frameworks and decisional centers, the heterogeneity of practice is then reduced or enlarged by the approaches adopted by experts” (p. 673). While this institutional perspective on the translation of risk sounds appealing, both Mikes (2011) and Vries et al., (2011) suggest that there are uncertain elements of going from *first-order* to *second-order* risk measurement (Mikes, 2011, p. 226) and that the risk categorisation often changes overnight (Vries et al., 2011). Furthermore, by referring to Hasson (2010), Corvellec (2010) argues that risk cannot be reduced to an objective fact because regardless of how scientific the measure or approach may be “...it rests on eminently cultural valuation process” (Ibid., p.). Likewise, Andersen et al. (2009) acknowledge that the calculation of risk might indicate a true relation although we cannot be certain. As such, it is difficult to install some sort of taxonomy based risk categorisation approach (e.g. Renn, 2005) that will be of any guidance for categorisation and aggregation of risk because risk might migrate between categories as new challenges emerge (Vries et al., 2011).

Despite the lack of confidence in the assessment or categorization of uncertainty and the calculation of risk - often referred to as epistemological uncertainty - and lack of knowledge about possible uncertainties - often referred to as ontological uncertainty (Vries et al., 2011), risk is increasingly regarded as a manageable factor (Millo and Mackenzie, 2009; Power, 2007). In sum risk has been “internalized” as a first order thing (Garland, 2003) although it might as well be seen as a product of the social organisational and managerial process where objects are recognised and described as risks (Power et al., 2009). Thus, the measurement, categorisation and calculation of risk and uncertainty could both be seen as a portraying practice (Kleffner et al., 2003) or a manufacturing practice (Kalthoff, 2005).

The risk and value paradox

As a fundamental aspect of management research, scholars from all fields of research have been interested in the processes of how managers maintain above average returns and create value for their organisations (Ruefli et al., 1999). Following Adam Smith’s ideas and description of the relationship between risk and reward (Smith, 1776, p) Alquir and Tignol (2006) argue that profit by necessity requires accepting some risk. Managing and controlling risk are believed to create market leadership and company growth (Meier, 2000) as well as successful operation (Archer, 2002) which create value (Miller, 1998; Wang, Barney and Reuer, 2003) while the opposite can destroy value (Doherty, 2000; Manab et al, 2010). In essence risk management is assumed to “*Provide a solid foundation upon which companies can enhance corporate governance and deliver shareholder value*” (Bowling and Rieger, 2005, p. 29). As such, value is created by aligning objectives with the risk appetite of the organisation, which will drive the risk tolerance level for the firm (Rao, 2009). While this management perspective on value and risk seems rather functionalistic and smooth, Olsen and Wu (2010) acknowledge that even the best-laid risk management plans might be disrupted. Nevertheless, the adoption and application of risk management will still create value (Manab et al., 2010) and reduce uncertainty and improve success rates (Zwikael et al., 2011) making it highly essential

for all types of organisations in the world (Manab et al., 2010). The fundamental assumption here is that risk and return are correlated and that the control of risk will create value.

Interestingly, “*One of the most enduring puzzles in the strategy literature is the negative association between risk and return known as the Bowman paradox*” (Andersen et al. 2009, p.). While this might be explained by the lack of methodological measurements to capture the relationship (Andersen et al. 2009) or scholarly inconsistency (Ruefli et al, 1999) a plausible explanation is given by behavioral economics (Kahneman and Tversky, 1979) and the behavioral theory of the firm (Cyert and March, 1963; March and Shapira, 1987). From this perspective grounded in cognitive psychology and prospect theory (Kahneman and Tversky, 1979) managerial risk taking is impacted by the relative reference point of the managers framed by the situation (gains or losses) which will impact the decisions of the managers and effect the overall performance (Andersen et al.,2009). So despite all the focus on risk management the premises for creating value might not be cut in stone as suggested by some risk management scholars (e.g. Manab et al., 2010).

Additionally, critical scholars have suggested that risk management technologies primarily create value or success through their organizational usefulness as a communicative device rather than as an accurate risk management device (Millo and Mackenzie, 2006). As such, contemporary risk management technologies enable an efficient way of tackling operational, political and organizational challenges (Ibid.). Furthermore, these devices work fine on everyday basis, yet in situations of extreme volatile conditions their usefulness and value are low (Holzer and Millo, 2006). This critical perspective is congruent with the critics from commentators of the recent financial meltdown, blaming the emphasized focus on risk measurement (Power, 2009; Taleab, 2007). As such, risk management technologies “...are useful devices to deal with the fundamental uncertainty of the future. They help to deal with, but cannot eliminate ignorance” (Holzer and Millo, 2006, p). Risk management technologies might create value if they are used in a reflective way taking the models and frameworks into account (Holzer and Millo, 2006) but they also have a tendency to create side-effects (Millo and Mackenzie, 2006) and new bureaucracies (Power. 2007). Furthermore Power et al. (2009) claim, although focusing on a reputational risk, that risk management only creates new accountability conditions for the organisations as well as an isomorphic pressure increasing the overall complexity of risk management. This is comparable to the seminal study from Perrow (1984), although not a risk management study, suggesting that unexpected consequences arise from complex systems. Finally Holzer and Millo (2006) argue against Smith’s (1776) description of risk, by saying “...this dichotomy, between risk as an inherent element of entrepreneurship and risk as an external factor that should be minimized, is misleading. In fact, individual risk taking and the societal management of risk are intertwined”(Holzer and Millo, 2006, p). This last comment focusing on how risk and value is an intertwined social process is analogous to Vries et al. (2006), suggesting that managers or policymakers need to get socially involved and *invoke other strategies* to manage risk successfully.

Taking this social construction perspective to the extreme Corvellec (2010) argues that “*Risk and value are neither separate from each other nor from practice. They are connected to everything that constitute managerial practice*” (p.). The central element here is that only something that is at value can be at risk (Corvellec, 2010). This is corresponding to the risk definitions put forward by Rosa (1998, 2003) But more constructivist in the sense that only “...*what managers consider as being of value follows from how they organize their managerial practice*” (Corvellec, 2010, p). Furthermore, Corvellec (2010) argues for understanding the social conditions for valuation through scrutinizing the processes of “...*why some objects are endowed with value while others are not*” (p.). In sum, this adds to the ambiguity of how formal risk management technologies might add or might not add value and risk management has yet to prove its ability to create value (Power, 2009).

Seeing or creating the future

Risk management introduces the future as an object for management which enable managers to have an idea about the risk of the future - following Knight’s introducing quote from his seminal book *Risk Uncertainty and Profit* (1921) managers always get into troubles due to the fact that they know only very little about future risk or unmeasurable uncertainty which Knight used as a proxy for risk (Ibid.). Approaches to risk management provide different options and actions for managing possible future risk (Millo and Mackenzie, 2009) or “...*it offers new ways of action and thus makes it possible to conceive of more potential ‘states of the world’. The world and its dangers are not ‘given’ any more, as technological tools make it increasingly a matter of decision to consider alternative futures*” (Holzer and Millo, 2005, p. 227). From this perspective risk management approaches do not only describe a given reality (Hutter and Power, 2005) but create the context for producing certain knowledge about risk that includes a prediction of the future and is operated upon as a blueprint for action and as such has a constitutive or performative role (Millo and Mackenzie, 2009 p. 639).

Additionally, risk management and the representation of risk (number, colors or other categories) frame the actions by installing some level of certainty about the outlook of the future (Kalthoff, 2005). In this process risk management has a social role both as a device to calculate something and as a device to calculate with something, but also counting on the outcome of that calculation which installs the capacity to act (Ibid.). Nevertheless, Mikes (2011) found that “*risk calculations appear to have the capacity to either increase or decrease decision uncertainty*” (p.26) and Vries et al. (2011) found that overnight risk may turn out to be a different type than originally thought. On a wider scale Holzer and Millo (2006) found that the use of sophisticated systems of risk management under certain circumstances undermine their own purpose by resulting in unforeseen consequences and new danger.

From a more rational-economic perspective risk management technologies support managers to take better decisions (Lam, 2003) by introducing a holistic picture of the exposure of the organisation to future risks (Deleoch, 2000; Lam, 2003; Young and Fone, 2000). This is done by using information regarding risk and causes from previous failures (De Bakker, 2009). The assumption here is that the future to some degree will be a replication of the past and that information from previous risk can be generalised to future risk. Taken to the extreme risk management is seen as serial experiments that can be repeated over time (Holzer and Millo, 2006). Nevertheless, Olson and Wu (2010) acknowledge that *“We cannot expect to cope with every contingency, however, we need to be able to respond to new challenges”* (p.). In the same vein Andersen et al. (2009) suggest that responsiveness is strategic and created through a better environmental fit, which requires managers to identify, mobilise and utilise resources depending on their potential strategic value in a given future. Likewise Rao (2009) suggests that in order to enhance the control over future possibilities risk management should be a separate discipline, but aligned with strategic performance management. Although, Arena et al. (2010) have a more institutional perspective on risk management they suggest that risk management enables organisations to handle the greater turbulence and complexity of the future created in the contemporary competitive environment.

The possible actions for managing risk

Various scholars suggest that risk management should be a strategic activity that not only consists of models, algorithms, check lists or frameworks (Andersen, 2006), but become a supportive element in the design of strategic business models (Slywotzky, 2008) or the strategic focus in public organisations (Young and Fone, 2001). Andersen et al (2009) suggest that dealing strategically with the exposure to risk will insure that responsive initiatives and activities are considered. Rao (2009) even goes as far as saying: *“...for risk management to be realistic with a feasible management action, the management of risk must involve actions taken by management to minimize the likelihood of asset damaging or loss-generating events from occurring, and mitigating the impact on the organization should they occur”* (p.). A critical question for this line of thought is what would the opposite actions look like?

Wu and Olsen (2010) found that risk management at the enterprise level has a potential impact on activities, processes and resources of the organisation. Nevertheless, there is still limited empirical evidence regarding the implied performance effects of risk management practices (Andersen, 2008). Additionally, De Bakker (2009) found that there is little empirical evidence suggesting that knowledge about risk is actually used for risk management. On the contrary Kleffner et al. (2003) found that there is some evidence suggesting that the introduction of risk guidelines influences the risk management strategies of the company. While the impact of these top down perspectives on the actions of managing risk has been debated (Power, 2009), other more bottom up perspectives have also been developed over the past decade (Zsidisin et al., 2005; Zwikael, et al., 2011). One of these perspectives is Business Continuity Planning (BCP) which primarily have been

developed by practitioners (Zsidisin et al., 2005) focusing on the possible collective actions to minimize unanticipated events rather than communicating the possible risk across the organization to the strategic level using accounting inspired measures of risk (Power, 2009). BCP does not focus on an integrated organizational wide approach, but on enabling practitioners to develop different responses to possible disruptions or the impact of disruptions within their field of work e.g. supply chain (Zsidisin et al., 2005). Focusing on both top-down approaches and bottom-up approaches, researcher seem to agree that risk management practices and the possible actions to mitigate risk fluctuate across sectors (Acharyya, 2006) and contexts (Chenhall, 2003) as well as within a single sector whether this is public (Collier and Woods, 2009) or private (Mikes, 2009).

Nevertheless, Slovic (1999, 2001) observes, that controlling the definition of risk also enables the prescription of the solutions or actions to mitigate the risk. This might be the reason that Power (2009) blames risk management research and practice for having a too functionalistic perspective by saying; “... *the objectives of a business which are ‘at risk’ are more or less an exogenous input into the model with the consequence that it is hard to enlist such a framework in challenging the objectives themselves*” (p. 854). In answering the call for more critical contributions to scrutinize the relation between risk management, the *exogenous* input into the models and the possible actions, Mikes (2009, 2011) focuses on the clusters of risk management practices and try to look behind the scenes of risk management and how different kind of risk management are given particular organisational significance. Risk management practices are here seen as *calculative cultures* that construct and shape the local understanding of risks enabling different responses to risks (Mikes, 2009; 2011). By looking at risk management practices in the financial sector Mikes (2009) concludes that: “*The spectrum of risk management practices suggested by COSO (2004), falls into to two clusters. On one hand, ERM by numbers respond to the suggestion of “applying risk management in strategy setting (i.e. integration with planning and control) and using it to manage risks to be within (the firm’s) risk appetite’ (i.e. control by exception). On the other hand holistic ERM corresponds more directly to the design requirement that risk management should be applied to identify potential events that may affect the entity and bring those to high level discretionary decision making*” (p. 37). With reference to Beck (1992) Arena et al. (2010) add to this by concluding that risk management introduces a new scientific rationality which explains how uncertainty is conceptualised and how risk possibly prescribes actions related to how managers ascribe responsibility to the possible risks “...*marking a potential rupture in the company’s risk history and sensitivity, but its organizational translation diverges as they encounter pre-existing centres of control and practices. This heterogeneity is explained at highest level by differing risk rationalities and their potential to challenge the conceptualization of uncertainty. A shift in the decisional mindset and the context is shown to be dependent on whether risk are represented as “real” problems for managers, instilling urgency in the form of new moral vocabulary, and the visualizing impacts in a manner close to their action and responsibilities*”(p. 673). This line of thought is supported by Power et al. (2009) who suggest that risk

management prescribes changes in behaviour, cognition and communication. Furthermore, Power et al. (2009) address how the links between discourses of risk and of responsibility and their connection to possible actions, have been articulated by a wide representation of theorist (e.g. Douglas, 1992; Hilgartner, 1992; Luhmann, 1993) and how the management of risk prescribes or shapes the organisational activities and organising principles (Huter and Power, 2005).

Additionally, Corvellec (2010) extends this argument by saying that the opposite is equally true - organising practices also shapes risk. This is corresponding to the argument of Kalthoff (2005) suggesting that *“The manufacture of economic representation through practices and tools of representations shapes economic practices”* (p.). Although, this argument almost sounds tautological, it illustrates how risk management tools become a part of the world it tries to describe and *“...the world that includes the theory as something that people act upon is different from the one without it”* (Holzer and Millo, 2006, p.). From this perspective risk management responses are not suggested or constructed beyond humane action or through humane action alone, but also through technical devices – practice and device become interwoven. Taking this argument a step further Millo and Mackenzie (2006) suggest that: *“...since risk management is not only a description of a given reality but includes a prediction and is operated upon as a blueprint for action, it includes a constitutive (or performative) element: the way organizations depict their risk has a significant effect on the way they will, eventually, react to events and other actors”* (p.)

Taking a closer look at the abilities to influence the organisational activities of the actors Mikes (2011) suggests that *“...advocates of particular practices of performance measurement need to make even controversial counting systems seem natural and unavoidable in order to incorporate them in the monitoring and control of organizations”* (p. 226). Correspondingly Arena et al. (2010) conclude that actors use risk management to seize opportunities to gain additional power but at the same time they also struggle to secure organizational recognition. Likewise, Kutsch and Hall (2005) found that actors *“...show a tendency to deny the possibility or actual presence of risk and uncertainty; they avoid them, or delay their actions until the circumstances have improved”* (p.). As such, risk management also mobilises actors across the organisation to advocate for different activities using economic knowledge and representation and calculation of risk to lead and defend actions. From this perspective the possible risks of the future might also be used as a rhetorical ploy to advocate for certain actions.

In sum, it seems apparent from the review of the increasing research literature and growing body of knowledge within risk management, that research on the impact of risk management is a multidisciplinary research area with the possibility of using the insights from many different theoretical perspectives across the social sciences. Nevertheless, most research remains within its disciplinary perspective and methodological traditions paying little attention to complimenting areas of research which might limit the theoretical development within risk management. Furthermore, these disciplinary approaches reveal a pluralism of

aspects in relation to the impact of risk management. Additionally, the different perspectives have different assumptions about the future and the possible value creation, and focus on a single level of analysis with little attention to the cross organisational perspectives on the impact of using risk management. This could explain the myriad of definitions of risk and risk management approaches, although not always stated explicitly depending on the disciplinary tradition. Although this might be a well known phenomenon and premise within management research in general – that the assumptions of what we study affect how the phenomenon is studied (Morgan, 1990) – it is of little guidance to explore the impact of risk management or to understand the possible pragmatism and actions of the disciplinary perspectives. Additionally it illustrates the need for a more multilevel approach to advance the study of the impact of risk management technologies beyond disciplinary silos and the orthodox thinking in risk management research (Power, 2009). While there is considerable research on both risk and risk management, only limited research has been done on the organisational consequences of using risk management technologies. Furthermore it is yet to be explored how organisational processes and organisational dynamics govern the actual use of risk management technologies and how the use of risk management impacts the day to day practice of managing risk and uncertainty.

4. Synthesising the review

The synthesis first focuses on using the insights from the analysis to develop a framework for the view on risk and the possible actions for managing risk. Second, it focuses on developing three propositions by doing a theoretically inspired synthesis of the concepts from the analysis as well as the insights from the framework.

4.1. Developing a framework for the view on risk and the possible actions for managing risk

Whereas all organisations face uncertainty not all organisations are explicitly involved in risk management (Corvellec, 2009) and although risk cannot be eliminated, the lack of knowledge or its complementary amount of uncertainty create new demands for information in order to reduce uncertainty and enable decisions (Arrow, 1964). Despite this it is evident from the review of the existing literature that managers need some sort of measure (Millo and Mackenzie, 2009), calculation (Kalthoff, 2005) or non-calculative qualcalation (Mikes, 2011) to handle uncertainty and establish the capacity to act (Kalthoff, 2005) or mobilize action (Mikes, 2009). As such, the relationships of risk are bound to action and decisions to act (Luhmann, 1993) because knowledge or ideas about risk always serve action (Boholm and Covellec, 2010). As illustrated in the analysis there is a wide variation of perspectives on the relation between risk, risk management and the possible risk responses. To synthesis, this variation might be conceptualised in the four

subsequent perspectives; *episodic view*, *discursive view*, *exposure view* and *socio-technical view*. These four views are described in the following and illustrated in **figure 3**.

The *episodic* view, views risks as episodes that have a negative impact on objectives of the organisation. From this perspective risk management creates value through planning activities that align strategy, objectives and risk appetite and execute the plan. Here the central distinction is whether risk management is an ex ante management activity creating strategic fit (Andersen et al, 2009) or an ex post evaluative approach focusing on learning from the past (De Bakker, 2009; Zsidinsin et al, 2005).

A more relativistic and cultural view on risk, sees risk as a *discursive* phenomenon. From this perspective risk is not an objectively given fact but is as much about values and beliefs (Douglas, 1992). From this perspective managing risk becomes fuzzy – the paradox is that as the amount of risk and uncertainty increases, the predictability decreases. Risk and uncertainty mean not knowing what to expect (Beck, 2009). From this perspective the casual relation between past and present becomes difficult to foresee (Arnoldi, 2009), nevertheless the use of calculable ideas and scientific concepts of risk spreads into new fields of application (Hood et al., 2001) and is increasingly applied to govern, regulate or *colonize* people, organizations and societies (Rothstein et al., 2006). Managing risk from this perspective therefore automatically becomes political and choices of whose risk are being managed and what values justify different behaviour in relation to risk (Mikes, 2009; Power, 2009). Anette Mikes conceptualises the tension between values, beliefs and risk management as different *calculative cultures* (Mikes, 2009, p. 36). Mikes argues that the issue is the culture surrounding the models and frameworks that constitutes risk management and not the models and frameworks themselves (Kaplan et al, 2009, p. 70). Similarly Michael Power argue, using Kenneth Arrow's famous paradox which suggests that preferences cannot be consistently aggregated, that because of the different attitudes and values about risk it is clear that organizations are constituted by varieties of beliefs about risk which change over time and according to context which hampers the idea of an organisational wide risk management approach (Power, 2009, p. 851). Here risk management is a tool *prescribing* the possible responses to risk which are mainly driven by responsibility and accountability (e.g. Power et al., 2009).

Adam Smith (1776) originally argued for a natural perspective on risk with two fundamental characteristics: The first sees risk as an opportunity for profit and the other as a threat to security (Smith, 1776). This perspective on risk as something naturally given is similar to many of the managerial perspectives of risk management from the analysis (e.g. Andersen et al., 2009) that focus on the upside and downside of risk (Slywotsky and Drzik, 2005) depending on the organisational exposure to risk (Andersen et al., 2009). From this *exposure view* on risk, risk and opportunity exist where the future is not known with certainty, meaning that they are omnipresent (Young and Fone, 2000). Risk is never about the past but always future oriented,

meaning that managing risk, becomes managing the variance of return, as the future is always uncertain (Markowitz, 1952). Although there is a vast amount of research focusing on risk and return (Verbano and Venturini, 2011) suggesting different functionalistic solutions for business decisions (e.g. Taleb et al., 2009), the main idea of risk management is to picture the exposure to risk of the organisation and to create *descriptive* knowledge useful for the possible response actions to fit the organisation to the surrounding competitive environment (Andersen, 2008).

Finally a more *socio-technical* view suggests that risk management might create value by reducing ignorance by using reflexive models (Millo and Mackenzie, 2006; Holzer and Millo, 2006) although from this view the world might be too complex and volatile for standard risk management to create value or be of any guidance (Vries et al, 2012). Here the risk management device becomes a part of what it describes where practice, representations and actions become interwoven and the device changes the world it is trying to describe (e.g. Millo and Mackenzie, 2006). Here risk management technologies are "... (re)-configured in interactions with the audiences, as a result of which the roles of various entities (auditors, risk analysts, controllers, managers, etc.) are negotiated and delimited" (Skærbæk and Vinnari, forthcoming, p. 6). Giving both agency to the technology and the actors means that the technology is both framing a certain type of calculative practice and that the actor is constantly (re)-configuring the technology as part of their identity and practice. There is a mutual entanglement of actors in the network where all actors have the possibility of being translators of risk management technologies at different levels of the same organization (Ibid.).

In sum, risk management models and approaches frame the understanding that decision makers have of risk and opportunity differently (Arena et al., 2009), however it is not the models that make decisions; people do (Kaplan, et al., 2009). Nevertheless, people as individuals also frame risk and opportunity differently, depending on their perception (Slovic, 2004), personal characteristics (Dietz et al., 2002; Slimak and Dietz, 2006) and the situational framing (Kahneman and Tversky, 1979) that surrounds them. As such both the risk management models and the actors shape the possible actions for managing risk. Furthermore, approaches to risk management shape the possible actions for managing risk depending on how they enable and constrain potential states of the world (Holzer and Millo, 2005). The perspective from which risk is analyzed, measured and calculated is based on a set of assumptions about the future that shapes the possible solutions for managing risk - how we come to understand the possible future also enables us to see certain feasible actions for mitigating the risk of the future and guide our attention, choices and internationalities. If there is no upside risk or opportunity – the future only holds threats which support actions towards more protective activities to secure performance and protect against the chance and magnitude of losses. As such there is a pluralism of perspectives on what risk is, how it is created or constructed and how it might or might not be managed. The different perspectives encompass both very functionalistic and smooth perspectives on risk

and risk management but also more relativistic and constructivist perspectives. These diverse understandings and perspectives on risk illuminate different aspects of risk and advocate for different pragmatic solutions in relation to how risk should be mitigated or managed. These differences and how they impact the actions for managing risk are illustrated in **figure 3**. Whether responses to risk are classified in one of these four perspectives depends on a continuum of how agency is ascribed with the risk management technology and whether or not the inputs into the risk models, frameworks and devices are seen as merely *exogenous* inputs or a part of a longer translation process.

Dimension/Perspective	Episodic view	Discursive view	Exposure view	Socio-technical view
Unit of analysis	Organizational processes	Speech acts/ cultures /discourses	Level of strategic fit within industries	Socio-technical arrangements
Risk definition and measure of uncertainty	A portfolio approach to risk where episodes with negative impact on objectives represent risk. Risk is measured as the probability of an adverse outcome that could affect the achievements of objectives	Numbers and measures about risk are the means of a social communication process where risk is socially constructed and derived from the cultural valuation process	Degree of variation derived from intended performance within a specific period of time	Is a mundane rather than a philosophical dispute and the focus is on when, where and how uncertainties and risks enter the organisational scene
Risk management approach	Risk management is a evaluative process that minimises the possibilities of not achieving defined objectives and is a method to control eventual loses	The culture, processes and structures that are directed towards realizing potential opportunities whilst managing adverse effects	Risk management is a strategic capability to identify and transform adverse effects into economic benefit – where effect is the deviation of what is expected	Reflexive and taking the models into account by understanding that risk management approaches are disturbed across persons and frameworks as a social-technical arrangement
Assumptions about value creation	Risk and return are correlated and the control of risk will create value by protecting against possible losses	Depending on the fluidity of social practices; it might create isomorphic pressure, it might be used to gain power or to create value	Risk and return are correlated and the control of exposure to risk will create value by turning possible losses into gains	Local embedded practice of risk management install a new framing of how to understand value
Assumptions about the future	Predictable – the future is to some degree a linear version of the past	Future is not predictable	Less predictable	The future is not given and there can be alternative futures depended on the conceived state of the world where the risk management technology have a performative role
Management object to obtain knowledge about risk	Interrelatedness of individual risk. Controls that reduce the possibility of an occurrence of adverse events	Depended on calculative culture and the social valuation process	Strategic analysis of the competitive environment	The representation is ambivalent having a transformative role which might create side-effects
Possible actions	Ex ante evaluative activity where information on prior adverse events is used to analyze future events for better planning and the development of protective procedures for internal control	Seen as a continuum of actions going from quantitative enthusiast to quantitative sceptics but depended on the local understanding of the connection between value and risk constituting managerial practice	Ongoing harmonising activity where individual risk is analysed and prioritized in order to minimize variation in performance and insure responsive initiative to fit the organization to the exposure in the industry	Risk management do not only describe a given reality but creates a context for social knowledge making that acted upon as a blueprint for action
Exemplary papers	Kleffner et al. (2003) Wu and Olsen (2010)	Mikes (2009) Corvellec (2010)	Andersen (2005) Acheyye (2006)	Millo and Mackenzie (2006) Kalthoof (2005)

Figure 3. Perspectives on risk and the possible actions for managing risk (Own production).

4.2. Developing general propositions on the relationship between risk and actions for managing risk

From the framework in **figure 3** and the findings from the analysis it is apparent that risk management approaches have diverse management objects depending on what is being valued (Corvellec, 2010) and the fluidity of practices (Mikes, 2011) which shapes the economic representation of risk (Kaltooff, 2005). As such the managerial implications of using a particular risk management approach, is that it shapes the attention and the decisions towards certain aspects of risk. Furthermore, risk management will always have an impact on how the future is interpreted in terms of opportunities and threats or as described by Holzer and Millo, 2006: “...risk invariable involves decisions that make a difference in the present and thus change the outlook for the future” (p). This leads to the first of three propositions:

1. Risk management singles out risk differently depending on the local embedded practice of translating risk and uncertainty. Risk management establishes what is seen as calculable and what is not. These embedded practices offer no increased control or oversight of uncertainty and risk, but install a new *framing* on how to understand value creation and the outlook of a possible future which nevertheless impacts the practices for managing risk and is a risk in itself.

Risk management establishes what is included and what is not in the calculations and categorisations of risk and thus frames the possible knowledge about risk. Additionally risk management approaches also establish new needs for information by drawing the boundaries between relevant and irrelevant information. This disentanglement enables the calculation of risk that makes it possible to assign a number, colour or another type of categorization in order to circulate information about risk. Another important aspect of the analysis and the framework in **figure 3** is that knowledge about risk is always partial - no matter how holistic or precise the measure or calculation of risk, it does not capture risk in its totality but rather changes its form and sets the context for decisions. This inaccuracy or ambiguity of a possible risk might be the reason why risk management approaches are rendered usable and why they become exponential successful (Millo and MacKenzie, 2009). By the same token it also permits the pursuit of diverse goals by different organisational participants without manifesting a lack of centrality of purpose (Bhimani, 2009, p. 3). In sum, this has led to diverse practices under the same label (Mikes, 2005) referred to as the fluidity of risk management practices (Mikes, 2009, 2011), and risk management has been blamed for being the risk management of everything (Power, 2007) as well as the risk management of nothing (Power, 2009) which is illustrated in the second of the three propositions:

2. The fluidity of risk management practices is a prerequisite for risk management to become a part of organisational practice. This fluidity of practices depends on the embedded day to day practice of the actors and the disentangling and negotiating of the boundary of uncertainty and risk. Uncertainty and risk become a *mundane issue* and a matter of when and where the issue is singled out and enters the organisational scene.

Risk management has become a highly *technologized* activity (Beunza and Stark, 2004; Mikes, 2011) mainly focusing on economic measures (Kalthoff, 2005). This pushes metrics into more and more areas of the domain of humane judgment (Mikes, 2011) which might be dysfunctional (Power, 2004). Additionally, risk management is assumed to be in place to detect and control risk (Wu and Olsen, 2010) although inaccurate numbers are generated for various reasons (Schaefer et al., 2006) or as suggested by Pannel et al. (2000) “*The emphasis on algebraic models is unfortunate because in practice, assessing the impacts of, and optimal response to, risk is primarily a numbers game*” (p.). As such, the models which risk management is based on are not reflexive (Holzer and Millo, 2006). Finally this narrow technical and economical focus has turned risk management into a poorly defined and integrated management instrument (Arena et al., 2010). In fact Power et al. (2009) suggest that the risk management explosion only creates isomorphic pressure driven by accountability and transparency. This leads to the last of the three propositions:

3. Driven by accountability and responsibility risk management technologies become *performative* by focusing on creating and communicating certainty. Nevertheless, most of the elements of risk management are uncertain (measures, value, future and fluidity of practices). As such, risk management technologies require an immense *investment* and *effort* in order to single out risk and create some sort of sensory certainty that enables managers to act. These investments and efforts increase the constitutive effects of risk management technologies.

In sum, this synthesis argues that the knowledge about risk serves actions through four interrelated elements; 1) Risk management approaches focus on different management objects which frame the information about risk differently, 2) This establish different boundaries of what are external and internal risks and what managers are made accountable and responsible for. Furthermore this gives diverse meanings for managers to lead and defend possible actions for managing risk, 3) Risk management mainly uses past performance data to prepare for the future which establish a prediction that makes certain aspects of the future relevant and as such changes the outlook for the future, 4) The fluidity of risk management practices singles out risk objects differently depending on how managers ascribe meaning to the future and the possibilities for value creation. The interrelatedness of these elements is illustrated in the three suggested propositions. Whether these propositions are enabling or constraining the risk management practice is an empirical question which could be explored in the future.

5. Conclusion

This paper explores and analyses the relation between risk management approaches, risk definitions and the perspectives on how and why something is considered a risk and singled out as an object for management. Furthermore the paper synthesises the variation of views on risk, risk management and how these views influence the measurement, analysis and calculation of risk differently depending on the object of

management and thus frame the possible knowledge about risk and the actions for managing risk. In sum, risk management approaches have different objects of management which influence how threats and opportunities are framed and give different meanings to the possible actions and human activities for managing risk which in essence is illustrated in **figure 3**. Unfortunately, despite the increased focus on risk and risk management, it is often forgotten that the way risk is understood and managed also frames and determines the way managers seek and recognise opportunity and choose to innovate and develop their organisations.

From the review of the literature it is clear that defining risk is an important element of risk management research, although it is implicated differently across disciplinary perspectives depending on the contextual background (Verbano and Venturini, 2011). Despite the increasing scholarly interest in risk management the debates about the definitions of risk (Aven and Renn, 2009, 2010; Merkelsen, 2011; Rosa, 2003, 2010) have yet to become an integrated part of risk management research. Management scholars seem either to have adopted a constructivist notion that risk is shaped by the context it inhabits (Bhimani, 2009) suggesting that the conception of what constitutes risk for an organisation is immanent to the particular managerial practice of the organization (Corvellec, 2010, p. 146) or to have a more orthodox notion of risk with an exact measure that can be applied and generalized across context (Ruefli et al., 1999). As such, only a limited number of studies take a more mundane approach to risk (e.g Vries et al., 2011) and the definitional debates about what constitutes a risk seems to have become the less important side-show judged by its impact on risk management research.

Nevertheless, risk has become an omnipresent phenomenon in the globalized world (Beck, 1992; Damodaran, 2007) and risk management has become ever more ubiquitous in our society (Power, 2004) which is also mirrored by the escalating amount of papers referring to risk management after 1991. Despite the increasing interest in the organisational impact of risk management little is still known about how different risk management approaches perform in practice and how they shape the learning, effectiveness and day to day practices within the organisations that implement and use risk management as a managerial tool.

This paper has also addressed the circumstances for managing risk that have developed over time and how these circumstances have changed within the last 55 years of risk management research. It is interesting how we often think of research and knowledge to be a cumulative practice and terms like *progression*, *direction* and *improvement* are often used to describe the work done within different fields of research (Tranfield et al., 2003). Risk management is not a new thing (Gallager, 1956; Grier, 1981) and although new risk management approaches have been developed (Verbano and Venturini, 2011) and the scholarly interest in risk management research have increased over the last twenty years, the development has not led to a feeling of greater understanding, control and oversight of risk (Covello and Mumpower, 1985; Verbano and Venturini, 2011).

Finally, by taking the notion that risk only makes sense when connected to humane activity (Renn, 1998, p. 50) this paper illustrates the variation and fluidity of risk management practices by analysing the empirical research on the organizational impact of risk management technologies. In sum, risk management “...*can be different things in different organizations or even within the same organization at different times*” (Arena et al., 2010, p). The paper adds to the complexity and breadth of risk management research by suggesting how risk management shapes the outlook of the future and the local understanding of value depending on the suggested views on risk and risk management in **figure 3**. These conceptual views on risk could be further scrutinized along the notion of embeddedness focusing on the day to day practice of translating uncertainty into risk and by applying the suggested propositions to different empirical settings.

To begin this empirical Odyssey and returning to Knight’s introducing quote about our limited knowledge a simple question to ask would be if risk management would become more useful and relevant across the fluidity of practices if it focused on communicating the uncertain aspect of what we believe to be certain.