Università degli Studi di Padova

Department of Economics and Management

Master Program in Business Administration

A STUDY OF RESILIENCE IN SMES

Supervisor Alessandra Tognazzo, Ph.D.

Candidate Giulia Passarelli
ID Number 1190169

Academic Year 2019/2020

To my family

La candidata dichiara che il presente lavoro è originale e non è già stato sottoposto, in tutto o in parte, per il conseguimento di un titolo accademico in altre Università italiane o straniere. La candidata dichiara altresì che tutti i materiali utilizzati durante la preparazione dell'elaborato sono stati indicati nel testo e nella sezione "Riferimenti bibliografici" e che le eventuali citazioni testuali sono individuabili attraverso l'esplicito richiamo alla pubblicazione originale.

The candidate declares that the present work is original and has not already been submitted, totally or in part, for the purposes of attaining an academic degree in other Italian or foreign universities. The candidate also declares that all the materials used during the preparation of the thesis have been explicitly indicated in the text and in the section "Bibliographical references" and that any textual citations can be identified through an explicit reference to the original publication.

Firma

_____

INDEX

TABLES, BOXES & FIGURES

INTRODUCTION & SUMMARY

THE PURPOSE OF MY DISSERTATION – The purpose of this dissertation is to investigate the resilience concept in the context of small and medium-sized enterprises in order to understand what factors influence the resilience of entrepreneurs and how their resilience impacts on business performance.

It is extremely important for the members of an organization to have the ability to recuperate, and even succeed, in the face of problems and adversity. Being able to react to unexpected incidents and difficult events has always been a fundamental capacity, even more so nowadays, given the difficult situation that many individuals and organizations are facing due to the pandemic.

Over the years, a lot of research has been done on the effects of entrepreneurial resilience in large, publicly traded firms, while there are far fewer studies that have analysed the value of resilience in small and medium enterprises. The aim of this study is to review the literature in this field and to carry out a quantitative analysis of a broad sample of SMEs that operate in the metropolitan area of Milan.

FIRST CHAPTER – THE CONCEPT OF RESILIENCE – This chapter aims at introducing the broad concept of resilience and its application to individuals and organizations. It reports the origins of the concept and later provides a review of resilience literature in the business context. The review begins by outlining the various fields of resilience research and proceeds by analysing in more detail the studies on resilience at the organizational and individual level. Indeed, in several circumstances, organizations and entrepreneurs need to be resilient, that is, to maintain a positive attitude despite challenges and uncertainty

and to have the ability to resist and adapt over time to the continuous changes in the environment. Resilience is not a static characteristic of organizations and individuals but a behavioural quality that evolves over time and can be improved. Therefore, it is important to understand what are the factors that contribute to increasing resilience. Finally, the chapter concludes with an overview of the ways in which researchers have attempted to measure resilience.

SECOND CHAPTER – ENTREPRENEURIAL RESILIENCE IN SMES – In this chapter, the focus shifts to research that has examined resilience in SMEs. The section begins by describing the main characteristics of small and medium enterprises, before going on to analyse how these companies face adversity and how important the figure of the leader is within these small organizations. After that, the chapter continues by reviewing studies that have analysed the effects that failures have on the individual resilience of business leaders. In particular, it intends to understand if the resilience of business leaders can be affected by negative experiences and events such as performance shocks suffered by the company they own or manage. Subsequently, the literature review moves on to studies that investigate the relationship between individual resilience of leaders and business performance. Furthermore, the same topic is discussed in relation to the gender of the business leader in order to detect any differences. On the basis of this theoretical review, two hypotheses have been formulated aimed at testing, through an empirical analysis, the relationship between performance shocks and the resilience of business leaders as well as the presence of a link between the resilience of leaders and the expected business performance also considering the influence that the gender of the leader can have on this relationship.

THIRD CHAPTER – EMPIRICAL STUDY – The purpose of this chapter is to assess whether the assumptions on performance shocks, the resilience of leaders, gender and expected company performance are significant or not. Therefore, this chapter begins by describing the data that have been used to test the hypotheses developed in the second chapter and reports the main descriptive statistics. Afterwards, it describes the two regression models used to test the hypotheses. The first model is aimed at testing whether there is a significant relationship between performance shocks and leader's resilience. The second, instead, seeks to assess the existence of a relationship between a leader's individual resilience and the expected SME performance, taking into consideration also the influence of

the leader's gender on this relationship. Hence, the chapter continues by discussing the results obtained from the statistical models and comparing them with the relevant literature. Finally, it displays the limitations of the study and directions for future research.

1. CHAPTER ONE

THE CONCEPT OF RESILIENCE

1.1 Introduction

Everyday countries, communities, organizations and individuals are forced to face upsetting events. This is because they operate in constantly changing environments, subject to internal and external forces which can pose both potentially unpredictable and severe threats to the balance of the system. Events such as natural disasters, pandemic diseases, terrorist attacks, economic downturn, equipment failures and human errors can seriously jeopardize the continuity of an organization's operation (Bhamra, Dani, & Burnard, 2011).

In complex environments, where managing unexpected events is increasingly part of daily activities, it may happen that organizations and their members do not have all the capacities to foresee and prevent any challenge that may arise. In these situations, resilience is a necessary capacity to deal with unanticipated adversities after they have occurred (Sutcliffe and Vogus, 2003).

An example of a disastrous and unforeseeable event which has recently troubled many individuals and organizations is the outbreak of COVID-19 (the disease caused by Severe Acute Respiratory Syndrome Coronavirus 2). The World Health Organisation (WHO) declared the COVID-19 outbreak as a global emergency on January 30, 2020. To limit the infections, governments have enforced border shutdowns, travel restrictions, social distancing and quarantine in countries which constitute the world's largest economies, causing a dire economic crisis and recession. Indeed, these preventive measures have led to the temporary closure of schools, universities, some companies and organizations, causing many jobs to be lost across all economic sectors (Nicola et al., 2020). After about eight months from the outbreak declaration, according to the WHO’s coronavirus disease

situation report, the COVID-19 pandemic has resulted in over 46 million confirmed cases and over 1.2 million deaths globally.

Given the first signs of a new economic and financial recession, today more than ever we need a resilient and strong leadership in all fields, from healthcare to business, to government and to society in general (Nicola et al., 2020).

A number of researchers (Klein et al., 2003; Manyena, 2006) have argued that, in order to enhance resilience, it is necessary to have a good initial understanding of the origin of the concept, by which variables it is determined and how it can be measured, maintained and improved over time. Therefore, this chapter retraces all the steps that led to the definition of the concept of resilience in the business context and, subsequently, provides a literature review of major studies on the concept of resilience applied to organizational members and the organization itself. Moreover, it reports some scales used to measure resilience.

1.2 What is resilience?

1.2.1 Origins of the concept and its applications

The term "resilience" was used for the first time by the Canadian ecologist Holling in 1973 within the seminal work titled *Resilience and Stability of Ecological Systems*. This work created the basis for numerous studies on ecological resilience but also on other forms of resilience (Bhamra, Dani, & Burnard, 2011; Limnios et al., 2014). Holling (1973) distinguishes between stability and resilience. Stability is defined as the ability of a system to return to an equilibrium state after a temporary disturbance. Instead, resilience is identified as a measure of the persistence of systems and of their ability to absorb disturbances and still maintain the same relationships between system entities (Holling, 1973).

Today, the term resilience is being applied in a wide variety of fields, including ecology, metallurgy, individual and organisational psychology, supply chain management, strategic management and safety engineering. Despite the disparity of the various fields of application, across all of these fields the notion of resilience is closely linked with the

capability and ability of an element to return to a stable state after a disruption (Bhamra, Dani, & Burnard, 2011).

This broad definition remains valid even when the concept of resilience is applied to communities and the wider context of organizations. Resilience concerns both the individual and organizational responses to turbulence and disruptions. It entails the ability and capacity to resist systematic discontinuities and adapt to new risk environments (Starr et al., 2003).

1.2.2 Research streams in the business context

Despite this apparently common basis, however, within the business context, the notion of resilience can be observed from different points of view, adopting different approaches, focusing on individuals within an organization or on the organization in general and its characteristics (Wishart, 2018). There are several lines of enquiry through which the concept of resilience has been studied and that define it in slightly different ways. Indeed, resilience can be defined either as (1) organizational responses to external threats, (2) organizational reliability, (3) employee strengths, (4) the adaptability of business models, or (5) design principles that reduce supply chain vulnerabilities and disruptions (Linnenluecke, 2017).

Two seminal papers by Staw et al. (1981) and Meyer (1982) mark the origins of the concept of resilience in the business and management literature. They contributed to the resilience research by noting that the way in which organizations react to external threats triggers organizational processes which can either lead to a functional and dysfunctional response, impacting on an organization's performance and questioning even its survival (Linnenluecke, 2017). These two authors therefore conceived resilience as an organizational response to external threats. However, resilience can also be seen as a response to firm-internal disruptions or better as the reliability of internal organizational processes and the avoidance of small failures, deviations and other deficiencies which could potentially lead to disastrous events (Linnenluecke, 2017). This conception of resilience is what Wildavsky refers to in his book *Searching for Safety* (1988). Widavsky stated that there are two strategies for dealing with disruptions: (1) anticipation, that attempts to predict and prevent potential dangers before damage is done, and (2) resilience, that is the capacity to cope with unforeseen dangers after they have become manifest, learning to bounce back. Resilience is the best strategy to manage risks in unpredictable environments, when

it is impossible to anticipate the dangers, so it is necessary to learn from adversity how to do better (Wildavsky, 1988). According to the author, it is experience in dealing with adversity that more than anything else teaches organizations to become resilient. This vision of resilience as a mindful process leading to reliability was also shared by Weick et al. (1999). Indeed, the authors suggested that High Reliability Organizations can manage unexpected events effectively adopting processes of mindfulness, including a preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to resilience, and underspecified structuring.

Since the 2001 terrorist attacks in the US, publications on resilience have increased exponentially. Resilience researchers shifted their interest from intra-organizational reliability towards coping mechanisms and response strategies under conditions of great environmental uncertainty (Linnenluecke, 2017).

Luthans (2002) identified resilience as one of the factors leading to psychological strength in employees and defined it as the positive psychological capacity to bounce back from adversity, uncertainty, conflict, failure or even positive change, progress and increased responsibility.

Another line of enquiry focused on understanding how organizations adjust, adapt and reinvent their business models in a constantly evolving environment (Linnenluecke, 2017). Sutcliffe and Vogus (2003) defined resilience as the maintenance of positive adjustment under challenging conditions. A similar conception of resilience is that which emerges from Valikangas and Hamel' work (2003). The authors argued that resilience is the capacity of an organization to reinvent its business model as circumstances change. An organization should continuously anticipate and adapt to changes that can permanently damage its economic performance; it should have the capacity to change before the need for change becomes desperately obvious.

Finally, a third stream of post-9/11 research has focused on resilient supply chain design (Linnenluecke, 2017). Rice and Caniato (2003) highlighted the inherent vulnerability of closely interconnected supply networks, both among the trading partners and with the government agencies and the transportation infrastructure. In these operating environments, the effects of a disruption quickly endanger the whole network, therefore it is necessary to adopt a supply network design that is both secure (with advanced processes and

procedures in place) and resilient (capable of responding to unexpected events and restoring normal operating activities).

1.3 Organizational resilience

1.3.1 Resilience at the organizational level

At the organizational level, the term "resilience" has been associated with the intrinsic features of those organizations that are able to react quicker, bounce back faster, or reinvent their ways of doing business more easily under challenging conditions than others (Linnenluecke, 2017).

Some organisations are more successful in dealing with, and responding to (or even surviving), adverse, difficult and unexpected situations than others under similar circumstances (Linnenluecke, 2017). These organizations are able to avoid, absorb, respond to, and recover from situations that could jeopardize their existence (Alberti, Ferrario, & Pizzurno, 2018). For these reasons, they are considered to be "resilient".

Hollangel at al. (2008) defined organizational resilience as a set of abilities that organizations should possess to be resilient. First, an organization should be able to respond to various disturbances and to regular threats. Second, it should be able to flexibly monitor what is happening to promptly identify issues that can become critical in the short term. In this case, the concept of flexibility refers to the fact that the basis for monitoring must be assessed from time to time, to avoid falling into routine and habits. Third, an organization should have the ability to anticipate disruptions, and their consequences. It should be able to look beyond the imminent future more towards the medium-long term. This means being able also to cope with irregular threats, that is, very rare events that cause serious consequences for which it is not possible to prepare in advance. Finally, an organization should be able to learn from experience (Hollangel at al., 2008).

Organizational resilience requires organizations to adapt in order to manage disruptive challenges (Lee, Vargo, & Seville, 2013). Woods and Wreathall (2008) distinguished between two types of adaptive capacity. First-order adaptive capacity is displayed when organizations respond to adversity or recover from difficult situations using their previously developed capabilities and their predetermined planning. In contrast, second-order

adaptive capacity emerges when organizations develop new capabilities to respond dynamically to unexpected situations (Woods and Wreathall, 2008). Lee, Vargo, and Seville (2013) too agreed that organizational resilience has two dimensions: planned and adaptive. Planned resilience takes place before any disastrous event occurs, whereas adaptive resilience typically is exhibited post-disaster and requires strong leadership, internal cohesion and collaboration, external contacts, and the ability to learn from past experiences (Prayag et al., 2018).

1.3.2 Sources of organizational resilience

According to Sutcliffe and Vogus (2003), organizations are more likely to be resilient in the presence of some enabling conditions. They argued that organizational resilience depends on the organization' ability to develop, through norms, structures, and practices, conceptual slack and ad-hoc problem-solving networks and use effective communication media. Conceptual slack is obtained when organizational members adopt different perspectives towards internal processes, when they show a desire to learn and exchange information and knowledge mutually. Thanks to the greater number of perspectives available and the willingness to question the knowledge already acquired, the organization is able to identify quickly the problems to be solved and become more effective. The use of ad-hoc problem-solving networks and fluid decision structures allow the organization to respond swiftly to problems, irreducible uncertainty and adverse events. Social relationships also promote resilience, as organizations can ask their networks for the insights and assistance they need (Sutcliffe and Vogus, 2003).

Hamel and Valikangas (2003) indicated innovation as another enabling condition that allows organizations to foresee and cope with a wide range of turbulence. They claimed that the future of a business depends on how it masters three essential forms of innovation: revolution, renewal and resilience. Industry revolution means innovation with respect to industry rules and is essential to produce unconventional financial returns. Strategic renewal implies innovation with respect to one's traditional business model and is fundamental for incumbents. Finally, resilience refers to innovation with respect to those organizational values, processes, and behaviours that allow the organization to systematically continue its path towards innovation (Hamel and Valikangas, 2003).

According to Rice and Caniato (2003), the key design principles that can lead to resilience within supply chains are flexibility and redundancy. Flexibility involves the creation of

capabilities within the organization, before they actually are needed, such as developing a multi-skilled workforce, utilizing adaptable production systems, and ensuring the possibility of changing suppliers transparently. Redundancy, instead, means maintaining capacity to cope with disruptions in the supply network (Rice and Caniato, 2003). This thinking is in agreement with the contingency theory according to which structural formalization, specialization, complexity, and size make organizations rigid and deprive them of the ability to respond quickly to adversity and unexpected events (Sutcliffe and Vogus, 2003). This is also in line with Meyer's findings (1982) that organizations with strict job descriptions and centralization that impede growth and flexibility are negatively associated with resilience.

1.4 Individual resilience

1.4.1 From the trait approach to the process approach

Individual resilience is defined as the ability of an individual to show positive adaptation and development despite exposure to situations or conditions associated with negative outcomes (Masten, & Reed, 2002).

The concept of individual resilience has its roots in psychological and human development theories. Its origins can be traced to studies concerning schizophrenia, poverty and the response to stress and trauma (Cicchetti, & Garmezy, 1993). Since psychologists initially defined resilience as a personal trait, first studies that analysed individual resilience focused on identifying the personal qualities that made children resilient. In the early publications, successful high-risk children were referred to as “invulnerable”, “stress-resistant” or “resilient”. However, "resilient" became the attribute most used to describe these individuals (Sutcliffe, & Vogus, 2003). According to Rutter (1987), resilience is a factor that protects from psychotic disorders and is present in individuals that possess self-esteem, believe in their self-efficacy, demonstrate problem-solving skills and have satisfying interpersonal relationships. Similarly, Benard (1993) identified four characteristic attributes of resilient children: social competence, problem-solving skills, autonomy, and a sense of purpose and future. Social competence means establishing positive relationships and involves qualities such as responsiveness, flexibility, empathy, caring,

communication skills, and a sense of humour. Problem-solving skills include skills such as planning and resourcefulness in seeking help from others. Autonomy implies having a sense of one's own identity, the ability to act independently and exercise control over the environment. Finally, a sense of purpose entails having persistence, educational aspirations, goals, hopefulness and a bright expectation of the future (Benard, 1993). Wagnild and Young (1993) defined resilience as a positive personality characteristic that moderates the negative effects of stress and enhances individual adaptation.

Subsequently, researchers shifted their focus towards identifying the risk factors (i.e. the possible threats to individual development) and the protective factors (i.e. the resources or qualities of people or contexts) involved in the development of resilience, such as other personal qualities, aspects of their families and aspects of their social contexts (Sutcliffe, & Vogus, 2003). In other words, risk factors are factors that negatively affect the individual resilience and that can arise from a single traumatic event or from several stressful life events (Garmezy, 1991; Luthar, 1993). Instead, protective factors are characteristics of a group of individuals or their situations that can improve or reduce the negative influence of risk factors on the development of individual resilience. However, when risk factors are greater than protective factors, even individuals who have been resilient in the past can falter (Garmezy, 1993). Stewart, Reid and Mangham (1997) defined resilience as the ability of individuals to cope with significant change, adversity or risk successfully. According to the authors, this ability changes over time and may be improved by protective factors in the individual and environment (Stewart, Reid & Mangham, 1997).

Recently, the focus has been on identifying the protective processes, that is, not only studying which child, family, and environmental factors are involved in resilience but also understanding how these factors contribute to the positive outcome (Luthar, Cicchetti, & Becker, 2000).

From this body of research, it emerged that resilience is based on at least two building blocks: adequate resources and an active mastery motivation system (Sutcliffe, & Vogus, 2003). Individuals are more likely to be resilient when they have access to a sufficient amount of quality resources (both material, human and social) that allow them to develop skills. Furthermore, resilience is more likely when individuals have already had experiences that have enabled them to succeed and become self-effective, and that now motivate them to seek success (Masten, & Reed, 2002). This is also true for individuals within

organizations. Their resilience can be improved if they have access to human, social and material capital and if they have experiences that contribute to their personal growth, competence, and efficacy. Experiences are formative when they involve individuals personally, asking for their judgment, discretion and imagination, when they allow individuals to make and recover from mistakes, and when they show individuals role models from which they can learn how to behave (Sutcliffe, & Vogus, 2003).

1.4.2 Individual resilience in the work context

As also emerged from the introductory theoretical review, in the managerial literature, the concept of resilience is linked to both the individual and organisational reactions to turbulence and discontinuities (Bhamra, Dani, & Burnard, 2011). At the individual level, the term "resilience" refers to the capacity of organizational members to recover, and even succeed, in the face of unexpected, abrupt and/or adverse situations (Linnenluecke, 2017).

Every day workers face multiple changes that can be both internal, i.e. changes related to the way they have to carry out their work or related to their company in general, and external, i.e. involving the environment outside the company (Mallak, 1998). Pressure and stress at work are often caused by changes occurring in demographic, social, technological, and economic environments as these changes require businesses to be able to respond effectively and efficiently to be successful (Kumari, & Sangwan, 2015). Very often workers are put under pressure, have to make important decisions in a short amount of time, stand up for what they have done and quickly move on to the next task. Furthermore, they often are placed in these situations without adequate preparation or resources (Mallak, 1998). The workforce is required to be resilient to cope with the distress and eustress caused by events that occur both in the workplace and in personal life (Kumari, & Sangwan, 2015). Consequently, workers need to learn how to become more resilient, that is, how to dynamically adopt positive adaptive behaviours, while enduring minimal stress. These resilient behaviours can help workers quickly resolve all challenges, seize some opportunities that would otherwise be missed, and avoid catastrophes by acting quickly and effectively in crisis situations. Resilient employees expend less effort in assimilating organizational changes and therefore can focus on improving productivity and quality (Mallak, 1998). Kumari and Sangwan's (2015) empirical study indicated that individual resilience has a positive association with job performance (intended as work

responsibility, self-efficacy at job, presentation and behavioural skills, punctuality, and organizational skills). Furthermore, they found that resilience capacity is a significant predictor of job performance.

In numerous circumstances, entrepreneurs need to be resilient, to maintain a positive attitude despite difficulties and uncertainty and to have the ability to renew and adapt over time to the various changes in the environment (Duening, 2010). They often need to overcome the setbacks related to their private and professional life (Zautra et al., 2010).

The individual resilience of the entrepreneur is fundamental because it may affect the ability of a company to deal with external shocks. The way entrepreneurs react to challenges in their personal lives is reflected in their ability to deal with shocks in business. The degree to which managers are personally able to cope with adversity, adapt to changes in the environment and not be discouraged by failures affect business resilience (Bullough, & Renko, 2013). According to Riolli and Savicki (2003), organizational resilience builds on the foundation of the resilience of its members (Riolli & Savicki, 2003). Indeed, organization-level capabilities are not just the sum of individual capabilities, but the final effect of individual actions and interactions. Therefore, individuals collectively enable the organization to be resilient (Lengnick-Hall, Beck, & Lengnick-Hall, 2011). Organizational resilience requires people who are able to respond in a quick and effective way to changes while enduring minimal stress. The resilient organization will have individuals who perceive their experiences constructively and find a positive angle even in difficult situations, who perform positive adaptive responses to situations they face, who have access to adequate external resources and the necessary decision making authority, who practice bricolage (i.e., is able to create solutions out of whatever is available), who have a high tolerance for uncertainty and is able to make decisions despite the lack of some strategic information, and who operate within a virtual role system where each person knows not only others' roles, but have a shared understanding of the team's mission (Mallak, 1998).

1.5 The impact of resilience on business performance

After having outlined what are the characteristics, attitudes and behaviours of resilient organizations and individuals, it is interesting to analyse what effects all this can have on business performance.

Looking at what the studies on resilience in the business environment say, there seems to be a link between being resilient and being competitive. An organization is resilient when it has strong leadership, is aware and knows the environment in which it operates, can manage vulnerabilities and is able to adapt to sudden changes. These are all characteristics that also belong to competitive companies which are able to quickly adapt to changes in the market or industry sector, anticipating their competitors (Lee, Vargo, & Seville, 2013). Companies with higher levels of agility and resilience are more competitive and profitable even in the presence of turbulence (McCann, Selsky, & Lee, 2009).

Through their empirical study, Prayag, et al. (2018) found that organizational resilience has a positive impact on business performance. Organizational resilience affects performance both in times of crisis and when business is as usual (Mitroff, 2005). To have high financial performance it is important for an organization to have strong leadership, use knowledge in innovative ways, have employees capable of filling multiple roles, and have sufficient resources to absorb unexpected changes (Prayag et al., 2018). Moreover, post-disaster recovery strategies also seem to affect business performance (Corey, & Deitch, 2011).

As for the influence of entrepreneur resilience on business performance, there seems to be a positive relationship. Certainly, entrepreneurs have an impact on business performance through their strategic decisions, attitude and commitment (Coelho et al., 2004). However, to be successful they should have a resilient mind which means knowing how to get up after failures (Duening, 2010). Moreover, entrepreneurs' resilience can positively impact employees and encourage them to positively cope with challenges, helping to make the organization as a whole more resilient (Lengnick-Hall, Beck, & Lengnick-Hall, 2011).

1.6 Measurement of resilience

1.6.1 Organizational resilience measures

In order to demonstrate their progress towards becoming more resilient, organizations need tools that allow them to quantify improvements in their resilience and keep track of changes in measurement over time (Lee, Vargo, & Seville, 2013). Moreover, reliable and valid measures are needed in order to evaluate interventions and policies aimed at promoting resilience. The multiple and diverse definitions of the concept of resilience have led to the development of a wide range of scales to measure it, and perhaps for this reason widespread consensus on how to operationalise resilience has not been achieved (Windle, Bennett, & Noyes, 2011).

For example, McManus (2008) argued that organizational resilience depends on the organization's overall situation awareness, management of keystone vulnerabilities and adaptive capacity in complex, dynamic and interconnected environments. Consequently, she developed a model where relative overall resilience (ROR) is made up of three factors (situation awareness, management of keystone vulnerabilities, and adaptive capacity). Situation awareness can be defined as being aware of what is happening around you and what this information means to you now and in the future (Endsley, Bolte, & Jones, 2003). It is a vital command skill in situations of crisis because evaluating the situation is central to making decisions (Crichton, Lauche, & Flin, 2005). Keystone vulnerabilities are elements in the organizational system, whose loss or impairment may cause exceptional effects throughout the system (McManus et al., 2008). Finally, an organization's adaptive capacity can be defined as the ability to continuously develop solutions to match or exceed the needs of the environment as changes in that environment occur (Windle, Bennett, & Noyes, 2011).

In order to invest effectively in resilience, organizations need to understand what their resilience strengths and weaknesses are, and they need to be able to assess the effectiveness of their resilience strategies (Lee, Vargo, & Seville, 2013). Therefore, Lee, Vargo and Seville (2013) developed a survey tool designed to identify strengths and weaknesses and to assess and evaluate the effectiveness of organizational resilience strategies and investments. Moreover, they developed a model of organizational resilience. In particular, given that neither McManus's (2008) original ROR model nor the adjusted model proposed in their study were supported by the data, they decided to develop a new model of

organizational resilience that operationalized resilience as a function of two factors: adaptive capacity and planning.

However, due to the diversity of organizations and their environments and the lack of consensus on the definition of organizational resilience, a widely used and validated tool has not yet emerged (Wishart, 2018).

1.6.2 Individual resilience measures

Since the early 2000s, attempts have been made to measure individual resilience, albeit usually in clinical and non-organizational settings (Mallak, & Yildiz, 2016). Overall, individual resilience has been analysed more than organizational resilience (Wishart, 2018).

To ensure data quality, only resilience measures that have been validated should be used. For a measure to be validated, it must go through a validation process that demonstrates that it accurately measures what it has to measure, regardless of who the respondents are, when they respond and to whom they respond. The validation process should include ranges and reasons for any inaccuracies and sources of bias. It should also demonstrate that it is well received by respondents and that it is in line with the underlying concepts and theory (Windle, Bennett, & Noyes, 2011)

Windle, Bennett, and Noyes (2011) performed a methodological review of resilience measurement scales. They focused their attention on fifteen scales aimed at measuring resilience. Of all these measurement scales, the Connor-Davidson Resilience Scale (25 items), the Resilience Scale for Adults (37 items) and the Brief Resilience Scale received the highest psychometric ratings, although the quality of these questionnaires was considered as only moderate due to some missing information regarding the psychometric properties (Windle, Bennett, & Noyes, 2011).

The most used measurement scale for individual resilience is the Connor-Davidson Resilience Scale. This scale has been initially developed to assess the modifiability of resilience in response to pharmacologic treatment in clinical patients. The CD-RISC contains 25 items, all rated on a 5-point scale (0–4), ranging from “not true at all” (0) to “true nearly all of the time (4). Therefore, the total score can go from 0 to 100, with higher scores meaning greater resilience. Some examples of statements that individuals under analysis need to assess and report are: I am able to adapt to change; I can deal with whatever comes; I see the humorous side of things; I prefer to take the lead in problem solving; I have strong sense of purpose (Connor, & Davidson, 2003). This measure has been tested

in different populations, cultural and linguistic contexts and has proved statistically valid (Wishart, 2018).

A shorter version of the Connor-Davidson resilience scale with 10 data items instead of 25 was subsequently developed (Campbell-Sills, & Stein, 2007). This version of the scale, which may be easier to use for survey research, after being tested in different contexts, was found to be valid (e.g., Lauridsen et al, 2017).

1.7 Discussion

From the review of the literature on resilience, it emerged that this concept was initially born in ecology and that it has only more recently been applied to the organizational context (Limnios et al., 2014).

Both individuals and organizations are subject to different threats every day; the environment in which they operate is constantly changing (Bhamra, Dani, & Burnard, 2011). To be able to overcome these challenges, uncertainties and deviations, it is necessary for entrepreneurs and organizations to become more resilient (Nicola et al., 2020). Resilience should be seen not as an end state of being but rather as a process of adaptation and growth in difficult situations (Southwick et al., 2017). It enables organizations and individuals to adapt and transcend these situations. Resilience is the ability to cope with difficulties by leveraging the adaptive capacity that allows an individual, but also a community or organization, to respond effectively to changes (Duening, 2010; Windle, Bennett, & Noyes, 2011).

For these reasons, it is worth investing more in entrepreneurial resilience and understanding how it can be improved.

2. CHAPTER TWO

ENTREPRENEURIAL RESILIENCE IN SMES

2.1 Introduction

Small and medium enterprises (SMEs) are the backbone of the European economy, the main promoters of innovation and employment and contribute in large part to social and local European integration (Ionescu et al., 2011). Although the extent of the contribution made by the small and medium sized enterprises, both empirical and theoretical research examining organizational resilience has traditionally focused upon larger businesses and their environments. Relatively little resilience research has focused upon the specific context of the SMEs (Wishart, 2018).

Very little is known about the ways in which SMEs experience adversities and shocks that jeopardize their survival (Wishart, & Hopley, 2020). To date, business resilience research has mainly focused on large organizations, and has assumed that the same findings could also be applied to small and medium-sized enterprises. There has been an implicit assumption that conceptual frameworks and models developed by studying large organizations are valid and directly applicable to SMEs. However, there are significant differences between SMEs and their larger counterparts (Ates and Bitici, 2011). Small businesses are more vulnerable than their larger counterparts because they generally have fewer resources on which to draw in both normal and disaster situations (Webb et al., 2002).

Especially when it comes to small businesses, the figure of the owner/manager is fundamental. Indeed, given the limited resources that these companies often possess, it is essential to make good use of them (Powell and Baker, 2011). In the event of a crisis, the decisions entrepreneurs make and the way they react to challenges may impact more on

survivability of the business than the preparations previously made (Marshall, & Schrank, 2014). For this reason, it is extremely important that entrepreneurs have the capacity to manage unstable and changing business environments, looking at difficult situations with a positive attitude rather than fear or desperation. All these behavioural qualities can be summed up with the concept of resilience; this is what an entrepreneur should have to be able to face certain difficult situations with tenacity and positivity (Fatoki, 2018). Therefore, it would be interesting to understand what factors affect the degree of resilience of a leader and, more specifically, if the company's performance shocks also contribute to determining the leader's ability to react to adversity.

From the literature regarding entrepreneurship, the idea that the resilience of the entrepreneur may help to explain entrepreneurial success seems to prevail. Regarding this, it would also be worth checking whether there are specific gender differences. Indeed, the relationship between individual resilience and business success has not yet been well analysed in relation to the gender of the entrepreneur (Ayala, & Manzano, 2014). Therefore, it would be interesting to test whether this relationship is moderated by the gender of the leader and eventually how it is affected.

2.2 The SME context

2.2.1 What is a SME?

The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million (Article 2 of the Annex of Recommendation 2003/361/EC).

Small and medium-sized enterprises are the hub of the European economy. They account for 99.8% of all enterprises in the EU-28 non-financial business sector, generate 66.6% of employment and 56.4% of value added (European Commission, 2019). Moreover, in an international landscape characterized by continuous structural changes and a growing competitive pressure, the role of SMEs becomes even more important as creator of employment opportunities and key player of local and regional prosperity. The European economy needs dynamic SMEs that are able to cope with the uncertainty caused by the

phenomenon of globalization. They are the engine of the European economy and must remain powerful, competitive and innovative (Ionescu et al., 2011).

In order to create a favourable environment for small enterprises and entrepreneurial initiatives, the Small Business Act (SBA) was approved by the European Parliament and the European Council in 2008. The SBA is a package of guiding principles and concrete measures aimed at supporting the growth and competitiveness of small businesses (Ionescu et al., 2011).

However, despite all the efforts of the European Commission in favouring the prosperity of small and medium enterprises, these are often under-prepared for crises and suffer disastrous consequences when they experience them (Wishart, 2018). As SMEs constitute such a large part of the European economy, the impact of failing to deal with adverse events in their macro environments can go far beyond the single organisation. Therefore, understanding what are the factors and circumstances that make these organisations resilient becomes essential for a wide range of stakeholders, including SME owners and employees, their customers and suppliers, policy-makers and government and non-government agencies interested in the job and wealth creation that these organisations can deliver (Wishart, 2018).

2.2.2 Resilience in SMEs

Despite the fact that small and medium-sized enterprises are the backbone of the economy, few researchers have tried to investigate the recovery process of small businesses. Understanding what factors contribute most to recovery and demise of businesses—specifically small businesses—after natural disasters and other shocking events would certainly be of great help to business owners, academics, and practitioners in order to increase the likelihood of survival for SMEs that experience this kind of events (Marshall, & Schrank, 2014).

There seems to be a general consensus among researchers that recovery is a time-consuming and gradual process (Brown et al. 2008). However, in many prior studies, researchers have analyzed small business recovery as if it were an event, not thinking of it as a process that may have no endpoint. Most research studies have not been able to outline the process of recovery and have limited their research to business data (e.g., revenues, size, age) in characterizing factors that were related to survival (Marshall, & Schrank, 2014). Alesch et al. were among the first to conclude that the recovery of a

company from a disaster is a long and arduous process and not an event. They suggested that examining recovered businesses at a single point in time does not allow researchers to understand the recovery process and scrutinize the whole range of decisions made by their owners. Furthermore, the ever-changing environment within which decisions were made continues to impact survival or demise for long periods post disaster (Alesch et al. 2001).

Zhang et al. (2009) proposed a framework for evaluating business vulnerability to natural disasters. This model assumes that not all companies recover in the same way and at the same pace and that at least some of this variability can be explained by variations in four business-related dimensions (capital, labour, supplier and customer), the type of business and the size of business. Among the various findings, the authors also concluded that small businesses face far more obstacles to recovering from the effects of disasters than large ones.

There are numerous factors that can test the resilience of SMEs, including economic recession, environmental events, man-made disasters, terrorist attacks, reputational damage, fraud and regulatory issues, cyber-crime and information theft and supply-chain disruptions (Wishart, 2018). According to Herbane (2010), small businesses need to invest in resilience to reduce their vulnerability. However, as Sullivan-Taylor and Branicki pointed out in their study (2011), SMEs typically possess limited resources and cannot afford to devote many financial resources to addressing uncertainty. For this reason, they need tailored guidance and assistance with the execution of extreme event planning and response (Sullivan-Taylor, & Branicki, 2011).

In their empirical study, Pal et al. (2014) found that SMEs may be able to enhance their ability to survive adversity by making better use of their strategic assets and capabilities, especially by focusing upon access to finance, networking, material assets, and strategic and operational flexibility. Similarly, Reymen et al (2015) argued that being flexible and adopting a collaborative decision-making approach allow SMEs to deal with highly uncertain settings in an effective manner. According to Battisti and Deakins (2017), a SME's dynamic capabilities, that is its proactive posture and ability to integrate external resources in the event of shocks, are central to its ability to withstand adverse events. In order to increase these capabilities, small businesses need to actively prepare for

adversity, by developing contingency plans, by building networks and by questioning their adaptive capacity.

2.2.3 The influence of leaders on the resilience of SMEs

Some researchers, including Keong and Mei (2010), have studied the resilience of small organizations focusing on its relationship with human involvement within organizations. Through their studies, they came to the conclusion that as SMEs are business organizations formed by two or more individuals to pursue specific objectives, usually economic objectives, it is reasonable to assume that resilient organizations possess the same resilient qualities possessed by human beings because it is not possible to separate the activities of the business from the actors operating them (Bhamra, Dani, & Burnard, 2011). Therefore, resilient organizations should also possess those qualities of human beings associated with resilience which can be summarized in four important behavioural attributes: flexibility, motivation, perseverance, and optimism. These are to be thought of as personal behavioural qualities rather than specific traits or characteristics. Specifically, flexibility is demonstrated by a high tolerance for ambiguity, an ability to adapt quickly to changing situations, and a propensity to welcome change rather than hinder it. Motivation is displayed through a strong sense of purpose, a high level of self-efficacy, and a driving need for achievement and autonomy. Perseverance is reflected in determination in their quest for success despite some major challenges. Finally, optimism is demonstrated by a positive outlook and a proactive personality, looking at failure as an opportunity and working to improve a situation beyond simply doing what is expected (De Vries, & Shields, 2006). After interviewing a sample of small and medium business entrepreneurs, Alesch et al. (2001) came to the conclusion that probably the most important factor in being able to survive adversity and ever-changing environments is the extent to which the owner or manager recognizes and adapts to the post-event situation. After a disastrous event, the environment is no longer as it was before the event, it inevitably changes. Continuing to operate as before is often not possible. Therefore, to have a higher probability of surviving, it is necessary to be able to perceive the change and respond in the appropriate way. The business owner's past experience and perceived competencies are the factors that most seem to affect the early stages of post-disaster recovery of a SME. The most successful owners and managers are those who actively seek to improve their company's potential (Alesch et al., 2001).

Similarly, Conz et al. (2017) found that the resilience of SMEs is primarily driven by the ability of the leaders to adopt the adequate internal resilience strategies, depending on the circumstances they encounter (Conz et al., 2017).

Baron and Markman (2000) suggested that entrepreneurs' social capital and social skills influence their businesses' success. Social capital refers to the actual and potential resources entrepreneurs gain from their relationships with others, being part of a social network with them, or merely from being known to them and having a favourable reputation. A high level of social capital often helps entrepreneurs get contacts and opportunities, providing access to venture capitalists, potential customers, and others. Once such access is gained, their social skills, that is their ability to interact effectively with others, can strongly influence their success. Indeed, specific social skills, such as being able to read others accurately, making good first impressions, being persuasive, and knowing how to adapt to different social situations, are key players in shaping ongoing relationships which are fundamental to business success (Baron and Markman, 2000).

2.3 The effect of performance shocks on leader's resilience

2.3.1 Can leaders become more resilient?

Traditionally, entrepreneurship theory focused on the characteristics of entrepreneurs as individuals. However, recently, new models have evolved that focus on the consequences of entrepreneurs' actions as a way to define them (Aldrich & Martinez, 2001). The idea that has long prevailed is that the characteristics of the entrepreneur are innate traits that one has from birth, that these traits cannot be taught or learned over time. Such characteristics include risk appetite, analytical abilities, skills in human relations, initiative, proactivity and leadership skills. However, recent research on entrepreneurship is slowly shifting the focus more towards behavioural and cognitive aspects rather than the number of experienced personality characteristics (Hedner, Abouzeedan, & Klofsten, 2011).

Entrepreneurs often face unexpected events, such as financial crises, technological innovations or market competition, that can potentially threaten the survival of their companies (Franco et al., 2020). To be successful, entrepreneurs therefore need to be resilient, that is, able to overcome these critical business-related situations and emerge from

failures and crises stronger than before (Duchek, 2018). According to Drugan et al. (2013), an individual can be considered resilient because of an inherent capacity to recover after shocks, because of its/her ability to deal with the physiological or psychological consequences of a stressor by implementing efficacious response strategies, or because of a developed capacity to resist stressor's consequences thanks to previous experiences. Resilience is a dynamic and evolutionary process through which entrepreneurs learn to quickly overcome failures related to their life and career ambitions (Franco et al., 2020). Resilience is an adaptation process that allows entrepreneurs to continue to be optimistic about the future of the company despite the destabilizing events and problems that continually arise. This ability to adapt and recover in the face of adversity depends on the resources of the individual and their interaction with the environment. Entrepreneurs' resilience changes as a result of their businesses requiring them to adopt the right strategies and develop the skills for coping with different kinds of situations with determination and optimism. Therefore, each entrepreneur can become more resilient over time: resilience can be developed and encouraged (Ayala, & Manzano, 2014).

According to Duchek (2018), there are at least two situational (parents' behaviour and parents' experience) and two process-related factors (entrepreneurial learning and experience and entrepreneur's work attitudes and behaviours) that have a great impact on the development of entrepreneurial resilience and success. Learning from failure is crucial, especially for entrepreneurs. There are numerous case reports on how failures and the ability to recover from failure have formed successful entrepreneurs (Hedner, Abouzeedan, & Klofsten, 2011).

2.3.2 Do performance shocks affect leader's resilience?

Despite the fundamental role they play in economic and social development, SMEs face enormous challenges every day that jeopardize their progress and survival. Many of these companies go bankrupt or close prematurely due to the challenges and unexpected events to which they are continually subjected. Globalization, the digital age, the continuous presence of crises (of whatever nature they are, financial, economic, political, etc.) put the resistance of SMEs to a severe test. Confronted with these challenges, entrepreneurial resilience has been seen as an essential element for survival, recovery and success. To act against these situations, identifying the main factors likely to hinder SME performance

and understanding how failure factors affect entrepreneurial resilience is fundamental (Franco et al., 2020).

Academic studies have often focused on analysing companies that have been successful and have managed to overcome periods of crisis. However, to better understand what are the factors that often lead to failure and to have a more complete view on organizational and entrepreneurial resilience, it is important to also examine the companies that have failed (Webb et al., 2002). Despite the numerous studies carried out, the results of research on the relationship between failure factors and resilience are scarce and not sufficient to explain this phenomenon (Holt, 2013).

According to Pardo and Alfonso (2017), the main factors affecting organizational success or failure can be classified into six categories, namely, financial, external environment, organisational, operational/technical, marketing, and human resources. Table 1 shows each category with its respective attributions.

Table 1 Factors that should generate business failure

CATEGORIES	ATTRIBUTIONS
Financial aspects	Insufficient income to survive, financing problems (loans), excessive operating expenses, delayed client payments, provider credit issues, poor money management
Environment and external factors	Economic or political crisis, provider or contractor problems, arrival of a strong competitor, unexpected change in clients, legislative change, interest group discontent, arrival of new and improved technologies, criminal activity
Organization/administration	Execution problems, deficient planning, lack of indicators/management measurements, conflict between shareholders/partners, inadequate organizational structure, poor information management, excessive delegation and lack of supervision, lack of passion or motivation
Operational/technical issues	Size, capacity, and/or other technical requirements, raw materials, patent process
Marketing	Promotion/publicity problems, inadequate point of sale, weak market study, poor selection of target market, dramatic loss of clients, inadequate price point, poor product design, poor packaging design
Human resources	Lack of staff development, compensation issues, poor hiring decisions, theft, turnover

Source: adapted from Pardo and Alfonso (2017)

The causes for the formation of these factors that could lead SMEs to fail can be internal and/or external. Sometimes the organization risks failure due to the entrepreneurs/managers' short-sightedness (Franco, Haase, & António, 2020). In their empirical study, Bullough et al. (2013) found that self-efficacy and resilience help entrepreneurs to

manage business failure. Therefore, identifying which factors positively and negatively affect the leader's individual resilience serves to understand how leaders can improve their ability to cope with challenging periods and consequently reduce the probability of failure.

According to Hedner, Abouzeedan, and Klofsten (2011), the level of entrepreneurial resilience is dependent not only on personal characteristics but also on structural and external factors. Indeed, just as the causes of entrepreneurial failure are related to both internal and external factors (such as the entrepreneur's characteristics, the company's structure and strategies, and the environment), it is reasonable to believe that the extent of entrepreneurial resilience depends on a combination of such factors (Hedner, Abouzeedan, and Klofsten, 2011).

In Franco, Haase, and António's (2020) empirical research, it emerged that some failure factors of SMEs have a significant influence on entrepreneurial resilience. Specifically, the study results show that, among all the failure factors analysed, financial, environmental, organisational, and operational factors seem to have a significant influence on entrepreneurs' resilience. The authors therefore concluded that the greater the control entrepreneurs have over these factors, the more resilient they will be.

Failure, in various circumstances, can become a source of learning, a tool to discover new opportunities and skills, and a motivation to chase success (Franco, Haase, & António, 2020). It would be interesting to further investigate the relationship between failure factors and entrepreneurial resilience and to understand whether performance shocks also affect the individual resilience of the leader and eventually how they affect it. Indeed, entrepreneurial resilience has rarely been studied in the context of failure, despite it being an unpleasant and debilitating experience (Corner, Singh, & Pavlovich, 2017). Therefore, the first hypothesis is formulated:

> Hypothesis 1: There is a significant relationship between the number of experienced performance shocks and leader's resilience.

2.4 Individual resilience and expected SME performance

2.4.1 Why is the leader's perception of the expected SME performance relevant?

In many research studies, disaster impacts on small businesses have been examined making use of simulation models (e.g. Shiller, 2011), where damage estimates can be calculated by assuming some factors and projecting these on the entities that presumably may be involved in such events. The results thus found are useful for emergency management purposes to estimate the cost of the damage that could occur and to activate an effective emergency plan. However, when evaluating the recovery capacity or the future of a small company, it is important to take into consideration the point of view of the owner, the perception of the owner on the future economic performance of the organization. Indeed, small business owners are at the epicentre of their businesses: everything revolves around them. Nobody knows the company better than them, knows what they have done and why they have done (or not done) something, and can better report the indicators useful to researchers to assess the level of resilience or the future of the company (Marshall, & Schrank, 2014).

Vij and Bedi (2016) conducted a study aimed at analysing the relationship between subjective and objective measures of business performance in order to justify the use of subjective measures in place of objective ones and found a strong positive correlation between subjective business performance and objective business performance, in line with some previous studies (e.g. Dess and Robinson, 1984; Venkatraman and Ramanujam, 1987; Dawes, 1999; Wall et al., 2004). Therefore, both subjective and objective measures of business performance are valid for measuring the performance of an organization. The use of subjective measures of business performance in strategic management research is justified in the absence of objective measures (Vij, & Bedi, 2016).

2.4.2 The effect of leader's resilience on expected SME performance

Considering their large number, SMEs represent a key segment and a driver for most national economies. Understanding how SMEs can achieve high performance can bring several benefits to both owners/managers and employees and to the economy in general. Indeed, high levels of performance can facilitate firm growth and subsequent profit performance, which in turn can lead to employment gains and contribute to the general national economic health. On the other hand, low levels of performance could lead to firm

crisis or failure, and in the worst situations to economic collapse. Given the limited resources of small and medium-sized companies and their susceptibility to disruptions, hardship, and total powerlessness in the face of environment change and uncertainty, better understanding what are the factors and mechanisms that contribute to their high performance is essential (Wolff, & Pett, 2006).

The resilience practices of SMEs vary along the adaptive cycle and the capacity of managers and entrepreneurs to balance resilience strategies directly affects the economic performance of the firm (Conz et al., 2017). According to Powell and Baker (2011), a SME's resilience depends on its resourceful behaviours, that is, the actions that ensure the best use of limited resources. These actions, in turn, are shaped by the commitment of the leader to the business and its success (Powell and Baker, 2011).

The resilience of leaders seems to be one of the factors that contribute positively to the high performance of organizations. In their empirical study, Ayala and Manzano (2014) tested whether a connection exists between the resilience of an entrepreneur and the growth of his/her business and found a positive correlation. They found that resilience helps to explain entrepreneurial success, and that entrepreneurs with a higher degree of resilience are likely to lead successful businesses that grow over time. The empirical study conducted by Fatoki (2018) also confirmed that there is a significant positive relationship between entrepreneurs' resilience and personal and organizational success. However, there are also results that contradict this. After an empirical research, Fisher et al (2016) concluded that entrepreneurs' resilience is a predictor for entrepreneurial success at the individual level. However, they found no significant relationship between individual resilience and business success.

Overall, most resilience studies seem to confirm that there is a positive relationship between entrepreneurial resilience and company performance. Based on the previous literature, the expectation is that a leader's resilience contributes to predict entrepreneurial success. Furthermore, the literature seems to confirm that the SME leader's perceptions are a good indicator of real performance because, being a central figure, he/she knows better than anyone the potential and capabilities of his own company. As stated above, there are several studies that argue that both objective and subjective business performance measures are valid for measuring the performance of an organization. Therefore, the first part of the second hypothesis is formulated:

Hypothesis 2a: There is a significant relationship between a leader's individual resilience and the expected SME performance.

2.5 Women and leadership

2.5.1 The think crisis – think female stereotype

Recent evidence suggests that female business leaders are under-represented within the general entrepreneur population. Research shows that female entrepreneurs that do succeed in starting their own businesses often experience greater barriers to entry, and lower turnover and survival rates than other groups (Wishart, 2018).

While men, namely heterosexual white men, are more likely to be put on a fast track to leadership roles thanks to a "glass escalator" (Williams, 1992), women traditionally encounter a 'glass ceiling', various invisible and impenetrable barriers preventing their rise into upper management positions (Kanter, 1977).

In most companies, leadership positions are still dominated by men, however recent evidence suggests that women are beginning to break through the glass ceiling that until now has prevented them from reaching the highest organizational leadership positions (Bruckmüller, & Branscombe, 2010).

Research suggests that companies are more likely to appoint men to upper management positions in times of success, while they are more prone to appoint women to their executive boards when they have recently experienced consistently poor performance (Haslam, & Ryan, 2008). A possible explanation for this phenomenon, termed the glass cliff, could be found in stereotypes about gender and leadership (Bruckmüller, & Branscombe, 2010).

Most people see in the figure of the "typical manager" that of the "typical man", that is, they ascribe to them many attributes commonly associated with the "typical man" and only very few associated with the "typical women". This effect is indicated as the think manager–think male stereotype (Schein, 1973). In particular, the typical male stereotypes associated with the figure of the manager are attributes such as competitiveness and self-confidence (Schein, 2001).

Starting from this assumption, some researchers have decided to compare gender stereotypes with perceptions of managers in successful versus unsuccessful organizations. What emerged from these researches is that, in a context of crisis, the perception of what makes a good leader is completely different. The characteristics considered as desirable for a manager in an unsuccessful company are more similar to those stereotypically associated with a woman than with a man. This phenomenon is referred to as the think crisis–think female stereotype. In particular, stereotypically female attributes seen as needed in times of crisis involve interpersonal qualities such as intuition and awareness of the feelings of others (Bruckmüller, & Branscombe, 2010). As also emerged from the experiment conducted by Bruckmüller and Branscombe (2010), women are perceived as possessing more of the specific crisis management skills, such as the ability to motivate employees in the face of declining organizational performance, than men.

2.5.2 The effect of leader's gender on the relationship between individual resilience and expected SME performance

Recent research on disaster recovery has focused on the ways in which the gender of the business leader shapes people's vulnerability to disasters. Researchers have demonstrated that owner characteristics may play a fundamental role in long-term disaster recovery. (Webb et al., 2002). In particular, differences in personal characteristics between men and women seem to affect the success of their businesses (Ayala, & Manzano, 2014).

In their empirical study, Webb et al. (2002) examined long-term recovery outcomes of businesses impacted by major natural disasters. In particular, they developed a statistical model containing five major components thought to impact long-term disaster recovery outcomes of businesses. Among all the variables, they also included the gender of the owner, since previous literature on small businesses argued that female owners often face greater challenges than their male counterparts in running businesses and that women-led companies have a higher failure rate and a lower profitability than men-led ones. However, through their statistical analysis, they found no significant relationship between the gender of the business owner and long-term business recovery. Overall, regarding the influence of gender on company performance, researchers found contradictory results (Ayala and Manzano, 2014).

As regards, instead, the relationship between gender and individual resilience, Campbell-Sills, Forde & Stein (2009) found significant differences between the level of resilience

shown by men and women. Women reported significantly lower degrees of resilience on average than men (Campbell-Sills, Forde, & Stein, 2009), a finding which was also confirmed by a study that used completely different methodology to evaluate resilience (Bonanno et al., 2007). On the other hand, Burns and Anstey (2010) and Karairmak (2010) encountered no differences in the level of resilience based on gender.

Since the results regarding the relationship between resilience and gender differences were not conclusive, Ayala and Manzano (2014) decided to test not only whether entrepreneur's resilience has an influence on business success but also whether any gender-specific differences exist. They noted that no previous studies had examined the importance of entrepreneur's resilience according to gender differences and its relation to the business success. All the previous research was conducted without considering the gender of the leaders. Through their analysis, Ayala and Manzano (2014) found that the gender of the owner influences the way in which individual resilience predicts the success of the business.

All things considered, it is possible to suppose that the gender of the leader moderates the relationship between individual resilience and organizational performance. Therefore, the second part of the second hypothesis is formulated:

> Hypothesis 2b: Leader's gender moderates the relationship between individual resilience and expected SME performance.

2.6 The research framework

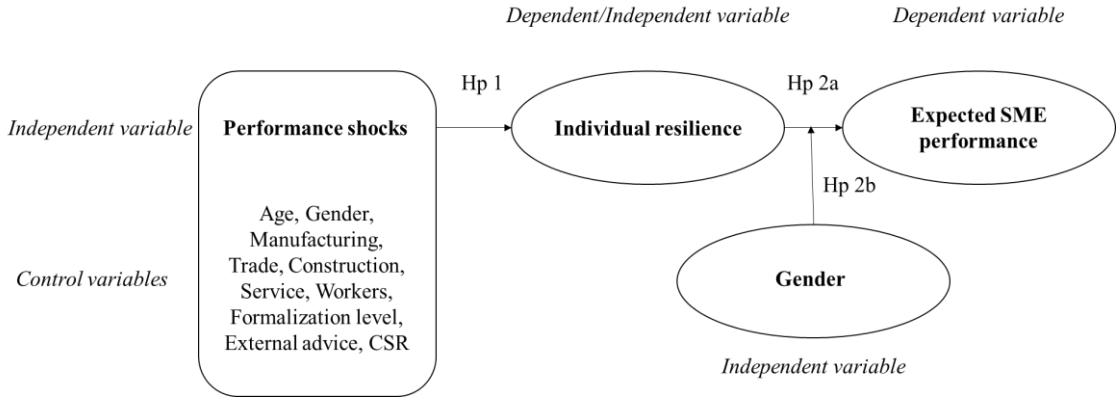
Although researchers' interest in SME resilience has grown in recent years, research on entrepreneurial resilience is still at an early stage. It is still unclear what factors affect entrepreneurial resilience and how it can be improved (Duchek, 2018).

Since resilience is not an inherent characteristic trait, but rather an individual capability that can be developed and promoted, over time entrepreneurs may enhance their resilience (De Vries, & Shields, 2006). According to Duchek (2018), factors that have a great influence on entrepreneurial resilience are not only individual but also situational and process-related factors. Therefore, it is reasonable to assume that performance shocks affect the resilience of leaders.

Moreover, previous research suggests that the resilience of entrepreneurs could be a key factor in the prediction of entrepreneurial success and that the gender of the leader could be an interacting factor which moderates this effect. However, there has not yet been much research on this moderation effect (Ayala, & Manzano, 2014).

To help fill this research gap, based on the theoretical review, a research framework has been created representing the hypotheses described above. In the third chapter, this theoretical model will be tested on a sample of data using statistical techniques.

Figure 1 Research framework



Source: own elaboration

2.7 Discussion

Although SMEs are key drivers for the European economy, and their sustainability is of vital importance for the global economy (Ates and Bititci, 2011), these are, from the point of view of resilience, less studied (Alberti, Ferrario, & Pizzurno, 2018).

Small businesses are more vulnerable to disruptions than large organizations due to the limited resources at their disposal. Therefore, more than anything else they need to invest in resilience both at individual and organizational level (Herbane, 2010).

Previous studies on SME resilience explain how the resilience of employees, managers, or entrepreneurs can foster organizational success (Ayala and Manzano 2014). To be sustainably successful, entrepreneurs need to be resilient, that is, able to overcome critical situations and even emerge from failures and crises stronger than before (Duchek, 2018). Therefore, it is important to understand what factors influence leaders' resilience. From the literature review, it emerges that there may be various factors that have a significant

impact on individual resilience, and these may be process-related or situational factors (Duchek, 2018). It would be interesting to test whether performance shocks affect leaser's resilience.

Regarding the influence of the leader's gender on individual resilience and business performance, the results are not yet exhaustive (Ayala and Manzano 2014). Consequently, it would be of great interest to examine whether, assuming that individual resilience impacts business performance, the gender of the leader moderates this relationship.

3. CHAPTER THREE

EMPIRICAL STUDY

3.1 Introduction

This third chapter aims to test the hypothesis developed in the second chapter. These have been formulated after carefully analysing the recent literature on individual resilience, any gender differences in resilience and its link to business success.

Before proceeding with the hypothesis tests, some information has been inserted on the dataset and on the research project for which it has been created, on the questionnaire that has been used to collect the data and on the companies and business leaders that have decided to participate in the project.

Some descriptive statistics have been performed to analyse companies' economic performance, management composition, initiatives and other information regarding the respondents including their resilience.

Subsequently, the variables used in this empirical study and their measurements have been described. Moreover, the correlation analysis has been performed between all possible pairs of variables to analyse the relationships among all the variables.

At this point, the regression models developed to test the hypotheses of the study regarding the impact of performance shocks on the resilience of the leader and the relationship between the latter and the expected SME performance with a possible effect of moderation by the leader's gender have been reported and analysed in detail. Furthermore, the hypotheses and the results obtained have been examined in depth, also referring to the literature.

Finally, some theoretical and managerial implications have been discussed as well as study limitations and directions for future research.

3.2 Survey administration

3.2.1 Data collection

The empirical analysis that will be presented in this chapter makes use of the data collected for a European research project on small and medium-sized enterprises, the "Business Resilience Study", conducted by the Enterprise Research Centre and supported by the JP Morgan Chase Foundation.

This European study investigates the challenges (and potential opportunities) that SMEs in general, and those led by under-represented groups in particular, face during their lifetime. This study examines the ways in which SMEs and their business leaders experience and react to adversity. The purpose of this research is to fully understand these challenges and how they vary among different groups of business leaders, and to develop tailored toolkits that can help these businesses and leaders become more resilient. The research is particularly focused on the study of small businesses led by women and ethnic minorities. The aim is to provide insights on what can be done to help them better manage adversity and foster resilience (Wishart, & Hopley, 2020).

Research was undertaken in five key European cities – London, Paris, Frankfurt, Milan and Madrid. The University of Padua was in charge of conducting this research in the metropolitan area of Milan.

The MPS Research, a scientific and statistical research institute, was commissioned by the University of Padua to carry out the interviews in order to understand what challenges the interviewed companies encounter during their existence and how they face them.

The data was collected between January and February 2019. The organizations were randomly selected from a list of private profit-making companies, based in the Milan Metropolitan area, which, at the date of the survey administration, had between 3 and 99 employees. Participation in this survey was voluntary. 600 of all the companies contacted decided to take part in the project and complete the interview. The respondents were all owners or managers of the businesses, involved in strategic business decisions.

To ensure that the research also included under-represented groups, the researchers set up quotas. They established quotas regarding the type of district in which the company was working, the presence of women and ethnic minorities among the management and the number of employees.

In particular, the first quota was set to control for the wider environmental context in which the business was operating. The researchers wanted to make sure of carrying out the survey in both low- and middle-income boroughs. Therefore, they divided the Milan Metropolitan area in two subgroups according to the average per capita income of residents: the "disadvantages areas", in which the average per capita income was below 23,000 €, and the "medium disadvantaged areas", in which the average per capita income was between 23,000 € and 25,000 €. Consequently, the first principal quota distinguishes between disadvantaged and medium disadvantaged areas.

The other principal quota was established to ensure that leaders of different gender and from different ethnic groups were considered. Indeed, one of the objectives of the project is to identify the possible different challenges and difficulties encountered by the under-represented groups compared to the others. Consequently, four categories were established according to the management profile: predominantly female, predominantly non-female, predominantly ethnic minority, and predominantly non-ethnic minority.

Finally, a control quota was envisaged to control the impact of the company size. Therefore, researchers divided the companies into four categories based on the number of employees and made sure that each category was fairly equally represented in the sample.

Table 2 Principal quotas by type of district

Quotas by type of district	Definition	Target interviews
Disadvantaged	Baranzate, Morimondo, Cinisello Balsamo, Ozze-ro, Rozzano, Turbigo, Corsico, Cologno Monzese, Pioltello, Buscate, Grez-zago, Nosate, Besate, Ce-sano Boscone, Motta Visconti, Solaro, Bubbiano, Pieve Emanuele, Senago, Canegrate, San Giulia-no Milanese, Pero, Mesero, Castano Primo, Trez-zo sull'Adda, Gar-bagnate Milanese, Ossona, Dai-rago, Villa Cortese, San Zenone al Lambro, Cug-giono, Liscate, Arconate, Vanzaghello, Truc-cazza-no, Zibido San Giacomo, Busto Garolfo, San Co-lombano al Lambro, Cerro Maggiore, Cesate, Ro-becchetto con Induno, Paullo, Vittuone, Vaprio d'Adda, Lacchiarella, Albairate, Settala	300
Medium disadvantaged	Sedriano, Casarile, Bollate, Locate di Triulzi, San Giorgio su Le-gnano, Sesto San Giovanni, Melzo, Magnago, Pozzo d'Adda, Bi-nasco, Vernate, Medi-glia, Abbiategrasso, Cormano, Cassano d'Adda, Bareggio, Pantigliate, San Vittore Olona, Zelo Sur-ri-gone, Trezzano Rosa, Rosate, Calvignasco, Arlu-no, Pozzuolo Martesana, Carugate, Nerviano, Pregnana Milanese, Pessano con Bornago, Po-gliano Milanese, Casorezzo, Inveruno, Paderno Dugnano, Masate, Vignate, Rescaldina, Colturano, Rho, Santo Stefano Ticino, Basiano, Cornaredo, Parabiago, Bresso, Mele-gnano, Carpiano, Magen-ta, Gudo Visconti, Boffalora Sopra Ti-cino, Inzago, Robecco sul Naviglio, Bernate Ticino, Bellinzago Lombardo, Corbetta, Noviglio	300

Source: adapted from the survey

Table 3 Principal quotas by management profiles

Quotas for management profiles	Definition	Target interviews	
		Disadvantages	Medium
Predominantly female (50%+)	50% + of the owners / managers are women	150	150
Predominantly non-female (<50%)	Less than 50% of owners / managers are women	150	150
Predominantly ethnic minority / migrant (50%+)	50% + of the owners / managers are not Italian	minimum 75	minimum 75
Predominantly non-ethnic minority / non-migrant (<50%)	Less than 50% of the owners / managers are not Italian	maximum 225	maximum 225

Source: adapted from the survey

Table 4 Control quotas

Quotas by dimension	Target interviews	
	Disadvantaged	Medium
3-4 employees	76	73
5-9 employees	86	86
10-19 employees	69	67
20-99 employees	69	74

Source: adapted from the survey

The companies that took part in the project were surveyed using a telephone interview which was closed in the event that the main requirements on the type of business, the number of employees and the location of the company were not met, as well as when the target quota had already been reached. Therefore, all the companies in the sample at the time of the survey were private and for profit, had between 3 and 99 employees, and had registered their activity in the metropolitan area of Milan. This is fundamental given that this study aims to identify what are the factors that threaten the survival of small and medium-sized enterprises and how they actually react to these threats.

3.2.2 Questionnaire description

The questionnaire administered to the various companies that agreed to participate in the project included a series of questions whose quantity could vary according to the interviewee's responses. It was divided into sections covering various issues.

First, some general questions about the company and the respondent were asked to do an initial screening and classification of the sampled companies. In particular, the interviewers made sure that the contact person was the owner or manager of the company in question and that he was involved in strategic corporate decisions. Moreover, they verified that all the requirements to participate in this survey were met and took note of the number of employees, the number of people responsible for managing the company and how many of these were women or ethnic minorities.

The second section of questions concerned some characteristics of the company including legal form, age, change in the number of employees, turnover, sales abroad, its objectives for the next 3 years, coordination mechanisms and level of formalization. All these features are useful for research purposes because they can influence the present and future performance of the company.

Questions in the third section focused on business resilience. This section was aimed at investigating the possible challenges that the companies faced and could face in the future, respondents' approach towards risk management, their experiences of adversity and their attitudes towards strategies and interventions in the event of crisis.

Finally, in the last part of the survey the interviewers asked a few final questions about the respondent. They asked the interviewee's age, if he was also the founder of the company, if he had already managed or owned other companies, his education level and if the company in question was a family business. Moreover, they also captured individual resilience scores using the Connor Davidson Resilience Scale for the research respondents. Researchers decided to use this measure of individual resilience because it resulted the most widely validated.

The questionnaire was made up of different types of questions. There were questions in which the interviewee had to answer yes or no, questions in which the respondent had to choose one of the options proposed by the interviewer, some open-ended quantitative questions in which the interviewee had to report a specific company data, finally some questions which required the respondent to give a personal evaluation of certain

statements. In particular, the latter made use of the Likert-type scale, a psychometric scale commonly involved in research, that ranges from 1 = not important at all/never/no affect/never true to 5 = very important/always/major affect/usually true (Wade, 2006).

3.3 Data analysis

Some data from AIDA have been added to the dataset containing information on companies and their leaders collected through the survey in order to have a more complete vision for the purpose of the research. AIDA is a database, distributed by Bureau van Dijk S.p.A, that contains financial, personal, and commercial information on over 900,000 companies operating in Italy. Specifically, the information that has been collected through AIDA concerns financial data on companies, their ATECO classification, address, and some information on ownership.

Finally, STATA 14.1, a statistical software package that provides all your data science needs (data manipulation, visualization, statistics, and automated reporting), has been used to analyse all the data collected with the interviews and AIDA.

This section provides some information about the sample. First, it describes the main characteristics of the small and medium companies interviewed. After that, it provides some general information about the respondents and the assessment of their resilience.

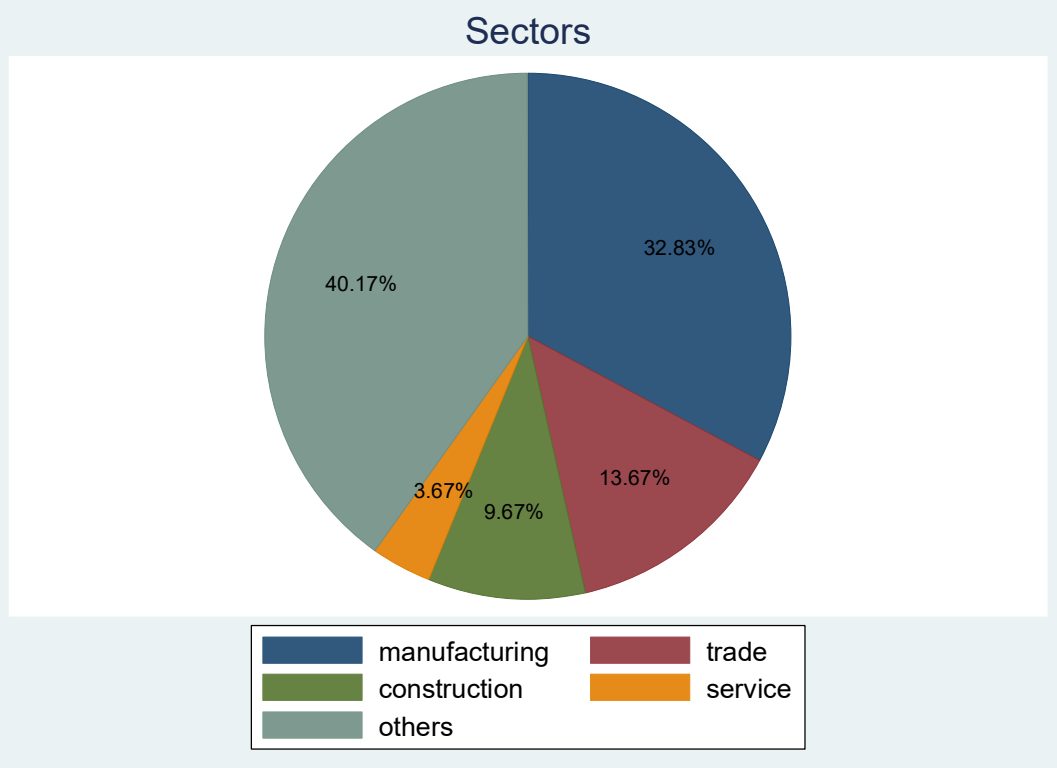
3.3.1 General data about the participating firms

As has already been said, the sample consists of 600 small and medium enterprises operating in the metropolitan area of Milan. To have an overview of the sample and its main characteristics, some descriptive statistics have been calculated.

First of all, the sector to which each company belong has been identified. To do this, the first two digits of the Ateco code, obtained through AIDA, have been used. Considering the two initial digits of the code, the sample has been divided into groups representing different sectors of activity. At this point, attention has been focused on the four groups, and consequently the four sectors, most represented within the sample. These sectors are manufacturing, trade, service and construction and, collectively, represent the 59,83% of the companies in the sample (N=359). Most companies, more precisely 32.83% of these, operate in the manufacturing sector, 13.67% work in the trade sector, 9.67% in the service

sector, 3.67% in the construction sector, while the remaining companies operate in other sectors.

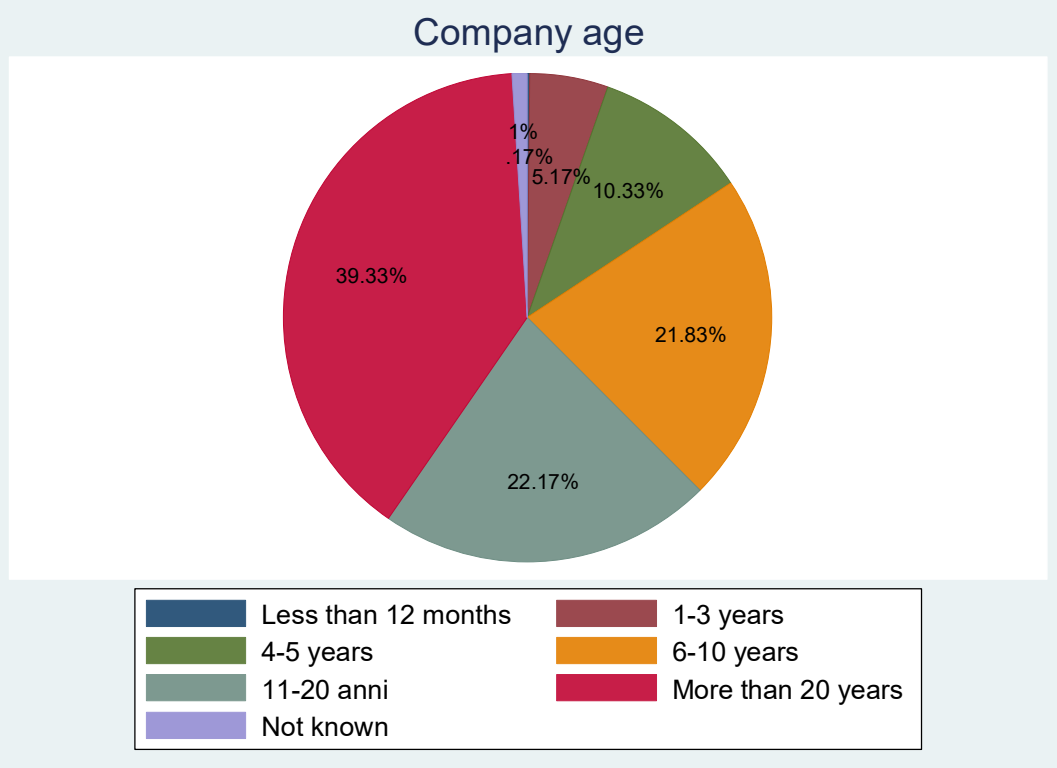
Figure 2 Business sector



Source: own elaboration using STATA 14

Among the data collected through the questionnaire, there is also some demographic information on the companies in the sample. A question asked the owner or manager how old their company was. The responses showed that most SMEs were over 20 years old. In particular, 39.33% of the companies in the sample were founded more than 20 years ago, 22.17% of these were founded between 11 and 20 years ago, 21.83% between 6 and 10 years ago, 10.33% between 4 and 5 years ago, while 5.17% between 1 and 3 years ago. Regarding the age of the company, no differences have been found between female-led and male-led companies.

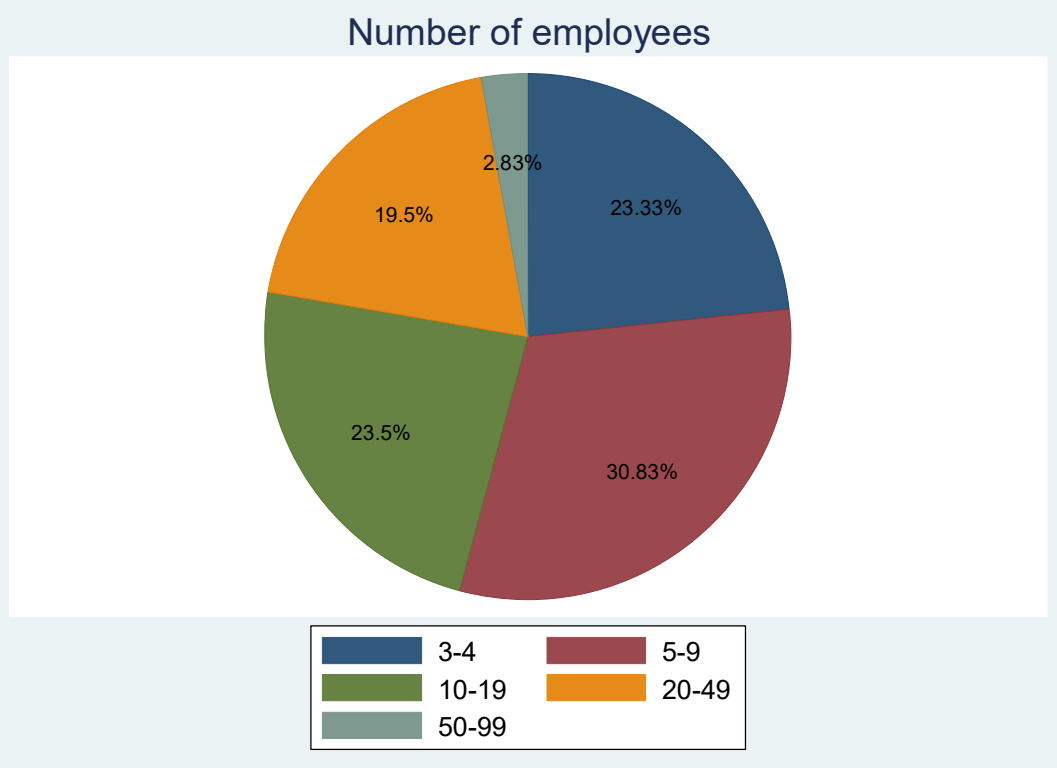
Figure 3 Company age



Source: own elaboration using STATA 14

In addition, respondents were asked to report the number of employees working in the company. Through the answers of the interviewees it has been possible to divide the sample into categories based on the number of employees. Figure 4 shows the percentage of companies within each category. Most of the companies in the sample, more precisely 82.67% of these, have between 3 and 20 employees.

Figure 4 Number of employees



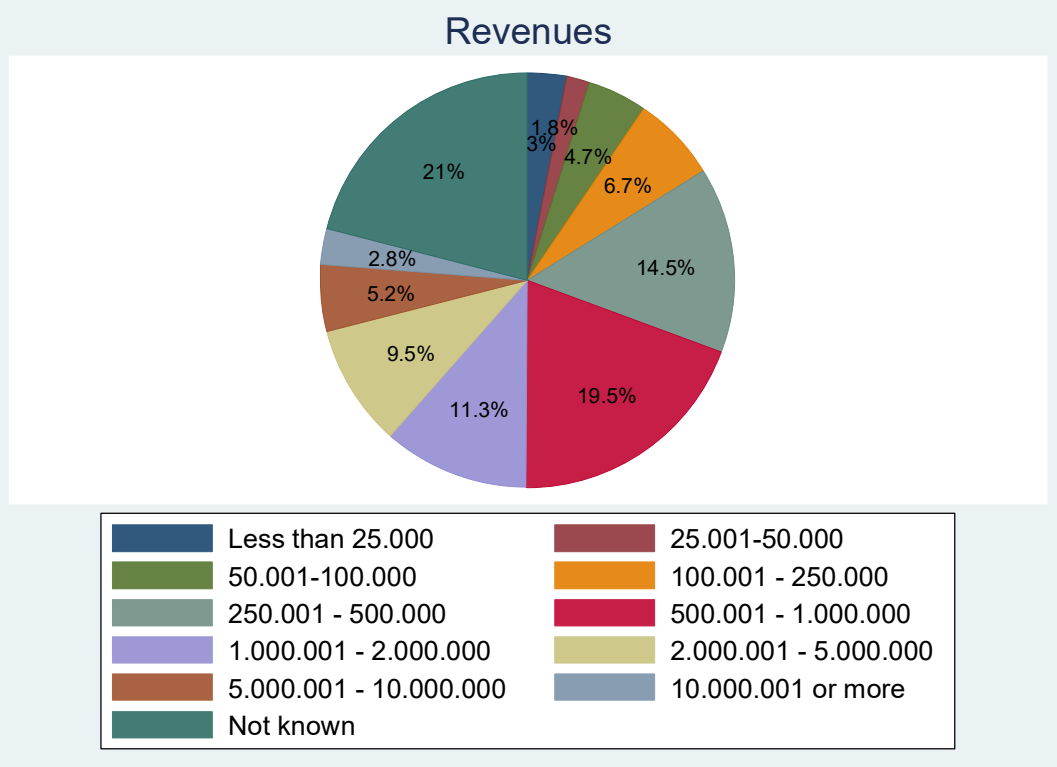
Source: own elaboration using STATA 14

97.83% of the companies have between 1 and 5 owners/managers. In details, 178 enterprises have only 1 owner/manager, 224 have 2 owners/managers, 100 have 3, 66 have 4, 19 have 5, while the remaining 13 companies have between 6 and 16 owners/managers. Moreover, 49.17% of the companies have a predominantly female management (i.e. more than 50% of the owners/managers are women), while the remaining 50.83% of the companies have a predominantly male management (i.e. more than 50% of the owners/managers are men). These data are in line with the quotas set initially. In addition, 24.33% of the enterprises have a predominantly ethnic minority management (i.e. more than 50% of the owners/managers are ethnic minorities), while the remaining 75.67% of the enterprises have a predominantly Italian management (i.e. more than 50% of the owners/managers are Italians).

70.17% of the companies under analysis (N=421) stated that they were family businesses. Furthermore, 33.5% of respondents stated that the company was part of an association or network of companies such as Confindustria, Confartigianato or similar.

The dataset also contained some information regarding the economic performance and growth prospects of the companies. Specifically, the questionnaire asked the interviewees to report the approximate turnover of the last year. Therefore, the sample has been divided into different categories based on the revenues. Figure 5 shows the percentage of companies within each category. As can be seen from the graph, most companies generated an amount of revenues between € 250,001 and € 2,000,000. Furthermore, 38.73% of respondents stated that the company's turnover had increased compared to the previous year, 46.74% which had remained the same, and 12.19% which had decreased. In addition, 49.50% of respondents expected the company's turnover to increase the following year compared to the current year, 38.67% to remain unchanged, and 6.17% to decrease.

Figure 5 Revenues



Source: own elaboration using STATA 14

3.3.2 General data about the participating business leaders

All the respondents confirmed they are owners or managers of the company under analysis and that they were involved in strategic corporate decisions. Furthermore, 47% of them said they are also the founder of the company in question.

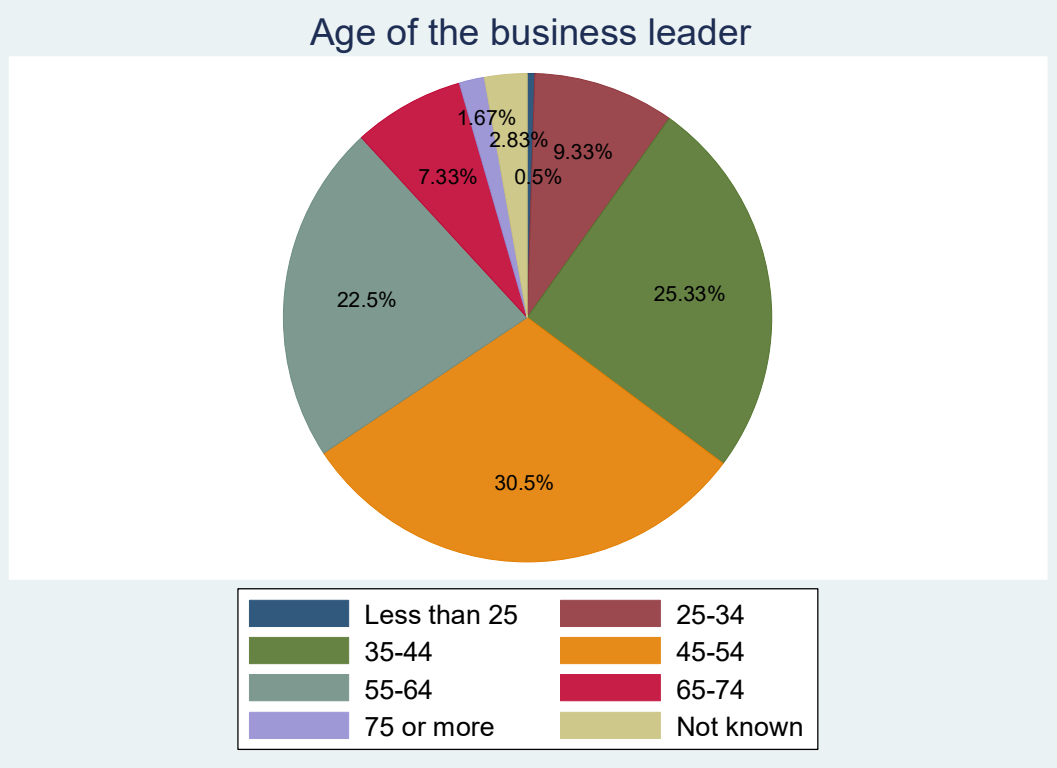
34.17% of respondents said they had managed or owned other businesses in the past or at the same time as the one under analysis, while the remaining 65.83% never managed or owned other businesses.

The questionnaire did not contain information regarding the gender of the respondent, consequently, since the respondents are the owners/managers of the companies, the gender of the director/chairman of the board of directors has been searched on AIDA[1]. 79.12% of the companies have a male business leader, while 20.88% have a female business leader.

The majority of respondents are between 40 and 60 years old. Figure 6 shows the percentage of respondents in different age groups.

[1] Not in all cases the respondent is the director/chairman of the board of directors, anyway in these cases the director/chairman of the board of directors is a figure who has a lot of influence on the respondent, consequently, for the purpose of the research, it has been chosen to use his/her gender.

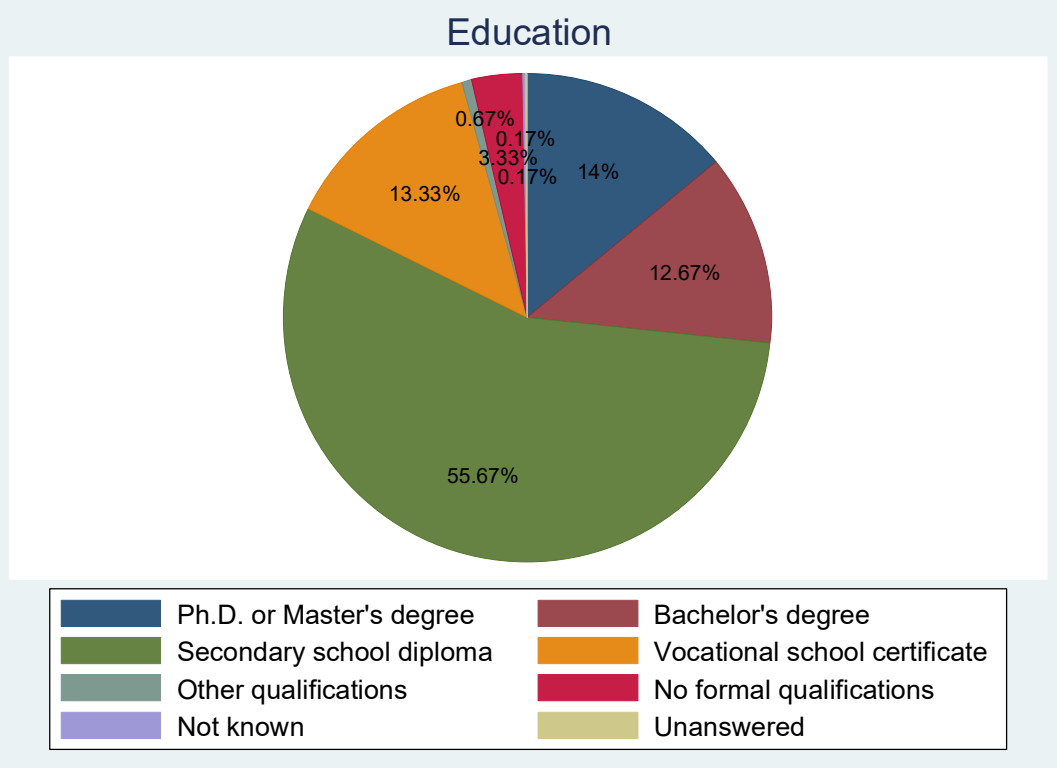
Figure 6 Age of the business leader



Source: own elaboration using STATA 14

Moreover, 14% of respondents obtained a master's degree or a Ph.D., 12.67% a bachelor's degree, 55.67% a secondary school diploma, 13.33% a vocational school certificate, while the remainder either have other qualifications or none

Figure 7 Education



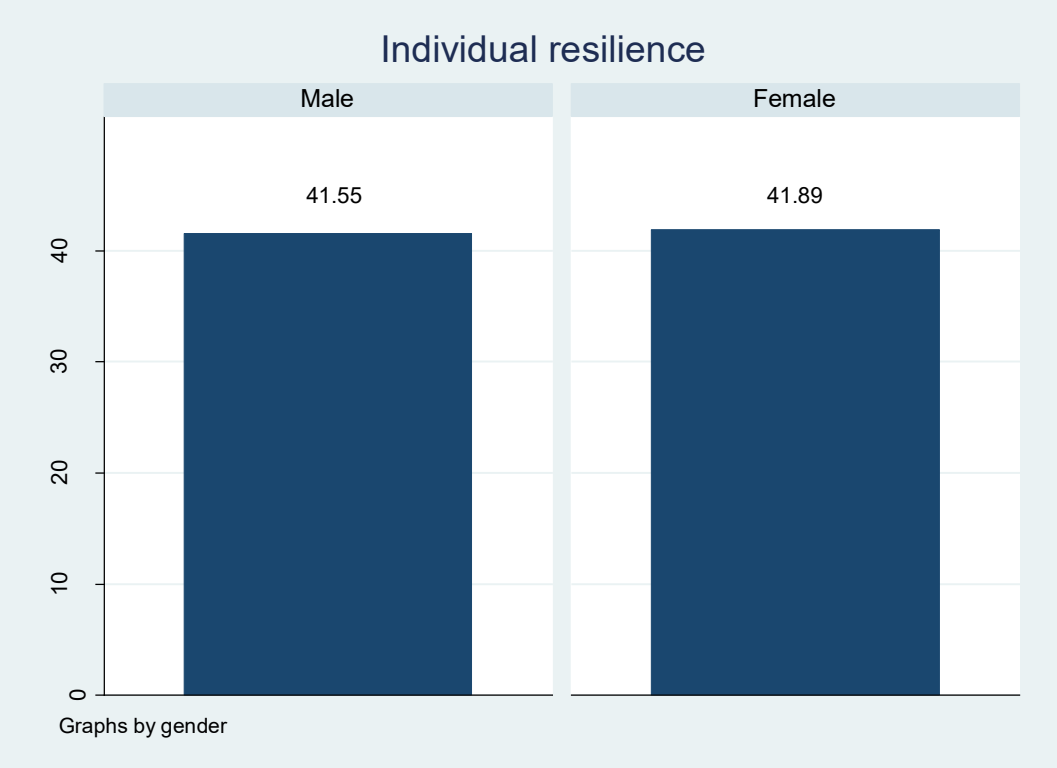
Source: own elaboration using STATA 14

3.3.3 The individual resilience evaluation

In this study, the Connor-Davidson Resilience scale, a validated scale supported by the literature, has been used to assess the individual resilience of business leaders interviewed. Their scale is made up of 25 items with a 5-point range of responses ranging from "not true at all" (0) to "true nearly all the times" (4). For the purposes of the project, this scale has been modified; the dimensions of resilience taken into account for the assessment have been reduced from 25 to 10, while the evaluation scale goes from a minimum of 1 to a maximum of 5. Using this reduced version of the scale, consisting of only 10 items, the total score can go from a minimum of 10 to a maximum of 50, with higher scores meaning greater resilience. A score of 10 is obtained if all statements are evaluated as "not true at all", while a score of 50 is obtained if all statements are considered to be " true nearly all the times ". The 10 questions used to assess the individual resilience of business leaders in this study cannot be reported as they are protected by copyright.

Generally, these items evaluate their ability to face challenges and changes, their attitude to adversity, their determination, their ability to manage stress and their self-confidence. Figure 8 shows the average resilience level exhibited by respondents depending on the gender of the business leader. As can be seen from the graph, when the business leader is female, the respondents have an average score of 41.89, while when it is male, they have an average score of 41.55 (N = 455). The two scores are not very different; however, the average resilience level of respondents is slightly higher when the business leader is female.

Figure 8 Individual resilience by gender



Source: own elaboration using STATA 14

3.4 Methodology

To test the hypotheses formulated in the second chapter, STATA 14.1 has been used. The methods used to assess the hypotheses are the multiple linear regression and the ordered logistic regression depending on the nature of the dependent variable.

Multiple regression analysis is commonly used to find the best set of independent variables (also known as predictor variables) which can explain the dependent variable (also known as an outcome variable). It is possible to determine the overall fit of the model and the relative contribution of each of the independent variables to the total variance explained. However, for a reliable estimation of parameters, multiple regression analysis should be provided with some assumptions (Eyduran, Ozdemir, & Alarslan, 2005):

- Assumption 1: The dependent variable should be measured at the continuous level.
- Assumption 2: There should be two or more independent variables, measured at the continuous or categorical level.
- Assumption 3: Residual terms should be independent from each other. This can be checked using the Durbin-Watson statistic.
- Assumption 4: Residual terms should have a mean of zero for any given value, or combination of values, on the predictor variables.
- Assumption 5: The model that relates the dependent variable to the predictors should be linear in the regression parameters. Linearity can be checked using scatterplots.
- Assumption 6: There should be homoscedasticity, that is, the error variance should be constant. Homoscedasticity can be checked by plotting the studentized residuals against the predicted values.
- Assumption 7: There should not be multicollinearity, which occurs when two or more independent variables are highly correlated with each other. The variance inflation factor is one popular measure of multicollinearity.
- Assumption 8: There should be no significant outliers, high leverage points or highly influential points.
- Assumption 9: Residuals terms should be approximately normally distributed. This can be checked using a histogram or a normal Q-Q plot of the studentized residuals (Williams, Grajales, & Kurkiewicz, 2013).

The ordered logistic model, instead, is a regression model used in case of an ordinal response variable. Indeed, when the outcome variable of interest is ordinal, it is advisable to use a specific model for this type of variables. For example, questions relating to expectations are usually ordinal in nature. The ordered logistic model is based on the cumulative probabilities of the outcome variable. In particular, the logit of each cumulative probability is assumed to be a linear function of the covariates with regression coefficients constant across response categories (Grilli, & Rampichini, 2014).

3.5 Variables and measures

This section is intended to explain which variables have been considered to test the hypotheses formulated in the second chapter and how they have been measured. The variables used to test the two hypotheses are: *expected_performance, individual_resilience, performance_shocks, age, female, manufacturing, trade, construction, service, workers, formalization_level, external_advice, CSR*. Table 5 shows the main descriptive statistics for each variable of the study. Below, these variables will be explored and analysed in more detail.

Table 5 Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
expected performance	566	2.459	.616	1	3
individual resilience	600	0	1	-5.507	2.833
performance shocks	363	.38	.634	0	3
age	583	50.106	11.236	22	86
female	455	.209	.407	0	1
manufacturing	600	.328	.47	0	1
trade	600	.137	.344	0	1
construction	600	.097	.296	0	1
service	600	.037	.188	0	1
workers	600	12.668	12.518	3	90
formalization level	531	3.034	1.759	1	6
external advice	593	.804	1.199	0	7
CSR	592	0	1	-2.393	1.367

Source: own elaboration using STATA 14

3.5.1 Independent variables

The independent variables used in this study are *performance_shocks* and *female*. In particular, *performance_shocks* is used to test the first hypothesis, while *female* is used as moderator in the second hypothesis.

The variable *performance_shocks* is a discrete variable (i.e., a numeric variable that can take on a countable number of values between any two values). This variable represents the number of performance shocks that each company in the sample suffered from 2013 to 2017. To evaluate the presence of performance shock, it has been assumed that there was a performance shock when the percentage change in ROA from year to year was greater than -100%. The return on assets (ROA) is an indicator of how profitable a company is relative to its total assets. Subsequently, to calculate the total amount of shocks suffered by each company in recent years, all the performance shocks were added up. As a result, each company could have suffered from zero to a maximum of four shocks during this time. It has been decided to take into account the shocks that has occurred in recent years, i.e. from 2013 to 2017, and not previous ones because it has been assumed that in previous years many things could have been different, including the business leader, and consequently it would not have been accurate to consider the furthest performance shocks to predict the leader's individual resilience to date. Furthermore, we have considered the shocks up to 2017 as the aim of the thesis is to assess their influence on individual resilience and presumably time must pass before this effect can be detected.

The interviewed companies for which ROA data were available for the years 2013-2017 are 363. 253 of these small and medium-sized enterprises never suffered performance shocks between 2013 and 2017, 84 suffered 1 shock, 24 suffered 2 shocks, only 2 suffered 3 shocks, none suffered 4 shocks.

The variable *female* instead is a dummy variable, taking values 0-1. This variable indicates whether the business leader is male or female. Taking into consideration the purpose of this study, it has been decided to focus the attention on women. Therefore, the dummy variable indicating the gender of the business leader has been coded 1 in case of female leader and 0 in case of male leader, and the variable *gender* has been renamed *female*. The variable *female* takes value 1 in 95 cases and value 0 in the remaining 360 cases.

3.5.2 Dependent variables

The dependent variables used to test the hypotheses developed in the second chapter are *individual_resilience* and *expected_performance*.

The variable *individual_resilience* is a continuous variable that indicates the level of resilience of the business leader. Therefore, to test the first hypothesis the multiple linear regression analysis has been used. The values assumed by the variable have been calculated with the 10-item Connor-Davidson scale. Using this scale to measure the level of resilience, the maximum score that an individual can reach is 50 (and not 40 as the literature predicts) since in the questionnaire used for this study the participants had to answer on a range that went from 1 to 5. Since the questionnaire contained 10 questions relating to individual resilience as determined by the Connor-Davidson scale, it has been necessary to use factor analysis to group all items into a single variable. Factor analysis is a statistical technique that is used to reduce a large number of variables into fewer numbers of factors. This technique reduces the number of variables in an analysis by describing linear combinations of the variables that contain most of the information and that, hopefully, admit meaningful interpretations. Often researchers try to get one factor from several correlated variables by using factor analysis and then use this factor as an index of all variables for further analysis (Weeraratne, 2016). In this study, factor analysis produced one factor: this was the factor that explained the most variance in terms of the 10 items. At this point, Cronbach's alpha has been calculated to evaluate the reliability. The coefficient alpha was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1. The alpha's values considered acceptable range from 0.70 to 0.95 (Tavakol, & Dennick, 2011). In this case, the coefficient alpha for the entire scale is 0.8164, which is really good. This means that there is good internal consistency between items.

The other dependent variable used in this study is the variable *expected_performance*. It is an ordinal categorical variable that indicates the expected growth of the turnover in the following year, in the business leader's opinion. Therefore, to test the second hypothesis the ordered logistic regression analysis has been used. More precisely, the question that was posed to the interviewees is whether they expected turnover to increase, decrease or remain approximately the same over the next 12 months. The variable *expected_performance*, therefore, takes value 1 when the respondent expects turnover to decrease, takes

value 2 if he/she expects turnover to remain the same and finally takes value 3 when he/she expects turnover to increase. In the sample, the variable takes the value 1 in 37 cases, takes value 2 in 232 cases and takes value 3 in 297 cases. For the purpose of the research, it was extremely important that the performance measure considered was temporally consequent to the resilience measure. Indeed, it is possible to measure the effects of the leader's ability to manage adverse situations on company performance only by analysing the performance trend after detecting his level of resilience. Since the questionnaire was administered in January/February 2019 and consequently also the assessments on the individual resilience of business leaders date back to that period, performance must be measured after this period to assure that it can be a consequence of the level of resilience previously assessed. However, at the time the empirical analysis has been performed, the performance data for the year 2019 were not yet available on AIDA. Therefore, it has been decided to use a subjective business performance measure based on the opinion of the business leader who is the most suitable figure in small and medium-sized enterprises to evaluate performance expectations (Marshall, & Schrank, 2014). The study carried out by Corey and Deitch (2011) also used a subjective business performance measure to identify which factors influenced business recovery after Hurricane Katrina. In any case, there are many studies that have shown that both objective measures and subjective measures are valid for measuring the performance of a company (Vij, & Bedi, 2016).

3.5.3 Control variables

A control variable is a variable that is not changed throughout an experiment in order to better understand the relationship between the other variables being tested. The control variables used to test the hypotheses developed in the second chapter concern both characteristics of the companies and aspects concerning the person who answered the questionnaire who was required to be the owner or manager of the company in question. More precisely, the control variables used in this study are *age*, *gender*, *manufacturing*, *trade*, *construction*, *service*, *workers*, *formalization_level*, *external_advice*, *CSR*. The variables *age* and *gender* are the individual control variables, while the other variables *manufacturing*, *trade*, *construction*, *service*, *workers*, *formalization_level*, *external_advice*, *CSR* are the organizational control variables.

The variable *age* is a continuous variable that indicates the age of the business leader. It is important to take into consideration the age of the business leader as this can affect

his/her ability to recover from times of crisis and consequently company performance. Regarding the relationship between age and individual resilience, it is reasonable to assume that older individuals have experienced and overcome more difficult situations than younger people and consequently that, as they age, resilience increases. Indeed, many studies have shown how resilience can be developed and improved through past experiences and events, including failures (Duchek, 2018). On the other hand, Waelchli and Zeller (2013) examined the relationship between business leader's age and firm performance in unlisted firms. Through their empirical study, they found that firm performance declines with business leader's age due to declining cognitive abilities and lower motivation of older leaders.

The variable *gender* instead is a dummy variable that indicates whether the business leader is male or female. As previously stated, this variable has been renamed *female* as it has been decided to focus the attention on women. It has been coded 1 in case the leader was a woman and 0 in case the leader was a man. As emerged from the theoretical review, the gender of the leader is an important aspect that can condition his way of acting in the face of adversity and leading the company.

The variables *manufacturing*, *trade*, *construction* and *service* are dummy variables that have been used to indicate the sector in which each company operates. The Ateco code found on the AIDA database has been used to identify the sector to which each company in the sample belongs. The Ateco code is an alphanumeric combination that identifies an economic activity. The letters identify the economic macro-sector while the numbers (from two to six digits) represent, with different degrees of detail, the specific articulations and sub-categories of the sectors themselves. Once the Ateco code of each company has been identified, the companies have been divided according to the first two digits of the code and four groups, and in turn four variables, have been created, taking into consideration the four most represented sectors within the sample (manufacturing, trade, construction and service). Each of these variables assumes a value of 1 if the company under examination belongs to the sector represented by the variable, while it assumes a value of 0 otherwise. Companies that do not operate in the sectors considered but operate in others have been coded 0 in each of these four variables. It is important to consider the sector in which the company operates as this can affect company performance and can also influence the attitude of business leaders.

The variable *workers* indicates the number of people who work in the company, including owners, which, as established at the beginning of the research, must be between 3 and 99. This variable represents a proxy of the firm size and helps to better define the company under analysis. Firms' characteristics (such as size and sector) largely influence the way they manage adversity (Wishart, & Hopley, 2020).

Finally, *formalization_level*, *external_advice*, *CSR* have been included as control variables. This set of variables have been included because it represents important organizational aspects that can be related to organizational and individual resilience and help SMEs to better perform.

The level of formalization of a small and medium-sized company can play a central role when it has to respond and adapt quickly to crisis situations. The ambiguity of the environment in which small and medium-sized enterprises operate and their less formal routines and roles compared to larger organizations often leads owners and managers to adopt responses and behaviours in response to adversity that are not appropriate in those circumstances (Wishart, 2018). The lack of formal roles, routines, and established patterns of behaviour to guide entrepreneurs and employees makes it more difficult for businesses and their members to tackle the challenges. Clarifying roles, objectives and responsibilities can have a positive impact on the resilience of SMEs (Blatt, 2009). For this reason, it has been decided to create a control variable concerning the level of formalization within the company. The questionnaire asked respondents to indicate which departments/functions were formalized in their companies, choosing between Administration and Finance, Information Technology, Human Resources, Research and Development, Operations, Marketing and Sales. In this case, the term "formalized" means that there is an identified responsible person for the specific department/function regardless of the number of collaborators who report to him/her for the specific function. The variable *formalization_level* is therefore a discrete variable that indicates the number of departments/functions formalized in each company, with values ranging from 0 to 6. In the sample, 149 companies had 1 formalized department, 93 had 2, 82 had 3, 74 had 4, 64 had 5 and 69 had 6.

External sources of information and advice can be fundamental in certain situations of crisis because, through their knowledge and experience, they can help entrepreneurs to better face challenges and recover from crisis. A SME's ability to mobilise and integrate

external resources in the event of adversities is key to its capacity to withstand such events (Wishart, 2018). Therefore, a variable concerning external sources of advice has been added to the study. The variable *external_advice* indicates how much the leaders of the SMEs in our sample use external sources for advice on the running and management of their firms. The sources outside the company that can be consulted are many and include accountants, business networks, family members, local administration, government sources of advice, mentors, lawyers. Respondents were asked if they had consulted external sources of information or advice in the past 12 months and which sources they had consulted. Then, the answers have been grouped into a single variable indicating the total number of external sources that the company consulted in the previous 12 months. Therefore, the variable *external_advice* is a discrete variable, with values ranging from 0 to 7. In the sample, 149 companies did not consult any external sources, 111 consulted 1, 65 consulted 2, 47consulted 3, 12 consulted 4, 5 consulted 8, 1 consulted 7.

The other organizational aspect that can have an impact on entrepreneurial resilience is Corporate Social Responsibility (CSR). CSR can be defined as the actions designed to improve social or environmental conditions that companies undertake voluntarily (Mackey, Mackey, & Barney, 2007). The engagement in CSR initiatives helps build a company's reputation and deep social foundation that in turn activate conventional business resources that are useful for buffering disruptions, reducing financial volatility and supporting innovation (Lv et al., 2019). Moreover, a company's CSR engagement can positively impact on employee satisfaction and commitment that further foster employees' innovative behaviours (Barakat et al., 2016). The variable *CSR* has been created by looking at the answers that the interviewees gave to two questions regarding the company's objectives for the next three years. In particular, business leaders were asked to rate on a Likert scale from 1 to 5, where 1 means "it is not at all important" and 5 means "very important", if for the next three years the company would aim to make a contribution to the local community and improve its social and environmental sustainability. The variable *CSR* is therefore a standardized variable representing the mean of the scores given by each respondent in these two questions.

3.6 Correlation analysis

First of all, to see whether or not there is a relationship among the variables in the empirical study, the bivariate correlations between all possible pairs of variables have been checked. The correlation coefficient is used to express the relationship between two variables, in terms of entity and direction. This coefficient can assume values ranging from –1.00 (perfect negative correlation) to +1.00 (perfect positive correlation). A correlation equal to 0 indicates that there is no linear relationship between the two variables. Correlation does not include the concept of cause and effect, but only that of the relationship between variables. The correlation allows us to state that between two variables there is a systematic relationship, but not that one causes the other. The correlation matrix has been constructed by computing the correlation coefficients for each combination of pairs of variables.

Through the correlation matrix, it can be seen that there are many correlated variables. First, attention will be focused on the correlations that are found to be most significant, i.e. those with a p-value <0.01, which means that the relationship is significant at the 1% level. From this analysis, it resulted that the expected SME performance is positively correlated with the resilience of the leader (r = 0.123***, p = 0.003), which means that the companies with the highest performance expectations are managed by the respondents who showed the highest levels of individual resilience. The expected performance is also correlated to the number of information and advice sources consulted by the company in recent years (r= 0.143***, p=0.001), demonstrating that the more external sources consulted, the higher the performance expectations. Moreover, the expected performance is positively related to the variable *CSR* (r= 0.146***, p=0.001), confirming that companies that pay more attention to CSR have higher expected performances. The leader's individual resilience has a negative correlation with the number of external sources consulted (r= -0.150***, p=0.000) which means that more resilient leaders have needed to consult fewer experts outside the company. The resilience of the leader, on the other hand, is positively correlated to CSR (r= 0.235***, p=0.000), which highlights how companies that pay more attention to social and environmental issues are managed by more resilient leaders. Age has a positive correlation with the variable *manufacturing* (r= 0.150***, p=0.000) and service (r= 0.134***, p=0.001), which means that the businesses operating in these sectors have older managers and owners. Moreover, age is positively related to

the formalization level (r= 0.154***, p=0.000), meaning that companies with older leaders have a higher formalization level. On the other hand, the age of the leader is negatively correlated with CSR (r= -0.107***, p=0.010), which underlines that older leaders pay less attention to social and environmental aspects. Manufacturing is negatively related to trade (r= -0.278***, p=0.000), construction (r= -0.229***, p=0.000) and service (r= -0.136***, p=0.001), while trade is negatively related to construction (r= -0.130***, p=0.001). Moreover, manufacturing has a positive correlation with the number of workers within the company (r= 0.142***, p=0.000), meaning that companies operating in the manufacturing sector employ more people and therefore are bigger than others. The variable *manufacturing* is also positively related to the formalization level (r= 0.142***, p=0.000) and to the number of external sources consulted (r= 0.106***, p=0.010), which means that SMEs in the manufacturing sector are more formalized than others and consult more external sources. The size of the business is positively correlated to the level of formalization (r= 0.228***, p=0.000) and this is in line with the fact that a high level of formalization is required to be able to effectively manage larger companies. The level of formalization is also positively related to the use of external sources for advice (r= 0.154***, p=0.000), which means that companies with many formalized departments/functions often refer to external sources for advice or information. Finally, the number of external sources consulted has a negative correlation with the CSR (r= -0.133***, p=0.001), meaning that companies that care about social and environmental issues have relied less on external advice.

The correlation matrix shows many other correlations that are significant at the 5% level, with a p-value <0.05. Among these, the expected SME performance is negatively correlated to the age of the leader (r= -0.101**, p=0.018), meaning that companies with higher performance expectations are run by younger leaders. Moreover, the expected performance has a positive correlation with the size of the business measured by the number of workers (r= 0.085**, p=0.043), meaning that larger companies have higher performance expectations. The age of the business leader is positively correlated to the level of individual resilience (r= 0.103**, p=0.012), which means that older business leaders show higher degrees of individual resilience. Individual resilience is instead negatively correlated to the variable *manufacturing* (r= -0.096**, p=0.019) and the variable *construction* (r= -0.088**, p=0.031), meaning that people working in the manufacturing and

construction sectors are less resilient. Performance shocks are negatively correlated to the age of the business leader (r= -0.107**, p=0.044), which means that companies led by younger business leaders have experienced more performance shocks. Moreover, the number of performance shocks suffered by the company are positively related to the external advice (r= 0.117**, p=0.026), meaning that the companies that have experienced the most performance shocks have had the greatest need to seek advice from outside sources. The age of the business leader has a positive correlation with the variable *female* (r= 0.103**, p=0.030), which means that female business leaders are the older ones. This confirms the fact that women encounter more obstacles along the way to reach the highest management positions and that they manage to obtain them only after a longer time than men. On the other hand, the variable *female* is negatively correlated to the variable *construction* (r= -0.099**, p=0.035), meaning that business leaders in the construction sector usually are not female. The variable *manufacturing* has a negative correlation with the CSR (r= -0.094**, p=0.022), which means that companies in the manufacturing sector take less care of environmental and social aspects.

Lastly, there are also some correlations that are significant at the 10% level, with a p value <0.10. The expected SME performance is positively correlated to the formalization level (r= 0.077*, p=0.083), which means that companies with a higher level of formalization have higher performance expectations. The resilience of the business leader is negatively related to performance shocks (r= -0.094*, p=0.074), meaning that the more shocks the company has suffered in past years, the lower the leader's level of resilience. The age of the business leader is negatively related to the number of external sources consulted (r= -0.079*, p=0.057), meaning that younger business leaders consult more external sources. The variable *trade* has a negative correlation with the variable *service* (r= -0.078*, p=0.057). Finally, the level of formalization is negatively correlated to the CSR (r= -0.085*, p=0.051), meaning that companies with lower levels of formalization take more care of environmental and social issues.

Table 6 Correlation matrix

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. expected_performance	1.000												
2. individual_resilience	0.123***	1.000											
	(0.003)												
3. performance_shocks	-0.010	-0.094*	1.000										
	(0.846)	(0.074)											
4. age	-0.101**	0.103**	-0.107**	1.000									
	(0.018)	(0.012)	(0.044)										
5. female	-0.029	0.032	-0.021	0.103**	1.000								
	(0.543)	(0.496)	(0.685)	(0.030)									
6. manufacturing	-0.025	-0.096**	-0.065	0.150***	0.023	1.000							
	(0.546)	(0.019)	(0.214)	(0.000)	(0.629)								
7. trade	-0.002	0.055	-0.049	0.043	0.026	-0.278***	1.000						
	(0.968)	(0.182)	(0.354)	(0.295)	(0.574)	(0.000)							
8. construction	-0.007	-0.088**	0.028	-0.041	-0.099**	-0.229***	-0.130***	1.000					
	(0.869)	(0.031)	(0.600)	(0.327)	(0.035)	(0.000)	(0.001)						
9. service	0.036	0.030	0.008	0.134***	0.061	-0.136***	-0.078*	-0.064	1.000				
	(0.396)	(0.468)	(0.886)	(0.001)	(0.196)	(0.001)	(0.057)	(0.118)					
10. workers	0.085**	0.016	-0.046	0.030	-0.066	0.142***	-0.039	-0.061	0.060	1.000			
	(0.043)	(0.692)	(0.382)	(0.476)	(0.159)	(0.000)	(0.339)	(0.137)	(0.144)				
11. formalization_level	0.077*	0.055	0.042	0.154***	0.063	0.213***	0.113***	-0.028	0.062	0.228***	1.000		
	(0.083)	(0.205)	(0.435)	(0.000)	(0.187)	(0.000)	(0.009)	(0.525)	(0.153)	(0.000)			
12. external_advice	0.143***	-0.150***	0.117**	-0.079*	0.060	0.106***	0.012	0.030	-0.005	0.065	0.154***	1.000	
	(0.001)	(0.000)	(0.026)	(0.057)	(0.204)	(0.010)	(0.777)	(0.465)	(0.900)	(0.115)	(0.000)		
13. CSR	0.146***	0.235***	0.010	-0.107***	0.059	-0.094**	-0.029	-0.044	0.035	0.037	-0.085*	-0.133***	1.000
	(0.001)	(0.000)	(0.849)	(0.010)	(0.211)	(0.022)	(0.486)	(0.290)	(0.399)	(0.372)	(0.051)	(0.001)	

*** *p<0.01, ** p<0.05, * p<0.1*

Source: own elaboration using STATA 14

3.7 Empirical analysis

In the second chapter, after reviewing the literature on entrepreneurial resilience, the model on which this empirical study is based has been developed. This model aims at testing two hypotheses: the first hypothesis concerns the relationship between performance shocks and leader's resilience, while the second hypothesis concerns the relationship between leader's resilience and expected SME performance and the role of leader's gender in this relationship.

3.7.1 Hypothesis 1: performance shocks and leader's resilience

As previously stated, the first hypothesis aims to test whether there is a relationship between the number of experienced performance shocks and the leader's individual resilience. To test this hypothesis, multiple linear regression has been used. The regression model has *individual_resilience* as dependent variable, *performance_shocks* has independent variable and then *age, female, manufacturing, trade, construction, service, workers, formalization_level, external_advice, CSR* as control variables. Initially the model has been performed without inserting the independent variable *performance_shocks*. Subsequently, this variable has also been included in the model. In the multiple regression model it is assumed that each observed value of the dependent variable can be expressed as a linear function of the corresponding values of the explanatory variables, plus a residual term that translates the inability of the model to accurately reproduce the observed reality.

Table 7 Individual resilience regression

VARIABLES	(1) Individual resilience	(2) Individual resilience
age	0.009**	0.007
	(0.004)	(0.005)
female	0.032	0.071
	(0.118)	(0.133)
manufacturing	-0.088	-0.031
	(0.125)	(0.147)
trade	0.178	0.259
	(0.150)	(0.180)
construction	-0.094	-0.138
	(0.166)	(0.191)
service	0.163	0.224
	(0.246)	(0.269)
workers	0.000	0.001
	(0.004)	(0.004)
formalization_level	0.084***	0.093***
	(0.028)	(0.032)
external_advice	-0.068*	-0.056
	(0.037)	(0.042)
CSR	0.192***	0.193***
	(0.046)	(0.051)
performance_shocks		-0.144*
		(0.085)
Constant	-0.787***	-0.740**
	(0.254)	(0.300)
Observations	422	340
R-squared	0.101	0.117
Adjusted R-squared	0.079	0.088

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: own elaboration using STATA 14

To check whether there is an actual link between the dependent variable and all the regressors considered together, an F-test has been performed. In the first model, F (10, 411) = 4.61 and p-value <0.00, therefore it is significant at the 1% level. In the second model, F (11, 328) = 3.96 and p-value <0.00, therefore it also is significant at the 1% level.

R^2 is the coefficient of determination and measures the proportion of variability in the response variable that can be explained by the relationship of the response variable with

the predictors. If R^2 =1 there is perfect fit, which means that the whole variation is explained by the regression model. If R^2 =0 none of the variation is explained by the regression model. In this case, model 1 and model 2 explain respectively 10.1% and 11.7% of the variation. The adjusted R^2 is a measure of the proportion of variability in the outcome variable, explained by the model, adjusted for the number of terms in the regression function. In this case, model 1 and model 2 explain respectively 7.9% and 8.8% of the variation, taking into account the sample size and the number of independent variables.

In the first model, two control variables, *formalization_level* and *CSR*, are significant at the 1% level, with a p-value <0.01. Moreover, these variables remain significant at the 1% level also in the second model, after having introduced the variable *performance_shocks*. The estimated positive sign of the partial regression coefficient related to the variable *formalization_level* (β= 0.093***, S.E.= 0.032) implies that the level of formalization has a positive effect on the leader's resilience while the absolute value in the second model implies that, on average, the level of resilience of the business leader increases by 0.093 units for each additional department/function formalized within the company, ceteris paribus. Similarly, the estimated positive sign of the partial regression coefficient related to the variable *CSR* (β= 0.193***, S.E.= 0.051) implies that CSR has a positive effect on the leader's resilience while the absolute value in the second model implies that, on average, the level of resilience of the business leader increases by 0.193 units for each additional unit of CSR, ceteris paribus. These findings are in line with the literature. Indeed, for owners and managers it is important to clarify the roles and responsibilities within the organization to be more effective in times of crisis and to better manage different situations (Blatt, 2009). Moreover, attention to social and environmental issues can increase the motivation and commitment of company members and consequently their willingness to overcome adversity in order to pursue their goals (Barakat et al., 2016).

In the first model, the control variable *age*, instead, displays a p-value <0.05, therefore it is significant at the 5% level. However, this variable does not maintain its significance after the introduction of the independent variable. The same is true for the control variable *external_advice* which is significant at the 10% level in the first model but is no longer significant in the second.

The second regression model tests the first hypothesis developed in the second chapter according to which the performance shocks that the company has suffered in past years should impact the resilience of the business leader. This hypothesis has been formulated after reviewing the literature on entrepreneurial resilience. Indeed, from the literature review it emerged that resilience is not a personal characteristic but rather an attitude and behaviour assumed by individuals in the face of adversity that can be developed and improved over time (De Vries, & Shields, 2006). Extensive research has shown that individuals are able to learn from past experiences and failures and that in many cases these can represent sources of resilience (Duchek, 2018). The second multiple regression model shows that the independent variable *performance_shocks* is significant at the 10% level (β= -0.144*, S.E.= 0.085). Therefore, the first hypothesis is supported: there is a significant relationship between performance shocks and leader's resilience. Moreover, it is possible to analyse the effect of the independent variable on the dependent variable by looking at the partial regression coefficient of the independent variable. This coefficient has a negative sign, meaning that performance shocks, on average, have a negative influence on a leader's individual resilience, all other things being constant. β= -0.144* represents the partial effect of performance shocks on the level of resilience of the business leader, keeping the other variables constant. The estimated negative sign implies that this effect is negative while the absolute value implies that, on average, the level of resilience of the business leader decreases by 0.144 units for each additional shock suffered by the company, *ceteris paribus*. This finding contrasts with the part of literature which states that failures are useful to managers and owners because they allow them to learn and become stronger (Franco, Haase, & António, 2020). However, Pardo and Alfonso (2017) demonstrated that there are many factors that may cause organizational success or failure and consequently there are many kinds of failures. Therefore, it is reasonable to presume that each failure affects individual resilience differently according to its nature.

3.7.2 Regression diagnostics

To evaluate the validity of the regression models, various diagnostic techniques have been used. Regression diagnostics serve to investigate whether there are observations with a large, undue influence on the analysis. In particular, this section aims to test multicollinearity, the presence of unusual and influential data, normality of residuals, homoscedasticity and the good specification of the model.

Multicollinearity occurs when two or more explanatory variables are highly correlated with each other in a multiple regression analysis. If multicollinearity is high, the regression model estimates of the coefficients can be unstable and the standard errors for the coefficients can get wildly inflated. To detect multicollinearity, the variance inflation factor has been estimated. As a rule of thumb, a variable whose VIF value is greater than 10 or tolerance value, defined as 1/VIF, is lower than 0.1 should be further investigated. Tolerance, defined as 1/VIF, is used by many researchers to check on the degree of collinearity. In this case, as Table 8 shows, multicollinearity does not seem to affect the model.

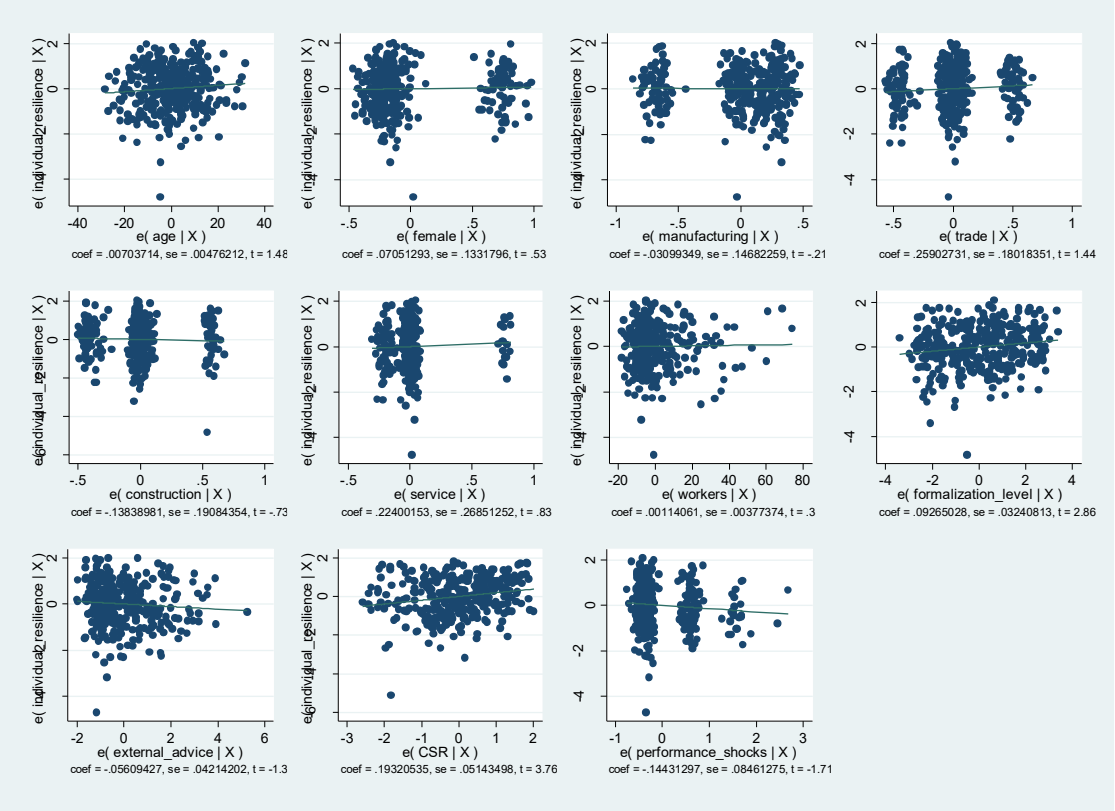
Table 8 Variance inflation factor

	VIF	1/VIF
manufacturing	1.946	.514
trade	1.646	.608
construction	1.519	.658
service	1.244	.804
age	1.12	.893
formalization level	1.107	.903
external advice	1.1	.909
workers	1.094	.914
female	1.064	.94
CSR	1.041	.961
performance shocks	1.037	.964
Mean VIF	1.265	.

Source: own elaboration using STATA 14

To search for unusual and influential observations, you can use several graphs. In this case, an added-variable plot for every regressor in the model has been performed. It is also called a partial-regression plot and is very useful in identifying influential points. As we can see from the graphs, in each of them there seems to be some problematic observation.

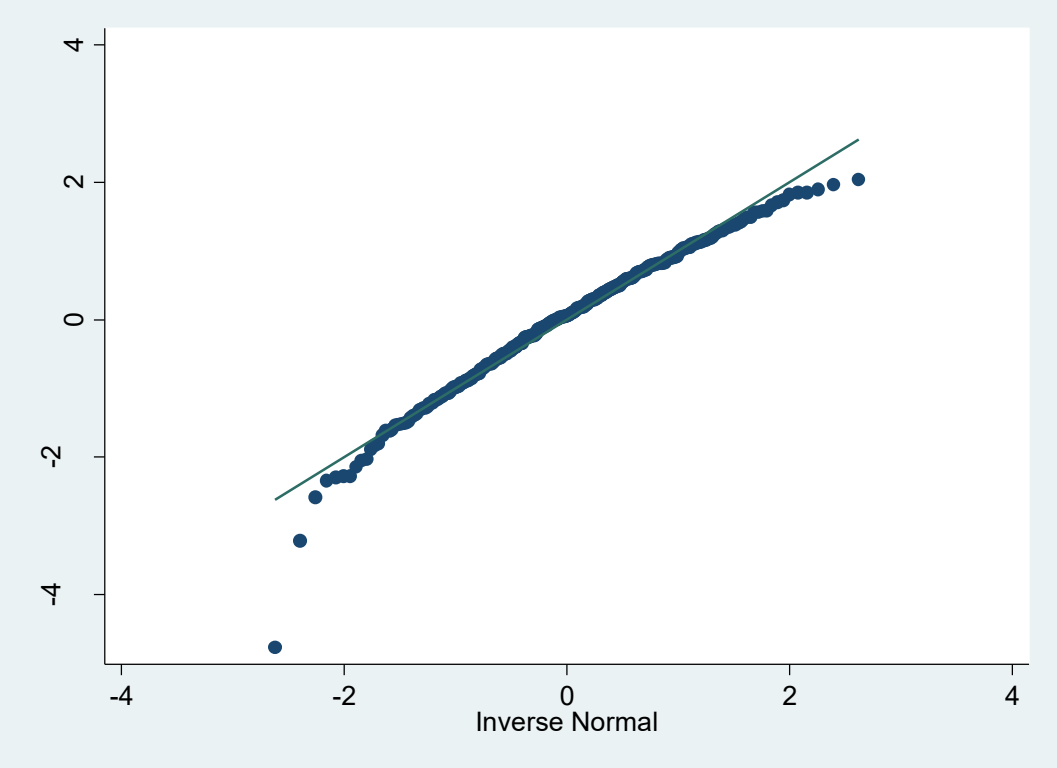
Figure 9 Added-variables plots for individual resilience regression



Source: own elaboration using STATA 14

For valid hypothesis testing, residuals need to be approximately normally distributed. The normality assumption assures that the p-values for the t-tests and F-test are valid. To test the normality of residuals, the Shapiro-Wilk test has been performed. The p-value is based on the assumption that the distribution of residuals is normal. In this case, p-value is very low (0.00) and the W statistic is 0.98, indicating that the null hypothesis must be rejected and that residuals are not normally distributed. This finding is also confirmed by the Q-Q plot (a graphical method for comparing two probability distributions by plotting their quantiles against each other) that shows a slight deviation from normal at the lower and upper tail.

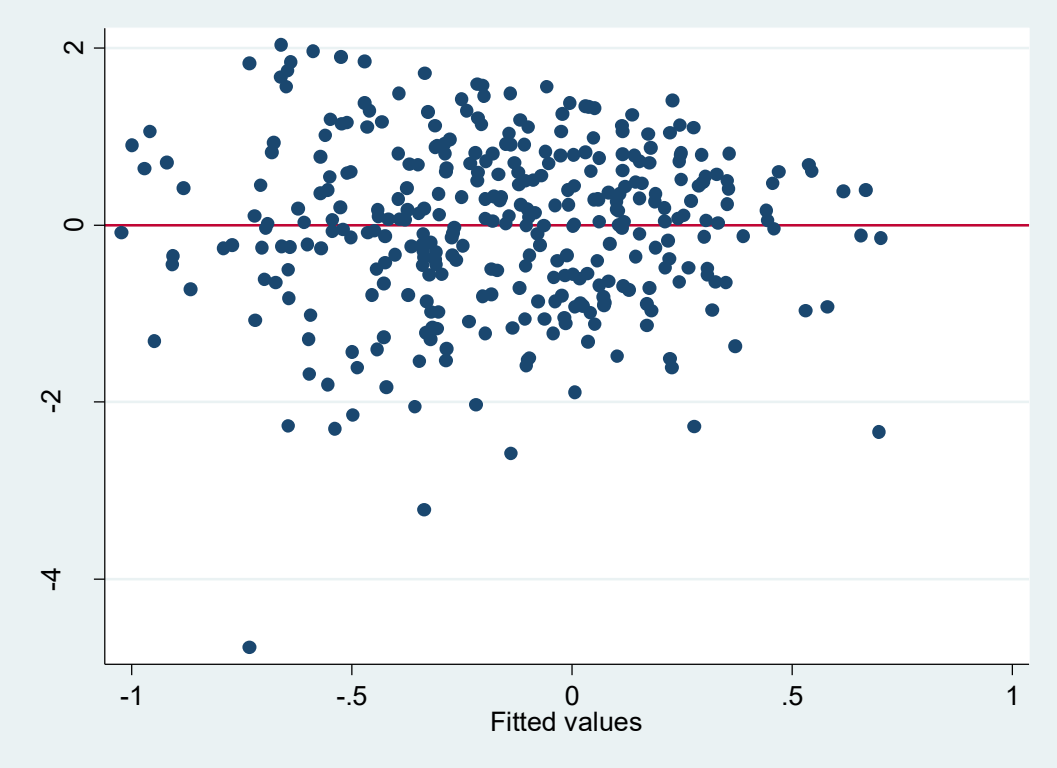
Figure 10 Q-Q plot for individual resilience regression



Source: own elaboration using STATA 14

The homogeneity of variance of the residuals is a fundamental assumption for the ordinary least squares regression. If the model is well-fitted, there should be no pattern to the residuals plotted against the fitted values. If the error variance is non-constant, then it is said to be "heteroscedastic". To detect heteroscedasticity, a commonly used graphical method is to look at the residuals versus fitted (predicted) values' plot. In this case, the pattern of the data points is getting a little narrower towards the right end, which is an indication of heteroscedasticity.

Figure 11 Residuals vs fitted values' plot for individual resilience regression



Source: own elaboration using STATA 14

Finally, the good specification of the model has been tested using the link test. A model specification error can occur when one or more relevant variables are omitted from the model or one or more irrelevant variables are included in the model. These errors can substantially impact on the estimate of regression coefficients. The link test is based on the idea that if a regression is properly specified, no additional independent variables should be found significant, except by chance. This test creates two new variables, the variable of prediction, *_hat*, and the variable of squared prediction, *_hatsq* and then refits the model using these two variables as predictors. The model is properly specified if only *_hat* is significant, and not *_hatsq*. In this case, *_hat* is significant at the 1% level (p-value = 0.000), while *_hatsq* is not significant (p-value = 0.801). Therefore, the model seems correctly specified.

3.7.3 Hypothesis 2: leader's resilience, leader's gender and expected SME performance

The second hypothesis that this study intends to test is whether there is a significant relationship between a leader's individual resilience and the expected SME performance (hypothesis 2a) and whether a leader's gender moderates this relationship (hypothesis 2b). To test the hypothesis, ordered logistic regression has been used because the dependent variable *expected_perfromance* is an ordinal categorical variable. The first regression model has been performed with only the control variables *age, manufacturing, trade, construction, service, workers, formalization_level, external_advice, CSR* (model 1). Successively, the independent variable *individual_resilience* (model 2) and the independent variable *female* (model 3) have been included in the regression model. Finally, the interaction between *individual_resilience* and *female* has also been added to the model (model 4).

Table 9 Expected SME performance regression

VARIABLES	(1) Expected performance	(2) Expected performance	(3) Expected performance	(4) Expected performance
age	-0.014*	-0.017**	-0.020**	-0.019**
	(0.008)	(0.008)	(0.009)	(0.009)
female			-0.098	-0.037
			(0.249)	(0.256)
manufacturing	-0.228	-0.190	-0.390	-0.409
	(0.235)	(0.236)	(0.271)	(0.273)
trade	-0.197	-0.206	-0.403	-0.396
	(0.284)	(0.285)	(0.318)	(0.320)
construction	-0.073	-0.015	-0.258	-0.243
	(0.320)	(0.322)	(0.352)	(0.354)
service	0.441	0.436	0.252	0.283
	(0.537)	(0.541)	(0.557)	(0.560)
workers	0.010	0.011	0.012	0.012
	(0.008)	(0.008)	(0.008)	(0.008)
formalization_level	0.114**	0.100*	0.071	0.073
	(0.058)	(0.058)	(0.061)	(0.061)
external_advice	0.251***	0.275***	0.221***	0.234***
	(0.081)	(0.082)	(0.085)	(0.086)
CSR	0.328***	0.273***	0.239**	0.232**
	(0.093)	(0.096)	(0.100)	(0.100)
individual_resilience		0.258***	0.221**	0.117
		(0.097)	(0.104)	(0.112)
ind_resxfemale				0.657**
				(0.272)
Constant cut1	-2.806***	-2.975***	-3.312***	-3.260***
	(0.475)	(0.483)	(0.578)	(0.580)
Constant cut2	-0.321	-0.462	-1.034*	-0.954*
	(0.449)	(0.454)	(0.550)	(0.552)
Observations	490	490	414	414
Log Lik	-415.3	-411.7	-352.9	-350
Pseudo R-squared	0.043	0.051	0.048	0.056

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: own elaboration using STATA 14

To check whether there is an actual relationship between the dependent variable and all the regressors considered together, a Likelihood Ratio (LR) Chi-Square test has been performed. In the first model, LR chi2(9) = 37.15 and p-value <0.00, therefore it is significant at the 1% level. In the second model, LR chi2(10) = 44.25 and p-value <0.00, therefore it

is significant at the 1% level. In the third model, LR chi2(11) = 35.46 and p-value <0.00, therefore it is significant at the 1% level. Finally, in the fourth model, LR chi2(12) = 41.41 and p-value <0.00, therefore it also is significant at the 1% level.

Logistic regression does not have an equivalent to the R-squared that has been calculated in OLS regression. A wide variety of pseudo R-squared statistics have been developed; however, these often give contradictory conclusions. Table 9 shows McFadden's pseudo R-squared, which is 4.3% in model 1, 5.1% in model 2, 4.8% in model 3, and 5.6% in model 4.

The control variable *external_advice* is significant at the 1% level in all four models. β= 0.234*** is the ordered log-odds estimate for consulting one more source of advice on the expected performance given the other variables are held constant in the model. If a company were to increase the number of external sources consulted by one unit, its ordered log-odds of having a higher expected performance would increase by 0.234 while the other variables in the model are held constant. The control variable *CSR* is significant at the 1% level in the first and second model and at the 5% in the third and fourth model. β= 0.232** is the ordered log-odds estimate for a one unit increase in CSR score on the expected performance given the other variables are held constant in the model. A one unit increase in CSR score would result in a 0.232 unit increase in the ordered log-odds of having a higher expected performance while the other variables in the model are held constant. The control variable *age* is significant at the 10% level in the first model and at the 5% level in all remaining models. β= -0.020** is the ordered log-odds estimate for being one year older on the expected performance given the other variables are held constant in the model. A one-year increase in business leader's age would result in a 0.020 unit decrease in the ordered log-odds of having a higher expected performance while the other variables in the model are held constant. The control variable *formalization_level* is significant at the 5% level in the first model and at the 10% level in the second, while in the other models it is not significant.

The second model has been performed to test the hypothesis 2a developed by reviewing the literature on individual resilience and entrepreneurial success. It is meant to check if there is significant relationship between a leader's individual resilience and the expected SME performance. Therefore, compared to the first model, the independent variable *individual_resilience* has been included in the second model. As the regression shows, the

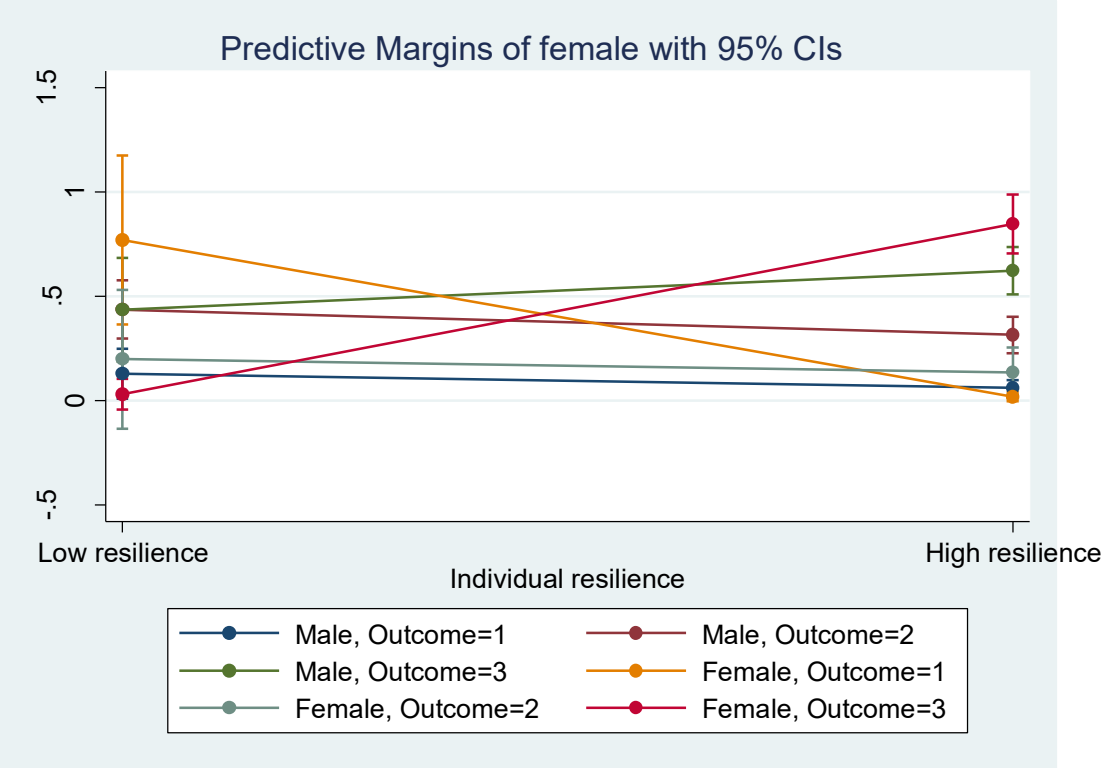
variable *individual_resilience* is significant at the 1% level (β= 0.258***, S.E.= 0.097). Thus, the hypothesis 2a is supported; it seems that a leader's resilience could be significantly related to the expected SME performance. Looking at the ordered log-odds (logit) regression coefficients it is possible to analyse the effect of a leader's resilience on the expected SME performance. β= 0.258*** is the ordered log-odds estimate for a one unit increase in the degree of individual resilience on the expected performance given the other variables are held constant in the model. A one unit increase in the level of individual resilience of the business leader would result in a 0.258 unit increase in the ordered log-odds of having a higher expected performance while the other variables in the model are held constant. This finding is in line with the literature that demonstrated the existence of a positive relationship between leaders' resilience and the growth and high performance of their organizations (Ayala, & Manzano, 2014). On the other hand, this result contradicts the findings of other authors who have argued that individual resilience does not affect business success but only individual success (Fisher et al., 2016).

The third and second model have been performed to test the hypothesis 2b. They aim to assess if leader's gender moderates the relationship between individual resilience and expected SME performance. In the third model, only the independent variable *female* has been added to see if this has a significant relationship with the expected performance. However, this variable seems to have no direct relationship with the dependent variable. Therefore, to see if there is a moderation effect of the variable *female* on the relationship between individual resilience and expected performance, the interaction between the two independent variables has been included in the fourth model. The interaction term introduced in the fourth model is significant at the 5% level (β= 0.657**, S.E.= 0.272). It seems that the leader's gender moderates the relationship between the leader's resilience and the expected performance of the company he/she manages or owns. The fact that the interaction between *female* and *individual_resilience* is significant means that there is a significantly different effect of the variable *individual_resilience* on the dependent variable *expected_performance* when the leader is a woman in relation to the situation where the leader is a man. This finding is in accordance with the result of Ayala and Manzano (2014) that found that entrepreneur's gender influences the way in which individual resilience predicts the success of the business. However, it is not in line with the authors

who stated that there are no differences between females and males in terms of resilience (Burns, & Anstey, 2010; Karairmak, 2010).

In order to better interpret the results of the fourth model, that is aimed to test whether the leader's gender moderates the relationship between *individual_resilience* and *expected_performance*, the margins have been calculated and then plotted. This function allows us to see how the probability associated with the different outcomes of the variable *expected_performance* varies (1 = expected decreasing performance, 2 = expected constant performance, 3 = expected increasing performance) according to the leader's gender, considering whether the respondent have a high or low resilience. Figure 12 confirms that the relationship between expected performance and individual resilience changes according to the gender of the leader. In particular, when the business leader is a woman, individual resilience has more impact on expected performance than when it is a man. This can be seen from the slope of the lines that are more inclined when the leader is a woman. Furthermore, from the graph it can be seen that the probability of an expected increase in performance (outcome 3) is higher if the respondent has a high resilience, while it is lower if he/she has a low resilience, with a more accentuated effect in the case in which the leader is female rather than man. On the other hand, the probability of decreasing expected performance (outcome 2) is higher if the respondent has a low resilience, while it is lower if he/she has a high resilience, with a more emphasized effect in the case in which the leader is female rather than man. Therefore, if the individual resilience level is high and the leader is female, the probability of having high performance expectations is greater, while the probability of having low performance is lower. On the other hand, if the individual resilience level is low and the leader is female, the probability of having low performance expectations is greater, while the probability of having high performance is lower. These probability differences in the expected performance results depending on the individual resilience level are minimal, however, in the case of the male leader.

Figure 12 Predictive Margins of female



Source: own elaboration using STATA 14

3.8 Discussion and conclusion

This empirical study has made use of the dataset created for the research project on business resilience funded by the JP Morgan Chase Foundation. The data was collected by interviewing the owner or manager of 600 small and medium-sized enterprises operating in the metropolitan area of Milan. Furthermore, some data concerning mainly economic and financial information were taken from the AIDA database. For the purpose of the research, some quotas were placed to make sure that the sample also included companies located in the most disadvantaged districts and those run by leaders from under-represented groups such as ethnic minorities and women. The questionnaire administered to the participants in the project was aimed at gathering some general information about the companies and the interviewees and then other more specific information regarding the way in which these companies and their leaders faced adversity. Indeed, the objective of

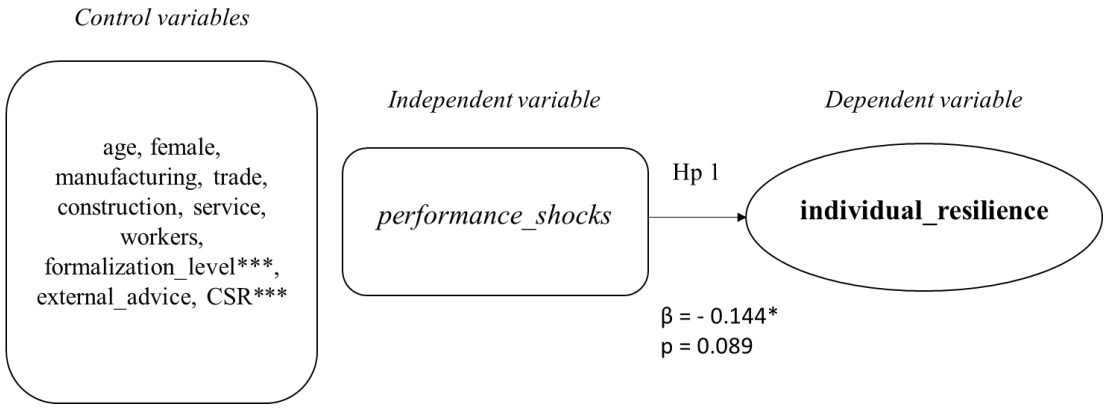
this research is to analyse the individual and organizational resilience within the SMEs located in the metropolitan area of Milan.

This study, in particular, aims to test two hypotheses: the first concerns the relationship between performance shocks and leader's resilience, while the second regards the relationship between a leader's individual resilience and the expected SME performance and the effect of leader's gender on this relationship. Therefore, the variables that have been used in the model developed to test the hypotheses are: the number of performance shocks suffered by each company, the level of individual resilience of the business leaders (assessed using the Connor-Davidson resilience scale), the expected SME performance, the gender of the leader, and some control variables. The methods used are the multiple linear regression and the ordered logistic regression depending on the nature of the dependent variable.

Below, we have reported the graphs representing the regression models and the main results. The stars indicate the level of statistical significance (i.e., *p < = .1, **p < = .05, ***p < = .01): the lower the p-value, the greater the significance.

Figure 13 shows the results of the multiple regression model developed to test Hypothesis 1.

Figure 13 Individual resilience regression results



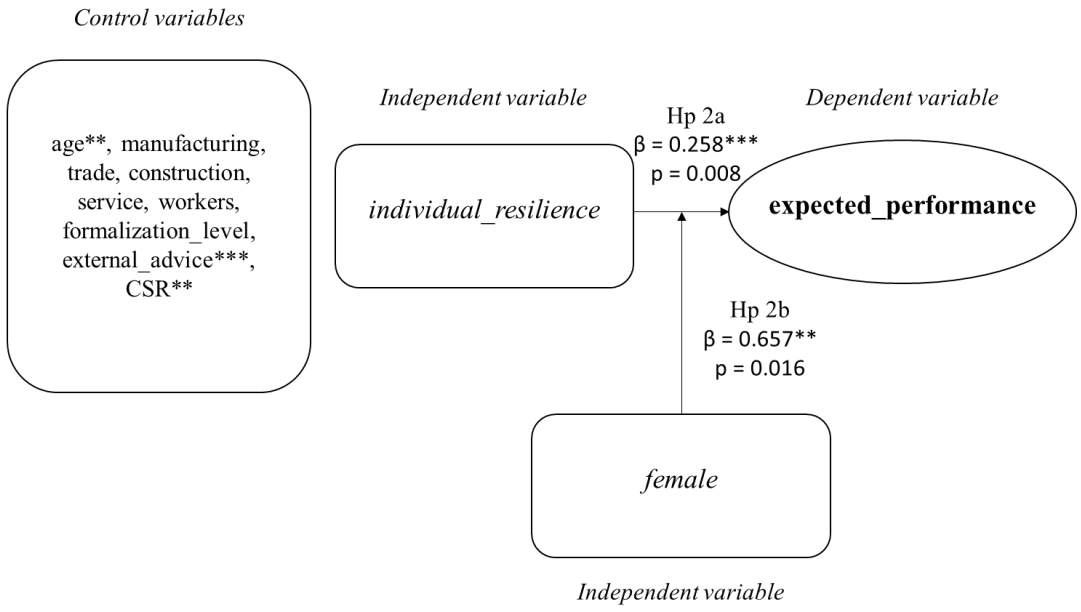
Source: own elaboration

This hypothesis aims to investigate whether performance shocks suffered by each company can impact on the individual resilience of its business leader. As discussed above, the regression results seem to support Hypothesis 1a. Indeed, the independent variable

performance_shocks is significant at the 10% level (β= -0.144*, p= 0.089). Therefore, it is possible to assert that there is a significant relationship between performance shocks and leader's resilience. The partial regression coefficient of the independent variable has a negative sign, meaning that the number of experienced performance shocks, on average, has a negative influence on the leader's individual resilience, being other things equal. Moreover, its absolute value implies that, on average, the level of resilience of the business leader decreases by 0.144 units for each additional shock suffered by the company, holding constant all of the other predictors. This finding is quite surprising given that many studies (e.g., Franco, Haase, & António, 2020) claimed that failures are an important source of learning, especially for entrepreneurs, and that these events can impact positively on individual resilience. Most likely, when the company undergoes a performance shock, the business leader, instead of seeing this failure as an opportunity to learn, loses confidence in himself/herself and in his/her work and consequently also the ability to be resilient in the face of challenges decreases.

After analysing the relationship between performance shocks and individual resilience, the study focuses its attention on the impact that the leader's resilience has on the performance of small and medium-sized companies. Figure 14 shows the results of the ordered logistic regression model developed to test Hypothesis 2a and Hypothesis 2b.

Figure 14 Expected performance regression results



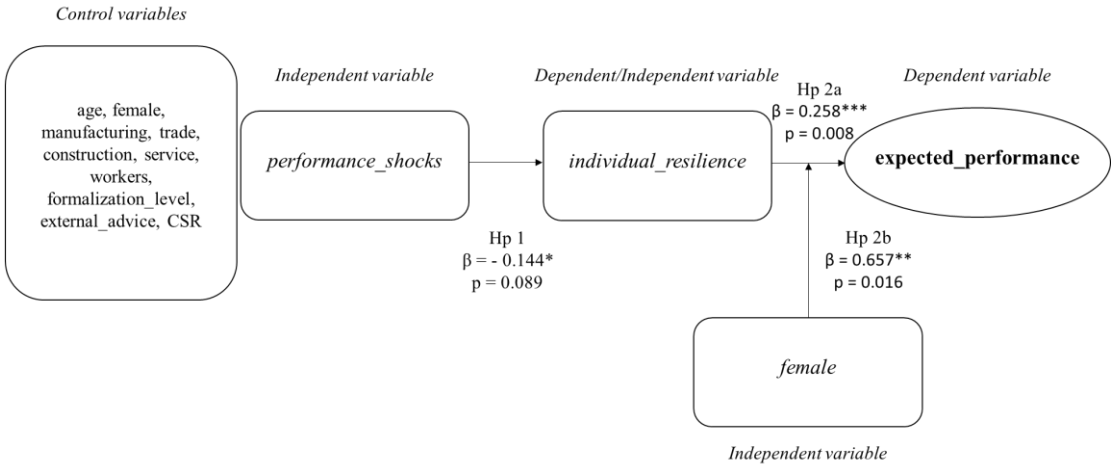
Source: own elaboration

The Hypothesis 2a aims to test whether there is a significant relationship between a leader's individual resilience and the expected SME performance. From the regression analysis, the independent variable *individual_resilience* has resulted significant at the 1% level (β= 0.258***, p= 0.008). Therefore, the Hypothesis 2a is supported; a leader's resilience has an impact on the expected SME performance. Looking at the ordered log-odds regression coefficients, it is possible to better analyse this relationship. According to the value of the ordered log-odds estimate, a one unit increase in the level of individual resilience of the business leader would result in a 0.258 unit increase in the ordered log-odds of having a higher expected performance while the other variables in the model are held constant. In line with much of the literature (Ayala, & Manzano, 2014; Fatoki, 2018), the result confirms there is a positive relationship between the resilience of the leader and the performance of the company he/she manages or owns. Given that the leader is a central figure in small and medium-sized companies, it is reasonable to assume that his ability to resist adversity and face them with optimism also reflects on company performance. Hypothesis 2b aims to test if leader's gender moderates the relationship between a leader's resilience and the expected SME performance. Initially, the model has been performed adding to the previous one only the variable *female* to see if a leader's gender has a significant and direct relationship with the expected performance. However, no direct relationship has been found. Afterwards, to see if there is a moderation effect of the variable *female,* the interaction term between *female* and *individual_resilience* has been included in the model. This is resulted significant at the 5% level (β= 0.657**, S.E.= 0.272), therefore it seems that the leader's gender moderates the relationship between the leader's resilience and the expected SME performance. There is a significantly different effect of *individual_resilience* on the *expected_performance* when the leader is a woman in relation to the situation where the leader is a man. To better understand the effect of the leader's gender on the relationship between individual resilience and expected performance, the margins have been calculated and then plotted. It resulted that in case of female leader the level of resilience has a greater impact on the expected performance of the company than in case of male leader. This is probably due to the fact that women have many qualities that, if combined with the individual resilience, make their companies perform better. Indeed, women typically have more intuition, awareness of the feelings

of others, ability to motivate others in the face of declining corporate performance, than men (Bruckmüller, & Branscombe, 2010).

In conclusion, from this study, it emerged that not only individual resilience affects the expected performance of the company but also that the performance of the company has repercussions on the resilience of the leader. Furthermore, the results provide supporting evidence that resilience affect, to varying degrees, the performance of the company on the basis of leader's gender.

Figure 15 The complete framework of hypotheses and results



Source: own elaboration

3.9 Practical implications

3.9.1 Theoretical implications

From a theoretical point of view, the findings of this study contribute to the literature investigating failures' influence on entrepreneurial resilience. Moreover, they contribute to the debate on the role that a leader's individual resilience plays in predicting business performance and that the leader's gender plays in shaping this relationship. In addition, all this adds to the literature that studies small and medium-sized enterprises since the sample used for the empirical study includes only companies that have from 3 to 99 employees.

More precisely, this study highlights the effects that performance shocks suffered by a company have on the resilience of the owner or manager. The results obtained from the regression showed that performance shocks have a negative influence on the ability of leaders to resist and face challenges. This is a strong statement as many authors (e.g., Franco, Haase, & António, 2020) argued that failures are an important source of learning that increase the resilience of individuals. Certainly, this finding is an important contribution to research on the relationship between failure factors and resilience.

Furthermore, this study seeks to take an important step towards an overall understanding of the influence of the resilience of the business leader on the success of the business. It provides evidence of a relationship between leader's individual resilience and expected SME performance. This work supports studies which state that the resilience of entrepreneurs positively reflects on the performance of the entire company.

Moreover, this analysis adds empirical evidence to studies investigating organizational and individual resilience in relation to the gender of the business leader. Indeed, as previously discussed, the results show that there is a gender difference in the relationship that links the resilience of the leader to the performance of the company. This is one of the first studies examining whether gender differences change the predictive value of resilience.

Additionally, this study contributes to the research on small and medium-sized enterprises. Given the important role that they play in the European economy, resilience research on SMEs is relatively scarce. Therefore, this work has aimed to examine organizational and individual resilience in the context of SMEs taking into account their unique characteristics.

3.9.2 Managerial implications

This study has several managerial implications that can help companies and individuals perform better in crisis situations. Indeed, this research allows owners and managers to better understand which factors positively and negatively affect individual resilience and consequently how they can improve their ability to cope with adversities and therefore reduce the probability of failure. In addition, it helps them to better understand which factors positively contribute to the company's performance expectations and consequently to its ability to face challenges.

From the literature on resilience, it appears that failures are a source of learning for entrepreneurs that positively affects their ability to counter adversity (Franco, Haase, & António, 2020), however this empirical study has shown that performance shocks suffered by SMEs negatively affect the resilience of their leaders. The reason for this result could be the fact that leaders do not analyse in detail the circumstances and mistakes that led to failure and consequently do not use performance shocks as opportunities to learn and become more resilient. Hence, the first managerial implication of this study is that managers and owners should focus more on analysing what caused their company to decrease their performance and try to understand how to improve. This could bring them greater self-confidence and awareness of the actions to be taken, therefore it could contribute to increasing their individual resilience which, as emerged from the regression results, has positive effects on the expected performance of the company. By improving their resilience, business performance also improves and therefore makes the company more likely to survive the threats that jeopardize its existence.

Given that company performance also depends on the resilience of organizational members, among many other things, it is important to adopt policies aimed at improving their resilience, for example creating a work environment that encourages them to give more and more even in the face of declining organizational performance. Indeed, for literature, motivation is one of those factors that lead individuals to being more resilient (De Vries, & Shields, 2006). To ensure that the work environment is motivating, an idea could be to appoint not only men but also women to the highest management positions. Indeed, female leaders are typically more able to motivate employees in the face of declining organizational performance than their male counterparts, and this can lead to higher resilience and consequently higher business performance. This has been also confirmed by the regression model that reported a greater impact of a leader's individual resilience on the expected SME performance in the event of a female leader.

In conclusion, it is hoped that the insights from this research can lead to better support for small and medium-sized businesses to improve their resilience and to provide entrepreneurs with the tools they need to survive and thrive.

3.10 Limitations and directions for future research

Although the results of this study are interesting, some limitations qualify the conclusions drawn from the empirical analysis.

A first limitation of the thesis is due to the use of the gender of the director/chairman of the board of directors found on AIDA, given the lack of information regarding the gender of the respondent in the questionnaire. Indeed, although the respondents were all owners or managers of the companies under analysis, they were not always the directors/chairmen of the board of directors. However, for the purpose of the research, it has been chosen to use this data as the director/chairman of the board of directors is still a relevant figure in the company, whose gender can affect the respondent (if not the same person) and the company.

A second limitation is the fact that the whole model is based on information, opinions and data provided by only one person, the owner/manager of the company. Clearly, if in future research more employees of the company are interviewed, even better if they belong to different departments/functions, the study becomes more accurate.

The level of resilience of business leaders has been measured using the Connor-Davidson scale which, however, does not evaluate resilience in an objective way as it is a self-assessment by the individuals under analysis. Indeed, it is reasonable to assume that resilience evaluations are not objective due to a distorted view that managers and owners have of themselves or due to the pressure to look good in the eyes of others. However, this limitation will always exist unless the level of resilience of leaders is assessed by external people who observe them constantly and then give an evaluation based on a critical and more objective analysis. Anyway, in future research, it would be interesting to assess the resilience level of all employees and see if the results obtained in the study can be extended to them as well. This would allow a more complete picture of resilience within small and medium-sized enterprises to be drawn.

Furthermore, the study, due to the lack of availability of data on AIDA, has used as performance variable the assessment of the business leader on the future trend of company performance. However, hypotheses should also be tested with objective performance measures when data becomes available to confirm the results obtained with the subjective performance measure. Indeed, business leaders may have been influenced by so-called "managerial myopia" in providing the assessment. Some studies claim that people often

believe themselves to be more capable than they actually are and that such biases, if extended to the organizational level, would lead to overly optimistic planning for the future (Larwood, & Whittaker, 1977).

In addition, it is possible to notice a decrease in the number of observations from one regression model to another due to the lack of data for some companies, sometimes because they are not available on AIDA, other times because the respondents did not want/know how to respond.

A further limitation is given by the fact that cross-sectional data, i.e. observations collected at a single point in time, have been used to carry out this study. However, since individual resilience is not a personal trait but is a behavioural quality that evolves over time (De Vries, & Shields, 2006), in future research it would be more appropriate to use longitudinal data, evaluating the resilience of business leaders at different times and observing how this changes according to past experiences. It would be very interesting to re-evaluate the resilience of business leaders after the COVID-19 pandemic to see how this emergency has affected them and their companies.

The sample included only small and medium-sized companies located in the metropolitan area of Milan. However, culture could have a big impact on resilience; people with cultures other than the Italian one could behave differently. A cross-cultural study should be conducted to better understand any possible cultural bias within the model. At the moment, therefore, it is not possible to generalize the results obtained through this study which focuses solely on SMEs in the Milan metropolitan area.

ACKNOWLEDGEMENTS

Having come to the end of this thesis, I would like to express all my gratitude to my supervisor, Professor Alessandra Tognazzo, for her constant guidance and support during the writing of the thesis. Without her assistance and involvement at every stage, this thesis would never have been realized.

I would like to thank Dr. Simona Leonelli for providing important information regarding the dataset used in this study given her great knowledge and involvement in the research project "Business Resilience Study" funded by the JP Morgan Foundation.

I would also like to thank Professor Diego Campagnolo for providing the dataset used for the empirical study. Indeed, the realization of this thesis would not have been possible without the dataset on the "Business Resilience Study", financed by the JP Morgan Foundation and conducted by the University of Padua under his supervision.

A heartfelt thanks goes to the University of Padua which has allowed me to enrich my cultural background and have unforgettable experiences.

Special thanks to all the friends I met during the university years who made them even more beautiful.

Finally, the warmest thanks go to my family who have always supported me economically and morally during these years of university.

REFERENCES

Alberti, F. G., Ferrario, S., & Pizzurno, E. (2018). Resilience: resources and strategies of SMEs in a new theoretical framework. *International journal of learning and intellectual capital, 15*(2), 165-188.

Aldrich, H. E., & Martinez, M. A. (2001). Many are called, but few are chosen: An evolutionary perspective for the study of entrepreneurship. *Entrepreneurship: Theory and Practice, 24*(4), 41.

Alesch, D. J., Holly, J. N., Mittler, E., & Nagy, R. (2001). Organizations at risk: What happens when small businesses and not-for-profits encounter natural disasters.

Ates, A., & Bititci, U. (2011). Change process: a key enabler for building resilient SMEs. *International Journal of Production Research, 49*(18), 5601-5618.

Ayala, J. C., & Manzano, G. (2014). The resilience of the entrepreneur. Influence on the success of the business. A longitudinal analysis. *Journal of Economic Psychology, 42*, 126-135.

Barakat, S. R., Isabella, G., Boaventura, J. M. G., & Mazzon, J. A. (2016). The influence of corporate social responsibility on employee satisfaction. *Management decision*.

Baron, R. A., & Markman, G. D. (2000). Beyond social capital: How social skills can enhance entrepreneurs' success. *Academy of Management Perspectives, 14*(1), 106-116.

Battisti, M., & Deakins, D. (2017). The relationship between dynamic capabilities, the firm's resource base and performance in a post-disaster environment. *International Small Business Journal, 35*(1), 78-98.

Benard, B. (1993). Fostering resiliency in kids. *Educational leadership, 51*(3), 44-48.

Bhamra, R., Dani, S., & Burnard, K. (2011). Resilience: the concept, a literature review and future directions. *International Journal of Production Research, 49*(18), 5375-5393.

Blatt, R. (2009). Resilience in entrepreneurial teams: Developing the capacity to pull through. *Frontiers of Entrepreneurship Research, 29*(11), 1.

Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2007). What predicts psychological resilience after disaster? The role of demographics, resources, and life stress. *Journal of consulting and clinical psychology, 75*(5), 671.

Brown, D., Saito, K., Spence, R., Chenvidyakarn, T., Adams, B., Mcmillan, A., & Platt, S. (2008, September). Indicators for measuring, monitoring and evaluating post-disaster recovery. In *Proceedings 6th International Workshop on Remote Sensing for Disaster Applications, Pavia, Italy* (Vol. 12).

Bruckmüller, S., & Branscombe, N. R. (2010). The glass cliff: When and why women are selected as leaders in crisis contexts. *British Journal of Social Psychology, 49*(3), 433-451.

Bullough, A., & Renko, M. (2013). Entrepreneurial resilience during challenging times. *Business Horizons, 56*(3), 343-350.

Burns, R. A., & Anstey, K. J. (2010). The Connor–Davidson Resilience Scale (CD-RISC): Testing the invariance of a uni-dimensional resilience measure that is independent of positive and negative affect. *Personality and Individual Differences, 48*(5), 527-531.

Campbell-Sills, L., & Stein, M. B. (2007). Psychometric analysis and refinement of the connor–davidson resilience scale (CD-RISC): Validation of a 10-item measure of resilience. *Journal of Traumatic Stress: Official Publication of The International Society for Traumatic Stress Studies, 20*(6), 1019-1028.

Campbell-Sills, L., Forde, D. R., & Stein, M. B. (2009). Demographic and childhood environmental predictors of resilience in a community sample. *Journal of psychiatric research, 43*(12), 1007-1012.

Cicchetti, D., & Garmezy, N. (1993). Prospects and promises in the study of resilience. *Development and psychopathology, 5*(4), 497-502.

Coelho, M., De Meza, D., & Reyniers, D. (2004). Irrational exuberance, entrepreneurial finance and public policy. *International Tax and Public Finance, 11*(4), 391-417.

Connor, K. M., & Davidson, J. R. (2003). Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression and anxiety, 18*(2), 76-82.

Conz, E., Denicolai, S., & Zucchella, A. (2017). The resilience strategies of SMEs in mature clusters. *Journal of Enterprising Communities: People and Places in the Global Economy*.

Corey, C. M., & Deitch, E. A. (2011). Factors affecting business recovery immediately after Hurricane Katrina. *Journal of Contingencies and crisis management, 19*(3), 169-181.

Corner, P. D., Singh, S., & Pavlovich, K. (2017). Entrepreneurial resilience and venture failure. *International Small Business Journal, 35*(6), 687-708.

Crichton, M. T., Lauche, K., & Flin, R. (2005). Incident command skills in the management of an oil industry drilling incident: A case study. *Journal of Contingencies and Crisis Management, 13*(3), 116-128.

Dawes, J. (1999). The relationship between subjective and objective company performance measures in market orientation research: further empirical evidence. *Marketing bulletin-department of marketing massey university, 10*, 65-75.

De Vries, H., & Shields, M., (2006). Towards a theory of entrepreneurial resilience: a case study analysis of New Zealand SME owner operators. *Applied Research Journal*, Vol. 6, pp. 33-43.

Dess, G. G., & Robinson Jr, R. B. (1984). Measuring organizational performance in the absence of objective measures: the case of the privately-held firm and conglomerate business unit. *Strategic management journal, 5*(3), 265-273.

Drugan, R. C., Christianson, J. P., Warner, T. A., & Kent, S. (2013). Resilience in shock and swim stress models of depression. *Frontiers in behavioral neuroscience, 7*, 14.

Duchek, S. (2018). Entrepreneurial resilience: a biographical analysis of successful entrepreneurs. *International Entrepreneurship and Management Journal, 14*(2), 429-455.

Duening, T. N. (2010). Five minds for the entrepreneurial future: Cognitive skills as the intellectual foundation for next generation entrepreneurship curricula. *The Journal of entrepreneurship, 19*(1), 1-22.

Endsley, M. R., Bolte, B., & Jones, D. G. (2003) *Designing for situation awareness: an approach to user-centered design*.

European Commission. (2019). Annual Report on European SMEs 2018/2019.

European Union Commission. (2003). Commission recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises. *Official Journal of the European Union, 46*(L124), 36-41.

Eyduran, E., Ozdemir, T., & Alarslan, E. (2005). Importance of diagnostics in multiple regression analysis. *J. Appl. Sci, 5*(10), 1792-1796.

Fatoki, O. (2018). The impact of entrepreneurial resilience on the success of small and medium enterprises in South Africa. *Sustainability, 10*(7), 2527.

Fisher, R., Maritz, A., & Lobo, A. (2016). Does individual resilience influence entrepreneurial success? *Academy of Entrepreneurship Journal, 22*(2), 39-53.

Franco, M., Haase, H., & António, D. (2020). Influence of failure factors on entrepreneurial resilience in Angolan micro, small and medium-sized enterprises. *International Journal of Organizational Analysis*.

Garmezy, N. (1991). Resilience in children's adaptation to negative life events and stressed environments. *Pediatric annals, 20*(9), 459-466.

Garmezy, N. (1993). Children in poverty: Resilience despite risk. *Psychiatry, 56*(1), 127-136.

Grilli, L., & Rampichini, C. (2014). Ordered logit model. *Encyclopedia of quality of life and well-being research*, 4510-4513.

Haslam, S. A., & Ryan, M. K. (2008). The road to the glass cliff: Differences in the perceived suitability of men and women for leadership positions in succeeding and failing organizations. *The Leadership Quarterly, 19*(5), 530-546.

Hedner, T., Abouzeedan, A., & Klofsten, M. (2011). Entrepreneurial resilience.

Herbane, B. (2010). Small business research: Time for a crisis-based view. *International small business journal, 28*(1), 43-64.

Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual review of ecology and systematics, 4*(1), 1-23.

Hollnagel, E., Nemeth, C. P., & Dekker, S. (Eds.). (2008). *Resilience engineering perspectives: remaining sensitive to the possibility of failure* (Vol. 1). Ashgate Publishing, Ltd..

Holt, G. D. (2013). Construction business failure: conceptual synthesis of causal agents. *Construction Innovation*.

Ionescu, V. C., Cornescu, V., & Druică, E. (2011). Small and Medium Enterprises in European Union. *Business&Leadership, 1*(7), 55-67.

Kanter, R. M. (1977). *Men and women of the corporation*. New York: Basic Books.

Karaırmak, Ö. (2010). Establishing the psychometric qualities of the Connor–Davidson Resilience Scale (CD-RISC) using exploratory and confirmatory factor analysis in a trauma survivor sample. *Psychiatry research, 179*(3), 350-356.

Keong, F. W. F., & Mei, L. Y. (2010). Sustainable development: the effect of adopting green technology on small and medium enterprises'(smes) business resilience and competitiveness.

Klein, R. J., Nicholls, R. J., & Thomalla, F. (2003). Resilience to natural hazards: How useful is this concept? *Global environmental change part B: environmental hazards, 5*(1), 35-45.

Kumari, P., & Sangwan, V. (2015). A Study on impact of resilience capacity on job performance of executives in the pharmaceutical industry. *International Journal of Management and Social Sciences Research, 4*(4), 2319-4421.

Larwood, L., & Whittaker, W. (1977). Managerial myopia: Self-serving biases in organizational planning. *Journal of applied psychology, 62*(2), 194.

Lauridsen, L. S., Willert, M. V., Eskildsen, A., & Christiansen, D. H. (2017). Cross-cultural adaptation and validation of the Danish 10-item Connor-Davidson Resilience Scale among hospital staff. *Scandinavian journal of public health, 45*(6), 654-657.

Lee, A. V., Vargo, J., & Seville, E. (2013). Developing a tool to measure and compare organizations' resilience. *Natural hazards review, 14*(1), 29-41.

Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. (2011). Developing a capacity for organizational resilience through strategic human resource management. *Human resource management review, 21*(3), 243-255.

Limnios, E. A. M., Mazzarol, T., Ghadouani, A., & Schilizzi, S. G. (2014). The resilience architecture framework: Four organizational archetypes. *European Management Journal, 32*(1), 104-116.

Linnenluecke, M. K. (2017). Resilience in business and management research: A review of influential publications and a research agenda. *International Journal of Management Reviews, 19*(1), 4-30.

Luthans, F. (2002). The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior, 23*(6), 695-706.

Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child development, 71*(3), 543-562.

Luthar, S. S., Doernberger, C. H., & Zigler, E. (1993). Resilience is not a unidimensional construct: Insights from a prospective study of inner-city adolescents. *Development and psychopathology, 5*(4), 703.

Lv, W., Wei, Y., Li, X., & Lin, L. (2019). What Dimension of CSR Matters to Organizational Resilience? Evidence from China. *Sustainability, 11*(6), 1561.

Mackey, A., Mackey, T. B., & Barney, J. B. (2007). Corporate social responsibility and firm performance: Investor preferences and corporate strategies. *Academy of management review, 32*(3), 817-835.

Mallak, L. (1998). Putting organizational resilience to work. *Industrial Management-Chicago then Atlanta*, 8-13.

Mallak, L. A., & Yildiz, M. (2016). Developing a workplace resilience instrument. *Work, 54*(2), 241-253.

Manyena, S. B. (2006). The concept of resilience revisited. *Disasters, 30*(4), 434-450.

Marshall, M. I., & Schrank, H. L. (2014). Small business disaster recovery: a research framework. *Natural Hazards, 72*(2), 597-616.

Masten, A. S., & Reed, M. G. J. (2002). Resilience in development. *Handbook of positive psychology, 74*, 88.

McCann, J., Selsky, J., & Lee, J. (2009). Building agility, resilience and performance in turbulent environments. *People & Strategy, 32*(3), 44-51.

McManus, S. T. (2008). Organisational resilience in New Zealand.

McManus, S., Seville, E., Vargo, J., & Brunsdon, D. (2008). Facilitated process for improving organizational resilience. *Natural Hazards Review, 9*(2), 81-90.

Meyer, A. D. (1982). Adapting to environmental jolts. *Administrative science quarterly*, 515-537.

Mitroff, I. (2005). Lessons from 9/11. *Technological Forecasting & Social Change, 3*(72), 375-376.

Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C., ... & Agha, R. (2020). The socio-economic implications of the coronavirus and COVID-19 pandemic: a review. *International Journal of Surgery*.

Pal, R., Torstensson, H., & Mattila, H. (2014). Antecedents of organizational resilience in economic crises—an empirical study of Swedish textile and clothing SMEs. *International Journal of Production Economics, 147*, 410-428.

Pardo, C., & Alfonso, W. (2017). Applying "attribution theory" to determine the factors that lead to the failure of entrepreneurial ventures in Colombia. *Journal of Small Business and Enterprise Development*.

Powell, E. E., & Baker, T. (2011). Beyond making do: Toward a theory of entrepreneurial resourcefulness. *Frontiers of Entrepreneurship Research, 31*(12), 2.

Prayag, G., Chowdhury, M., Spector, S., & Orchiston, C. (2018). Organizational resilience and financial performance. *Annals of Tourism Research, 73*(C), 193-196.

Reymen, I. M., Andries, P., Berends, H., Mauer, R., Stephan, U., & Van Burg, E. (2015). Understanding dynamics of strategic decision making in venture creation: a process study of effectuation and causation. *Strategic entrepreneurship journal, 9*(4), 351-379.

Rice, J. B. and Caniato, F. (2003). Building a Secure and Resilient Supply Network. *Supply Chain Management Review, 7*(5), 22-30.

Riolli, L., & Savicki, V. (2003). Information system organizational resilience. *Omega, 31*(3), 227-233.

Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American journal of orthopsychiatry, 57*(3), 316-331.

Schein, V. E. (1973). The relationship between sex role stereotypes and requisite management characteristics. *Journal of applied psychology, 57*(2), 95.

Schein, V. E. (2001). A global look at psychological barriers to women's progress in management. *Journal of Social issues, 57*(4), 675-688.

Schiller, A. R. (2011). The impact of a storm surge on business establishments in the Houston MSA. *Natural hazards, 56*(1), 331-346.

Southwick, F. S., Martini, B. L., Charney, D. S., & Southwick, S. M. (2017). Leadership and resilience. In *Leadership today* (pp. 315-333). Springer, Cham.

Starr, R., Newfrock, J., & Delurey, M. (2003). Enterprise resilience: managing risk in the networked economy. *Strategy and Business, 30*, 70-79.

Staw, B. M., Sandelands, L. E., & Dutton, J. E. (1981). Threat rigidity effects in organizational behavior: A multilevel analysis. *Administrative science quarterly*, 501-524.

Stewart, M., Reid, G., & Mangham, C. (1997). Fostering children's resilience. *Journal of pediatric nursing, 12*(1), 21-31.

Sullivan-Taylor, B., & Branicki, L. (2011). Creating resilient SMEs: why one size might not fit all. *International Journal of Production Research, 49*(18), 5565-5579.

Sutcliffe, K. M., & Vogus, T. J. (2003). Organizing for resilience. *Positive organizational scholarship: Foundations of a new discipline, 94*, 110.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education, 2*, 53.

Venkatraman, N., & Ramanujam, V. (1986). Measurement of business performance in strategy research: A comparison of approaches. *Academy of management review, 11*(4), 801-814.

Vij, S., & Bedi, H. S. (2016). Are subjective business performance measures justified?. *International Journal of Productivity and Performance Management*.

Vlikangas, L., & Hamel, G. (2003). The quest for resilience. *Harvard Business Review, 81*(9), 52-63.

Wade, M. V. (2006). Likert-type scale response anchors. *Clemson international institute for tourism & research development, department of parks, recreation and tourism management, Clemson University*.

Waelchli, U., & Zeller, J. (2013). Old captains at the helm: Chairman age and firm performance. *Journal of banking & finance, 37*(5), 1612-1628.

Walgnild, G., & Young, H. (1993). Development and psychometric evaluation of the Resilience Scale. *Journal of Nursing Measurement, 1* (2), 165–178.

Wall, T. D., Michie, J., Patterson, M., Wood, S. J., Sheehan, M., Clegg, C. W., & West, M. (2004). On the validity of subjective measures of company performance. *Personnel psychology, 57*(1), 95-118.

Webb, G. R., Tierney, K. J., & Dahlhamer, J. M. (2002). Predicting long-term business recovery from disaster: a comparison of the Loma Prieta earthquake and Hurricane Andrew. *Global Environmental Change Part B: Environmental Hazards, 4*(2), 45-58.

Weeraratne, N. C. (2016). The effectiveness of factor analysis as a statistical tool of variable reduction technique. *International Journal Of Core Engineering & Management, 3*(4).

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (1999). Organizing for high reliability: Processes of high reliability. *Research in Organizational Behaviour*, *21*, 81-123.

Wildavsky, A. B. (1988). *Searching for safety* (Vol. 10). Transaction publishers.

Williams, C. L. (1992). The glass escalator: Hidden advantages for men in the 'female' professions. *Social Problems, 39*, 253−267.

Williams, M. N., Grajales, C. A. G., & Kurkiewicz, D. (2013). Assumptions of multiple regression: Correcting two misconceptions. *Practical Assessment, Research, and Evaluation, 18*(1), 11.

Windle, G., Bennett, K. M., & Noyes, J. (2011). A methodological review of resilience measurement scales. *Health and quality of life outcomes, 9*(1), 8.

Wishart, M. (2018). Business resilience in an SME context: A literature review. *Coventry, UK: Enterprise Research Centre*.

Wishart, M., & Hopley, L. (2020). Building resilience in under-represented entrepreneurs: A European comparative study. *Coventry, UK: Enterprise Research Centre*.

Wolff, J. A., & Pett, T. L. (2006). Small-firm performance: modeling the role of product and process improvements. *Journal of Small Business Management, 44*(2), 268-284.

Woods, D. D., & Wreathall, J. (2008). Stress-strain plots as a basis for assessing system resilience. *Resilience engineering perspectives, 1*, 145-161.

World Health Organization. (2020). *Weekly epidemiological update - 3 November 2020*.

Zautra, A. J., Hall, J. S., & Murray, K. E. (2010). Resilience: a new definition of health for people and communities.

Zhang, Y., Lindell, M. K., & Prater, C. S. (2009). Vulnerability of community businesses to environmental disasters. *Disasters, 33*(1), 38-57.