FACULTEIT ECONOMIE EN BEDRIJFSKUNDE

EXPLORING THE RELATIONSHIP BETWEEN ENTREPRENEURIAL RESILIENCE AND REACTIVENESS: UNCOVERING MODERATING FACTORS IN THE ENTREPRENEURSHIP CONTEXT

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I declare that the research was conducted in accordance with the rules governing scientific and academic integrity. I have read, and acted in accordance with, the Code of Ethics of the Faculty.

Summary

This study explores the interaction between entrepreneurial resilience and strategic reactiveness, particularly focusing on how these factors influence business outcomes in Flemish startups. The research addresses three main hypotheses: the direct positive relationship between entrepreneurial resilience and strategic reactiveness, the mediating role of strategic reactiveness between entrepreneurial resilience and business performance, and the moderating effect of previous entrepreneurial experience on this relationship.

Data was collected via surveys from 277 Flemish startups in the summer of 2020, complemented with financial information from the Orbis database. The analysis revealed a counterintuitive negative relationship between entrepreneurial resilience and strategic reactiveness, suggesting that higher resilience might lead to rigidity in strategic approaches. No significant direct impact of resilience on business outcomes was found, leading to the discontinuation of further mediation analyses. Previous entrepreneurial experience also did not significantly enhance the relationship between entrepreneurial resilience and strategic reactiveness, indicating that prior experience may not notably influence this relationship.

These findings challenge the conventional view that resilience is always beneficial, highlighting the need for balancing between resilience and adaptability. The study's limitations include the self-reported nature of resilience and strategic reactiveness, the young age of the sampled companies, and the specific context of the COVID-19 pandemic, which may limit the generalizability of the results. Future research should incorporate more objective measures and longitudinal data to better understand these dynamics over time.

Resumo

Este estudo explora a interação entre resiliência empreendedora e reatividade estratégica, focando particularmente em como esses fatores influenciam os resultados empresariais em startups flamengas. A pesquisa aborda três hipóteses principais: a relação positiva direta entre resiliência empreendedora e reatividade estratégica, o papel mediador da reatividade estratégica entre resiliência empreendedora e desempenho empresarial e o efeito moderador da experiência empreendedora anterior nessa relação.

Os dados foram recolhidos por meio de inquéritos a 277 startups flamengas, no verão de 2020, complementados com informações financeiras da base de dados Orbis. A análise revelou uma relação contraintuitiva negativa entre resiliência empreendedora e reatividade estratégica, sugerindo que uma maior resiliência pode levar a rigidez nas abordagens estratégicas. Não foi encontrado impacto direto significativo da resiliência nos resultados empresariais, levando à descontinuação de análises de mediação adicionais. A experiência empreendedora anterior também não melhorou significativamente a relação entre resiliência empreendedora e reatividade estratégica, indicando que a experiência prévia pode não influenciar notavelmente esta relação.

Estes resultados desafiam a visão convencional de que a resiliência é sempre benéfica, destacando a necessidade de um equilíbrio entre resiliência e adaptabilidade. As limitações do estudo incluem a natureza autorrelatada da resiliência e reatividade estratégica, a pouca idade das empresas amostradas e o contexto específico da pandemia de COVID-19, o que pode limitar a generalização dos resultados. Pesquisas futuras devem incorporar medidas mais objetivas e dados longitudinais para entender melhor essas dinâmicas ao longo do tempo.

Foreword

I would like to express my heartfelt gratitude to everyone who helped me throughout the process of completing this master's thesis. Although this was primarily an independent project, the support and encouragement I received were invaluable.

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Emile D'hondt

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1 Introduction

1.1 What we know

- The entrepreneurial landscape is characterized by rapid change, uncertainties, and challenges, requiring entrepreneurs to adapt (Andries et al., 2013). This adaptability often reveals itself through the ability to adjust business models in response to changing market conditions, which is an essential factor in the success of startups (Forbes, 2005).
- Resilience has been found to be a key characteristic for entrepreneurs to succeed in uncertain and volatile environments. It encompasses the ability to withstand, recover and adapt to challenges. This plays a crucial role in the survival of entrepreneurial ventures (Ayala and Manzano, 2014; Saridakis et al., 2013).
- Previous research has extensively examined the dimensions of resilience (e.g., Connor & Davidson, 2003), including its psychological foundations (e.g., Luthans, Vogelgesang & Lester, 2006; Ayala & Manzano, 2014) and implications for entrepreneurial behavior and success (Korber & McNaughton, 2018). Although resilience generally strengthens the capacity to overcome challenges and adapt to changes (Ayala and Manzano 2014; Saridakis et al. 2013), some studies prove that this trait might not always have a positive impact (Martin and Sunley, 2015; Beaver and Jennings, 2005; Holm and Østergaard ,2015). These studies suggest that overly resilient entrepreneurs might stick too long to failing strategies or outdated business models, limiting their ability to adapt and innovate. For this reason, achieving a balance between resilience and adaptability is fundamental for entrepreneurs to increase their chances of success.

1.2 What we don't know

- **Empirical evidence on resilience and strategic reactiveness:** The current literature presents contrasting perspectives on the role of resilience in influencing strategic reactiveness and flexibility within entrepreneurial ventures. This duality indicates a gap in empirical evidence and theoretical frameworks. Frameworks clarifying the mechanisms linking entrepreneurial resilience to business performance and the conditions under which resilience influences strategic reactiveness. This influence is especially measured in terms of firms' speed of adaptation in response to changing market conditions. Exploring this topic is not only academically valuable but also essential for defining actionable strategies. These strategies leverage resilience for successful entrepreneurial

adaptation. By building our understanding on empirical research, we can uncover the nuanced interplay between resilience and strategic reactiveness. This provides a foundation for developing theories and practices that enhance entrepreneurial success in the face of adversity.

- **Interactions between entrepreneurial resilience and strategic reactiveness:** The importance of entrepreneurial and strategic reactiveness as stand-alone constructs in the success stories of entrepreneurs is widely recognized (Andries et al., 2013; Forbes, 2005; Ayala and Manzano, 2014). However, the interactive effects between these two constructs, remains largely unexplored. This highlights the need for further research in this area. Exploring this interaction will reveal the dynamics between psychological resilience and strategic management. This research is essential for understanding how resilience and strategic reactiveness guide entrepreneurs through volatile markets. By examining this synergy, we aim to enrich the entrepreneurial literature with a nuanced understanding that supports in the development of effective entrepreneurial strategies.
- **Understanding the impact of strategic reactiveness and entrepreneurial resilience on business outcomes:** The individual impacts on business outcomes of both strategic reactiveness (Andries et al., 2013) and entrepreneurial resilience (Ayala and Manzano, 2014) have been researched. However, there is a noteworthy lack of empirical research that examines how these two constructs together influence business outcomes. Existing literature treats these constructs in isolation and neglects the potential synergistic effects they could have on an enterprise's success. Understanding this interaction could provide fundamental insights into how resilience and strategic reactiveness together shape strategic decisions that drive business growth and sustainability. Addressing this gap would enhance our knowledge of entrepreneurial behavior. It would also guide the development of more integrated strategies for promoting resilience and strategic reactiveness in dynamic markets.

1.3 Importance of addressing this knowledge gap

- **Insight into the knowledge gap:** This study explores the interplay between strategic reactiveness and entrepreneurial resilience. It proposes that strategic reactiveness can enhance the effectiveness of resilience in improving business performance. By examining their direct relationship, we seek to provide a clearer path for applying these insights to practical strategy formulation. This approach addresses an important academic and practical gap by investigating

how entrepreneurial resilience when combined with strategic reactiveness, can potentially improve the adaptability and sustainability of startups.

- **Theoretical and practical contributions:** Bridging this gap enriches entrepreneurship studies by integrating psychological resilience with strategic management. This integration provides a nuanced view of entrepreneurial success and offers actionable insights for developing resilience-based strategic interventions. It advances both the theoretical understanding and the practical applications of entrepreneurship.
- **Implications for stakeholders:** This study aims to highlight the potential benefits of integrating resilience training with strategic planning. The interaction between entrepreneurial resilience and strategic reactiveness suggests that this integration could improve firms' competitiveness. By enhancing resilience capabilities, businesses might achieve better strategic responses in volatile markets. This approach is vital for entrepreneurs, policymakers, and educators who contribute to promoting a resilient entrepreneurial ecosystem.

The purpose of this dissertation is to explore two key constructs: entrepreneurial resilience and strategic reactiveness. This study aims to provide a detailed understanding of these concepts and examine their roles in today's rapidly evolving business environment. The research question guiding this study is: "How does entrepreneurial resilience influence strategic reactiveness, and how does this relationship impact business outcomes, as measured by the speed and extent of adjustments in response to market changes?"

2 Literature Review

2.1 Entrepreneurial Resilience

Resilience, deeply rooted in the psychological literature, has evolved from being seen as an exceptional trait to a commonly achievable state. This state enables stable functioning despite setbacks (Bonanno, 2012; Luthans et al., 2006). Initially observed in children overcoming adversity, the concept of resilience has been expanded to adults. It is now recognized as a dynamic ability that can be developed, rather than a static trait (Luthans et al., 2006).

Extending this psychological background to entrepreneurship creates the concept of entrepreneurial resilience. Despite attempts to clarify its relationship with constructs such as adaptability and vulnerability, the boundaries remain somewhat unclear (Luthar et al. 2000; Walker et al., 2004). Within entrepreneurship research, resilience is increasingly associated with the performance and sustainability of entrepreneurial ventures and individuals (Duchek, 2018; Ayala and Manzano 2014). It is often used interchangeably with persistence, preparedness, and self-efficacy (Bullough et al., 2014; Reinmoeller and Van Baardwijk, 2005).

There are six main conversations in the current literature on entrepreneurial resilience, each with its own focus (Korber & McNaughton, 2018). These conversations cover the antecedents of entrepreneurial resilience, its role in fostering entrepreneurial intentions, and its influence on organizational, regional, and economic resilience (Biggs et al., 2010; Bullough et al., 2014; Dewald and Bowen, 2010). The literature suggests that entrepreneurial resilience is an intrinsic trait that enables entrepreneurs to better cope with crises and setbacks. It is often linked to positive economic outcomes such as business survival and performance (Ayala and Manzano, 2014; Saridakis et al., 2013).

However, the current findings on entrepreneurial resilience have been criticized for their limited conceptualization and lack of temporal analysis. Resilience is often measured at a single point in time, which does not reflect its progression over time (Bonanno, 2004; Bonanno et al., 2011). This limitation ignores the process-oriented and dynamic nature of resilience, as it responds to various challenges, including business failure and other disruptions (Hayward et al., 2010).

Further critiques address the overly positive framing of resilience. This often leads to the neglect of its potential negative effects. These negative aspects include the persistence of undesirable or unsustainable states (Martin and Sunley, 2015). Other negative consequences can arise from the irrational, selfish, and egotistic behavior of entrepreneurs (Beaver and Jennings, 2005). The common assumption that all forms of entrepreneurship contribute positively to resilience also requires further investigation. This assumption may not account for the diversity in entrepreneurial activities and their varied impact at different system levels (Holm and Østergaard, 2015).

In a holistic conceptualization, entrepreneurial resilience can be defined as a multi-level dynamic ability that enables entrepreneurs to anticipate, prepare for, respond to, and transform in the face of adversity (Mamouni Limnios et al., 2014). This definition recognizes resilience as both offense (adaptation) and defense (resistance) to internal or external disturbances. It highlights the role of entrepreneurial action in shaping positive trajectories.

Unlike sustainability, resilience can be desirable or undesirable (Mamouni Limnios et al., 2014). Entrepreneurial resilience is viewed as a learning process enriched by experiences gained over time. This process is not characterized by sudden, dramatic insights but by the steady integration of entrepreneurial learning and practical experiences (Duchek, 2017). Often, these experiences initially seem like "silly mistakes," but they are valuable lessons that contribute significantly to future success (Reuber and Fischer, 1994).

Entrepreneurial resilience transcends mere surviving. It represents a proactive mindset that embraces continuous learning and innovation. This approach is essential for effectively adapting to change within socio-ecological systems (Westley et al., 2011). It involves understanding and using resilience in entrepreneurial actions and outcomes. This includes considering the interactions between entrepreneurs, their organizations, and the broader socioeconomic and ecological environment.

2.2 Strategic Reactiveness

Entrepreneurial firms often face significant uncertainty and vulnerability. This is because entrepreneurial activity is inherently speculative (Bhidé, 2000; McGrath and MacMillan, 1995). These firms commonly experience strategic "missteps" where the intended outcome is not achieved. This can occur due to factors like unanticipated competitive response, miscalculated market demand, or underestimation of competition. When a misstep occurs, a firm must realign its strategies with the realities of its environment. This realignment happens through strategic reactiveness (Green et al., 2008).

Strategic reactiveness can thus be described as a corrective mechanism for entrepreneurial firms. It addresses the intrinsic risks of their businesses, such as market unpredictability, intense competition, and the high likelihood of strategic misalignments due to the speculative nature of their business models.

Strategic reactiveness is a multifaceted concept that has been thoroughly explored in the literature. It can be achieved through multiple yet connected means. To ensure a coherent connection between the conceptual understanding and the operationalization of strategic reactiveness, it is important to identify the components within this framework.

Components of strategic reactiveness

Strategic reactiveness in entrepreneurial firms refers to the agility and adaptability that allow these ventures to adjust their strategies to cope with market uncertainties (Green et al., 2008). This adaptability is characterized by two main subdimensions: simultaneous experimentation and decision-making speed.

Simultaneous experimentation, as a learning strategy (Andries et al., 2013), involves adopting a portfolio approach to business models instead of a singular, focused commitment. This approach allows ventures to explore and test multiple business models simultaneously. As market conditions change, ventures can pivot or shift resources between different models. This emphasizes iterative learning and adaptation in uncertain and dynamic environments. While this might initially result in slower growth compared to a focused approach, it significantly improves long-term survival prospects by introducing versatility in the face of market volatilities (Andries et al., 2013).

Decision-making speed is the second component of strategic reactiveness. Baum and Wally (2003) illustrate the link between fast strategic decision-making and superior firm performance, particularly in growth and profitability. Fast decision-making enables firms to quickly capitalize on emerging opportunities, adopt new technologies, or modify business models in response to evolving market conditions. This speed is partly influenced by individual managerial characteristics (Forbes, 2005). Structural organicity, referring to the flexibility of an organization's structure, also plays a role. More organic structures support quick and intuitive decision-making, which is crucial in high-speed environments where opportunities are transient. However, fast decision-making must be balanced with thorough information gathering and processing. Quick decisions should not lead to poorly informed choices, as described in the "speed trap" (Perlow, Okhuysen, and Repenning, 2002). In more stable environments, a thorough and integrative decision-making process might be more favorable. Effective reactiveness involves making quick, well-informed decisions that are aligned with the stability and predictability of the market environment.

Strategic reactiveness is crucial for entrepreneurial agility but carries a spectrum of consequences. Positive outcomes include the ability to capitalize on emerging opportunities, adapt to market shifts effectively, and maintain a competitive advantage. These proactive actions often lead to enhanced firm performance, reflected in growth, market share, and innovation (Stevenson and Gumpert, 1985; Makadok, 1998). However, excessive or misaligned reactiveness can result in strategic overextension, resource depletion, or misallocation, potentially destabilizing the firm. Therefore, while strategic reactiveness can be pivotal for navigating the volatile entrepreneurial landscape, it must be carefully balanced.

Operationalization of strategic reactiveness

To operationalize strategic reactiveness, the goal is to capture the agility and adaptability of a venture using a comprehensive metric. Strategic reactiveness consists of simultaneous experimentation and decision-making speed. Both components play crucial roles in how ventures modify their strategies in response to market dynamics.

Simultaneous experimentation refers to the firm's ability to explore multiple business models concurrently. This allows for rapid adaptation based on iterative learning from market feedback. It

emphasizes flexibility, enabling firms to pivot between different approaches as market conditions change, fostering agility.

Decision-making speed focuses on the firm's capacity to make swift, yet strategic decisions. This speed is crucial in capturing emerging opportunities and adapting to evolving environments. Structural organicity within the organization can enhance or impede this speed, impacting how quickly firms capitalize on opportunities or respond to threats.

To measure strategic reactiveness, we assessed the timing and frequency of adjustments made to business plans during the COVID-19 pandemic. This method captures the agility and adaptability of the firms. It offers a practical perspective for quantifying and analyzing simultaneous experimentation and decision-making speed.

2.3 Conceptualization and hypotheses

This section presents the theoretical foundation and the hypotheses guiding this research. The conceptual models aim to explore the intricate relationships between entrepreneurial resilience, strategic reactiveness, and business outcomes. The hypotheses are listed below.

- The positive association between entrepreneurial resilience and strategic reactiveness (H1).
- The mediating role of strategic reactiveness in the relationship between entrepreneurial resilience and business outcomes (H2).
- The moderating effect of previous entrepreneurial experience on the relationship between entrepreneurial resilience and strategic reactiveness (H3).

By systematically examining these hypotheses, the study seeks to uncover the mechanisms through which resilience and reactiveness contribute to entrepreneurial success, offering deeper insights into the dynamic nature of entrepreneurship.

2.3.1 Hypothesis 1: Entrepreneurial resilience and strategic reactiveness

H1: Entrepreneurial resilience is positively associated with strategic reactiveness, such that higher levels of resilience will lead to greater strategic reactiveness in firms.

The argument for hypothesis 1 stems from the conceptual foundation of entrepreneurial resilience, which includes the ability to withstand, adapt to, and recover from setbacks (Ayala & Manzano, 2014). This ability inherently suggests a dynamic capacity not only to survive but also to proactively adjust in response to external challenges (Korber & McNaughton, 2018). The agility and adaptability inherent in strategic reactiveness require a foundation of resilience. Resilient firms are better able to recognize the need for change, evaluate strategic alternatives, and implement new directions quickly and effectively (Ayala & Manzano, 2014).

Resilience provides entrepreneurs with the psychological readiness to remain optimistic and motivated in the face of adversity. It fosters a mindset that embraces challenges and learns from failures. Resilience also offers the operational readiness needed to reconfigure resources, streamline processes, and realign strategies to swiftly respond to market changes (Rose, 2007). Thus, the positive association between entrepreneurial resilience and strategic reactiveness can be understood through the lens of dynamic capability theory. This theory posits that the ability to reconfigure resources and activities in response to changing market conditions is a crucial determinant of competitive advantage (Teece, Pisano, & Shuen, 1997).

In essence, resilience equips entrepreneurs with the psychological and operational readiness to respond strategically. It a cornerstone of adaptive and flexible strategy formulation in the volatile entrepreneurial landscape. Hence, we argue that greater entrepreneurial resilience enhances strategic reactiveness. This enables firms to adapt more effectively to changes and ultimately improve their competitive advantage.

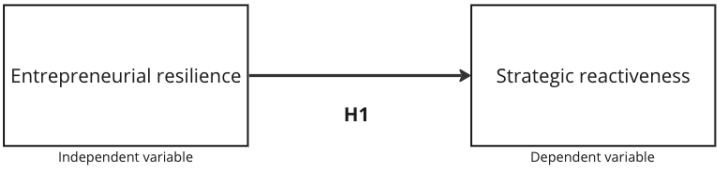

Figure 1: Hypothesized relationship between entrepreneurial resilience and strategic reactiveness

2.3.2 Hypothesis 2: The mediating role of strategic reactiveness

H2: Strategic reactiveness mediates the relationship between entrepreneurial resilience and business performance, with higher resilience levels leading to improved business performance through enhanced strategic reactiveness.

This hypothesis suggests that strategic reactiveness acts as a channel through which entrepreneurial resilience impacts business outcomes. While resilience helps entrepreneurs endure and overcome adversity, it does not directly lead to business success. Instead, the application of resilience in making strategic adjustments is what translates into tangible business results (Martin & Sunley, 2015).

For instance, a resilient entrepreneur may recover quickly from setbacks. However, without the ability to respond strategically, such as refocusing the business model or exploring new market opportunities, resilience may not lead to business growth or sustainability. Therefore, strategic reactiveness embodies the practical application of resilience. It serves as the mechanism by which resilience influences business outcomes.

Empirical studies can further illustrate this mediating role by linking strategic reactiveness to business performance. Specifically, they can show how decision-making speed and simultaneous experimentation contribute to business success. Decision-making speed enables firms to adapt swiftly to changing environments and seize opportunities (Baum and Wally, 2003). Simultaneous experimentation allows firms to explore multiple business models concurrently, enhancing agility and adaptability in uncertain conditions (Andries et al., 2013). These components of strategic reactiveness are crucial for leveraging resilience to achieve positive business outcomes.

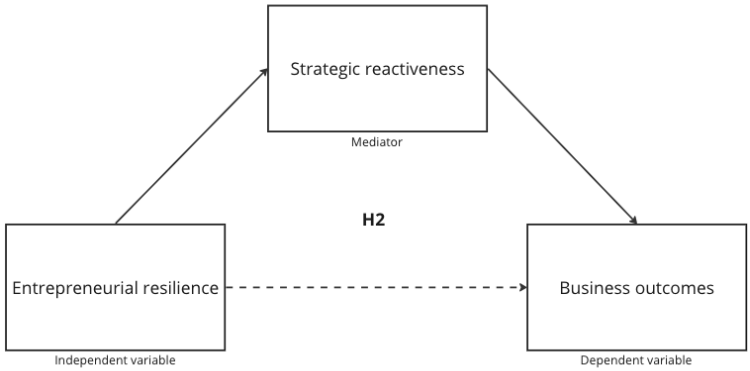

Figure 2: Hypothesized mediation of strategic reactiveness in the relationship between entrepreneurial resilience and business outcomes

2.3.3 Hypothesis 3: The role of previous entrepreneurial experience

H3: Previous entrepreneurial experience strengthens the relationship between entrepreneurial resilience and strategic reactiveness. More experienced entrepreneurs are better equipped to leverage their resilience to adopt strategic responses to challenges.

This hypothesis suggests that entrepreneurs with extensive experience in the entrepreneurial landscape, are better at using their resilience to develop strategic responses to challenges. The amplifying effect of prior entrepreneurial experience can be understood through the lens of experiential learning theory (Kolb, 1984).

Experienced entrepreneurs, who have endured the ups and downs of business ventures, possess a richer repertoire of tacit knowledge and skills. This experience enhances their resilience not only in weathering difficulties but also in using these experiences for strategic decision-making and adaptation (Ucbasaran, Westhead, & Wright, 2009).

Experienced entrepreneurs are more adept at recognizing signals for change. They can evaluate the implications of these changes and efficiently implement strategic shifts. Previous entrepreneurial experience enriches the link between resilience and responsiveness. It provides a practical framework that translates resilience into strategic action, increasing the effectiveness and speed of strategic responses to market dynamics and challenges.

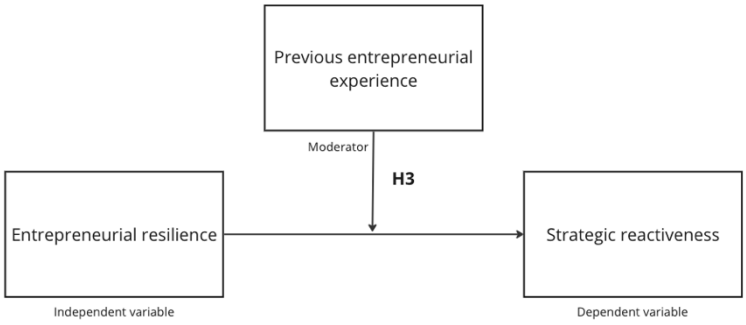

Figure 3: Hypothesized relationship between previous entrepreneurial experience, entrepreneurial resilience, and strategic reactiveness

To provide a comprehensive understanding of the relationships among the key constructs in this study, the following conceptual model integrates the hypotheses explored. This model illustrates how entrepreneurial resilience influences strategic reactiveness, which in turn impacts business outcomes. Furthermore, it highlights the moderating role of previous entrepreneurial experience in enhancing the relationship between entrepreneurial resilience and strategic reactiveness. This integrative approach allows for a holistic examination of the dynamic interplay between resilience, strategic adaptability, and business performance, offering valuable insights into the mechanisms driving entrepreneurial success

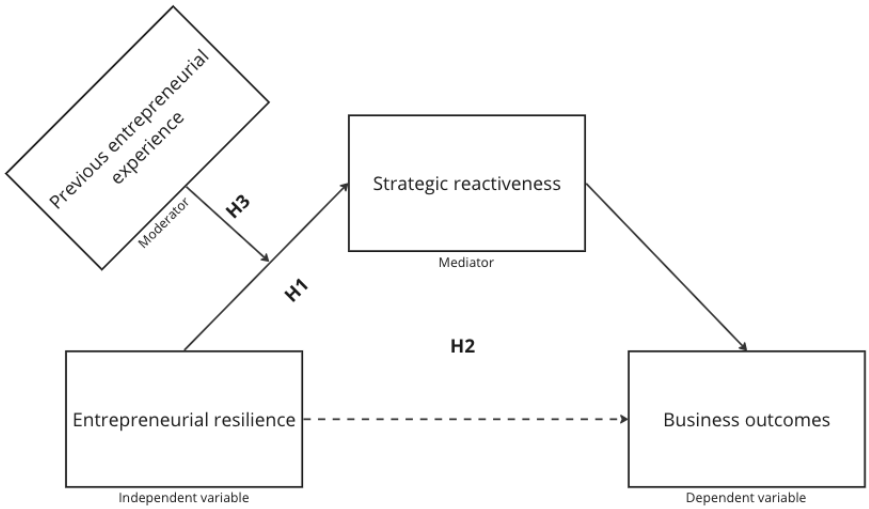

Figure 4: Integrated conceptual model of entrepreneurial resilience, strategic reactiveness, and business outcomes

3 Empirical Research

3.1 Data collection

Sample and sampling criteria

This study focused on a sample of Flemish startups, selected based on three specific criteria:

1. **Firm age:** Startups between 1 and 3 years old at the time of the survey, established between 2017 and 2019.
2. **Independence:** The firms must be independent, indicating they are not subsidiaries or branches of larger companies.
3. **Industry:** The startups must be active in low, medium, and high-tech industries.

Data collection process

The data was collected through an email survey conducted during the summer of 2020. This method was chosen to efficiently reach a large number of firms and ensure a broad representation of the targeted industries and firm ages.

- **Initial contact:** 3376 startups were contacted via email.
- **Responses received:** 663 responses were collected

To refine the sample, the following steps were taken:

- **Non-compliant startups:** 33 responses were excluded as they did not meet the criteria for firm age or independence. These criteria were validated using filter questions at the beginning of the survey.
- **Incomplete surveys:** 353 responses were excluded due to missing data in key variables such as profit/loss, revenue, resilience measures, and strategic reactiveness measures.

After these exclusions, the remaining sample consisted of 277 startups. This corresponds to a full response rate of 8.20% The most common missing values are depicted in the figure below:

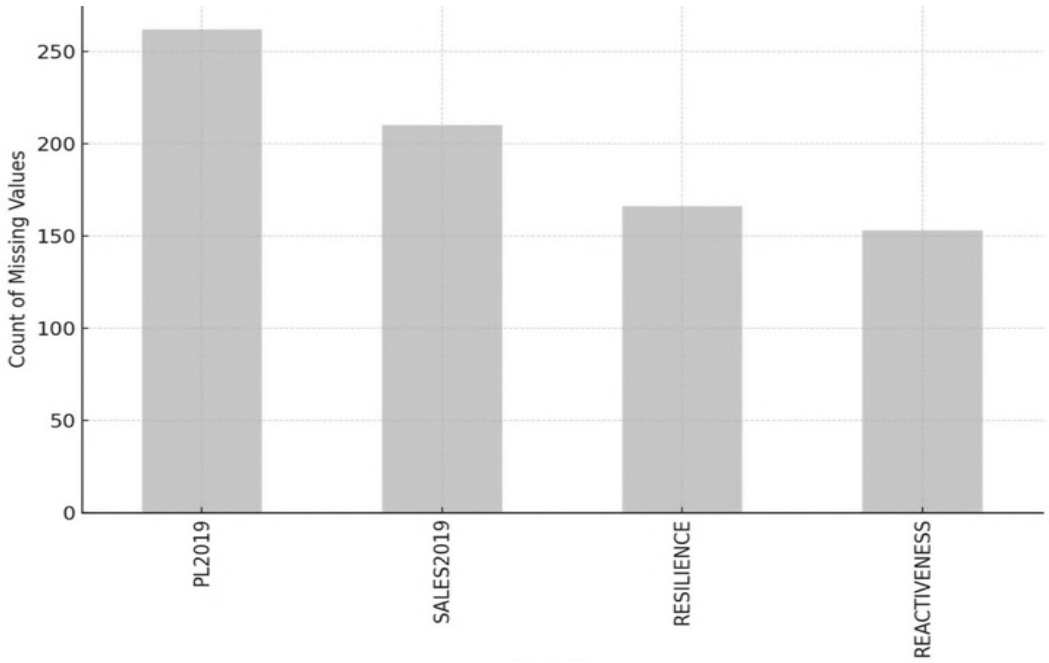

Figure 5: Distribution of missing data across key variables

The final sample provides a robust dataset for analyzing the entrepreneurial resilience and strategic reactiveness of Flemish startups across various industries. The cleaning process ensures the reliability of the data. To further enhance the robustness and validity of our findings, we supplemented our survey data with financial data from the Orbis database. Profit was the most available metric on Orbis, since firms disclosed very little financial data to this database. So only profit was used for conducting our robustness analysis. Additionally, we collected NACE codes for each enterprise from the database to categorize them into industries.

Data analysis was performed using R (https://cran.r-project.org/), version 4.0.3 (R Development Core Team 2020) in RStudio, version 1.3.1093. The packages utilized in this analysis included 'dplyr', version 1.0.2 (Wickham et al. 2020), for data manipulation; 'stargazer', version 5.2.3 (Hlavac 2022), for creating well-formatted regression and summary statistics tables; and 'mediation', version 4.5.0 (Tingley et al. 2014), for assessing causal mediation effects. These tools collectively facilitated the robust analysis of the collected data.

3.2 Variables

3.2.1 Dependent variable: Business outcomes

Overview: Business outcomes are evaluated through metrics such as revenue, profit/loss, customer satisfaction, growth, and company survival. These variables are essential in assessing a business's financial health and operational efficiency. By examining these variables separately, we aim to provide a comprehensive assessment of a company's overall success.

1. **Firm performance:**

   Definition and importance: Firm performance, measured by revenue and profit/loss, is essential in assessing the financial health of a business. These metrics help us understand how business translates into financial results. This provides us with a direct measure of economic success.

   Operationalization:

   - **Survey questions:**
     - "What was the revenue (in EUR) for 2019?" {SALES2019}.
     - "Did your company make a profit or a loss in 2019?" {PL2019_D).
     - "Please specify how much profit (before taxes) your company made in 2019." {PL2019}.

   In addition to these survey-derived measures, the study uses the Orbis database to obtain additional records on profit/loss. This approach helps to assess the accuracy of the financial performance data.

   Relevance to research: Analyzing firm performance provides empirical evidence on how strategic decisions impact financial outcomes. Following the frameworks by Dewald and Bowen (2010), this research explores the relationship between entrepreneurial strategies and their effectiveness in achieving financial growth and stability.

2. **Growth rate**

Definition and importance: Growth, indicated by changes in full-time equivalent (FTE) employees, reflects a company's ability and aspiration to scale operations. It also indicates the firm's capacity to manage and utilize human resources to meet expanding market demands.

Operationalization:

- **Survey questions:**
  - **"**How many employees (in full-time equivalents), including the owners, did the company employ in 2019? Please also include temporary workers, leased personnel, and subcontractors who work exclusively for your company." {FTE2019}.
  - "How many employees (in full-time equivalents), including the owners, do you expect will be working for this company in five years? Please also include temporary workers, leased personnel, and subcontractors who work exclusively for your company." {FTEGROWTH}.

Growth rate calculations:

To analyze growth, the Projected Growth Rate is calculated as:

$$Projected\ Growth\ Rate = \frac{FTEGROWTH - FTE2019}{FTE2019}$$

This metric predicts the expected increase in workforce over the next five years, providing a forward-looking measure of organizational growth.

Relevance to research: Studying growth offers insights into how effectively businesses can scale in response to strategic initiatives. This variable's investigation, grounded in the theoretical contributions of Mole et al. (2009), explores the correlation between resource allocation strategies and subsequent organizational expansion.

3. **Customer satisfaction**

Definition and importance: Customer satisfaction measures the extent to which a firm's offerings meet or exceed the market's expectations. It is a vital indicator of product or service quality and a predictor of future business performance, influencing customer loyalty and market share.

Operationalization:

- **Survey questions:**
    - "How did all of your potential customers, some of your potential customers, or none of your potential customers consider your products or services to be new or exceptional at the end of 2019?" {OMNEWCST}

The responses are scored to reflect varying levels of satisfaction, resulting in the {CUSTOMERSAT} variable:

- All customers - Score 3 (high satisfaction)
- Some customers - Score 2
- Do not know - Score 1
- No customer - Score 0

Relevance to research: This study examines how customer satisfaction reflects the success of customer relationship management and product innovation efforts. Building on findings from Anderson and Sullivan (1993), the research assesses how customer perceptions impact business outcomes.

4. **Survival status**

Definition and importance: An essential aspect of evaluating business performance in this study involves assessing the ongoing viability of the firms surveyed. This involves insights in the long-term sustainability of firms.

Operationalization:

- Derived from the Orbis database, this binary variable indicates whether a firm is operational several years post-survey.
    - '1' indicates active
    - '0' indicates inactive

3.2.2 Independent variable: Entrepreneurial resilience

Definition and importance: Entrepreneurial resilience reflects an entrepreneur's capacity to adapt to challenges, focusing on aspects like stress management and resilience during tough times. The ability to manage stress and bounce back from adversity is critical for sustaining entrepreneurial efforts under pressure (Bonanno, 2012; Luthans et al., 2006).

Operationalization:

- **Survey questions:** Entrepreneurial resilience was assessed using a set of self-reported questions where respondents rated their agreement on a 1-7 Likert scale:
    - "In my professional life, I can manage well if necessary." {RES1_2020}
    - "Overall, I can handle stressful situations in my professional life." {RES2_2020}
    - "I can handle difficult times in my professional life because I have experienced difficulties before." {RES3_2020}
- **Scoring:** Respondent's scores on these items are averaged to derive a final resilience score on a scale of 7 {RESILIENCE}

$$\frac{RES1_{2020} + RES2_{2020} + RES3_{2020}}{3} = RESILIENCE$$

Relevance to research: This measurement approach aligns with the methodologies used in prior research, such as studies by Connor and Davidson (2003) and Korber and McNaughton (2018), which underscore the significance of resilience in entrepreneurial success. By quantifying resilience through an average score, we capture the entrepreneur's capability to endure and manage professional challenges.

3.2.3 Independent variable/mediator: Strategic reactiveness

Definition and importance: Strategic Reactiveness refers to the firm's capability to rapidly adapt its strategies in response to market dynamics. For firms to maintain their competitiveness, it is crucial to be able to adapt quickly (Green et al., 2008).

Operationalization:

- **Survey questions and scoring:**
    - "Did you have to adjust your business plans due to the Covid-19 pandemic?" {REACT1_2020} This binary question identifies if the firm made any initial

adjustments, with 'Yes' leading to a next question and 'No' scored as 0, indicating no reactiveness.

- "When during the Covid-19 pandemic did you start changing your business plans or developing alternative plans?" {REACT2_2020} Options for responses are:

  Before January 2020 – Score 8

  In January 2020 – Score 7

  In February 2020 – Score 6

  In the first half of March 2020 – Score 5

  In the second half of March 2020 – Score 4

  In April 2020 – Score 3

  In May 2020 – Score 2

  In June 2020 – Score 1

The responses are used to form the {REACTIVENESS} variable, which quantitatively reflects the firm's strategic reactiveness to the pandemic. Higher scores indicate quicker and more proactive adjustments.

Relevance to research: Strategic reactiveness is a crucial concept based on insights from prior studies by e.g. Green et al. (2008) and Andries et al. (2013), which emphasize the importance of a firm's responsiveness to market dynamics. This study operationalizes strategic reactiveness by evaluating how firms adjusted their strategies during the Covid-19 pandemic—a significant market event testing the adaptability and resilience of businesses worldwide.

By integrating theory with practical application during the pandemic, this research demonstrates the crucial role of strategic reactiveness. It highlights how being responsive and adaptable is essential for keeping a competitive advantage in uncertain times.

3.2.4 Moderator: Previous entrepreneurial experience

Definition and importance: Entrepreneurial experience includes the backgrounds of both founders and their teams. It highlights the significance of their prior business endeavors, work history, and domain-specific knowledge. This collective approach, based on Ucbasaran et al. (2009) and Gruber, MacMillan, & Thompson (2012), emphasizes how individual and team experiences collectively shape strategic decision-making capabilities.

Operationalization:

- **Survey questions:**

Previous entrepreneurial experience

- "Had you founded another enterprise before starting this company?" {ENTREXPFDR_SU_D}
- "Had any of the founders previously started another business?" {ENTREXPTEAM_SU_D}

Description: These binary variables (Yes=1/No=0) measure prior entrepreneurial activities. The variable {ENTREXP} is set to 1 if any of these is positive; otherwise, it is 0.

Years of work experience

- **"**How many years of work experience (as an employee or self-employed) did you have when you founded this company?" {EXPFDR_SU}
- "How many years of work experience (as an employee or self-employed) did the founders have collectively at the time of founding?" {EXPTEAM_SU}

Description: Following Gruber, MacMillan, & Thompson (2012), the years are averaged per founder/team member to compute the {WORKEXP} variable, providing a measure of accumulated business acumen.

Domain-specific expertise

Participants rated their and their teams' expertise in management, marketing, and technology on a 1-7 Likert scale.

- Management experience {MGTEXPFDR_SU}
- Marketing experience {MKTEXPFDR_SU}
- Technological experience {TECHEXPFDR_SU}
- Management experience {MGTEXPTEAM_SU}

- Marketing experience {MKTEXPTEAM_SU}
- Technological experience {TECHEXPTEAM_SU}

Description: To calculate the {DOMEXP} variable, we averaged scores for each domain (management, marketing, and technology). For teams, we first averaged the scores from all team members for each domain. For solo entrepreneurs, we used their individual scores directly. Then, we combined and averaged these domain scores to create a composite {DOMEXP} score.

$$DOMEXP = \frac{MANAGEMENT\ SCORE + MARKETING\ SCORE + TECHNOLOGICAL\ SCORE}{3}$$

Relevance to research: This structured approach to evaluating entrepreneurial experience provides insight into how the interplay between individual capabilities and collective experiences influences business strategy and operational efficacy. It is particularly relevant in contexts where the ability to identify and exploit market opportunities is critical, aligning with Gruber et al.'s (2012) findings on the impact of human capital on market opportunity identification.

3.2.5 Control variables: Industry and firm characteristics

This section outlines the control variables related to industry and firm characteristics, including the company's age, size in terms of full-time equivalent (FTE) employees, and industry classification. These variables are needed to analyze the impacts on entrepreneurial outcomes, following methodologies established in prior studies by Green et al. (2008) and Fryges, Kohn, and Ullrich (2015).

1. **Age of the company {AGE_COMPANY}**
    - **Survey question:** "When was the company founded?" {YEAROFFOUNDATION}
    - **Operationalization:** The age of the company is calculated by subtracting the year of foundation from 2020, the survey year.

2. **Size of the company {SIZE_FTE}**
    - **Survey question:** ""How many employees (in full-time equivalents), including the owners, did the company employ in 2019?" {FTE2019}.
3. **Industry {SECTOR_D}**
    - **Source:** Industry classification is derived from NACE codes obtained from the Orbis database, using the enterprise number to identify the specific sector.
    - **Operationalization**: The NACE codes are then transformed into dummy variables as per the table below. Each sector is represented as a dummy variable (SECTOR_D). A value of 1 indicates the company's presence in that sector, and 0 indicates its absence.

This methodology is inspired by Fryges, H., Kohn, K., & Ullrich, K. (2015), and updated using Eurostat data.

Table 1: Industry classification based on NACE REV. 2 codes

Sector	NACE Rev. 2 Codes
Manufacturing	1052-3311
Construction	4120-4399
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	4511-4799
Transport and Storage	4932-5229, 7490
Accommodation and Food Service Activities	5610-5621
Information and Communication	5819-6399
Financial and Insurance Activities	6619-6622
Real Estate Activities	6810-6831, 7729
Professional, Scientific and Technical Activities	6910-7420
Administrative and Support Service Activities	8122-8299
Education	8551-8559
Human Health and Social Work Activities	8690
Arts, Entertainment and Recreation	9001-9329
Other Service Activities	9529-9609

3.2.6 Control variables: Entrepreneurial characteristics

Information on the entrepreneur's age, sex, educational level, and employment status at the time of founding the business is included to account for individual differences that could influence resilience and strategic reactiveness. This data was collected through the survey, following the operationalization approach used in studies like Ayala and Manzano (2014). The specific survey questions used to gather this information are

1. **Age of the entrepreneur/ the founding team (AGE_SU)**:
    - **Survey question**: "
        - How old were you when you founded this company?" {AGEFDR_SU}
        - “What was the average age of the founding members of the team when this company was founded?” {AGETEAM_SU}
    - **Operationalization**:
        - Single founder: Age of the entrepreneur at the time of founding.
        - Team of entrepreneurs: Average age of the team members at the time of founding.
2. **Sex of the entrepreneur (GENDER_D)**:
    - **Survey question**:
        - "What is your sex?" {GENDERFDR}
        - “How many people were in the founding team at the time of establishment (including yourself)? The founding team consisted of ... {MEN_SU} men and … {WOMEN_SU} women.”
    - **Operationalization**:
        - Single founder: Sex of the entrepreneur (1 for male, 0 for female).
        - Team of entrepreneurs: 1 if the team includes at least one male entrepreneur, 0 otherwise.

3. **Educational level of the entrepreneur/the founding team (EDUCATION)**:

- **Survey question**:

  - "What was the highest level of education you had achieved when you founded this company?" {EDUCFDR_SU},

  - “What was the highest level of education that at least one of the founders had attained at the time of establishment?” {EDUCTEAM_SU}, with options ranging from:

    No formal education (0)

    Primary education (1)

    Secondary education (2)

    Post-secondary non-tertiary education (3)

    Bachelor’s degree (4)

    Master’s degree (5)

    Doctoral or equivalent (6)

- **Operationalization**:

  - Single founder: Highest educational level achieved by the entrepreneur.

  - Team of entrepreneurs: Highest educational level achieved by any member of the team.

These survey items collectively provide a detailed profile of the entrepreneur, enabling an analysis of how demographic and educational backgrounds impact the strategic and operational dynamics of their enterprises.

The following table provides a summary of all the variables gathered through the survey.

Table 2: Overview of all variables

VARIABLE	TYPE	DESCRIPTION	SOURCE
BUSINESS OUTCOMES	Dependent	Measures firm performance through revenue, profit/loss, growth metrics and customer satisfaction.	Survey: SALES2019, PL2019, PL2019_D, OMNEWCS, FTE_SU, FTE2019, FTEGROWTH Orbis: Profit/loss statements
ENTREPRENEURIAL RESILIENCE	Independent	Assesses the entrepreneur's ability to withstand, adapt to, and recover from setbacks.	Survey: RES1_2020, RES2_2020, RES3_2020
STRATEGIC REACTIVENESS	Mediator	Measures the agility and adaptability of a firm through changes in the business model.	Survey: REACT1_2020, REACT2_2020
ENTREPRENEURIAL EXPERIENCE	Moderator	Evaluates the prior experience of the entrepreneur/ the founding team.	Survey: ENTREXPFDR_SU_D, EXPFDR_SU, MGTEXPFDR_SU, MKTEXPFDR_SU, TECHEXPFDR_SU, ENTREXPTEAM_SU_D, EXPTEAM_SU, MGTEXP_TEAM_2019, MKTEXP_TEAM_2019, TECHEXP_TEAM_2019
INDUSTRTY AND FIRM CHARACTERISTICS	Control	Considers variables such as firm age, industry type, and FTE's, these may influence business outcomes.	Survey: TE2019, YEAROFFOUNDATION Orbis: NACE codes
ENTREPRENEUR CHARACTERISTICS	Control	Includes variables like gender, age, and education of the entrepreneur/ the founding team.	Survey: GEFDR_SU, AGETEAM_SU, EDUCFDR_SU, EDUCTEAM_SU, GENDER, MEN_SU

3.3 Descriptive statistics

The descriptive statistics summarize the main variables used in this study, providing basic information about their averages, spread, and general distribution. This summary helps in understanding the data and in making initial assessments about possible relationships between the variables.

Table 3: Descriptive statistics for all variables

Variable	Min	1st Qu.	Median	Mean	3rd Qu.	Max	Std dev
SALES2019	0	1994,25	7047	33973,6	35000	668144	71699,48
PL2019	-50000	0	1250	8114,35	10000	150000	18475,27
CUSTOMERSAT	0	0	1	1,350	2	3	1,02
PROJECTEDGROWTH	-0,5	0	0	1,08	1	49	3,57
SURVIVAL_D	0	0	1	0,71	1	1	0,45
RESILIENCE	1,67	4,67	5,33	5,23	6	7	1,03
REACTIVENESS	0	0	0	1,96	4	8	2,32
ENTREXP	0	0	0	0,23	0	1	0,42
WORKEXP	0	3	10	12,11	20	45	10,46
DOMEXP	1	3,67	4,50	4,42	5	7	1,07
AGE_COMPANY	1	1	1	1,04	1	3	0,22
SIZE_FTE	0,1	1	1	1,21	1	7	0,90
AGE_SU	18	26	32	34,48	41	65	10,62
EDUCATION	0	3	4	3,76	5	6	1,29
GENDER_D	0	1	1	0,76	1	1	0,43
MANUFACTURING_D	0	0	0	0,05	0	1	0,22
CONSTRUCTION_D	0	0	0	0,08	0	1	0,27
WHOLESALE_D	0	0	0	0,08	0	1	0,27
TRANSPORT_D	0	0	0	0,02	0	1	0,13
ACCOMODATION_D	0	0	0	0,02	0	1	0,13
INFORMATION_D	0	0	0	0,32	1	1	0,47
INSURANCE_D	0	0	0	0,01	0	1	0,08
REALESTATE_D	0	0	0	0,01	0	1	0,12
PROFESSIONAL_D	0	0	0	0,27	1	1	0,45
ADMINISTRATIVE_D	0	0	0	0,04	0	1	0,19
EDUCATION_D	0	0	0	0,05	0	1	0,21
HUMANHEALTH_D	0	0	0	0,00	0	1	0,06
ARTS_D	0	0	0	0,03	0	1	0,18
OTHER_D	0	0	0	0,03	0	1	0,17

To further explore the relationships between variables, a correlation analysis was conducted. The correlation matrix presents Pearson correlation coefficients, which range from -1 to 1. These coefficients indicate the strength and direction of the linear relationship between pairs of variables. High correlations suggest strong relationships, which can have implications for multicollinearity in regression models.

In the correlation matrix, the highest correlations are highlighted in red. Notably, there is a correlation of 0.9 between work experience and the age of the founder, which is quite reasonable given that older founders are likely to have more work experience. Additionally, there is a correlation of 0.7 between profit and revenue, which is logical as higher revenues typically lead to higher profits. Another significant correlation is 0.6 between size in FTE and sales, indicating that larger firms tend to have higher sales.

To check for multicollinearity, we calculated the Variance Inflation Factors (VIFs) for the independent variables. VIF values show how much the variance of a regression coefficient is increased due to collinearity with other variables. Values above 10 suggest significant multicollinearity.

In our analysis, the highest VIF values are 13.09 for working experience and 12.95 for the age of the founder. These values indicate some degree of multicollinearity, which should be considered when interpreting the regression results.

Table 4: VIF for independent variables

Variable	VIF	Variable	VIF
RESILIENCE	1,27	WHOLESALE_D	3,49
REACTIVENESS	1,16	TRANSPORT_D	1,68
ENTREXP	1,26	ACCOMODATION_D	1,69
WORKEXP	13,09	INORMATION_D	8,77
DOMEXP	1,35	INSURANCE_D	1,33
AGE_COMPANY	1,10	REALESTATE_D	1,57
SIZE_FTE	1,22	PROFESSIONAL_D	8,00
AGE_SU	12,95	ADMINISTRATIVE_D	2,32
EDUCATION	1,73	EDUCATION_D	2,60
GENDER_D	1,37	HUMANHEALTH_D	1,17
MANUFACTURING_D	2,78	ARTS_D	2,14
CONSTRUCTION_D	3,85		

Table 5: Correlation matrix for all variables

Variable	SALES2019	PL2019	CUSTOMERSAT	PROJECTEDGROWT	SURVIVAL_D	RESILIENCE	REACTIVENESS	ENTREXP	WORKEXP	DOMEXP	AGE_COMPANY	SIZE_FTE	AGE_SU	EDUCATION	GENDER_D	MANUFACTURING_	CONSTRUCTION_D	WHOLESALE_D	TRANSPORT_D	ACCOMODATION_	INFORMATION_D	INSURANCE_D	REALESTATE_D	PROFESSIONAL_D	ADMINISTRATIVE_	EDUCATION_D	HUMANHEALTH_D	ARTS_D	OTHER_D
SALES2019	1	0,7	0,1	0,1	0,1	0,0	0,0	0,2	0,0	0,2	0,2	0,6	0,0	0,0	0,1	-0,1	0,0	0,0	0,0	0,1	0,0	0,2	0,0	0,0	-0,1	-0,1	0,0	-0,1	-0,1
PL2019	0,7	1	0,1	0,1	0,1	0,0	0,0	0,1	0,0	0,2	0,1	0,3	0,0	0,0	0,2	-0,1	0,0	-0,1	0,0	0,1	0,2	0,3	0,0	0,0	-0,1	-0,1	0,0	-0,1	-0,1
CUSTOMERSAT	0,1	0,1	1	0,2	0,1	-0,1	0,1	0,0	0,0	0,1	-0,1	0,1	0,0	0,1	0,0	0,0	-0,2	0,1	-0,1	0,1	0,1	0,0	0,0	-0,1	-0,1	0,1	0,0	0,0	0,1
PROJECTEDGROWTH	0,1	0,1	0,2	1	0,1	0,0	0,1	0,0	-0,1	0,0	0,0	0,0	-0,1	-0,1	0,1	0,0	0,0	0,2	0,0	0,0	0,0	0,0	0,0	-0,1	0,0	0,0	0,0	0,0	0,0
SURVIVAL_D	0,1	0,1	0,1	0,1	1	0,1	0,0	0,0	-0,1	-0,1	0,0	0,1	-0,1	0,1	-0,1	0,0	0,0	0,0	0,1	0,1	0,0	0,1	0,1	-0,1	0,0	0,0	0,0	0,1	0,0
RESILIENCE	0,0	0,0	0,1	0,0	-0,1	1	-0,1	0,1	0,1	0,3	-0,1	0,0	0,1	-0,1	0,1	0,0	0,1	0,0	0,0	-0,1	-0,1	0,0	-0,1	0,0	0,0	0,0	-0,1	0,1	0,0
REACTIVENESS	0,0	0,0	0,1	0,1	0,0	-0,1	1	0,1	0,1	0,0	0,0	0,1	0,0	-0,1	0,0	0,1	0,0	0,0	0,0	0,0	-0,1	0,1	0,0	-0,1	0,1	0,1	0,1	0,0	-0,1
ENTREXP	0,2	0,1	0,0	0,0	0,0	0,1	0,1	1	0,3	0,1	0,0	0,1	0,3	-0,1	0,1	0,0	-0,1	0,0	0,1	0,1	0,0	0,2	0,1	0,0	-0,1	-0,1	0,0	-0,1	0,0
WORKEXP	0,0	0,0	0,0	-0,1	-0,1	0,1	0,1	0,3	1	0,2	-0,1	-0,1	0,9	0,0	0,1	0,1	0,0	0,0	0,2	0,0	0,1	0,0	-0,1	-0,2	0,1	0,0	-0,1	-0,1	0,0
DOMEXP	0,2	0,2	0,1	0,0	-0,1	0,3	0,0	0,1	0,2	1	0,1	0,1	0,2	-0,1	0,2	-0,1	0,0	0,0	0,1	0,0	0,1	0,1	-0,1	0,0	-0,1	-0,1	-0,1	0,0	0,0
AGE_COMPANY	0,2	0,1	-0,1	0,0	0,0	-0,1	0,0	0,0	-0,1	0,1	1	0,1	0,0	0,1	-0,1	0,0	-0,1	0,1	0,0	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,1
SIZE_FTE	0,6	0,3	0,1	0,0	0,1	0,0	0,1	0,1	-0,1	0,1	0,1	1	-0,1	-0,2	0,1	-0,1	0,1	0,1	0,0	0,1	-0,1	0,2	0,1	-0,1	0,0	-0,1	0,0	0,0	0,0
AGE_SU	0,0	0,0	0,0	-0,1	-0,1	0,1	0,0	0,3	0,9	0,2	0,0	-0,1	1	0,1	0,0	0,2	0,0	0,0	0,2	0,0	0,1	0,0	-0,1	-0,1	0,0	0,0	-0,1	-0,2	0,0
EDUCATION	0,0	0,0	0,1	-0,1	0,1	-0,1	-0,1	-0,1	0,0	-0,1	0,1	-0,2	0,1	1	-0,2	0,0	-0,3	-0,2	-0,1	0,0	0,0	-0,1	0,0	0,3	-0,1	0,1	0,1	-0,1	0,0
GENDER_D	0,1	0,2	0,0	0,1	-0,1	0,1	0,0	0,1	0,1	0,2	-0,1	0,1	0,0	-0,2	1	-0,1	0,1	-0,1	0,0	0,0	0,3	-0,1	0,0	-0,1	0,0	-0,2	-0,1	-0,1	-0,2
MANUFACTURING_D	-0,1	0,1	0,0	0,0	0,0	0,0	0,1	0,0	0,1	-0,1	0,0	-0,1	0,2	0,0	-0,1	1	-0,1	-0,1	0,0	0,0	-0,2	0,0	0,0	-0,1	0,0	-0,1	0,0	0,0	0,0
CONSTRUCTION_D	0,0	0,0	-0,2	0,0	0,0	0,1	0,0	-0,1	0,0	0,0	-0,1	0,1	0,0	-0,3	0,1	-0,1	1	-0,1	0,0	0,0	-0,2	0,0	0,0	-0,2	-0,1	-0,1	0,0	-0,1	-0,1
WHOLESALE_D	0,0	-0,1	0,1	0,2	0,0	0,0	0,0	0,0	0,0	0,0	0,1	0,1	0,0	-0,2	-0,1	-0,1	-0,1	1	0,0	0,0	-0,2	0,0	0,0	-0,2	-0,1	-0,1	0,0	-0,1	0,0
TRANSPORT_D	0,0	0,0	-0,1	0,0	0,1	0,0	0,0	0,1	0,2	0,1	0,0	0,0	0,2	-0,1	0,0	0,0	0,0	0,0	1	0,0	0,1	0,0	0,0	-0,1	0,0	0,0	0,0	0,0	0,0
ACCOMODATION_D	0,1	0,1	0,1	0,0	0,1	-0,1	0,0	0,1	0,0	0,0	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1	-0,1	0,0	0,0	-0,1	0,0	0,0	0,0	0,0	0,0
INFORMATION_D	0,0	0,2	0,1	0,0	0,0	-0,1	-0,1	0,0	0,1	0,1	0,0	-0,1	0,1	0,0	0,3	-0,2	-0,2	-0,2	-0,1	-0,1	1	-0,1	-0,1	-0,4	-0,1	-0,2	0,0	-0,1	-0,1
INSURANCE_D	0,2	0,3	0,0	0,0	0,1	0,0	0,1	0,2	0,0	0,1	0,0	0,2	0,0	-0,1	-0,1	0,0	0,0	0,0	0,0	0,0	-0,1	1	0,0	-0,1	0,0	0,0	0,0	0,0	0,0
REALESTATE_D	0,0	0,0	0,0	0,0	0,1	-0,1	0,0	0,1	-0,1	-0,1	0,0	0,1	-0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	-0,1	0,0	1	-0,1	0,0	0,0	0,0	0,0	0,0
PROFESSIONAL_D	0,0	0,0	-0,1	-0,1	-0,1	0,0	-0,1	0,0	-0,2	0,0	0,0	-0,1	-0,1	0,3	-0,1	-0,1	-0,2	-0,2	-0,1	-0,1	-0,4	-0,1	-0,1	1	-0,1	-0,1	0,0	-0,1	-0,1
ADMINISTRATIVE_D	-0,1	-0,1	-0,1	0,0	0,0	0,0	0,1	-0,1	0,1	-0,1	0,0	0,0	0,0	-0,1	0,0	0,0	-0,1	-0,1	0,0	0,0	-0,1	0,0	0,0	-0,1	1	0,0	0,0	0,0	0,0
EDUCATION_D	-0,1	-0,1	0,1	0,0	0,0	0,0	0,1	-0,1	0,0	-0,1	0,0	-0,1	0,0	0,1	-0,2	-0,1	-0,1	-0,1	0,0	0,0	-0,2	0,0	0,0	-0,1	0,0	1	0,0	0,0	0,0
HUMANHEALTH_D	0,0	0,0	0,0	0,0	0,0	-0,1	0,1	0,0	-0,1	-0,1	0,0	0,0	-0,1	0,1	-0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1	0,0	0,0
ARTS_D	-0,1	-0,1	0,0	0,0	0,1	0,1	0,0	-0,1	-0,1	0,0	0,0	0,0	-0,2	-0,1	-0,1	0,0	-0,1	-0,1	0,0	0,0	-0,1	0,0	0,0	-0,1	0,0	0,0	0,0	1	0,0
OTHER_D	-0,1	-0,1	0,1	0,0	0,0	0,0	-0,1	0,0	0,0	0,0	0,1	0,0	0,0	0,0	-0,2	0,0	-0,1	0,0	0,0	0,0	-0,1	0,0	0,0	-0,1	0,0	0,0	0,0	0,0	1

3.4 Robustness analysis

To validate the reliability of our survey data, we cross-referenced the profit/loss statements with those available in the ORBIS database. The table below summarizes the relevant findings.

Table 6: Comparison of survey and Orbis on profit/loss data

Statistic	Value
t-value	-0,52099
p-value	0,6075
Correlation	0,92456
Adjusted R-squared	0.8482

Interpretation: The high positive correlation (0.92456) and the high adjusted R-squared (0.8482) suggest a strong similarity and a good fit between the two datasets. The paired t-test results indicate no significant difference between their means (t-value = -0.52099, p-value = 0.6075). This implies that while the datasets move together closely, their average values are not significantly different. Therefore, we can conclude that our survey is reliable.

3.5 Regression models

In this section, we describe the regression models used to test the hypotheses outlined in the conceptual framework. Each hypothesis is revisited, and the corresponding regression equations are presented to theoretically model the relationships between variables. Control variables are included to account for potential confounding factors.

3.5.1 Hypothesis 1: Entrepreneurial resilience and strategic reactiveness

Entrepreneurial resilience is positively associated with strategic reactiveness.

To test this hypothesis, we model the relationship between entrepreneurial resilience and strategic reactiveness as follows:

$$SR_i = \beta_0 + \beta_1 ER_i + \beta_n Control\ variables + \in_i$$

Where:

- SR_i is the strategic reactiveness of firm i.
- ER_i is the entrepreneurial resilience of firm i.
- β_0 is the intercept.
- β_1 is the coefficient for entrepreneurial resilience.
- $\beta_n Control\ variables$ represents the coefficients for the control variables.
- $\in_i$ is the error term.

We will use OLS regression to estimate the direct effect of entrepreneurial resilience on strategic reactiveness while controlling for relevant variables including entrepreneur and firm characteristics. We expect that β_1 will be positive, suggesting that higher levels of entrepreneurial resilience are associated with greater strategic reactiveness.

3.5.2 Hypothesis 2: The mediating role of strategic reactiveness

Strategic reactiveness mediates the relationship between entrepreneurial resilience and business outcomes.

To test this mediating effect, we follow the Baron and Kenny (1986) approach, which involves four steps. This method helps us to determine whether strategic reactiveness acts as a mediator between entrepreneurial resilience and business outcomes.

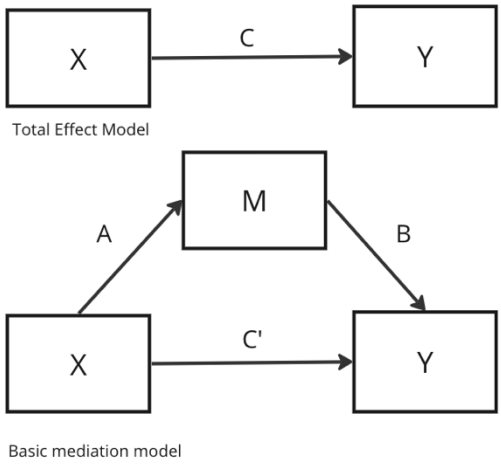

Figure 6: Mediation model illustrating the total and indirect effects, adapted from Baron and Kenny (1986)

1. **Step 1: Path C - Total effect of the independent variable on the dependent variable:** First, we estimate the relationship between entrepreneurial resilience and business outcomes.

$$BO_i = \beta_0 + \beta_1 ER_i + \beta_n Control\ variables + \in_i$$

2. **Step 2: Path A - Effect of the dependent variable on the mediator:** Next, we estimate the relationship between entrepreneurial resilience and strategic reactiveness.

$$SR_i = \beta_0 + \beta_1 ER_i + \beta_n Control\ variables + \in_i$$

3. **Step 3: Path B - Effect of the mediator on the dependent variable, controlling for the independent variable:** Then, we estimate the relationship between strategic reactiveness and business outcomes controlling for entrepreneurial resilience

$$BO_i = \beta_0 + \beta_2 SR_i + \beta_1 ER_i + \beta_n Control\ variables + \in_i$$

4. **Step 4: Reversed path C - Effect of the dependent variable on the independent variable, controlling for the mediator:** Finally, we check if the relationship between business outcomes and entrepreneurial resilience is non-significant when controlling for strategic reactiveness.

$$ER_i = \beta_0 + \beta_3 BO_i + \beta_2 SR_i + \beta_n Control\ variables + \in_i$$

Where:

- BO_i is the business outcome of firm i.
- ER_i is the entrepreneurial resilience of firm i.
- SR_i is the strategic reactiveness of firm i.
- β_0 is the intercept.
- β_1 is the coefficient for entrepreneurial resilience.
- β_2 is the coefficient for the strategic reactiveness.
- β_3 is the coefficient for business outcomes
- β_n represents the coefficients for the control variables.
- $\in_i$ is the error term.

The analysis for business outcomes will be conducted separately for each business outcome metric, including revenue, profit/loss, customer satisfaction, projected growth, and survival.

We will halt the regression analysis if any of these steps fail to hold. We anticipate that the effect of ER_i on BO_i will be partially or fully mediated by SR_i, indicated by a reduction in the significance of β_1 when β_2 is included in the model.

3.5.3 Hypothesis 3: The role of previous entrepreneurial experience

Previous entrepreneurial experience strengthens the relationship between entrepreneurial resilience and strategic reactiveness.

To test this moderating effect, we include an interaction term between entrepreneurial resilience and previous entrepreneurial experiences:

$$SR_i = \beta_0 + \beta_1 ER_i + \beta_2 ENTREXP_i + \beta_3 WORKEXP_i + \beta_4 DOMEXP_i + \beta_5 (ER_i \times ENTREPEXP_i) + \beta_6 (ER_i \times WORKEXP_i) + \beta_7 (ER_i \times DOMPEXP_i) + \beta_n Control\ variables + \in_i$$

Where:

- SR_i is the strategic reactiveness of firm i.
- ER_i is the entrepreneurial resilience of firm i.
- $ENTREXP_i$ is the entrepreneurial experience of the founder/the founding team of firm i.
- $WORKEXP_i$ is the working experience of the founder/the founding team of firm i.
- $DOMEXP_i$ is the domain experience of the founder/the founding team of firm i.
- $ER_i \times ENTREXP_i$ is the interaction term between entrepreneurial resilience and entrepreneurial experience.
- $ER_i \times WORKEXP_i$ is the interaction term between entrepreneurial resilience and working experience.
- $ER_i \times DOMEXP_i$ i is the interaction term between entrepreneurial resilience and domain experience.
- β_0 is the intercept.
- β_1 through β_7 are the coefficients for the respective terms
- β_2 is the coefficient for previous entrepreneurial experience.
- β_n represents the coefficients for the control variables.
- $\in_i$ is the error term.

We will use OLS regression to estimate the moderating effect of previous entrepreneurial experience on the relationship between entrepreneurial resilience and strategic reactiveness. By including the interaction terms, we can assess whether the strength of this relationship varies with the level of previous experiences. We expect a positive coefficient for β_5 through β_7, suggesting that previous experience enhances the positive impact of entrepreneurial resilience on strategic reactiveness

3.6 Results

3.6.1 Hypothesis 1: Entrepreneurial resilience and strategic reactiveness

The regression analysis results for hypothesis 1 examines whether higher levels of entrepreneurial resilience lead to improved strategic reactiveness.

Entrepreneurial Resilience: The coefficient for entrepreneurial resilience was found to be negatively significant ($p < 0.05$), indicating that a higher level of resilience leads to less strategic reactiveness.

Significant factors: The following control variables were found to be significant:

- Manufacturing Sector: Positive impact on strategic reactiveness ($p < 0.05$).
- Insurance Sector: Positive impact on strategic reactiveness ($p < 0.1$).
- Administrative Sector: Positive impact on strategic reactiveness ($p < 0.05$).
- Education Sector: Positive impact on strategic reactiveness ($p < 0.05$).

Table 7: Regression results for H1

	Dependent variable:
	Strategic Reactiveness
Resilience	-0.273**
	(0.138)
Company Age	0.113
	(0.640)
Company Size (FTE)	0.260
	(0.164)
Entrepreneur Age	0.013
	(0.014)
Education	-0.094
	(0.126)
Gender	0.060
	(0.360)
Manufacturing Sector	2.581**
	(1.018)
Construction Sector	1.148
	(0.976)
Wholesale Sector	0.907
	(0.960)
Transport Sector	0.608
	(1.321)
Accommodation Sector	1.618
	(1.324)
Information Sector	0.803
	(0.866)
Insurance Sector	3.169*
	(1.833)
Real Estate Sector	1.465
	(1.418)
Professional Sector	1.090
	(0.862)
Administrative Sector	2.683**
	(1.092)
Education Sector	2.525**
	(1.024)
Human Health Sector	3.072
	(2.442)
Arts Sector	1.785
	(1.120)
Constant	1.616
	(1.500)
Observations	277
R^2	0.108
Adjusted R^2	0.042
Residual Std. Error	2.274 (df = 257)
F Statistic	1.629** (df = 19; 257)
Note:	*p<0.1; **p<0.05; ***p<0.01

3.6.2 Hypothesis 2: The mediating role of strategic reactiveness

Step 1: Path C – Total effect of entrepreneurial resilience on business outcomes

The regression results for step 1 of hypothesis 2 are summarized in the table below. The analysis examines whether entrepreneurial resilience impacts any of the business outcomes.

The results indicate that entrepreneurial resilience is not significant for any of the business outcomes (revenue, profit/loss, customer satisfaction, projected growth, and survival). Several control variables, such as company age, company size, and the gender of the founder, as well as specific sectors, significantly impact business outcomes.

Since step one did not yield any significant results, we will not continue with the analysis for hypothesis 2. According to Baron and Kenny's method, if the first step does not show a significant effect, there is no need to move on to the next steps. Therefore, our research into the mediating role of strategic reactiveness between entrepreneurial resilience and business outcomes stops here.

Table 8: Regression results for H2 step 1

	Dependent variable:				
	Sales 2019	Profit 2019	Customer Satisfaction	Projected Growth	Survival
	OLS	*OLS*	*OLS*	*OLS*	*logistic*
	(1)	(2)	(3)	(4)	(5)
Resilience	-110.578	-90.179	-0.073	-0.127	-0.086
	(3,347.578)	(989.204)	(0.059)	(0.217)	(0.138)
Company Age	45,305.350***	9,557.663**	-0.586**	-0.376	-0.556
	(15,528.130)	(4,588.540)	(0.276)	(1.008)	(0.621)
Company Size (FTE)	47,137.470***	5,809.765***	0.135*	-0.142	0.638*
	(3,984.794)	(1,177.501)	(0.071)	(0.259)	(0.356)
Entrepreneur Age	735.871**	72.645	0.001	-0.035	-0.015
	(338.807)	(100.117)	(0.006)	(0.022)	(0.013)
Education	799.920	965.387	0.074	-0.202	0.219*
	(3,065.157)	(905.749)	(0.054)	(0.199)	(0.128)
Gender	17,451.220**	5,861.111**	-0.045	0.471	-0.399
	(8,731.811)	(2,580.237)	(0.155)	(0.567)	(0.378)
Manufacturing Sector	5,530.629	-20.999	-0.600	0.918	-0.282
	(24,684.760)	(7,294.311)	(0.438)	(1.603)	(1.011)
Construction Sector	-5,062.872	1,475.483	-1.172***	0.352	-0.109
	(23,682.300)	(6,998.085)	(0.421)	(1.538)	(0.991)
Wholesale Sector	11,448.870	1,273.782	-0.136	2.440	-0.397
	(23,275.080)	(6,877.753)	(0.413)	(1.512)	(0.976)
Transport Sector	-7,465.004	2,377.631	-1.149**	1.690	16.812
	(32,049.550)	(9,470.594)	(0.569)	(2.081)	(1,632.799)
Accommodation Sector	25,366.800	11,518.090	0.391	1.881	16.076
	(32,113.490)	(9,489.488)	(0.570)	(2.086)	(1,686.156)
Information Sector	29,132.780	10,417.660*	-0.425	0.810	-0.148
	(21,003.970)	(6,206.643)	(0.373)	(1.364)	(0.889)
Insurance Sector	139,556.300***	70,115.770***	-1.170	0.029	15.354
	(44,458.110)	(13,137.310)	(0.790)	(2.887)	(2,791.682)
Real Estate Sector	17,720.320	1,114.070	-1.090*	0.197	16.000
	(34,395.960)	(10,163.960)	(0.611)	(2.234)	(1,871.503)
Professional Sector	31,331.350	5,964.969	-0.787**	0.117	-0.565
	(20,913.850)	(6,180.011)	(0.372)	(1.358)	(0.886)
Administrative Sector	5,711.168	2,818.196	-0.892*	0.102	-0.031
	(26,477.440)	(7,824.045)	(0.470)	(1.720)	(1.102)
Education Sector	7,016.186	1,861.316	-0.255	0.490	-0.024
	(24,849.310)	(7,342.934)	(0.441)	(1.614)	(1.067)
Human Health Sector	25,520.630	11,214.140	-1.195	-0.465	15.638
	(59,231.260)	(17,502.750)	(1.052)	(3.847)	(3,956.180)
Arts Sector	13,876.370	3,571.568	-0.649	-0.593	1.034
	(27,155.920)	(8,024.535)	(0.482)	(1.764)	(1.366)
Constant	-132,291.200***	-25,224.020**	2.505***	3.282	1.413
	(36,388.500)	(10,752.750)	(0.646)	(2.363)	(1.533)
Observations	277	277	277	277	277
R^2	0.449	0.275	0.135	0.061	
Adjusted R^2	0.408	0.222	0.071	-0.008	
Log Likelihood					-153.048
Akaike Inf. Crit.					346.096
Residual Std. Error (df = 257)	55,151.310	16,297.130	0.980	3.582	
F Statistic (df = 19; 257)	11.025***	5.142***	2.104***	0.878	
Note:					*p<0.1; **p<0.05; ***p<0.01

3.6.3 Hypothesis 3: The role of previous entrepreneurial experience

The regression analysis results for hypothesis 3 examine whether previous entrepreneurial experience strengthens the relationship between entrepreneurial resilience and strategic reactiveness.

Experience and Interaction Terms: None of the experience terms nor the interaction terms between entrepreneurial resilience and these experiences were found to be significant.

Significant Factors: The following control variables were found to significant:

- **Manufacturing Sector:** Positive impact on strategic reactiveness ($p < 0.01$).
- **Administrative Sector:** Positive impact on strategic reactiveness ($p < 0.05$).
- **Education Sector:** Positive impact on strategic reactiveness ($p < 0.05$).

Table 9: Regression results for H3

	Dependent variable:
	Strategic Reactiveness
Resilience	-0.633
	(0.559)
Entrepreneurial Experience	2.309
	(1.928)
Working Experience	-0.009
	(0.082)
Domain Experience	0.114
	(0.659)
Resilience x Entrepreneurial Experience	-0.299
	(0.355)
Resilience x Working Experience	0.009
	(0.013)
Resilience x Domain Experience	0.033
	(0.126)
Company Age	-0.234
	(0.646)
Company Size (FTE)	0.251
	(0.169)
Entrepreneur Age	-0.039
	(0.046)
Education	0.033
	(0.139)
Gender	-0.094
	(0.367)
Manufacturing Sector	1.933***
	(0.685)
Construction Sector	0.521
	(0.620)
Wholesale Sector	0.059
	(0.594)
Transport Sector	-0.647
	(1.092)
Accommodation Sector	0.535
	(1.080)
Information Sector	-0.144
	(0.370)
Insurance Sector	1.441
	(1.682)
Real Estate Sector	0.390
	(1.187)
Administrative Sector	2.034**
	(0.808)
Education Sector	1.621**
	(0.705)
Human Health Sector	2.171
	(2.374)
Arts Sector	0.953
	(0.820)
Constant	4.251
	(3.001)
Observations	277
R^2	0.137
Adjusted R^2	0.054
Residual Std. Error	2.258 (df = 252)
F Statistic	1.663** (df = 24; 252)
Note:	*p<0.1; **p<0.05; ***p<0.01

4 Discussion

4.1 The negative effect of entrepreneurial resilience on strategic reactiveness

This negative effect aligns with studies by Martin and Sunley (2015), Beaver and Jennings (2005), and Holm and Østergaard (2015). Although resilience is generally viewed as a positive trait, it can lead to rigidity in strategic approaches. Overly resilient entrepreneurs might persist with failing strategies or outdated business models. This hinders adaptability and innovation.

In this study, resilience was measured using only three questions. This approach is limited compared to comprehensive scales like the Connor-Davidson Resilience Scale (CD-RISC) (Connor and Davidson, 2003). This scale captures the multifaceted nature of resilience, something that is be nearly impossible using only three questions.

These questions were:

1. "In my professional life, I can manage well if necessary."
2. "Overall, I can handle stressful situations in my professional life."
3. "I can handle difficult times in my professional life because I have experienced difficulties before."

These questions rely on self-evaluation, which is subject to biases such as the social desirability bias. Respondents might have overstated their resilience to comply with perceived social norms. Literature on self-evaluation bias indicates that these biases can significantly affect the accuracy of self-reported data, leading to over- or under-estimations (Furnham, 1986; Paulhus & Vazire, 2007). In this study, self-evaluated resilience might have led to inflated scores if respondents wanted to project an image of being highly resilient. This potential bias needs consideration when interpreting the results, as it might distort the true relationship between resilience and strategic reactiveness.

Strategic reactiveness was measured only once, during the COVID-19 pandemic. This approach may have caused a skewed understanding of reactiveness. Businesses that did not change their models during the pandemic were categorized as non-reactive. However, these businesses might have already had resilient and effective models. Thus, the measurement could misrepresent their actual strategic flexibility by not accounting for pre-existing robustness. Additionally, this study only measured when

changes happened, not the extent of those changes. This limitation might have led to an incomplete understanding of strategic reactiveness, as the scope and impact of the changes were not considered.

These findings suggest entrepreneurs should balance resilience with adaptability to avoid persisting in failing strategies. Managers should value both resilience and flexibility through regular strategy reviews and adaptability training. Policymakers can design support programs encouraging resilience and adaptability, offering workshops and continuous learning resources. For more robust analysis, future research could use comprehensive resilience scales and incorporate objective resilience measures to complement self-reported data.

4.2 The relationship between entrepreneurial resilience and business outcomes

The analysis found no significant relationship between entrepreneurial resilience and business outcomes. One potential reason for this result is the self-evaluation bias discussed in previously. The self-reported nature of resilience might have led to inaccurate assessments, affecting the study's findings. This aligns with studies like those by Martin and Sunley (2015), Beaver and Jennings (2005), and Holm and Østergaard (2015). These studies noted that an elevated level of resilience might not always lead to improved business outcomes.

Another factor could be the age of the companies in the study. Most were only one year old at the time of data collection, as seen in the descriptive statistics. Early-stage companies often experience volatile revenues and profits that might not reflect their long-term viability or success. This makes it challenging to draw conclusions about their future performance.

Customer satisfaction was assessed based on whether the product was perceived as exceptional. This metric might not accurately capture customer satisfaction, as products that are not seen as exceptional can still satisfy customers effectively. The measure used might have overlooked the satisfaction derived from well-executed but standard offerings.

Growth was also considered a business outcome. However, very young companies might not prioritize or achieve significant growth in their initial years. Early-stage businesses typically focus on survival and establishing a market presence rather than immediate growth. This focus means that the measure might not fully capture the actual potential or strategic direction of these young companies.

These findings suggest that future research should use more objective measures of resilience and include a broader and more correct range of business outcomes. Such an approach could provide a clearer understanding of the relationship between entrepreneurial resilience and business performance.

4.3 The moderating role of previous entrepreneurial experience

The study did not find significant moderating effects of experience on the relationship between entrepreneurial resilience and strategic reactiveness. This result suggests that prior experience does not significantly enhance the ability of resilient entrepreneurs to adopt reactive strategies. Several possible reasons may explain this finding.

The self-evaluation bias discussed in H1 might have influenced the results. Entrepreneurs with previous experience might have overestimated their resilience or strategic reactiveness, leading to skewed data.

The age of the companies in the study, with most being only one year old, could mean that the influence of previous experience has not yet had sufficient time to manifest in tangible strategic outcomes.

The measurement of strategic reactiveness during a single, unprecedented event like the COVID-19 pandemic might not adequately capture the ongoing strategic reactiveness of experienced entrepreneurs. The pandemic presented unique challenges that might not align with typical business environments, potentially masking the benefits of prior experience in standard contexts.

The study divided entrepreneurial experience into different types, such as having previously started a company, years of work experience, and domain-specific experience. This division might have diluted the overall effect on strategic reactiveness, making it harder to measure accurately.

These findings suggest that future research should consider more detailed and nuanced measures of entrepreneurial experience. Additionally, studying firms over a longer period might provide clearer insights into how previous experience moderates the relationship between resilience and strategic reactiveness.

5 Limitations

This study has several limitations that need to be acknowledged.

1. **Measurement of entrepreneurial resilience**: The metrics used to estimate entrepreneurial resilience were not comprehensive or fully reliable due to self-evaluation biases (Paulhus & Vazire, 2007). This limitation could affect the accuracy and generalizability of our findings regarding the resilience of Flemish startups.
2. **Measurement of strategic reactiveness**: The strategic reactiveness of startups was measured at a single point in time. As previously discussed, this approach might provide a skewed view of reality. Strategic reactiveness is a dynamic attribute that can vary significantly over time, especially in response to evolving market conditions and challenges. Measuring it at only one point in time does not capture its full temporal complexity. Furthermore, the extent of the changes was not measured, only when they happened. This limitation might result in an incomplete understanding of strategic reactiveness.
3. **Reduction in sample size**: The initial sample size of 663 startups was reduced to 277 because many enterprises were uncomfortable sharing their revenue or profit/loss data. This significant reduction in sample size might have introduced bias and limits the representativeness of our findings. The smaller sample size also reduces the statistical power of our analyses.
4. **Geographic and Temporal Scope**: This study focused exclusively on Flemish startups in 2020, a period right after and even during the COVID-19 pandemic. The economic challenges posed by the pandemic may have uniquely influenced these startups, making it difficult to generalize the findings to other regions or time periods.
5. **Measurement of business outcomes**: As previously mentioned, the way we measured business outcomes might have been distorted. Factors such as self-reported data and the subjective nature of certain measures (e.g., customer satisfaction) can introduce biases that affect the reliability of the results. The early-stage nature of many startups also means that metrics like revenue and profit might not fully reflect their long-term viability or success.

These limitations should be considered when interpreting the findings of this study and planning future research. Future studies could benefit from using more comprehensive metrics for resilience, longitudinal designs to capture changes in strategic reactiveness over time, larger and more diverse samples, and objective measures of business outcomes.

6 Conclusion

This thesis explored the relationship between strategic reactiveness and entrepreneurial resilience, focusing on their impact on the financial performance of Flemish startups. The study aimed to understand how these traits influence entrepreneurial success.

The findings indicate that while entrepreneurial resilience is generally valued, it can lead to rigidity in strategic approaches. Overly resilient entrepreneurs might persist with unsuccessful strategies, hindering their ability to adapt and innovate. This aligns with previous research (Martin and Sunley, 2015; Beaver and Jennings, 2005).

The study also found that resilience has a limited direct effect on business outcomes such as profit, revenue, and customer satisfaction. The moderating role of previous entrepreneurial experience was also not significantly supported. This suggests that prior experience does not notably enhance the strategic reactiveness of resilient entrepreneurs. A possible reason for these findings is that the startups in the study are in their early development stages, so their financial performance might not yet reflect long-term viability or success. We also lacked the right tools to measure resilience and strategic reactiveness comprehensively.

For future research, it is recommended to employ more comprehensive measures of entrepreneurial resilience. Rather than limiting the assessment to three questions, a more thorough test such as the Connor-Davidson Resilience Scale (CD-RISC), which includes 25 questions, should be considered (Connor & Davidson, 2003). Researchers must balance this trade-off because a more extensive test may lead to lower response rates. The CD-RISC can provide a more accurate measure of resilience, but it is essential to manage participant burden to maintain sufficient response levels.

These insights contribute to the broader understanding of the interplay between resilience and strategic reactiveness in entrepreneurship. They underscore the necessity for a balanced approach to resilience, emphasizing adaptability and flexibility. Future research should include longitudinal studies and more comprehensive metrics to capture the dynamic nature of these constructs over time, thereby providing a richer understanding of how entrepreneurial resilience and strategic reactiveness contribute to long-term business success.

7 Reference list

Anderson, E. W., & Sullivan, M. W. (1993). The Antecedents and Consequences of Customer Satisfaction for Firms. *Marketing Science*, *12*(2), 125–143. http://www.jstor.org/stable/184036

Andries, P., Debackere, K., & van Looy, B. (2013). Simultaneous experimentation as a learning strategy: Business model development under uncertainty. *Strategic Entrepreneurship Journal*, *7*(4), 288–310.

Ayala, J.-C. and Manzano, G. (2014). The resilience of the entrepreneur. Influence on the success of the business: a longitudinal analysis. Journal of Economic Psychology, Vol. 42, pp. 126-135.

Baron, R., & Kenny, D. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology, 51, 1173-1182.

Baum, J. R., & Wally, S. (2003). Strategic decision speed and firm performance. Strategic Management Journal, 24(11), 1107–1129.

Beaver, G. and Jennings, P. (2005). Competitive advantage and entrepreneurial power: the dark side of entrepreneurship. Journal of Small Business and Enterprise Development, Vol. 12 No. 1, pp. 9-23.

Bhidé, A.V., (2000). The Origin and Evolution of New Businesses. Oxford University Press, New York.

Biggs, R., Westley, F.R. and Carpenter, S.R. (2010). Navigating the back loop: fostering social innovation and transformation in ecosystem management. Ecology and Society, Vol. 15 No. 2,

Bonanno, G.A. (2004). Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events?. American Psychologist, Vol.59 No. 1, pp.20-28.

Bonanno GA, Westphal M and Mancini AD (2011). Resilience to loss and potential trauma. Annual Review of Clinical Psychology 7(5): 11–35.

Bonanno GA (2012). Uses and abuses of the resilience construct: Loss, trauma, and health-related adversities. Social Science and Medicine 74(5): 753–756.

Bullough, A., Renko, M. and Myatt, T. (2014). Danger zone entrepreneurs: the importance of resilience and self-efficacy for entrepreneurial intentions. Entrepreneurship: Theory and Practice, Vol. 38 No. 3, pp. 473-499.

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

Dewald, J. and Bowen, F. (2010). Storm clouds and silver linings: responding to disruptive innovations through cognitive resilience. Entrepreneurship Theory and Practice, Vol. 34 No. 1, pp. 197-218.

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

Furnham, A. (1986). Response bias, social desirability and dissimulation. *Personality and Individual Differences, 7*(3), 385–400.

Forbes, D. P. (2005). Managerial determinants of decision speed in new ventures. Strategic Management Journal, 26(4), 355–366.

Fryges, H., Kohn, K., & Ullrich, K. (2015). The interdependence of R & D activity and debt financing of young firms. *Journal of Small Business Management*, *53*, 251-277.

Green, K. M., Covin, J. G., & Slevin, D. P. (2008). Exploring the relationship between strategic reactiveness and entrepreneurial orientation: The role of structure-style fit. *Journal of Business Venturing*, *23*(3), 356–383.

Gruber, M., MacMillan, I. C., & Thompson, J. D. (2012). From minds to markets: How human capital endowments shape market opportunity identification of technology start-ups. *Journal of management*, *38*(5), 1421-1449.

Hayward, M.L.A., Forster, W.R., Sarasvathy, S.D. and Fredrickson, B.L. (2010). Beyond hubris: how highly confident entrepreneurs rebound to venture again. Journal of Business Venturing, Vol. 25 No. 6, pp. 569-578.

Hlavac, Marek (2018). stargazer: Well-Formatted Regression and Summary Statistics Tables. R package version 5.2.2. https://CRAN.R-project.org/package=stargazer

Holm, J.R. and Østergaard, C.R. (2015). Regional employment growth, shocks and regional industrial resilience: a quantitative analysis of the Danish ICT sector. Regional Studies, Vol. 49 No. 1, pp. 95-112.

Kolb, D. A. (1984). Experiential Learning: Experience As The Source Of Learning And Development.

Korber, S., & McNaughton, R. B. (2018). Resilience and entrepreneurship: a systematic literature review. In International Journal of Entrepreneurial Behaviour and Research (Vol. 24, Issue 7, pp. 1129–1154). Emerald Group Holdings Ltd.

Luthans F, Vogelgesang GR and Lester PB (2006). Developing the psychological capital of resiliency. Human Resource Development Review 5(1): 25–44.

Luthar, S.S., Cicchetti, D. and Becker, B. (2000). The construct of resilience: a critical evaluation and guidelines for future work. Child Development, Vol. 71 No. 3, pp. 543-562.

Makadok R. (1998). Can first-mover and early-mover advantages be sustained in an industry with low barriers to entry/imitation? Strategic Management Journal 19(7): 683–696.

Mamouni Limnios, E.A., Mazzarol, T., Ghadouani, A. and Schilizzi, S.G.M. (2014). The resilience architecture framework: four organizational archetypes. European Management Journal, Vol. 32 No. 1, pp. 104-116.

Martin, R. and Sunley, P. (2015). On the notion of regional economic resilience: conceptualization and explanation. Journal of Economic Geography, Vol. 15 No. 1, pp. 1-42.

McGrath, R.G., MacMillan, I.C., (1995). Discovery-driven planning. Harvard Business Review 73 (4), 44–54.

Paulhus, D. L., & Vazire, S. (2007). The self-report method. In R. W. Robins, R. C. Fraley, & R. F. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 224–239). The Guilford Press.

Perlow, L. A., Okhuysen, G. A., & Repenning, N. P. (2002). The Speed Trap: Exploring the Relationship between Decision Making and Temporal Context. In *Source: The Academy of Management Journal* (Vol. 45, Issue 5).

Reinmoeller, P. and Van Baardwijk, N. (2005). The link between diversity and resilience. MIT Sloan Management Review, Vol. 46 No. 4, pp. 61-65.

Reuber, R. A., & Fischer, E. M. (1994). Entrepreneurs' experience, expertise, and the performance of technology-based firms. IEEE Transactions of Engineering Management, 41(4), 365–374.

Rose, A. (2007). Economic resilience to natural and man-made disasters: multidisciplinary origins and contextual dimensions. Environmental Hazards, Vol. 7 No. 4, pp. 383-398. Resilience and entrepreneurship 1151

Saridakis, G., Mole, K. and Hay, G. (2013). Liquidity constraints in the first year of trading and firm performance, International Small Business Journal, Vol. 31 No. 5, pp. 520-535.

Stevenson H, Gumpert D. (1985). The heart of entrepreneurship. Harvard Business Review 63(2): 85–94.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509–533.

Ucbasaran, D., Westhead, P., & Wright, M. (2009). The extent and nature of opportunity identification by experienced entrepreneurs. Journal of Business Venturing, 24(2), 99–115.

Walker, B.H., Holling, C.S., Carpenter, S.R. and Kinzig, A. (2004). Resilience, adaptability and transformability in social-ecological systems. Ecology and Society, Vol. 9 No. 2.

Westley, F.R., Olsson, P., Folke, C., Homer-Dixon, T., Vredenburg, H., Loorbach, D., Thompson, J., Nilsson, M., Lambin, E., Sendzimir, J., Banerjee, B., Galaz, V. and Leeuw, S. (2011). Tipping toward sustainability: emerging pathways of transformation. Ambio, Vol. 40 No. 7, pp. 762-780.