PREFACE

"This is not just another book on risk management". That is exactly how I want to introduce this work. Any reader knows that who decides to write another book on this topic is particularly keen on taking risks. In fact, shelves of bookshops bulge, library racks are full and anyone can have immediate access to any kind of material on risk – from practical handbooks of how to manage it to advanced treatises on how to measure it, from academic debates to standards and regulations issued by governmental and non-governmental bodies.

So why is there still the necessity to study this phenomenon?

Well, the explanation might be simple: because there is still so much to analyse. Nowadays risk is increasing. The changing nature of dangers and opportunities in the world is, at best, only one part of the answer. Furthermore, a structured research on how to manage risks in SMEs is needed.

But how and why has risk become such a preeminent part of organisational and managerial language in those companies? How, if at all, does the business management of SMEs have to be adapted and reorganised in the name of risk?

Yet considering the abundance of risk analysis and its potential to relegate this book to just one other drop in the ocean, my focus is precisely to say something different and stimulate the debate also in a provocative way.

The interesting element in this research path is to define "risk" in the present days, definition that in the book I call "Risk definition 4.0".

Nowadays is it possible to distinguish the concept of risk from that of uncertainty, considering that probability and impact on business management are actually human definitions that depend on the judgment of those who manage their company?

Furthermore, studying SMEs has shown how difficult it is to understand how these companies manage risks and, how even more difficult it is to suggest a way to make risk identification and management less improvised, unconscious and irrational.

Why? Because procedures and processes cannot be formalised and

standardisation is often impossible. We cannot rely on reference standards such as ISO or COSO Report because risk procedures slow down and weigh down the business management of those companies. Flexibility, adaptability and resilience are the key concepts that all SMEs should pursue.

But another reason is linked to the fact that an even more effective and integrated management is required in these realities because the human element is decisive.

Risk becomes part of the decision, risk is linked to the person that decides and that has the responsibility to run the business.

Therefore, risk, uncertainty, judgment, bias, decision and human being are all the key words that summarise the content of the book in a nutshell.

Management accounting in this context as a strategic discipline must necessarily have a multidisciplinary vision that embraces psychology, organisational behaviour, strategy and entrepreneurship. The study must actually be re-located within the behavioural accounting discipline.

The several facets of the entrepreneur or family are reflected in multiple perspectives necessarily leading to a solution that cannot be univocal and standardised for all SMEs.

This book ends with some elements that have the aim to suggest a more structured approach for those companies that are not aware of their business, for those starting a business, undergoing a critical period or deciding to expand.

As the title of this book suggests, risk and its management especially in small and medium enterprises have become a lens through which a certain kind of rational organisational design might be envisioned.

I like to think that this research can become a means to observe all the facets, lights and dark sides of SMEs, which must be seen as rough diamonds, with an incredible potential for the economic system of many countries.

This book is just a preliminary in-depth study of ‘risk management in SMEs’. It is an analysis on the key elements of the changing risk discourse, a study which adopts multiple perspectives.

In writing this book, I have had incredibly interesting conversations with many entrepreneurs, being also physically present in some SMEs. They have allowed me to start thinking that risk is effectively embedded in the business management, even if sometimes it is difficult to make a distinction and a separate assessment.

I have also ‘encountered’ and immersed myself in many texts of both academic and non-academic nature, reading some and skimming others.

So, by the standards of formal method, this book is the product of a

blended approach, consisting of a rigorous research method in conducting the literature review and case-study analysis, and of a messy hermeneutical discovery made of hunches and intuitions, layered like strata in a process of accretion. This way, I was able to be critical and influenced by many arguments in a process of self-critical study, characterised by a constant and restless trade and exchange between theoretical precepts and bits of the empirical world, each mutually explicating the other in a 'to and from' process.

I hesitate to define this an interdisciplinary book, even though I have tried to provide insights of different disciplines as I think that today a good academic accountant should always be aware of his or her inherent hybridity and the necessity of mixing different concepts to describe the complex reality.

Consequently, I hope, as any author does, that this book will be of interest to scholars and practitioners, who may be curious about our contemporary interest in risk management.

Naturally, there remains, as there always does, more specific work to be done to understand and suggest a specific risk management model for SMEs through definitions, attributions of responsibility, communicative structures and accountability demands.

Even though I have only tackled the surface of this complex phenomenon, I hope it can be agreed that it is real enough and deserves further investigation.

This book should be read as a theoretical endeavour with transferable insights and suggestions, thanks also to the comparative case-study analysis. The research is also informed by a moderate risk 'constructivism', namely the idea that dangers and opportunities may be real enough, but must be subject to representation and framing within the business management.

Finally, to a body of thoughtful and reflective practitioners and SME entrepreneurs, I hope this book will have some appeal as an overview of the practical approach to be adopted to become more risk-aware and sensitive in a continuously challenging environment.

The entire book is an expanded and revised version of the Ph.D. thesis defended in October 2017.

This monograph is structured in four different parts: the first one is a theoretical background on the topics of risk, risk management and decision-making process; the second one represents a literature review specifically related to the management of risks in SMEs; the third one instead is a comparative case-study analysis on three companies and the last one presents a risk management model applicable to micro, small and medium enterprises. Some chapters were also presented in national and international conferences in the recent past.

This book is also the outcome of a research project, entitled Quando il rischio diventa un'opportunità: il risk management come parte integrante del processo decisionale nelle piccole e medie imprese, that received a research grant from SIDREA (Società Italiana dei Docenti di Ragioneria ed Economia Aziendale) in 2017.

I am also very privileged to have grown in an interesting and vibrant accounting research context and to have the opportunity to experiment such an intellectual pluralism that is fighting against a growing intellectual standardisation and declining curiosity.

I hope that this book is a just representation of, and testimony to both the creative spirit of and the dynamism and quality of the accounting research in Italy.

I am, of course, grateful to a large number of people, friends and to the reviewers, who have made comments and suggestions either directly on the chapters in this book or on various earlier manifestations of the ideas it contains.

I want to thank Prof. Ossola, who gave me the opportunity to start my research path.

My heartfelt thanks to Pier Luigi for his kindness and attention in supporting me and being a mentor in the recent steps of my academic path.

I am also grateful to Lucio, Francesca and their colleagues of Giappichelli Editore and Routledge, who helped me make this book possible.

Finally, I thank my family, but above all I want to dedicate all my achievements to Mum and Dad, who have always supported me and endured all the difficulties I have experienced with the awareness that efforts and hard work are always repaid.

Mum and dad, I hope you will be proud of me as I am trying to become the woman you have always wanted.

Turin, January 2019

Chiara Crovini

INTRODUCTION

Risk research has been conducted with different theoretical perspectives and methodological approach.

The concepts of risk and uncertainty were deeply studied in several sectors (economics, statistics, finance, engineering, psychology) and the first definitions date back to the Eighteenth century.

The topic of risk management instead was first studied after World War II, in the period between 1955 and 1964 (Williams and Heins, 1964; Crockford, 1982; Harrington and Niehaus, 2004).

More recent developments have reflected a general propensity to acknowledge the significance of social and cultural factors more seriously in understanding risk. Interestingly, there is a shift toward constructivism and to a more social approach in some works. This new dimension opens up opportunities for cross-disciplinary research, combining the business administration and economic theories, with psychology and sociology.

The difficulty of this kind of studies lies in the methodological rigour and in the epistemological approach because it is fundamental to analyse the topic with a holistic perspective that implies systems-thinking (O'Donnell, 2005).

Empirical evidence shows that 50% of small and medium enterprises close down before the fifth year after their constitution (ISO, 2015, p. 8). Therefore, it is clear how risky running a business could be.

But why are there still corporate failures? Why is there still an immature approach to manage risks in SMEs? Why is risk management still regarded as a burden or a major cost?

It seems that academics should investigate more the real reasons behind this phenomenon and try to suggest a new way for managing risks in micro, small and medium enterprises.

SMEs constitute an important reality for the global economic system, as they represent key drivers for innovation, social integration and employment (Eurostat, 2011; European Central Bank, 2013; ISO, 2015).

As mentioned in the *Theoretical Background*, SMEs have always had lit-

tle guidance on how best to manage risk and where to turn to for advice. Over the past few years few Guidelines have been published: some of them represent Corporate Governance Codes for Unlisted Companies (OECD, 2006, 2015; ecoDa, 2010) and the only practical guide for SMEs about how to implement risk management was issued in January 2016 by the International Organisation for Standardisation (ISO, 2015).

Several studies highlight the immaturity with which companies and, in particular, SMEs face risks. This approach can derive on the one hand from the lack of familiarity, the fear of change and additional costs that the implementation of a risk management system could result in and, on the other, from the actual lack of awareness of the benefits that an integrated risk management system might have, not only in terms of prevention, but also as regards the opportunities (Thun *et al.*, 2011; Falkner and Hiebl, 2015). Most unlisted enterprises are owned and controlled by single individuals or coalitions of company insiders (e.g. a family). In many cases, owners continue to play a significant direct role. In addition, the vast majority of them does not adopt a formalised risk management process and ignore how to treat risk properly (ISO, 2015).

Therefore, given their importance to further economic growth and development in several countries, studying the topic of risk management in SMEs has become essential and has relevant implications for both practical and academic purposes.

This research represents a complex study with a multidisciplinary approach that consists of two different phases: the former is a theoretical contribution in the field of risk management in SMEs that leads to the formulation of the research problems; the latter is a multiple-case study analysis that helps elaborate a conceptual model.

It differs from other studies because it contradicts incremental gap-spotting ideals, by emphasising assumption-challenging in the construction of research questions (Alvesson and Kärreman, 2007, 2011; Sandberg and Tsoukas, 2011) and *problematizing* some dominant assumptions in existing research (Davis, 1971).

Problematization involves not just a particular preferred meta-theoretical standpoint in order to challenge the assumptions of others, as it happens in paradigm debates or in various applications of critical perspectives (Alvesson and Sandberg, 2011). 'Real' *problematization* also involves questioning the assumptions underlying one's own meta-theoretical position (Alvesson and Sandberg, 2013a). The ambition is to unpack one's own position sufficiently so that some of the ordinary held assumptions can be scrutinised and reconsidered in the process of constructing novel research questions.

Consequently, *the problematization methodology* 'is to come up with novel research questions through a dialectical interrogation of one's own familiar position, other stances, and the domain of literature targeted for assumption challenging' (Alvesson and Sandberg, 2011, p. 252). This approach would support a more reflective-scholarly attitude (Abbott, 2004) and consider a different epistemological approach.

The *integrated* scientific method implied in this research combines both Gino Zappa's [1] and Charles Peirce's ideas [2] and it is rooted in the doctrinal concepts of pragmatism, constructivism and cognitive relativism that lead to *problematization.*

The complex reality must be analysed with a holistic and systemic approach that combines both theories and empirical analysis.

Successful *problematization* is a matter of creativity, intuition, reading inspiring texts that offer critical insights (but without being accepted as a new fixed framework), talking to other people, having specific experiences, or making observations that may trigger new thinking (Alvesson and Sandberg, 2013a). This methodology also has the advantage of facilitating focus, working as a support for a research identity around being a *problematizer* and a path-up setter (and not a gap-spotter), and facilitating description of what one has done and accomplished (Alvesson and Sandberg, 2013b). The conventional notion of rigour, requesting to systematically analyse the existing literature to demonstrate how to make a contribution, should be combined with imagination (Weick, 1989; Cornelissen and Floyd, 2009; Donaldson, Qiu and Luo, 2013).

The first part of this work (theoretical background and organised criti-

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[1] Gino Zappa (1879-1960) was a pupil of Fabio Besta's and the founder of the business administration as an autonomous science and discipline able to organically encompass the recognition, management and organisation of companies.

Zappa supported the idea to solve problems and not to accept theories without linking them to reality. His scientific method combines scientific facts and a constructively critical approach to solve problems related to his topic of analysis: the company itself. Therefore, he refused the uniquely deductive or inductive methods, by combining the two together synthetically.

[2] Charles Sanders Peirce (1839-1914) was an American philosopher, considered the founder of the American pragmatism. He spent his intellectual virtuosity trying to categorise the specific kinds of reasoning, examine their properties and their mutual relations. During this intellectual adventure, he clearly delineated a space for non-deductive, but "ampliative" reasoning (Psillos, 2011). In particular, he theorised that there are three basic, irreducible and indispensable forms of reasoning. Deduction and Induction are two of them. The third is what he called, in the last part of his career, Abduction. Abduction is the process of forming an explanatory hypothesis that leads to the introduction of new ideas. It consists of studying facts and devising a theory to explain them.

cal literature review) has the objective to identify and critically analyse the most important international and national works that determined the bases for the conceptualisation of risk management in SMEs and, thereafter, to classify them in order to define issues and opportunities for further studies and research. In addition, as mentioned above, this first phase is propaedeutic to the development of the following research problems (RP):

- *RP1*: Is that completely true and is it an obligation for small and medium enterprises to adopt a formalised risk management process, often difficult to implement because of their business organisation and activity?
- *RP2*: What is the role of a risk mindfulness, consciousness and appropriate approach leading to the development of existing processes so as to integrate the management of risks therein? Are they more beneficial than having procedures related to a separate and specific process?

The real problem is to understand from which point of view it is necessary to restart analysing this topic and to suggest a new perspective that could lead owners of small and medium enterprises to improve their risk attitude.

In some companies especially in very small ones, the management of risks cannot be formalised and procedures are integrated into the decision-making process.

A preliminary and, often unconscious, risk analysis is conducted while making the decision.

In these cases, to enhance the flexibility of these companies, to increase their market share and allow them to grow and manage risks more effectively, the first step is to improve the way decisions are made.

Consequently, it becomes fundamental to develop awareness in making the right choice, which can be raised only through a better knowledge and the definition of the level of risk that can be accepted (technically, *the Risk Appetite Framework*).

Focusing on the human being as a decision-maker and on how decisions are made in the business management, improving knowledge, the risk appetite and the awareness in making a choice implicitly means starting to develop a risk consciousness, which can be translated into a sound risk approach.

The Enterprise Risk Management framework or the practical guide for SMEs published by ISO (ISO 31000:2016) might become a useful conceptual reference for medium companies that start being more structured in their organisation and business activities, and they can refer to these guide-

lines while structuring and formalising the risk management process.

Only by improving risk awareness, responsibility and sensitivity, managers and owners would improve their knowledge of their company and of the risk appetite framework. Afterwards, procedures and control activities can be implemented and this dynamic and transversal process can be formalised.

This study contributes to existing knowledge as it extends the platform for research on risk management in SMEs, by associating it to the decision-making process in order to provide a different perspective.

In a stakeholders' view of corporate governance, every company should pay attention to stakeholders' needs as they demand quality, reliability and transparency. This is the reason why researchers should help SMEs understand the importance and the role of an effective internal control system and risk management process.

Hence the central point in this research is the necessity to start reconsidering the company as a whole and unique entity, by adopting a holistic approach.

And the final ambition of this study is to suggest an appropriate way of thinking, starting from the combination of both past and present theories, in order to find a solution that might lead SMEs to improve the effectiveness of the risk management process and set up concrete problems (Ferrero, 1987).

Therefore, concentrating on risk management would be a way to *find innovation in traditional theories*, a way to start rethinking the concept of *company* and its functioning and continue to build the *skyscraper* of business administration step by step, as suggested by Gino Zappa to his students a long time ago.

Chapter 1
THEORETICAL BACKGROUND

SUMMARY: 1.1. Definition and characteristics of Small and Medium Enterprises (SMEs). – 1.2. Risk and uncertainty. – 1.3. The risk management process: a brief state of the art. – 1.4. The decision-making process within the business management.

1.1. Definition and characteristics of Small and Medium Enterprises (SMEs)

Small and medium enterprises represent an important reality in several countries.

The term *SME* has a wide range of definitions and measures, varying from country to country and varying between the sources reporting SME statistics (Ayyagari, Beck and Demirguc-Kunt, 2007). Therefore, in this paragraph the main characteristics and variables used in this research to define a micro, small and medium enterprise are individuated.

Generally, a small and medium company is characterised by the following features (Ekwere, 2016; Henschel and Durst, 2016):

- it has a relatively small share of the specific market in which it operates;
- it is managed by owners (single, group or a family) and there is no formalised management structure;
- it has limited resources and limited access to capital markets (equity markets);
- there is information opacity;
- investment and financing decisions are closely interrelated;
- the bookkeeping and the preparation of the financial statements are done by a tax advisor, especially in small and micro firms.

SMEs usually have huge difficulties coping with open up foreign markets, market evolution and legislation changes (Marcelino-Sádaba *et al.*, 2014).

They promote entrepreneurial spirit and innovation, essential to competitiveness and employment. SMEs generate 66.7% of employment in Europe, hiring over ninety million people (Eurostat, 2011).

Empirical studies showed that 50% of small and medium enterprises close down before the fifth year after their constitution (ISO, 2015, p. 8).

As mentioned above, there is no unique definition of SME, as from an international perspective, there are several differences in the meaning of the criterion number of employees. While in the UK, for example, a company with less than two hundred and fifty employees is considered to be an SME, in the USA the limit increases to five hundred employees (Dana, 2006, p. 3).

In order to ensure comparability and homogeneity among the selected contributions included in the following literature review, the EU definition for SMEs is considered.

To classify SMEs, according to the official definition of the European Union (EU) micro firms are those that have fewer than ten workers and turnover or assets of less than € 2 million. The corresponding figures for small firms are fifty workers and € 10 million; for medium-sized firms two hundred and fifty workers, € 50 million of turnover and € 43 million of assets. Firms with figures above these levels are classified as large.

Table 1 shows the different categories and a few economic indicators that highlight the importance of SMEs in the euro area economy.

Table 1. SMEs in the Euro Area.

Definition					Data on SMEs		
Category	Number of Employees	Turnover and Assets (million €)	% of Firms	People employed (million)	People employed (%)	Value Added (%)	Productivity (relative to total %)
SMEs	< 250	< 50 (T) < 43 (A)	99.8	90.6	70	60	87
Micro	0-9	< 2 (T/A)	92	39.3	31	22	71
Small	10-49	< 10 (T/A)	6.7	27.9	22	20	91
Medium	50-249	< 50 (T) < 43 (A)	1.0	23.4	17	18	110
Large Firms	≥ 250	≥ 50 (T) ≥ 43 (A)	0.2	45.2	30	40	131

Source: European Commission 2012 Annual Report on European SMEs.
Notes: Data for 2011-13 are estimates. Productivity is measured as value added in nominal terms per employee and 100% is equal to the total productivity of the business economy.

To belong to one of the three classes, a firm must fulfil the following conditions (Henschel and Durst, 2016):

- it should have a minimum number of employees and meet at least one of the thresholds for annual turnover and total balance sheet;
- the 'legal independence criterion' must be fulfilled: a maximum of 25% is owned by one or more companies, which themselves do not match the previous threshold conditions.

The overwhelming majority (99.8%) of enterprises active within the EU non-financial business sector in 2013 were SMEs. More than nine out of ten (92.0%) enterprises were micro enterprises, 7% were small firms, 1% medium companies and 0.2% were large firms.

Among SMEs, micro firms made the largest contribution to employment, whereas for value added micro, small and medium-sized firms each contributed about 20% of the total value added of the business economy. However, labour productivity, measured as valued added in nominal terms per employee, was relatively low for micro firms (71% of overall business productivity) and high for large firms (131%). These divergences may reflect differences in labour skills and capital intensity, as well as factors not related to either input, such as technological dynamism (European Central Bank, 2013). Therefore, as numbers shoe, SMEs play a dominant role for the Euro area and they represent the backbone of the European economic system.

Julien (1996) underlined that small and medium enterprises are continuously challenged by both opportunities and threats posed by the market place. SMEs have a more limited resource base compared with larger firms. Therefore, they are more vulnerable to external shocks (O'Regan, Sims and Ghobadian, 2005). Business environment has become increasingly competitive and the need for improved capabilities is crucial to reduce the negative effects of strategic uncertainty (Parnell, Long and Lester, 2015).

Man *et al.* (2008) stressed that entrepreneurial competence in SMEs is related to strategic, conceptual, opportunity, relationship and technical skills and enhances organisational capabilities. Moreover, Hee Song NG and Mui Hong Kee (2018) argued that also technical competence leads to innovativeness in product, process and behaviour. Consequently, SMEs should shift from being solely focused on incremental innovation (just related to sales growth) and concentrate on radical innovation, which enhances strategic alliances and firm performance even in a hostile environment.

In addition, SMEs are often tightly integrated into the supply chain, alongside large corporations, and can hence benefit from privileged access to suppliers and to customer funding.

The above-mentioned characteristics clearly explain the reason why this research concentrates on SMEs: they are more vulnerable to the changing of the surrounding environment, but potentially much more flexible than medium and large firms, and they need to improve their knowledge about their risk profile and benefit of an appropriate risk approach.

1.2. Risk and uncertainty

The idea of risk is universal, but when we try to give a unique definition generally accepted, we realise that it is almost impossible.

Scherer (2005) correctly underlines that *One of the major drawbacks of social science research is the need to resort to everyday language concepts in both theory and empirical investigation* (p. 696).

A definition is a prerequisite of significant theoretical and empirical research and it constitutes the basis of an efficient communication with other scholars as required by a "systematic scientific approach" (Schueffel, 2016, p. 35).

Some definitions of risk are based on probability, chance or expected value, some on undesirable events or dangers, and others on uncertainties. Some consider risk as subjective and dependent on the available knowledge, whereas others grant risk an ontological and objective status.

These definitions, their rationale, strengths and weaknesses have been thoroughly discussed in the literature (Rowe, 1977; Renn, 1992; Aven and Renn, 2009; Aven, 2010; Aven, Renn and Rosa, 2011).

The concept of risk, addressing the term and its meaning, is not only relevant for linguistics (refer to the classification system of Althaus), but also an issue in other disciplines and areas. All disciplines and areas need to clarify how risk should be defined and understood as they may have different needs. Furthermore, the different definitions are related to different fields, such as economics, engineering, medicine etc., but nowadays the tendency is to elaborate more general holistic concepts able to capture the needs for assessing and managing decision problems, crossing traditional scientific disciplines and areas and opening up for new ways of describing/measuring uncertainties other than probability (Aven, 2010).

As underlined by Althaus (2005) in her semantic study, the conceptual understanding of risk conveys risk to be something that is open to a multi-

tude of converse possibilities and interpretations. She makes some interesting reflections on the variability in the use of the word 'risk' across time, society and region. She refers to Bernstein (1996) and Gigerenzer *et al.* (1989), who align the concepts of chance and probability with risk and argue that the notion of fate was replaced with belief in the ability of humanity to master uncertainty using probability. Following this idea any distinction between risk and uncertainty/chance today has been linguistically lost. However, at the same time, risk is a very vague term in everyday language, and issues of calculable probability are not necessarily important to the colloquial use of risk (Lupton, 1999). According to that, the word 'risk' has increasingly come to refer to something negative (Ferrero, 1968; Bertini, 1987; Wharton, 1992).

These changes in the semantic meaning of risk are associated with the emergence of modernity, beginning in the Seventeenth century and gathering force in the Eighteenth century (Lupton, 1999; Giddens, 2002). If we look at the various historical definitions, listed below, the following similar features are evident: for an activity, different consequences are possible; one or more are negative (undesirable) and the main focus is on these and the consequences are not known. Risk is either the possibility/uncertainty/chance that the activity will have some undesirable consequences, or the activity itself, which is often also referred to as a risk source or a threat.

However, while giving a scientific definition of risk, every researcher should consider three different dimensions: time, space and context.

Before trying to summarise all possible meanings, it is fundamental to refer to the founder of Italian business administration studies, as a science and an autonomous discipline, Gino Zappa, who stated in *Le produzioni nell'economia delle imprese* (1956) that: *Even though it is a perturbing factor in economic activity, risk is perhaps the most important feature of each company, so that in the absence of risk, the business activity is not even conceivable*[1].

Consequently, risk is intrinsic in doing business (Ferrero, 1968; Dezzani, 1971).

In this section the classification system for risk definitions, elaborated by Aven (2012), is fundamental in providing the definition of risk on which this study is based.

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[1] Zappa G. (1956), *Le produzioni*, Milano, Giuffrè (p. 226): "Sebbene fattore perturbatore dell'attività economica, il rischio è l'elemento che forse caratterizza meglio l'azienda, al punto che in assenza di rischio, l'attività aziendale non è neppure concepibile."

As mentioned above, the concept of risk has changed over time and in the Eighteenth century risk was considered as expected value (loss). The risk of losing any sum is the reverse of expectation and the true measure of it is the product of the sum adventured multiplied by the probability of the loss (Moivre, 1711). This idea was shared by Adams (1995) and Campbell (2005), who underline that risk equals expected disutility and the probability of undesirable events. This last definition was first elaborated by Haynes (1895), who highlights that risk is the chance of damage and loss.

Risk as the possibility of an unfortunate occurrence, unfavourable deviation from expectations and potential realisation of unwanted consequences of an event is also considered by Chapman and Cooper (1983), Oberparlaiter (1955), Corsani (1941), Sassi (1940) and Gobbi (1919).

Uncertainty and negative consequences, as linked to the concept of risk and to business management, were also discussed by Ferrero (1968). He considered two kinds of uncertainties: objective and subjective. The former is linked to the unknown in an absolute sense and they depend on the knowledge and the environment that surround the company. Subjective uncertainty instead can be dominated by the management because it is linked to insufficient information and to the informative system of the company. Consequently, uncertainty is intrinsic to the concept of risk. In 1987, Ferrero underlined that there are two categories of risk: general economic risk, which is linked to the economic effect of revenues not being capable of facing the remuneration of production factors, and business risk, specific to each company and representing the manifestation of the general economic risk.

This negative meaning is also present in the research of Bertini (1987), who considers risk as the manifestation of an adverse eventuality or negative scenario with damaging consequences for the company. Risk cannot have positive outcomes. Furthermore, as stated by Ferrero, uncertainty is the element that characterises risk, even if he concludes with the idea that risk is objectively and rationally hypothesised while uncertainty has a subjective connotation, linked to limitations of human knowledge and skills. Bertini (1987) also wrote that the study of risk consists of the interpretation of hypotheses and values that a company can assume when putting plans into effect.

In this context the studies of Knight (1921) and Power (2004, 2007, 2009) define risk as objective uncertainty. Frank Knight made a consequential distinction between risk and uncertainty in relation to the process of profit generation in the market. His masterpiece, *Risk, Uncertainty, and Profit* (1921), is an extremely complex and multidisciplinary essay

that refers to themes related to statistics, philosophy, psychology and management, and that drives several considerations regarding both the topic of risk and uncertainty and 'primitive' decision-making.

Firstly he analyses the scientific methods, induction and deduction, and he makes some comparisons with some philosophers, such as Mill, Dewey and Comte.

Risk in some cases means a quantity susceptible of measurement (pp. 19–20), while true uncertainty cannot be measured but can be considered an estimate.

The practical difference is that in the concept of risk the distribution of the outcome in a group of instances is known, while in the case of uncertainty that cannot be possible. However, an uncertainty, which can be reduced by using several methods to an objective, quantitatively determinate probability, can be transformed into complete certainty (pp. 231–232).

Knight wrote from a competing objectivist perspective. Probability is intrinsic to a proposition and depends only on necessary ignorance (Holt, 2004). But probabilities are human beliefs, not intrinsic to nature (Hume, 1748).

As mentioned before, uncertainty reaches beyond the Knightian emphasis on estimates of probability. In many businesses, managers and owners cannot know the set of alternatives or foresee all outcomes in the first place. As a consequence, expert decisions under uncertainty do not rely on estimating probabilities alone but also on search rules, aspiration levels, lexicographic rules, and other heuristic principles (Mousavi and Gigerenzer, 2014).

Knight aimed at refining the essential principles of the conventional economic doctrine and he wanted to improve the quality of human life. He was innovative in his conceptualisation of risk and uncertainty.

According to Power (2004, 2007, 2009), risk is either measurable uncertainty or uncertainty that is possible to organise.

Furthermore Power (2007) specifies that the distinction between risk and uncertainty is institutional and managerial between *those events and issues which are expected to be treated within management systems as 'risks' and those which are not. Uncertainty is therefore transformed into risk when it becomes an object of management, regardless of the extent of information about probability. When uncertainty is organised, it becomes a 'risk' to be managed* (pp. 5–6).

Spencer and Siegelman (1964) define uncertainty as *a state of knowledge in which one or more alternatives result in a set of possible specific outcomes, but where the probability of the outcomes is neither known nor meaningful* (1964, p. 9).

Hardy (1931) instead considers risk as uncertainty linked to cost, loss or damage.

Beyer and Sendhoff (2007) identify the sources of uncertainties in a system based on the system perspective. They introduce four sources of uncertainties, which include: changing environmental and operational conditions, production tolerance and actuator imprecision, uncertainty in the system's outputs, and feasibility uncertainty.

To sharpen up the meaning of uncertainty, it is worth noting that there are two types of uncertainty: the one expressing the probability of the event, and the uncertainty in the values used to calculate the impacts/consequences of risk.

This way, the magnitude of uncertainty directly relates to the magnitude of risk. The higher the uncertainty, the greater the degree of risk. Nevertheless, if the level of each risk is properly estimated, the risk assessment will be appropriately conducted (Torabi, Giahi and Sahebjamnia, 2016).

Therefore, risk is seen as uncertainty and its consequences are often negative.

For the International Organisation for Standardisation (ISO), which in 2009 elaborated ISO 31000:2009 about Risk Management and, more recently, in January 2016 published a practical guide for SMEs about how to implement risk management in alignment with ISO 31000, risk is the effect of uncertainty on achieving objectives.

All risk perspectives briefly summarised above had a specific meaning in the period and context in which they were elaborated.

However, it is important to underline that the specific risk perspective implied in a research strongly influences the way risk is analysed and managed, and the way decisions are made.

Defining risk is strictly linked to a recognition process as this concept of risk depends on how each person analyses an event or considers a danger.

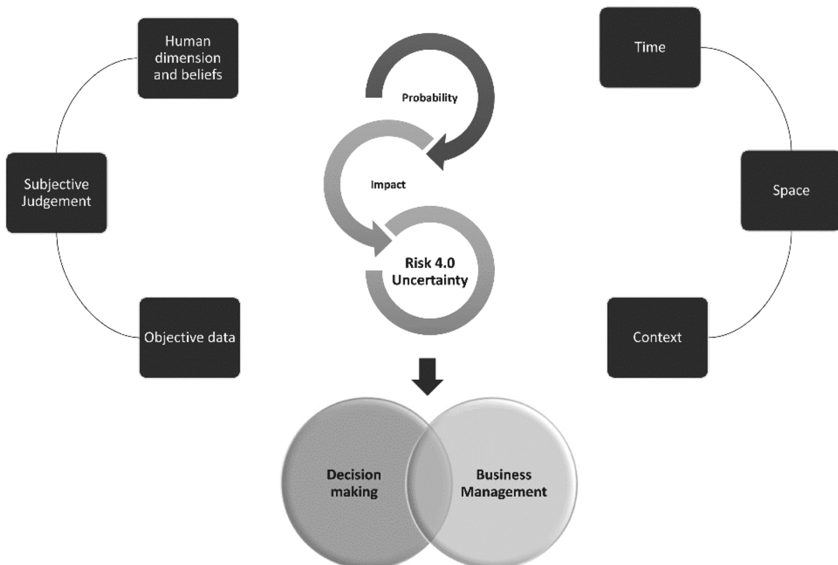
Nowadays, considering small and medium enterprises, risk should be seen in a *4.0 perspective* and as a future dimension that is not perfectly knowable and predictable. Probabilities and previsions are subjective and linked to human perception of reality. Therefore, human knowledge, the cultural and social environment strongly emphasise the way risks are perceived and considered while managing a business (Figure 1).

Consequently, uncertainty is the most important dimension of risk because, even though an event can be predicted in its probability of manifestation, such probability is defined by people on the basis of past events, which are not certain in their future manifestation, or people pre-

sume that a certain event might happen on the basis of other events external to the company. Probabilities are human beliefs and they are not intrinsic to nature and objective (Holt, 2004). In addition, when running a business, consequences of unexpected events might be either positive or negative. Therefore, when taking a risk, the activity results in some outcomes, whatever they are.

The problem, while making risk assessment and management, is to strongly support decision making, especially in SMEs. It is fundamental to capture both subjective judgments, human perceptions and objective data. Luhmann (1993) correctly underlines that the concept of risk implies a domain of decision making for the future and a related responsibility for that decision. Concluding, risk is intrinsic to each company and it could lead to either negative or positive consequences. Risk is strictly linked to uncertainty and it influences the decision-making process. But the common element to all these aspects is the central role of the human dimension and intervention, such as also strongly emphasised by Bernstein (1996).

Figure 1. Risk definition 4.0.



Source: elaborated by the author.

1.3. The risk management process: a brief state of the art

All companies are exposed to risk and they try to manage uncertainty and the challenge to determine how much uncertainty to accept as they strive to satisfy stakeholders' needs.

As mentioned in the paragraph *Risk and Uncertainty*, risk is intrinsic to each company and, being linked to uncertainty, it could lead to either negative or positive consequences, which in turn influence the decision-making process. But the common element to all these aspects is the central role of the human dimension and intervention, such as also strongly emphasised by Bernstein (1996).

Human intervention, which consists of setting and achieving business objectives, by ensuring and enhancing value creation over the long period with the aim to satisfy stakeholders' needs, plays a fundamental role for the survival of each entity.

Therefore, value is maximised when management sets objectives and a related strategy to strike an optimal balance between growth, return goals and related risks, and efficiently and effectively deploys resources in pursuit of the entity's objectives (COSO, 2004).

Accordingly, the risk management process can be seen in a strategic way because it is functional to the development of the company strategy and control (COSO, 2004; D'Onza, 2008) and it is considered as a key driver for value creation, competitiveness and profitability (Stulz, 1996; D'Onza, 2008). Consequently, risks should be assessed and managed effectively through a process that involves all company functions (D'Onza, 2008; Bromiley *et al.*, 2015; Khan, Hussain and Mehmood, 2016).

Hence, appropriate risk-based controls need to be implemented to help ensure that organisational objectives are achieved (Soin and Collier, 2013).

Therefore, risk management can be defined as a process that comprises coordinated activities to direct and control an organisation with regard to risk (Refsdal, Solhaug and Stolen, 2015, p. 12). It deals with planning, organising, directing and controlling resources to achieve given objectives when unexpectedly good or bad events can happen (Head, 2009) and it also provides a link between organisations and the external environment in which they operate.

The topic of risk management started being studied after World War II, in the period between 1955 and 1964 (Williams and Heins, 1964; Crockford, 1982; Harrington and Niehaus, 2004). Snider (1956) pointed out that there were no books on risk management at the time, and no universities offered