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Pivoting strategies in turbulent environments: how startups' founders navigate disruptions

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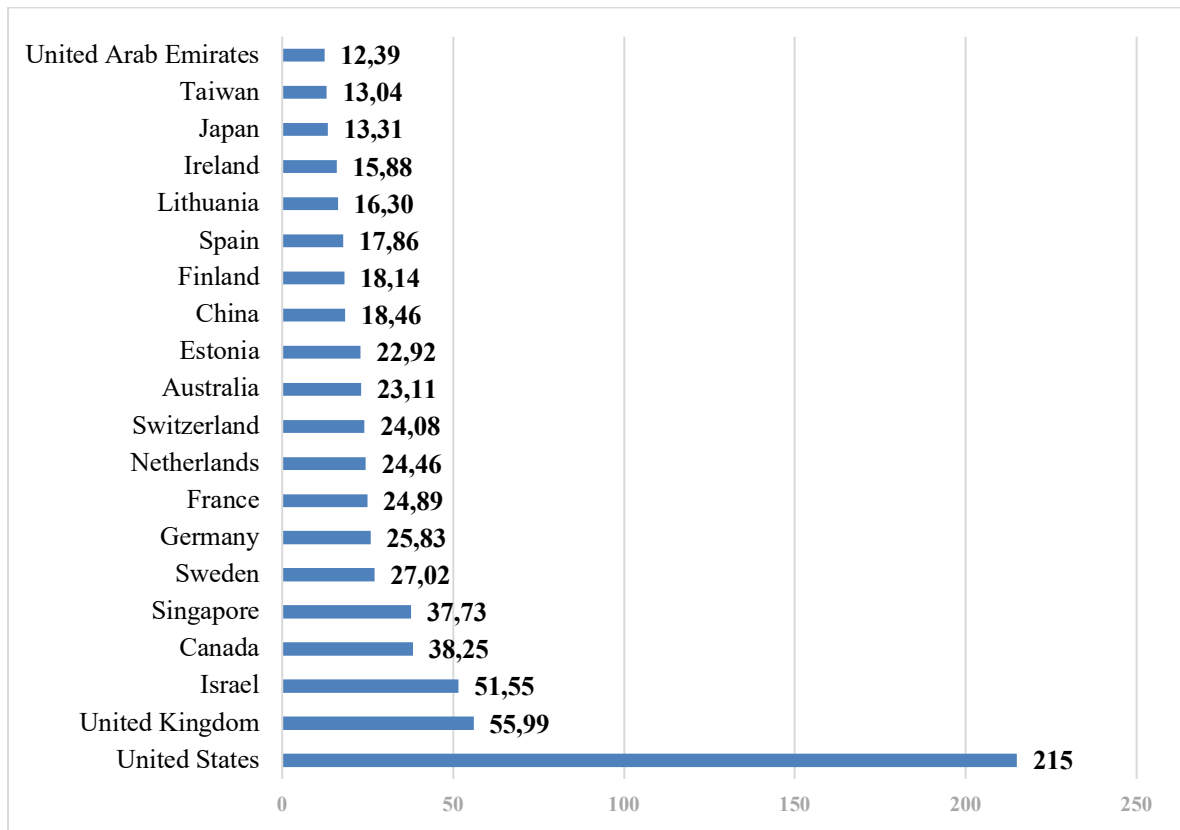
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Introduction

The ability of firms to innovate and adapt in the face of turbulent environments is crucial for their competitiveness. Building upon Schumpeter's seminal work on innovation (1934) and its resurgence in the early 2000s (Foss & Saebi, 2017), academic interest in this area has steadily grown. Organisational studies have long focused on how firms respond to environmental changes, particularly their adaptability during crises. Scholars have highlighted firms' ability to navigate volatile conditions. Recent global disruptions like COVID-19, the Ukraine conflict, and Israeli-Palestinian unrest have increased economic uncertainty and instability, emphasising the need to understand organisational coping mechanisms. Innovation, highlighted in Schumpeterian perspectives, is crucial for overcoming crises since it fosters resilience, adaptability, and competitive advantage during upheaval. By driving change and enabling firms to seize emerging opportunities, innovation is essential for recovery and growth in challenging environments.

Numerous studies have focused on large corporations as an ideal context for examining innovation during periods of turbulence. However, the critical role of innovation is increasingly shifting towards smaller enterprises, presenting significant research opportunities in the specific context of Small and Medium-sized Enterprises (SMEs), particularly start-ups. The relatively limited number of contributions focusing on start-ups as research context makes these companies particularly suitable for further investigation. Globally, start-ups are driving economic growth and innovation, with the United States leading the global ranking, compiled by StartupBlink in 2024 (Figure 1), with a score of 215, followed by the United Kingdom (55.99) and Israel (51.55). These countries exemplify the diverse entrepreneurial ecosystems that have developed worldwide. Concurrently, the start-up ecosystem has become a vital economic pillar for the European Union, reaching 35,000 companies by 2024 (State of European Tech, 2024) and attracting investments exceeding EUR 45 billion.

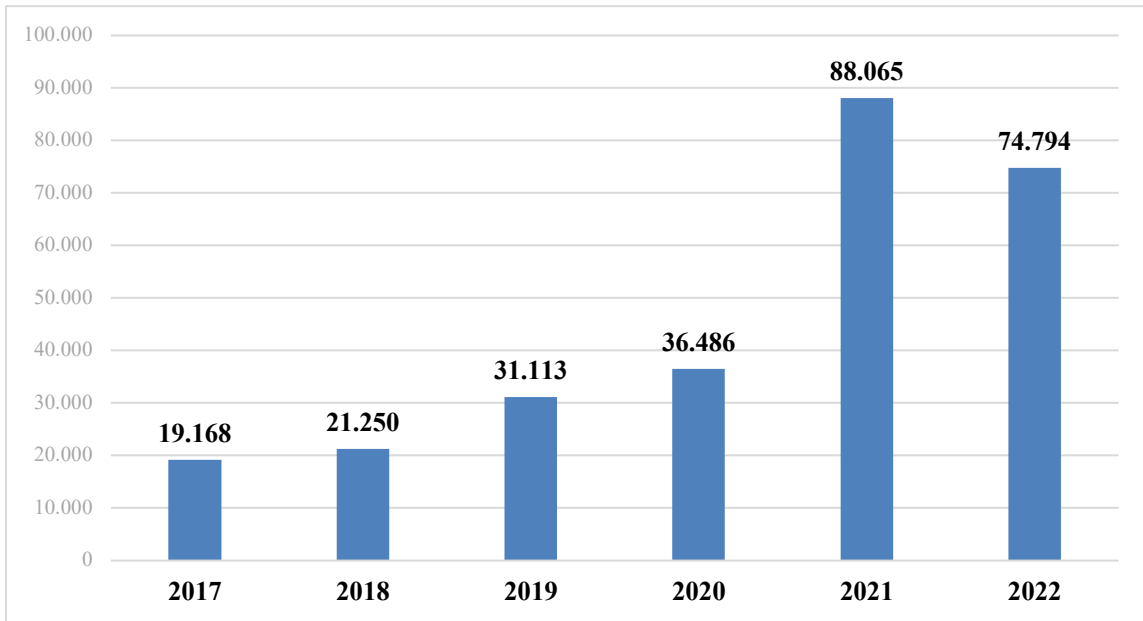
Figure 1. Leading countries for startups worldwide 2024 (StartupBlink, 2024)



Source: Authors' elaboration from Statista

Over the past decade, the influence of start-ups has expanded significantly due to increased capital investment and the proliferation of high-value companies, as evidenced by the remarkable growth observed in countries such as the United Kingdom, Germany, and France. Simultaneously, total European investment in start-ups rose from €19.2 billion in 2017 to a peak of €88 billion in 2021 before stabilising at €74.8 billion in 2022, demonstrating a mature yet resilient ecosystem as shown in Figure 2.

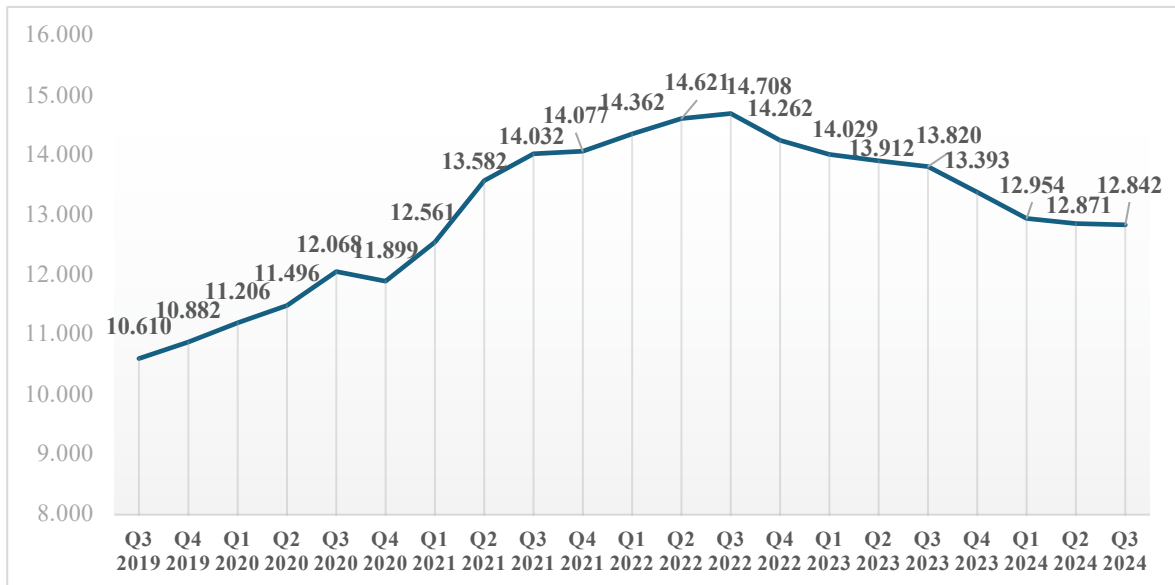
Figure 2. Total investments in start-ups in Europe (2017-2022)



Source: Authors' elaboration from Statista

Although more minor in scale, Italy provides a significant example of this evolution. Between Q3 2019 and Q3 2022, as shown in Figure 3, the number of start-ups steadily increased from 10.610 to 14.708, demonstrating resilience and growth even in challenging periods.

Figure 3. Number of start-ups in Italy (2019-2024).



Source: Authors' elaboration from Statista

During this period of persistent uncertainty, start-ups have encountered significant challenges addressing the complexities of innovation, growth, and adaptation to rapidly evolving circumstances (Kuckertz et al., 2020; Shepherd and Williams, 2020). Research on small businesses and entrepreneurship during crises has primarily adopted a macro perspective, covering how crises impact economies and businesses, the strategies firms use to tackle these challenges, and government policy responses (Belitski et al., 2021). Scholars have explored the effects of crises on business activities and outcomes (Devece et al., 2016; Fairlie and Fossen, 2021; Pedauga et al., 2021), entrepreneurial financing dynamics (Bellavitis et al., 2021), and the influence of policy measures on small firms (Belghitar et al., 2021; Dörr et al., 2021). Although some studies focus on how entrepreneurs adapt their business models during crises (Cucculelli and Peruzzi, 2020), most research on small firms in crisis times has concentrated on organizational-level perspectives (Belitski et al., 2021). While highly relevant and significant, such a perspective is incomplete, as research has consistently demonstrated that the entrepreneur is the central actor in small businesses (Caliendo et al., 2014; Rauch and Frese, 2007), mainly when the business is in its early stages (Aldrich and Cliff, 2003). Furthermore, various studies indicate that numerous firms have emerged to reassess and reallocate their resources in pursuit of resilience based on the decision-making process determined by the entrepreneur (Klein, 2020; Rindova and Courtney, 2020). Thus, studying entrepreneurial decision-making processes is a significant area of scientific inquiry in entrepreneurship. The central figure in this process is the entrepreneur, "someone specialising in taking responsibility for and making judgmental decisions that affect the location, the form, and the use of goods, resources or institutions" (Hebert & Link, 1988, p. 155).

Numerous entrepreneurs have been compelled to reassess and redistribute their resources to navigate this turbulent environment in pursuit of resilience, as evidenced by different examples (Klein, 2020; Rindova and Courtney, 2020). Specifically, entrepreneurs may consider

implementing a pivot strategy, which entails formulating an alternative approach to value creation (Sala, Philbin and Barikzai, 2022). Researchers such as Brenk et al. (2019) point out that a pivot constitutes a change in a startup's strategy. Similarly, Teece (2018) defined pivot as replacing the existing business model. Shepherd and Gruber (2021) define it as a scientific and organised method of testing new hypotheses about the business model. The pivot was initially described by Ries (2011) in his book as a "structured course correction to test a new fundamental hypothesis about the product, strategy, business model". The concept of pivoting has garnered attention from numerous practitioners and start-ups; however, conceptualising the different types of pivots and associated factors still necessitates further empirical investigation and clear validation within the relevant literature (Bohn and Kundisch, 2020).

Previous literature indicates that pivots are one of the most common strategic decisions in start-ups (Flechas Chaparro & de Vasconcelos Gomes, 2021) as they provide the fundamental flexibility to address environmental uncertainty. Previous studies have also reported that pivots are only implemented in severe resource constraints (Hampel et al., 2020a) and compel companies to focus on short-term goals (Berends et al., 2021). Since the business model pivot is expected to enable firms to probe new business model assumptions, they can be an essential ally in exceptionally constrained situations due to crises and exogenous shocks such as COVID-19 (Sanasi & Ghezzi, 2022). These studies, however, are limited. Most previous research on business model pivots has been descriptive, defining this concept as the definition of a scientific method of testing new business model hypotheses.

Furthermore, some recent research has contributed to bringing into the debate the notion that, in situations of uncertainty, the widely accepted experimental model is inapplicable due to the scarcity of resources and the limited amount of time available. Sanasi and Ghezzi (2022) argue that companies affected by exogenous events can employ pivots to formulate immediate responses to the crisis, fulfilling the requirements for prompt action. However, companies do

not have the time to incrementally test and validate strategic changes in crisis contexts, as is typically the case in the pivot process (Kirtley & O'Mahony, 2023). Therefore, substantial scope remains for studying pivots as a crisis response, particularly from an entrepreneurial perspective.

This dissertation contributes to the ongoing discourse surrounding entrepreneurial adaptability by addressing critical gaps in the study of pivots as a strategic response to crises. Its objective is to investigate the pivoting process from diverse theoretical and empirical perspectives, elucidating its role in navigating extreme uncertainty. This research examines how entrepreneurs modify their business models, decision-making processes, and cognitive frameworks during crises through three distinct yet interconnected studies. The dissertation's structure follows a progressive approach, transitioning from macro-level bibliometric analysis to in-depth qualitative investigations.

The first paper, “Entrepreneurs in Action: A Systematic Literature Review on Pivot Strategies”, presents a bibliometric review spanning from 2012 to 2024. Mapping the theoretical landscape of pivots highlights a shift from experimental to adaptive definitions, emphasising the concept's applicability in extreme uncertainty. The second paper, “From Crisis to Response: How Start-up Founders Navigate Uncertainty through Pivoting”, narrows the focus to the Italian entrepreneurial ecosystem during COVID-19. The analysis of twenty start-ups identifies a four-stage decision-making model that integrates entrepreneurial cognition and stakeholder collaboration, providing a framework for understanding how adaptation strategies emerge in response to external shocks. The third study, “Pivots in Response to Crises: A Sense-Making Perspective”, explores the cognitive and social dimensions of pivoting through Karl Weick's sense-making theory. Examining Italian entrepreneurs' experiences underscores the interplay between crisis perception, stakeholder engagement, and opportunity creation, presenting pivoting as a dynamic and socially embedded phenomenon. These studies offer a

comprehensive perspective on the pivoting process, bridging bibliometric insights with empirical findings to enhance our understanding of entrepreneurial adaptability in times of crisis. The conclusions advance theoretical discourse and provide actionable insights for practitioners and policymakers seeking to foster resilience and innovation in uncertain environments.

References

- Belghitar, Y., Clark, E., Dropsy, V., & Mefteh-Wali, S. (2021).** The effect of exchange rate fluctuations on the performance of small and medium-sized enterprises: Implications for Brexit. *The Quarterly Review of Economics and Finance*, 80, 399-410.
- Belitski, M., Guenther, C., Kritikos, A. S., & Thurik, R. (2022).** Economic effects of the COVID-19 pandemic on entrepreneurship and small businesses. *Small Business Economics*, 1-17.
- Bellavitis, C., Fisch, C., & McNaughton, R. B. (2021).** COVID-19 and the global venture capital landscape. *Small Business Economics*, 1-25.
- Berends, H., van Burg, E., & Garud, R. (2021).** Pivoting or persevering with venture ideas: Recalibrating temporal commitments. *Journal of Business Venturing*, 36(4), 106126.
- Bohn, N., & Kundisch, D. (2020).** What are we talking about when we talk about technology pivots?—a Delphi study. *Information & management*, 57(6), 103319.
- Brenk, S., Lüttgens, D., Diener, K., & Piller, F. (2019).** Learning from failures in business model innovation: solving decision-making logic conflicts through intrapreneurial effectuation. *Journal of Business Economics*, 89, 1097-1147.

- Caliendo, M., Fossen, F., & Kritikos, A. S.** (2014). Personality characteristics and the decisions to become and stay self-employed. *Small Business Economics*, 42, 787-814.
- Cucculelli, M., & Peruzzi, V.** (2020). Post-crisis firm survival, business model changes, and learning: evidence from the Italian manufacturing industry. *Small Business Economics*, 54(2), 459-474.
- Devece, C., Palacios-Marqués, D., & Alguacil, M. P.** (2016). Organizational commitment and its effects on organizational citizenship behavior in a high-unemployment environment. *Journal of Business Research*, 69(5), 1857-1861.
- Dörr, J. O., Murmann, S., & Licht, G.** (2021). The COVID-19 insolvency gap: First-round effects of policy responses on SMEs. *ZEW-Centre for European Economic Research Discussion Paper*, (21-18).
- Fairlie, R. W., & Fossen, F. M.** (2021). *Sales losses in the first quarter of the COVID-19 pandemic: Evidence from California administrative data* (No. w28414). National Bureau of Economic Research.
- Flechas Chaparro, X. A., & de Vasconcelos Gomes, L. A.** (2021). Pivot decisions in startups: a systematic literature review. *International Journal of Entrepreneurial Behavior & Research*, 27(4), 884-910.
- Foss, N. J., & Saebi, T.** (2017). Fifteen years of research on business model innovation: How far have we come, and where should we go?. *Journal of management*, 43(1), 200-227.
- Hampel, C. E., Tracey, P., & Weber, K.** (2020). The art of the pivot: How new ventures manage identification relationships with stakeholders as they change direction. *Academy of Management Journal*, 63(2), 440-471.
- Hébert, R. F.** (1988). The entrepreneur: mainstream views & radical critiques.

- Kirtley, J., & O'Mahony, S.** (2023). What is a pivot? Explaining when and how entrepreneurial firms decide to make strategic change and pivot. *Strategic Management Journal*, 44(1), 197-230.
- Klein, P. G.** (2020). Uncertainty and entrepreneurial judgment during a health crisis. *Strategic Entrepreneurship Journal*, 14(4).
- Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Reyes, C. A. M., Prochotta, A., ... & Berger, E. S.** (2020). Startups in times of crisis—A rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*, 13, e00169.
- Pedauga, L., Sáez, F., & Delgado-Márquez, B. L.** (2022). Macroeconomic lockdown and SMEs: the impact of the COVID-19 pandemic in Spain. *Small business economics*, 58(2), 665-688.
- Rauch, A., & Frese, M.** (2007). Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of work and organizational psychology*, 16(4), 353-385.
- Ries, E.** (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. Crown Business. New York.
- Rindova, V., & Courtney, H.** (2020). To shape or adapt: Knowledge problems, epistemologies, and strategic postures under Knightian uncertainty. *Academy of Management Review*, 45(4), 787-807.
- Sala, P. K., Philbin, S. P., & Barikzai, S.** (2022). A qualitative research study of the tech startup journey through entrepreneurial pivoting. *International Journal of Entrepreneurial Behavior & Research*, 28(4), 1050-1074.

- Sanasi, S., & Ghezzi, A.** (2024). Pivots as strategic responses to crises: Evidence from Italian companies navigating Covid-19. *Strategic Organization*, 22(3), 495-529.
- Schumpeter, J. A.** (1934). *The theory of economic development. An inquiry into profits, capital, credit interest, and the business cycle.* Oxford University Press.
- Shepherd, D. A., & Williams, T.** (2020). Entrepreneurship responding to adversity: Equilibrating adverse events and disequilibrating persistent adversity. *Organization Theory*, 1(4), 2631787720967678.
- Shepherd, D. A., & Gruber, M.** (2021). The lean startup framework: Closing the academic–practitioner divide. *Entrepreneurship Theory and Practice*, 45(5), 967-998.
- Teece, D. J.** (2018). Business models and dynamic capabilities. *Long-range planning*, 51(1), 40-49.

Chapter 1. Entrepreneurs in Action: A Systematic Literature Review on Pivot Strategies¹

Abstract: The concept of pivoting has gained traction as a strategic innovation approach in the entrepreneurial context. While widely adopted by practitioners, the pivot concept has received relatively limited academic attention and remains inconsistently defined in the literature. This study seeks to address this gap by conducting a systematic literature review (SLR) of 110 papers, to analyse the evolution of the pivot definition and its applications, particularly in the context of external shocks. Using bibliometric tools such as Bibliometrix and VOSviewer, this research identifies key contributions that have shaped the field, focusing on the period before and after the COVID-19 pandemic crisis. The findings reveal three main contributions: a bibliographic coupling analysis that maps the central theories and developments in the pivot literature; a refined conceptualisation of the pivot process, by its cognitive and decision-making dimensions; the development of a theoretical framework that highlights critical research gaps and offers directions for future studies. Overall, this study advances the understanding of pivoting as an adaptive strategy, providing a structured foundation for ongoing research.

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1. Introduction

In the entrepreneurial context, a pivot is a widely adopted innovation strategy. As Ries (2011) explained, this approach entails a strategic adjustment a start-up makes to test a new fundamental hypothesis regarding a product, business model, or growth engine. Although this concept has gained widespread acceptance among entrepreneurs (Maurya, 2012; Blank and Dorf, 2020), it has received less attention in academic circles (Hampel et al., 2020). However, there has been an exponential increase in scientific research on this topic in recent years. Despite its growing popularity, the pivot lacks a uniform definition in the literature. According to Flechas Chaparro and de Vasconcelos Gomes (2021), scholars have used the term to describe various types of change (Axelson and Bjurström, 2019; Camuffo et al., 2020; Tekic and Koroteev, 2019), strategic decisions (Hampel et al., 2020; Pillai et al., 2020), correction or replacement mechanisms in the event of failure (Conway and Hemphill, 2019; Leatherbee and Katila, 2020; McMullen, 2015; Shepherd and Gruber, 2021), processes or events (Camuffo et al. 2020; Hampel et al., 2020; Ghezzi, 2019), and states or conditions (Bahrami and Evans, 2011).

Flechas Chaparro and de Vasconcelos Gomes (2021) have presented a comprehensive synthesis of prevailing definitions and have proposed a definition focused on decision-making. However, based on articles published up to October 2020, their study does not include all post-pandemic research on this topic. Recent studies have emphasised the significance of pivots in situations of external shocks, allowing companies to explore new assumptions for their business model. For instance, Sanasi and Ghezzi (2022) conducted a study that laid the groundwork for a theoretical discussion on the validity of the pivot concept as an experimentation process during exogenous shocks, showing a clear transition towards an adaptive process concept. Such evidence highlights the need to address some research gaps by conducting a bibliometric literature review. This study aims to answer three research questions: 1) What are the major

findings of the academic research on pivot? 2) How has the definition of pivot evolved since the Covid-19 pandemic crisis? 3) Which areas require further research?

The arguments mentioned above and the increasing scholarly interest in pivot research underscore the necessity for a systematic review of the extant literature. A systematic literature review (SLR), conducted utilising tools such as Bibliometrix and VOSviewer, represents a rigorous and structured research methodology to systematically identify and analyse the intellectual output in a given field, considering the applied methods, levels of analysis, and theoretical frameworks employed (e.g., Gomes et al., 2019). Following previous SLRs (e.g., Granstrand and Holgersson, 2020; Eggers and Kaplan, 2013), this study aims to contribute to the advancement of the pivot literature by identifying the principal contributions that have shaped the field and tracing their evolution over time to define and elucidate new research directions. Based on the SLR conducted, this study makes three primary contributions to the pivot literature. Firstly, bibliographic coupling analysis provides a comprehensive overview, organised by periods (pre- and post-pandemic), of the central contributions and theories underpinning the literature, facilitating an understanding of the origin and evolution of the field of study. Secondly, utilising co-occurrence analysis enhances the conceptualisation of the pivot process, synthesising existing definitions and proposing a novel one that focuses on the cognitive and decision-making processes of the entrepreneur. Finally, the study suggests a theoretical framework that delineates the main areas of interest and gaps that require further investigation, providing a structured foundation for future research in the field. The paper is structured as follows. Initially, a brief and concise literature review contextualises the current knowledge regarding pivoting. After, the research methodology and protocol are explained in detail, followed by a presentation of the results obtained through descriptive and bibliographic coupling analysis. The paper concludes with a discussion of the results through co-occurrence

analysis and recommendations for future research. The final paragraph of the conclusion summarises the findings of the analysis and the study's implications.

2. Theoretical Background and Motivations for a Review

In contrast to established concepts such as strategic change (Greenwood and Hinings, 1996) or business model innovation (Chesbrough, 2010), pivoting lacks a consistent definition in the literature. Erick Ries first introduced the term in his book *The Lean Start-up* (2011), in which he defines it as a "structured course correction to test a new fundamental hypothesis about the product, strategy, and growth engine" (p. 149).

The concept of pivoting has gained increasing legitimacy and attention among management scholars, and numerous studies have explored its nature and impact on both start-ups and established firms (e.g., Grimes, 2018; Pillai et al., 2020; Snihur and Clarysse, 2022). As recently summarised by she, scholars have used the term "pivot" to refer to various types of change (Axelson and Bjurström, 2019; Camuffo et al., 2020; Tekic and Koroteev, 2019), strategic decisions (Hampel et al., 2020; Pillai et al., 2020), correction or replacement mechanisms in case of failure (Conway and Hemphill, 2019; Leatherbee and Katila, 2020; McMullen, 2015; Shepherd and Gruber, 2021), processes or events (Camuffo et al., 2020; Hampel et al., 2020; Ghezzi, 2019), and states or conditions (Bahrami and Evans, 2011). Despite different conceptual definitions and types of strategies, the studies mentioned above agree that the nature of pivots is inherently experimental (Pillai et al., 2020) and allows organisations to redefine their business model from a systematic perspective (Hampel et al., 2020; McDonald and Gao, 2019).

According to researchers, there are various types of pivots, as highlighted by Hampel et al. (2020, p. 6). These researchers distinguish between "conceptual pivots" in the early phases and "real pivots" in later stages. Pivoting in the early phase is a sub-process of the lean start-up

method, primarily focusing on start-ups, as Boddington and Kavadias (2018) argued. This process consists of four stages: Ideation, Prototyping, Testing, Validation, and Growth. Similarly, Ghezzi (2019) views pivoting as a process in which a company performs a series of successive iterations until an action plan is developed. However, according to Hampel et al. (2020, p. 48), late-stage pivots are performed by companies that have followed a specific strategic path over a long period, usually small and medium-sized enterprises (SMEs). Ries (2011), Hirvikoski (2014), and Bajwa et al. (2017) identified and classified different forms of pivots based on their strategic orientation in terms of product change or market approach.

Additionally, pivots can be categorised based on their triggers. First, a pivot can be triggered by difficulties in the business model, such as limited market penetration leading to declining revenues (Hampel et al., 2020), low product attractiveness for potential customers (Kirtley & O'Mahony, 2023), or the emergence of competing technologies threatening the business offering (Pillai et al., 2020). Pivots enable businesses to explore new assumptions about their operations and restore profitability, making them a crucial element in responding to crises. Crises result from sudden, external shocks that require quick decision-making within a limited time frame (Hermann, 1963; Pearson and Claire, 1998). This has led to questions about whether the traditional concept of pivots as a strategic response to crises requires adjustments (e.g., Kirtley and O'Mahony, 2023; Hampel et al., 2020; McDonald and Gao, 2019) as it views pivots as decisions made due to the falsification of hypotheses through experimentation.

Sanasi and Ghezzi (2022) argue that firms affected by exogenous events can use pivots to formulate an immediate response to the crisis and fulfil the timing requirements for action. This view contradicts the experimental nature of pivots, which aim to systematically explore the feasibility of business model assumptions (Andries et al., 2020; Frederiksen and Brem, 2017). However, organisations do not have the time to test and validate strategic changes incrementally in a crisis context, as is typically the case in the pivot process (Kirtley and O'Mahony, 2023).

According to previous studies that have identified pivots as a response to unforeseen events (Berends, van Burg, and Garud, 2021), the literature suggests that pivots in crises may address the temporary nature of the crisis itself, as organisations must balance the tension between immediate survival and long-term durability.

3. Methodology: Search Protocol

A systematic review of the reference literature was conducted using a structured methodological design that involved several stages (Gundolf and Filser, 2013). This type of review helps identify the state of the art of a research topic by critically evaluating relevant publications (Rodrigues et al., 2014). Following a structured approach, the systematic review answered initial questions by identifying and analysing all studies related to the topic and then drawing conclusions based on the identified studies following the research protocol (Armitage and Keeble-Allen, 2008). The methodology proposed by Chandra (2018) and operationalised by Pereira et al. (2023) involves mapping reference topics, analysis of co-citations, and visualisation of overlaps. This systematic review followed these steps to answer the formulated research questions and present a future research agenda.

3.1. Article Selection and Fine-Tuning

The data for this study was obtained from the Web of Science (WoS) and Scopus databases, which are the most widely used and comprehensive sources for peer-reviewed literature (Mongeon and Paul-Hus, 2016; Zupic and Cater, 2015; Randhawa et al., 2016). To ensure that our analysis was as comprehensive as possible, we conducted a Systematic Literature Review (SLR) using bibliometric analysis, which involves a statistical examination of publications to gather information on researchers, scientific journals, and the origin of publications (Randhawa

et al., 2016). This method allows researchers to base their findings on aggregated bibliographic data from other scholars working in the field, as expressed through citations, collaborations, and writings (Zupic and Čater, 2015). To ensure an unbiased and transparent approach, we followed the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines (Moher et al., 2009; Di Vaio et al., 2022; Vinagre et al., 2023) and are illustrated in Figure 1.

To clarify the selection and exclusion criteria outlined in Figure 1, we detail the work steps undertaken, drawing upon the research of Marzi et al. (2021) and Turzo et al. (2022). Initially, we comprehensively analysed the pertinent literature on pivot strategies, entrepreneurial stages, and start-ups to identify crucial keywords. A comprehensive list of these keywords, categorised by macro-topic, is presented in Table 1.

Table 1. Set of keywords used.

Start-ups	Pivot	Entrepreneurial phases
New venture*	Pivot	Latent entrepreneur*
Startup*	Pivoting	Emergent entrepreneur*
Start-up*	Pivots	Growth Entrepreneur*
New firm*	Reorient*	Entrepreneur* growth
Entrepreneur*	Lean start-up approach	Exit Entrepreneur*
	Lean startup approach	Entrepreneur* exit
	LSA	
	Strateg* design	
	Lean design thinking	
	LDT	
	Business model* reorient*	

Once the keywords had been defined, the next step was to formulate a query to search for the articles' titles, summaries, and keywords in the two specified databases. The terms were combined using the Boolean operators “AND” and “OR” to refine the search for the articles. The search string for both databases was as follows: ((“New venture*” OR “Startup*” OR

“start-up” OR “new firm*” OR “entrepreneur*” OR “Latent entrepreneur*” OR “Emergent entrepreneur*” OR “Growth Entrepreneur*” OR “Entrepreneur* growth” OR “Exit Entrepreneur*” OR “Entrepreneur* exit”) AND (“Pivot” OR “pivoting” OR “Pivots” OR “reorient*” OR “lean start-up approach” OR “lean startup approach” OR “LSA” OR “lean design thinking” OR “LDT” OR “strateg* design” OR “business model* reorient*”).*

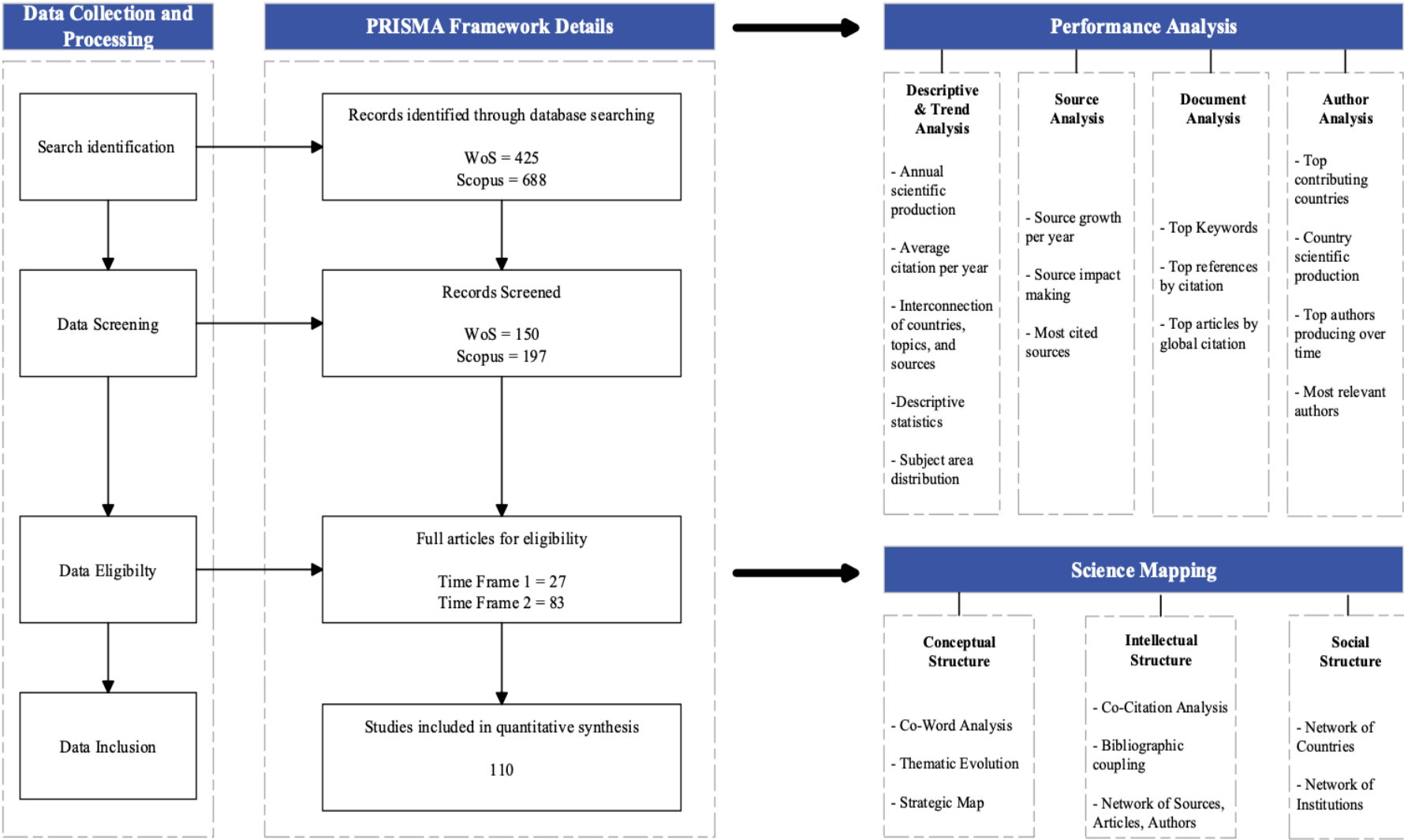
The subsequent step was to execute queries on the two databases and search for articles' titles, abstracts, and keywords. This initial search yielded 1.113 articles from the two databases, with 425 from WoS and 688 from Scopus. The fourth step involved refining the search to include only articles that met the predefined inclusion criteria, which are defined in Table 2 and include the number of articles included per step.

Table 2. Articles' inclusion and exclusion criteria.

N°	Inclusion Criteria	Exclusion Criteria
1	Web of science categories: Management and Business Scopus category: Business, Management and Accounting	Books, Book Chapters, Conference Reports, Proceeding Papers
2	Documents Type: Only articles	Non-English Publications
3	Language: English	Articles published before 2012
4	Date of publication: 2012-2013-2014-2015-2016-2017-2018-2019-2020-2021-2022-2023-2024	

On the other hand, articles were excluded for the following reasons: (1) conference articles, book chapters and articles under review; (2) articles not written in English; (3) articles with a publication year before 2012 as the pivot concept was first mentioned by Ries in 2011.

Figure 1. Diagram of the methodology to select and analyse articles.



Three hundred forty-seven articles from the two databases were considered in this phase: 150 from WoS and 197 from Scopus. In the fifth phase of the study, the abstracts and keywords of the selected articles were thoroughly examined and analysed. Articles were excluded for the following reasons: (1) Articles unrelated to the research topic; (2) Articles referring to the concept of pivot or business model innovation but not concerning start-ups; and (3) Articles mentioning business model innovation and pivot as similar topics. This approach was employed to ensure the accuracy and relevance of the sample concerning the research theme and to eliminate any potential duplicates or irrelevant articles (Denyer and Tranfield, 2009).

The endeavour mentioned above involved delineating a concluding sample of 110 articles, which were subsequently categorised into two distinct timeframes: the first, comprising the years 2012 to 2019, with 27 articles, and the second, covering the period from 2020 to 2024, comprising 83 articles. This procedure was carried out to precisely address one of the formulated research inquiries to gauge the influence of the Covid-19 pandemic on the literature. After assembling and selecting the studies to be incorporated into the SLR, we progressed to the sixth phase, during which we executed descriptive analyses using Bibliometrix and utilised the VOSviewer software to establish clusters. We ultimately culminated with the seventh phase, i.e., the process of literature review, analysis, and model construction.

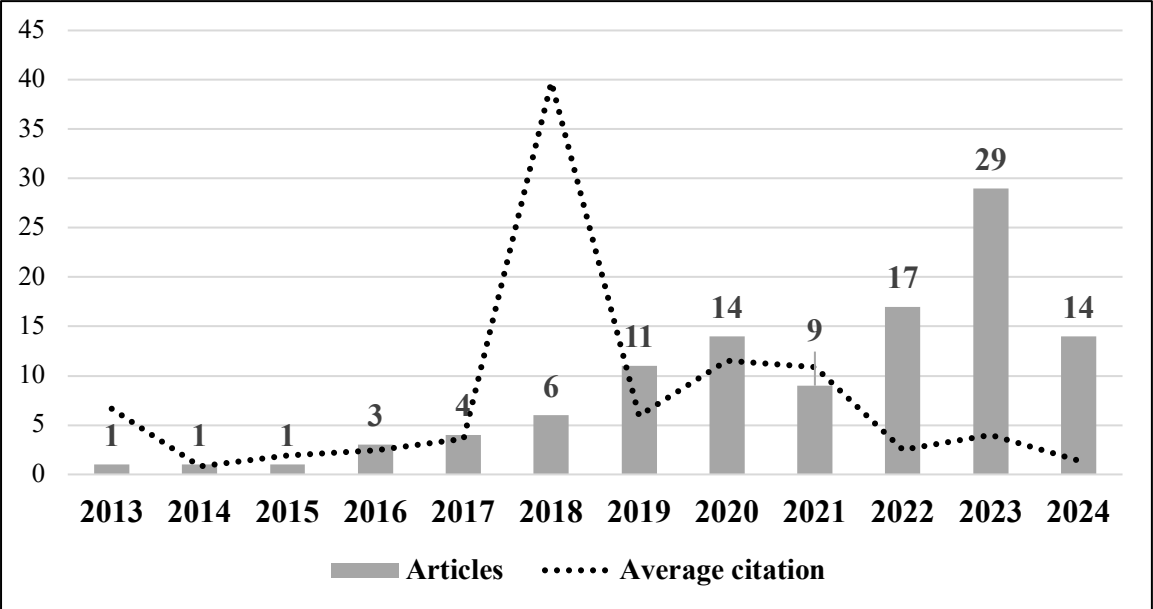
4. Results

4.1. Descriptive Analysis of the Pivot Literature

The research sample chosen for analysis comprises 110 articles sourced from two separate databases, Web of Science and Scopus. As illustrated by the graph displayed in Figure 1, the articles were produced over approximately 11 years. The earliest article dates to 2013, and after a brief period of low production, there was a significant increase in production between 2019 and 2023, from 11 to 29 published articles per year. As of the last data retrieval date of May 22,

2024, 14 additional articles have already been published. It is evident that in the past five years, there has been an increased focus on analysis topics, resulting in a total of 94 articles published between 2019 and 2023. This trend is noteworthy as it highlights a substantial interest and attention towards pivot strategies in start-ups. However, it may also make it challenging to identify well-defined research areas. Therefore, systematising the literature can help define the application areas better and provide a deeper understanding of the key concepts.

Figure 2. Annual scientific production and average citation.



Source: Authors' elaboration from Bibliometrix

Upon analysing the documents, it is crucial to concentrate on the 67 sources utilised for their publication. Among these, the most significant sources are the International Journal of Entrepreneurial Behaviour and Research, with eight articles; Emerging Markets Case Studies, with five publications; Technological Forecasting and Social Change, with 5; Journal of Business Venturing and Strategic Management Journal, with four articles each. In addition, the ten most cited journals are presented in Table 3, which depicts the dynamics of the sources based on the 2021 ABS ranking.

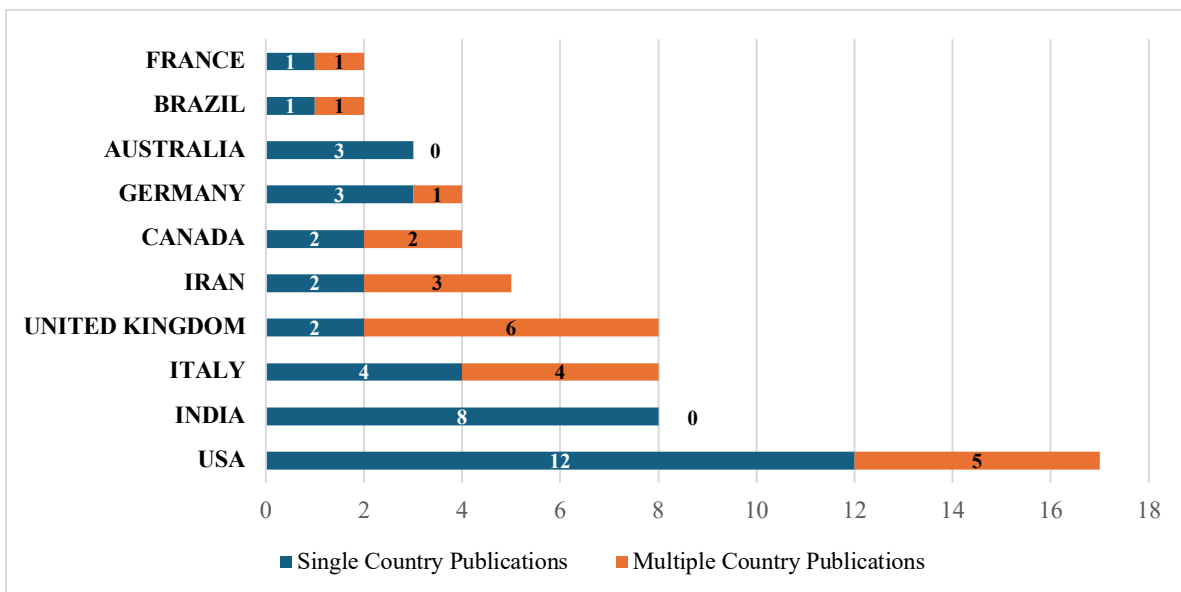
Table 3. Top 10 Journals with the highest number of publications.

Sources	ABS Ranking	Articles
Journal of Business Venturing	4*	4
Strategic Management Journal	4*	4
Academy of Management Journal	4*	2
International Journal of Entrepreneurial Behaviour and Research	3*	8
Technological Forecasting and Social Change	3*	5
International Small Business Journal	3*	3
Long Range Planning	3*	3
Journal of Business Venturing Insights	2*	2
Emerald Emerging Markets Case Studies	1*	4
Journal of Small Business and Entrepreneurship	1*	4

Source: Authors' elaboration from Bibliometrix

The articles analysed comprise contributions from 270 authors, with a relatively modest number of individual contributions accounting for only 19 of the total 110 papers. Notably, the proportion of international co-authors is 35.45%, underscoring the global interest in this topic. This international commitment is further emphasised by examining the geographical distribution of authors, which reveals a leadership role played by North America, with 17 contributions coming from authors working at American universities.

Figure 3. Distribution of articles by authors' country



Source: Authors' elaboration from Bibliometrix

The USA is followed by India, Italy and the United Kingdom, with eight articles each. Beyond this top group, the sample reflects a diverse geographical distribution, including contributions from different world regions, including Europe, Asia, South America, and Australia. This indicates a widespread and global interest in the topic, as depicted in Fig. 3. When viewed from a regional perspective rather than a national one, it is apparent that Europe plays a pivotal role in producing knowledge about pivot processes in start-ups. Adding up the articles from Italy, Germany, Spain, and France yields 16. This evidence is significant for two primary reasons. First, it reflects the interest of practitioners (founders, investors, etc.) in considering pivot processes as global best practices worthy of academic and practical study. Secondly, the European Union has emerged as a significant global player in the start-up economy in recent years, and the number of scholarly papers devoted to the study in this region is further evidence of this.

In conclusion, the key contributions to this field of study, as evidenced by the references cited in our sample, are "Business Models and Dynamic Capabilities" by D.J. Teece (2018, Long-range Planning) and "The Pivot: How founders respond to feedback through idea and identity work" by M.G. Grimes (2018, Academy of Management Journal). These two articles were cited most frequently within our sample, indicating their significance and acknowledgement within the broader body of literature examined.

4.2. State of the Art: Mapping the Foundations of the Pivot Literature from a Bibliographic Perspective

Figures 4 and 5 present the bibliographic links of the papers: the analysis yielded three distinct clusters for timeframe 1 (2012-2019), while the study identified four clusters for timeframe 2 (2020-2024).

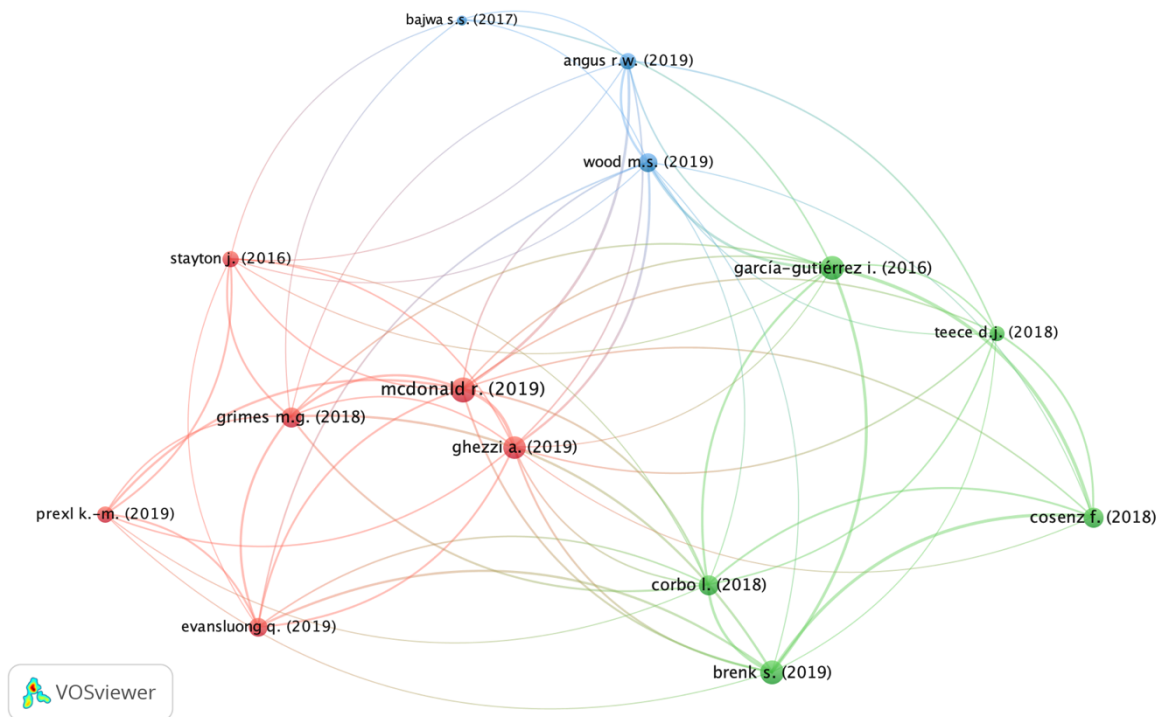
4.2.1. Time Frame 1 (2012-2019)

Blue cluster: Strategic Responses to Failure. In this line of research, scholars define pivot as a strategy implemented in response to the failure of a key element of value creation. Specifically, the pivot emerges as a corrective measure to address identified critical issues by modifying or repositioning the aspects that impede the business model from achieving its objectives.

Wood et al. (2019) posit that a pivot is a strategy whose purpose extends beyond mere change, but rather “*to abandon a current offering in favour of a completely new concept*”. Their research thus demonstrates the abandonment of a flawed initial BM and its concepts, replacing them with more promising alternatives. Furthermore, they underscore the nature of the pivot as an inherently drastic and definitive strategy. However, this interpretation is contested by Angus (2019), who, applying *problematic search theory*, argues that radical change (nonlocal search) is not always the optimal approach. Although he concurs with Wood et al.'s (2019) view of pivoting as a strategy adopted in response to the failure of a key element of value creation, his study demonstrates that business performance is superior when the changes adopted are moderate rather than radical, particularly in the presence of intermediate levels of initial performance. Angus (2019) thus implicitly critiques the notion of a pivot as a total change and suggests that less extreme solutions may yield more consistent results.

These two significant research studies draw upon the work of Bajwa et al. (2017). Their research, contextualised to pivots in the software startup sector, emphasises that failures are not merely the result of errors but represent a critical moment of validated learning, a fundamental principle of the *lean startup approach* (Ries, 2011).

Figure 4. Bibliographic Coupling Time Frame 1.



Specifically, Bajwa et al. highlight two key elements that inform the subsequent work of Wood et al. (2019) and Angus (2019): pivot flexibility and the role of failures and triggers. Regarding pivot flexibility, the authors first acknowledge that pivoting is a multifaceted phenomenon that can manifest in incremental or drastic forms depending on the circumstances. Secondly, concerning the role of failures and triggers, they emphasise the line of research shared by Wood et al. (2019), identifying failure as the primary catalyst for pivoting and, more broadly, for the entire cluster analysed.

Green cluster: Scientific Experimentation Process. In this category, pivots are conceptualised based on change, precisely transforming or modifying something over time (Rensink, 2002), emphasising changes in the business model.

García-Gutiérrez & Martínez-Borreguero (2016) were the first researchers to identify pivots as a tool for change, proposing the Innovation Pivot Framework, a practical and theoretical tool for startups to focus innovation on designing a new business model. They suggest that pivoting

is necessary to respond to negative feedback or market changes and inherently involves revising the business model. Cosenza & Noto (2018) also widely acknowledged this concept and emphasised the importance of rapid adaptation to emerging dynamics through dynamic modelling to test real-time strategies to address uncertainty. The divergence lies in the dynamic and iterative approach, where the business model is not viewed as a static entity but as a system that evolves through simulations and experimentation.

Experimentation on the business model is a concept derived from Teece's (2018) seminal paper on business model innovation, which also proposes a clear definition of pivots as actions designed to rapidly test, rule out, and replace ideas and concepts that have proven flawed. The study conducted by Brenk et al. (2019) aligns with the research mentioned above while exploring how established organisations approach the business model innovation (BMI) process. It draws attention to conflicting decision logic, introducing the effectual logic concept and favouring a more dynamic and adaptive approach typical of entrepreneurial innovation in startups. This research thus emphasises the importance of analysing strategic decision-makers or entrepreneurs' traditional or effectual reactions (level of analysis).

Similar to Brenk et al. (2019), Corbo et al. (2018) address the topic of business model adaptation to significant external changes. In the case of Corbo et al., the business model change occurs in response to an external shock, specifically China's entry into the WTO. In contrast, in the case of Brenk et al. (2019), companies face change in the context of a digital transformation. While Brenk et al. (2019) define the process of business modelling as a balance between traditional and effectual logic, Corbo et al. (2018) focus on business model experimentation in response to exogenous events, similar to the previously analysed work.

Red cluster: Social Dimension of Pivot. The results provide a process pivot view in this cluster. According to Pettigrew (1997, p. 338), a process is "a sequence of individual and collective events, actions, and activities that take place over time in a context." Within the

process approach, some authors propose a series of well-defined stages. In contrast, others consider pivots less structured, similar to trial-and-error learning processes (e.g., Ghezzi, 2019). The work elaborated by Ghezzi (2019) posits the necessity to revisit the pivot as a structured process, a concept derived from the study by Stayton and Mangematin (2016), in which the authors offer a structured perspective on the role of the pivot in the creation and development of technology startups. The positioning of this cluster and the literature on the definition of a less structured process stems precisely from the evolution of the conclusions drawn by Stayton and Mangematin (2016), in which the pivot is described as a necessary and planned transition process that enables startups to become structured and reliable organisations.

The processes, understood as a sequence of events, actions, and activities conducted both individually and collectively, highlight, through their collective dimension, the contribution of various social actors. It is precisely this collective nature that the cluster emphasises, drawing attention to diverse studies analysing the role of these actors in the definition of processes themselves. Specifically, the study by Prexl et al. (2019) delves into the topic by focusing on the role of ecosystems in processes such as pivoting. In particular, the paper emphasises how the iterative learning environment fostered by accelerators, through the interaction between startups and corporations, influences the business change processes of startups. This approach underscores the importance of the social dimension in transformation processes. The social dimension, broadly and more circumscribed to pivot processes, is also analysed by McDonald and Gao (2019). McDonald and Gao (2019) highlight how companies' communication pivots significantly impact their relationships with key supporters and partners. This suggests that the pivot process is not solely a strategic decision but also a choice that requires careful social assessment to minimise potential constraints. This aspect further underscores the socially situated nature of this process.

The processes also originate from the entrepreneurs' identification of opportunities, emphasising a critical role in shaping the entrepreneur's pathways. According to Grimes (2018), the central focus is the entrepreneur's cognition and how their perceptions, rationality, experience, and behaviour influence decision-making and pivotal actions. Inevitably, human perceptions and behaviour are influenced by the social dimension, a conclusion highlighted by the correlation between Grimes' (2018) paper and the research of Evansluong et al. (2019), who elucidate how the opportunity creation process is a dynamic entrepreneurial mechanism in which the social and cultural context plays a predominant role.

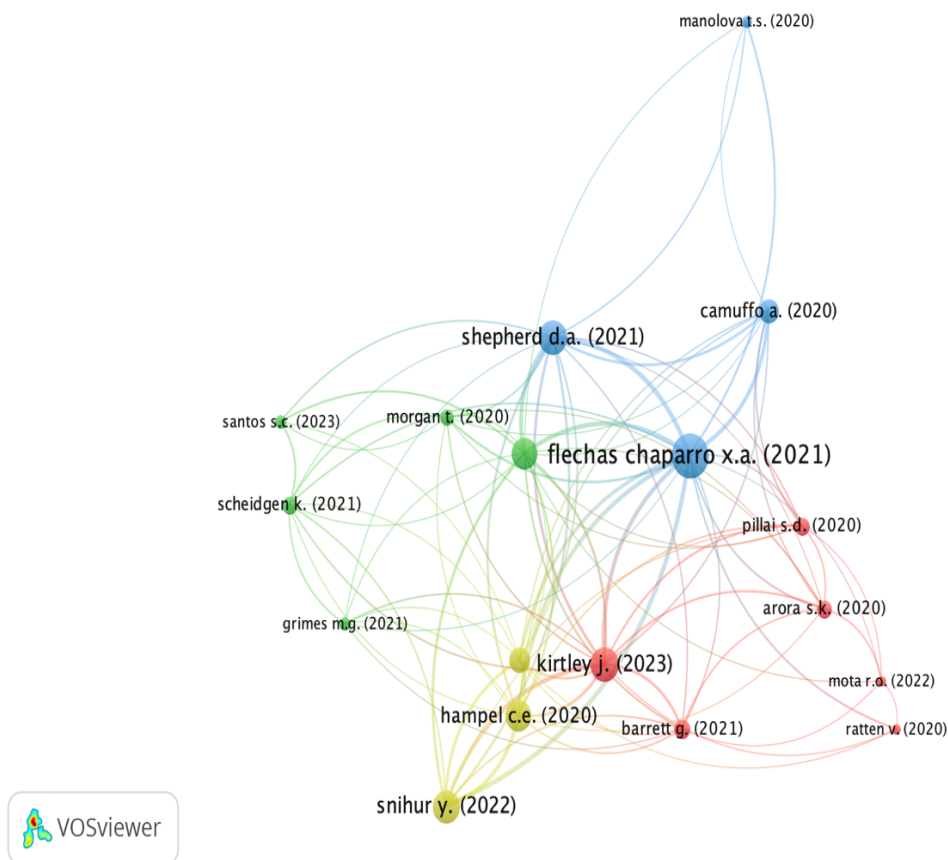
4.2.2. Time Frame 2 (2020-2024)

Blue Cluster: Scientific Decision-making Process. Papers included in this cluster examine *entrepreneurial decisions* and their intrinsic relationship to pivoting strategies, *employing scientific methodologies*. Specifically, a conceptualisation of pivoting as a construct of scientific change initiated by the entrepreneurial entity emerges.

In this context, the research of Camuffo et al. (2020), which utilises an experimental approach (RCT), compares the efficacy of a scientific methodology in entrepreneurial decision-making, focusing on the individual level of analysis to investigate the pivot and the effectiveness of a scientific method in addressing change. Shepherd and Gruber (2021) concur that adopting rigorous and experimental approaches, such as the scientific method or Lean Startup, enhances the quality of entrepreneurial decisions. Both emphasise the significance of validating hypotheses to guide entrepreneurs toward more informed pivot decisions. As broadly defined, the cluster underscores the importance of the level of analysis at which pivots are studied, considering them entrepreneurial decisions. This aspect is further explored in the study by Manalova et al. (2020), which analyses how women entrepreneurs responded to the COVID-19 crisis by adopting pivoting strategies that combine risk reduction and the utilisation of new

opportunities. Flechas Chaparro et al. (2021) approach pivoting from a theoretical perspective, examining the stages and theories associated with it, and proposing a systematic framework for understanding decision-making in start-ups, contributing to the emergence of a new strand of research that emphasises the entrepreneurial level in the analysis of pivoting strategies.

Figure 5. Bibliographic Coupling Time Frame 2



Yellow Cluster: Social Dynamics. This cluster of papers focuses on analysing the social dimension in pivot processes, examining how these processes are influenced and shaped by stakeholder relationships, organisational identity, and temporal dynamics.

Hampel et al. (2020) posit that a central aspect of pivot is its impact on key stakeholder relationships, which are critical to the firm's success but can be threatened by change. Hampel

et al. (2020) assert that pivots can damage such relationships but propose strategies to mitigate the adverse effects, such as fostering empathy with stakeholders and emphasising the necessity for change. This suggests that a pivot is not merely an internal strategic change but a process that must consider external interactions and relationships, which can be as decisive as the new direction. The study by Berends et al. (2021) aligns with the context discussed in the work of Hampel et al. (2020), expanding and deepening the theme of the social dimension. Both studies acknowledge the importance of managing change in a manner that minimises external and internal disruptions. However, Berends et al. (2021) offer a more nuanced perspective on the temporal dimension and how entrepreneurs adapt to circumstances, emphasising how time and temporal choices are crucial in deciding whether to persevere or pivot. This further complements Hampel et al.'s (2020) analysis by suggesting that the timing and sequencing of process actions (and not solely the decision to pivot or not) can influence such a decision's outcome and relational consequences. The key concept introduced by Snihur and Clarysse (2022) is the crystallisation of roles within the firm, i.e., the process by which organisation members define and stabilise their roles in a manner consistent with organisational identity. Specifically, the authors emphasise how attracting investors and employees who align with the organisational identity facilitates the transition to new opportunities and the extent to which the company successfully defines a coherent and effective pivot process.

Green cluster: Responses to Crisis-driven Uncertainty. The projects analysed in this cluster examine the role of pivot processes as strategic and cognitive responses to uncertainty arising from crises and exogenous shocks.

Particularly relevant is the research by Ghezzi (2020), which investigates the role of cognitive processes in adopting scientific and systematic business approaches, with a specific focus on managing limited cognitive resources. The author elucidates how business models function as cognitive lenses, facilitating the translation of Lean Startup Approaches (LSAs) into

expeditious and frugal responses. This enables entrepreneurs to organise information, experiment, and adapt their strategy effectively. This approach emphasises the connection between the cognitive dimension and entrepreneurial action, as illustrated by Figure 5, which relates this paper to the blue cluster, characterised by the focus on entrepreneurial action. This approach aligns with the possibilistic thinking proposed by Grimes and Vogus (2021), who posit that entrepreneurs critically interrogate their cognitive sphere and consequently existing assumptions about their business model to formulate systemic (pivot) interventions in response to grand challenges such as crises.

Crises serve as a significant exogenous driver for implementing cognitive pivot processes, as explored in the study by Scheidgen et al. (2021). The authors demonstrate how the COVID-19 pandemic and physical distancing measures have generated new entrepreneurial opportunities, particularly in digital social innovation. This study highlights an additional cognitive area underlying the pivots: the capacity of entrepreneurs to react to crises, seize new opportunities and address social needs simultaneously. In this vein, the paper by Santos et al. (2023) further investigates the role of entrepreneurs' cognitive volition in recognising and exploiting such opportunities through digitisation. The ability to enhance entrepreneurial resilience through the adoption of digital technology infrastructure further corroborates how the cognitive orientation of entrepreneurs is crucial in transforming constraints into strategic levers for innovation and growth. Morgan et al. (2020) offer an alternative perspective, emphasising how crises not only drive the adoption of pivots but also necessitate strategic thinking. The authors' analysis focuses on the implications of responses to these shocks, suggesting that SMEs address crises in significantly different ways depending on their stage of development. Specifically, they elucidate how start-ups, due to their agility, can swiftly capitalise on arbitrage opportunities, while more established firms, despite possessing more significant resources, may

incur additional costs and wasted resources if they attempt to pivot solely driven by the desire to exploit entrepreneurial opportunities.

Red cluster: Entrepreneurial Capabilities. This cluster of research examines the factors that influence companies' decisions to alter their strategies, focusing on the elements that determine the efficacy of the pivot process. In this context, information, resilience, and founder characteristics emerge as crucial for the success of strategic change.

Pillai et al. (2020) noted that pivots represent strategic choices between alternatives that involve high risks and significant investments. Often precipitated by unfavourable outcomes, such as an insufficient market niche or the emergence of dominant technologies that threaten the company's offering, the pivot does not occur arbitrarily. Instead, it frequently manifests as a strategic learning opportunity, which, according to Pillai et al. (2020), can be decisive for the company's long-term success. This notion is corroborated by Kirtley and O'Mahony (2023), who posit that firms are more likely to pivot when confronted with conflicting information that challenges their existing beliefs, leading to incremental changes over time rather than radical alterations. The capacity to pivot, therefore, depends on several factors, including the firm's resilience and the leadership's ability to interpret the available information effectively.

Barrett, Dooley and Bogue (2021) emphasise how the managerial characteristics of SME founders significantly influence pivot adoption. The ability of these leaders to navigate uncertainty, particularly in times of crisis such as COVID-19, directly impacts firms' adaptability and long-term success. The study by Mota et al. (2022) on start-ups during the pandemic confirms this, underscoring the importance of resilience. Start-ups with robust resilience characteristics, such as agility and innovation, were better equipped to adapt their strategies in response to the crisis. Ratten (2020) arrives at similar conclusions but shifts the analysis to the individual level. According to Ratten, entrepreneurs' cultural, social, and lifestyle changes in response to sudden and large-scale events necessitate highly adaptable individuals.

Resilient entrepreneurs, capable of pivoting rapidly and innovating, survive and thrive, capitalising on new opportunities that emerge from such upheavals.

5. Discussion and Research Avenues

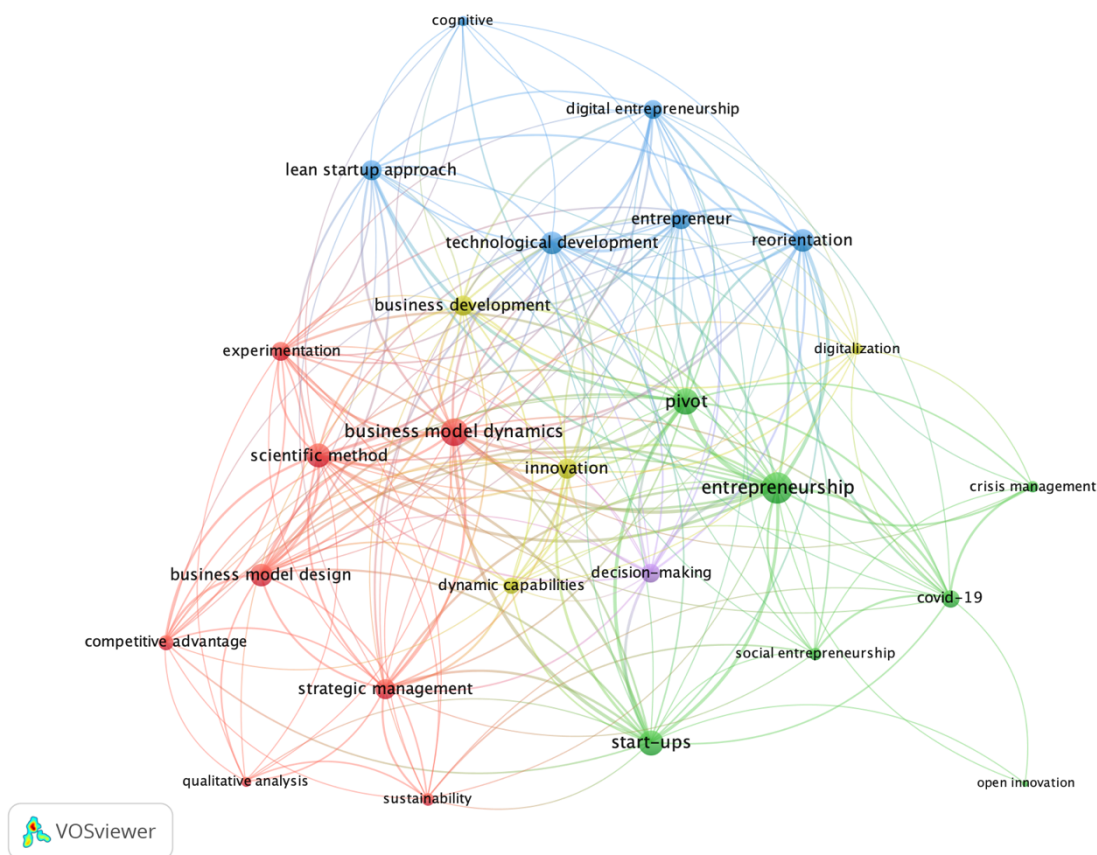
Studies such as those by Christensen et al. (2018) and Spigel and Harrison (2018) have suggested that multiple and divergent conceptualisations in a research field can be detrimental, as it risks limiting contributions and hindering the development of a cohesive and unified body of theory. However, in the pivot literature, a univocal conceptualisation is not feasible. As elucidated in the *bibliographic coupling* section, it is more appropriate to assert that the literature, and consequently the definition of the pivot, has undergone an evolutionary process influenced by the intersection between this field of research and crisis management. To illustrate this transition, this section employs *co-occurrence* analysis (Figure 6, Figure 7) to map the contributions of the entire sample according to the keywords associated with them, enabling a holistic analysis that directly links to the state-of-the-art described in the previous section.

5.1. The Evolution of Pivot Concept: From Business Model Experimentation to Effectuation Theory

In the pre-pandemic period, the analysis of previously reviewed papers elucidates the pivot as a *strategic* process of *experimentation* undertaken following the failure or identification of a potential failure in one or more elements of the *business model* (BM) that threaten the existence of the startup (Cosenza & Noto, 2018; Brenk et al., 2019; Flechas Chaparro and de Vasconcelos Gomes, 2021). Specifically, as illustrated in Figure 6 through the ***Red Cluster: Business Model Experimentation***, the analysis corroborates that *failure* or its potential - identified through qualitative analysis of the papers, linked to the highlighted terms of *competitive advantage* and *sustainability* - is the primary catalyst of the pivot.

This conception is widely acknowledged in the literature, as evidenced by several studies. For instance, Hampel et al. (2020) assert that a pivot may be necessary when a tiny market niche leads to a decrease in revenues, while Kirtley and O'Mahony (2023) observe that customers' reluctance to pay for the product may compel a startup to pivot.

Figure 6. Co-occurrence analysis (2012-2024)



Another crucial aspect of this perspective of process experimentation is the *scientific approach* to the change process, as elucidated by Ghezzi (2020). This approach entails adopting rigorous testing and measurement methods, which enable start-ups to iterate rapidly on business hypotheses, thereby mitigating the risks associated with pivoting. Pillai et al. (2020) corroborate how the scientific approach reduces false positives, thus enhancing start-ups' probability of

success. Camuffo et al. (2020) emphasise that a scientific and iterative approach facilitates dealing with uncertainties with greater agility, while another study by Camuffo et al. (2024) demonstrates that entrepreneurs can be trained to utilise a scientific method for decision-making, improving efficiency in the selection of ideas and reducing the reliance on trial and error. This is directly derived from contextualising the pivot in software startup contexts and the Lean Startup Approach concept proposed by Ries (2011). Sanasi (2023), in his integrated review of business models, reinforces this view, noting that the literature on the subject has extensively underscored that the Lean Startup Approach, predicated on the experimentation of business models, is the pivotal principle in this field. Burnell et al. (2023) contribute further to the view of pivot as business model experimentation, introducing an additional dimension by exploring the *external resistance* (stakeholders) that entrepreneurs may encounter during the pivot, mainly when it implies a change in the value proposition. Similarly, Snihur and Clarysse (2022) explore organisational identity's role in the pivot of new firms, emphasising how a strong identity can foster scalability and the attraction of resources conducive to the experimentation process. Resources essential for the experimentation process, or multiple requisite experimentation processes on the business model, are critical for arriving at well-considered strategic decisions (pivot), as Sala et al. (2022) highlighted. Through a qualitative study, the authors identify and categorise pivot types and triggers in the context of the Lean Startup Approach and elucidate the so-called “domino effect” in pivoting. This phenomenon demonstrates how the value proposition can be adapted and significantly enhanced through *incremental experiments* that generate progressive yet decisive changes within the business model.

As illustrated in Figure 6, the red cluster is connected to the ***Yellow Cluster: Dynamic Capabilities***, characterised by key terms such as *innovation, business development, digitalisation, and dynamic capabilities*. This connection elucidates how numerous

contributions have attempted to integrate an essentially practical and innovative perspective, such as that proposed by Ries (2011) and the associated pivot definition, with more established theoretical approaches, such as those on innovation, dynamic capabilities and business development. For instance, Abebe et al. (2024) introduce the concept of “digital reorientation” as a long-term strategy for organisational turnaround designed to respond to radical changes induced by disruptive technological innovations. Digital reorientation manifests as a simultaneous, multilevel, technology-supported process that redefines the fundamental architecture of organisations and the way they serve their customers. Similarly, Mukherjee et al. (2023) analyse how start-ups have coped with the restrictions imposed by COVID-19, emphasising the role of dynamic capabilities in facilitating rapid reorganisation of business models.

Furthermore, Mota et al. (2022) examine the impact of the pandemic crisis on Brazilian start-ups' performance, focusing on organisational resilience characteristics. These examples corroborate the existence of contributions closely or indirectly related to the pivot literature, demonstrating how this concept has been reinterpreted and traced back to related but different themes. Moreover, they highlight how the experimentation process, the cornerstone of pivoting, can be applied in other fields, including Discovery-Driven Planning, Agile Software Development, Customer Development, Design Thinking, Experiment-Driven Product Development and Market Opportunity Navigator (Sadeghiani et al., 2023).

The *Green Cluster: Crisis Management* aggregates keywords describing the specific context in which the pivot was analysed. Among these, the term *start-up* emerges with particular significance, summarising the centrality of these enterprises in pivot analysis and emphasising the close connection of this concept with entrepreneurial contexts characterised by high uncertainty, continuous innovation, and the need for experimentation (Trincanato et al., 2024; Sadeghiani et al., 2023). The presence of keywords such as *entrepreneurship*, *Covid-19*,

social entrepreneurship, crisis management, and open innovation further elucidates the context. The contributions associated with these terms precisely define the circumstances in which the pivot is necessary, as previously indicated in the bibliographic coupling section. In the initial time frame (2012-2019), pivots primarily manifest as strategic tools to address typical entrepreneurial events such as the failure of a business model or the identification of an excessively narrow market. In this phase, the pivot is frequently utilised as a reactive response to navigate entrepreneurship's uncertainties and daily challenges (Brenk et al., 2019). However, in the post-pandemic period (2020-2024), pivots assume a decidedly more reactive role, responding to more significant exogenous challenges, such as the COVID-19 pandemic, which compelled numerous startups to adapt to new modes of operation and new markets rapidly (Scheve et al., 2024, Santos et al., 2023). In this context, pivoting becomes a response to external shocks, such as COVID-19, which has prompted many companies to adopt digital innovations to sustain entrepreneurial resilience (Santos et al., 2023). Consequently, in digital healthcare, for example, the pivot concept has emerged as an opportunity to respond to regulatory and technological changes, with direct implications for social innovation and the value that start-ups can generate in times of crisis (Trincanato et al., 2024). Furthermore, the literature suggests that post-pandemic pivots not only respond to traumatic events but also reflect a shift in business paradigms, such as the adoption of open innovation models in high-tech start-ups, which seek to navigate through the complexity of the changing global environment (Barrett et al., 2021). This shift towards a more collaborative and digital approach has been crucial for start-ups that have integrated digital social innovation practices during the crisis, rapidly adapting to new consumer and user needs (Scheidgen et al., 2021).

Analysis of the green cluster reveals a distinct transition in the pivot approach, evolving from an internal response to market failure towards a reactive strategy to address external shocks of various kinds. This transition introduces the ***Blue Cluster: Entrepreneurial Reorientation,***

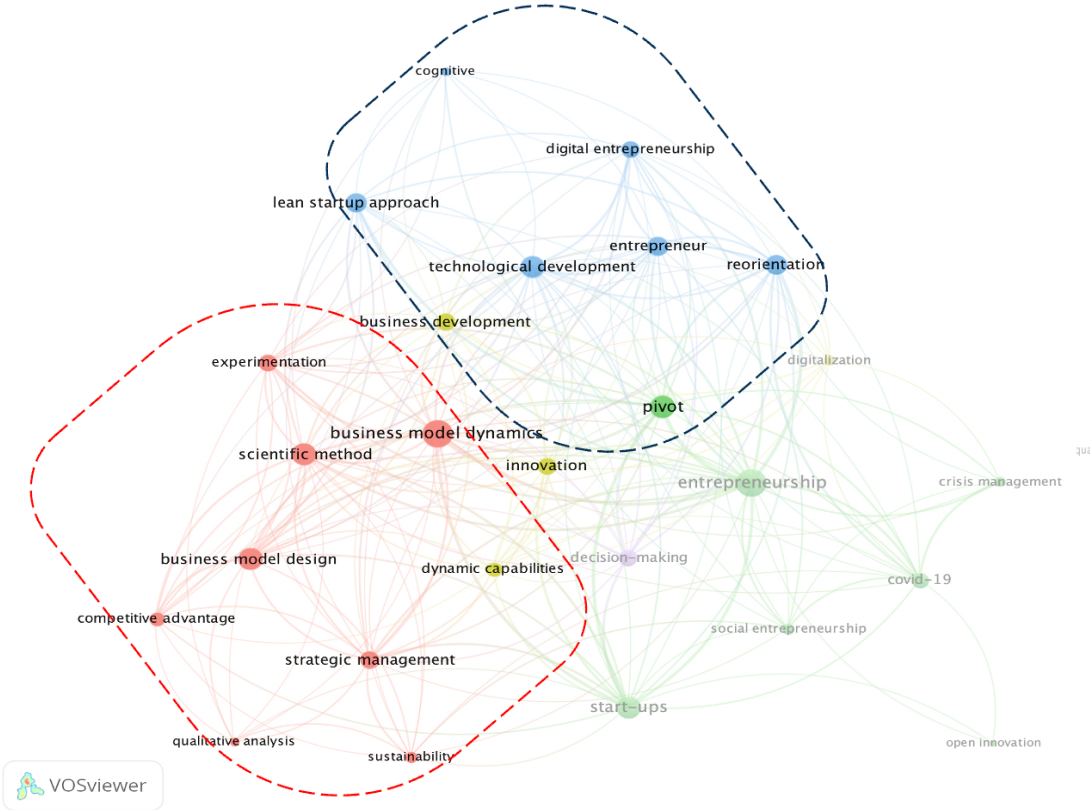
characterised by keywords such as *reorientation*, *entrepreneurship*, and *cognitive*, which contrast significantly with the red cluster analysed above. While the red cluster provides a comprehensive theoretical and conceptual basis for understanding the pivot through different approaches and conceptual attributions, it nevertheless leaves unexplored the aspects related to perceptions and cognitive processes that emerge from the analysis context described above. Specifically, the contributions in the blue cluster suggest that, while existing definitions have been broadly delineated and often over-contextualized (Sadeghiani et al., 2023), the pivot is gradually assuming the connotations of a strategic reorientation process, rooted in the cognitive and decision-making dynamics of the entrepreneur (Figure 7).

This paradigm shift, which emphasises the entrepreneur's role and figures as an agent of change, reflects a more comprehensive understanding of the pivot not only as a structural or operational response but as a process intrinsically linked to the entrepreneur's capacity for strategic reorientation in contexts of uncertainty and rapid adaptation to environmental changes. Shepherd (2021) argued that the founder's interpretation of exogenous and adverse events and his cognitive capabilities (Massa et al., 2017) constitute a critical element in driving pivot processes. The primary objective of pivot is to transform adversity into opportunity through strategic initiative activities and operational changes. In this context, Manolova et al. (2020) provide an initial perspective on how pivot can be conceptualised as an entrepreneurial decision to convert difficulties into opportunities. The study emphasises the variables influencing female entrepreneurs to formulate pivot strategies in response to the pandemic, underscoring the decisive role of personal characteristics and leaders' perceptions in decision-making.

In support of this perspective, Shepherd and Williams (2023) expound upon organisational resilience, identifying distinct response pathways to environmental shocks, such as the COVID-19 pandemic. According to their study, resilient organisations react expeditiously to shocks and utilise them as opportunities to grow and challenge the status quo. This further enriches the

concept of pivot, presenting it not merely as a means of survival but as a strategic tool to thrive during adversity. As defined, the pivot increasingly assumes the form of a cognitive entrepreneurial process in which the individual dimension plays a central role.

Figure 7. The transition of the pivot concept



The recent study by Nguyen et al. (2024) demonstrates how crisis rumination, combined with active coping, directly links the individual cognitive dimension to entrepreneurial decision-making, highlighting the crucial role of mindset in defining and implementing the pivot process. Complementing this perspective, Allen et al. (2024) broaden the understanding of the cognitive phenomenon by emphasising how pivots are influenced by external learning and stakeholder engagement. The external influence on entrepreneurial decision-making, emphasised by Allen et al. (2024), underscores the crucial role of stakeholders in the strategic redefinition of start-ups. This shift in perspective relates directly to the evolution of pivot

research, which is moving away from the traditional Lean approach to increasingly embracing the principles of Effectuation Theory (Sarasvathy, 2001).

The Lean Startup methodology is based on a predictive approach, wherein the entrepreneur gathers data through A/B tests, surveys, and interviews to validate or invalidate specific hypotheses regarding the business model. When these hypotheses are refuted, the entrepreneur must pivot, continuously iterating the model (Fischer & Reuber, 2011). Such a model is not applicable in adverse crises or when environmental conditions preclude the entrepreneur from obtaining predictive information. In contrast, Effectuation Theory shifts the focus from hypothesis testing to the value of self-selected stakeholders' concrete commitments - conceptualised as exchanging opinions, feedback, and sharing activities. As noted by Sarasvathy & Dew (2005), each commitment represents a sufficient condition to proceed with the next step, transforming uncertainty into active co-creation of the future. In this context, the pivot occurs when stakeholders' commitments - including the entrepreneurs themselves - reach an agreement that justifies change.

Furthermore, empirical evidence demonstrates that, in the context of effectuation, pivots do not manifest as radical transformations but rather as natural evolutions, such as the extension of product lines or the creation of new markets (Van Mumford & Zettinig, 2022). This perspective expands the understanding of the entrepreneurial pivot process, highlighting how learning and stakeholder engagement are more than mere tools for validating internally decided scientific strategies: they constitute the primary mechanism for the growth and adaptation of start-ups. Consequently, the evolution of the literature and the analysis discussed in this section contribute to defining the pivot as a cognitive process of an effectual nature of the entrepreneur.

5.2. Avenues for Future Research

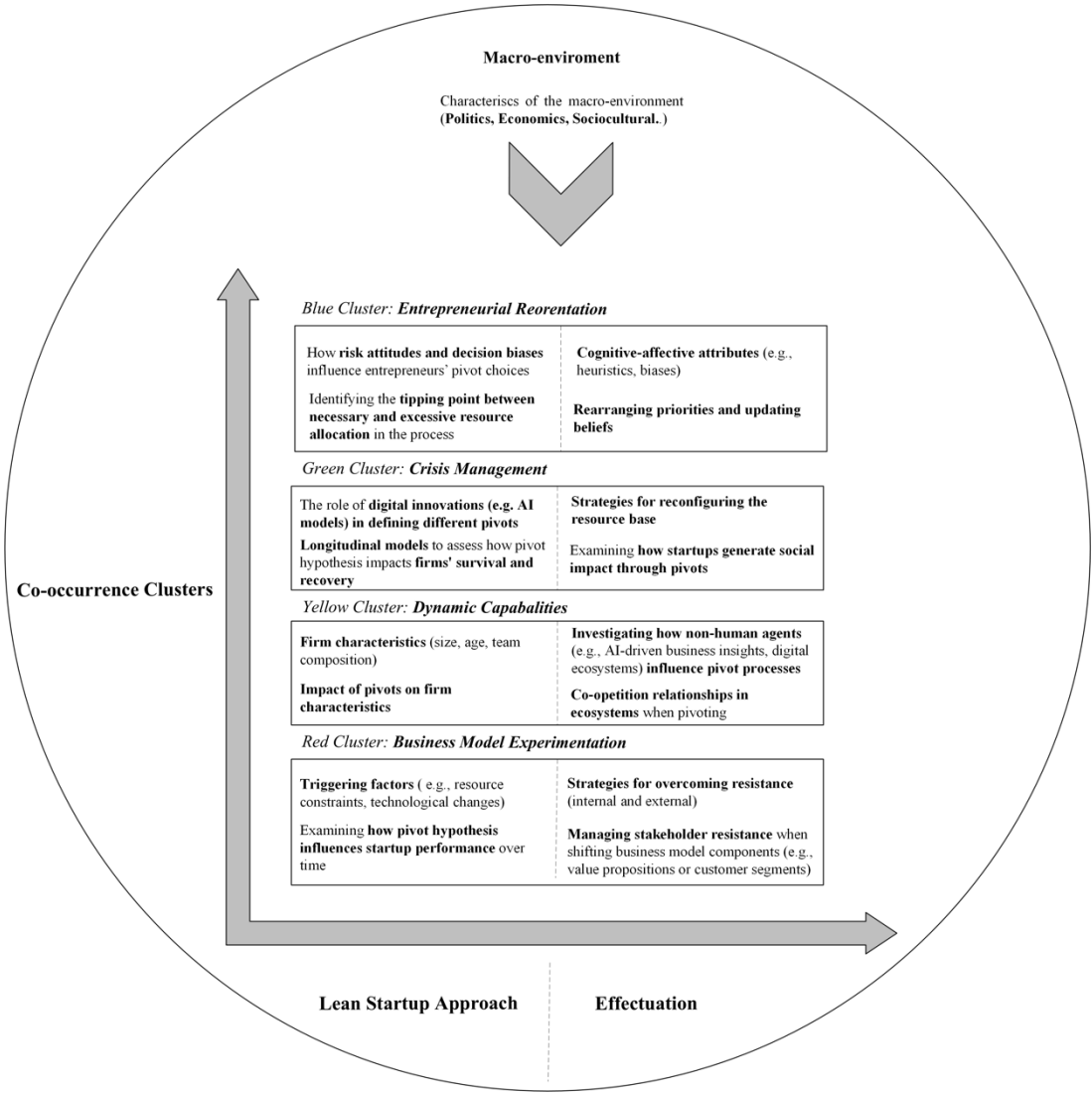
The literature on pivoting is multifaceted and incorporates various factors that both affect and are affected by strategic decisions. This section proposes directions for future research to explore pivot through a multifactorial lens. A framework has been developed to provide clearer guidance, as illustrated in Figure 8. This framework outlines the clusters discussed earlier in co-occurrence section: (1) Red Cluster: Business Model Experimentation, (2) Yellow Cluster: Dynamic Capabilities, (3) Green Cluster: Crisis Management, and (4) Blue Cluster: Entrepreneurial Reorientation. It also distinguishes between the previously analysed theoretical frameworks: (1) the Lean Startup methodology and (2) Effect Theory. The text boxes within the diagram highlight elements of the literature that can be incorporated into discussions on pivoting.

Red Cluster: Business Model Experimentation. Future research related to the Red cluster stands to gain significantly by enhancing the examination of pivots as experimental approaches for validating business models. It should mainly focus on the contextual and cognitive aspects that influence the success of such experimentation. In particular, the iterative validation of the Lean Startup methodology warrants closer investigation to understand how various entrepreneurial environments affect its effectiveness. As noted by Burnell et al. (2023), it is essential to test and reproduce findings in a broader array of entrepreneurial settings, such as resource-limited startups, corporate entrepreneurship, or social enterprises, where the capacity for experimentation can vary widely. Furthermore, Burnell et al. (2023) emphasise the need to directly assess identity and psychological ownership factors that may hinder adjustments in specific business model elements—such as value propositions, customer segments, or key partnerships—encouraging future studies to explore these underlying psychological dynamics explicitly. Further enriching this perspective, Camuffo et al. (2024) underscore the importance of exploring contextual factors that can affect the robustness of the scientific approach to pivot

decisions, including variations in startup contexts that might moderate the relationship between experimentation and performance outcomes. Specifically, they advocate for research explicitly designed to identify the conditions or moderating factors influencing how effectively startups implement rigorous, scientific decision-making processes during pivots. Addressing these moderating effects would provide valuable insights into optimising pivot strategies, particularly in dynamic or highly uncertain context environments.

Additionally, Sanasi (2023) explicitly invites researchers to explore pivotal decision-making under extreme resource constraints and unfolding organisational crises, particularly examining the performance implications when pivots occur in response to exogenous shocks as opposed to normal operational conditions.

Figure 8. A framework of research avenues



Investigating how startups navigate legitimacy challenges during crises—especially regarding stakeholder perceptions of rapid strategic changes—also emerges as a pertinent future research avenue. Addressing these legitimacy concerns would contribute significantly to understanding pivot success or failure in turbulent contexts, enriching theoretical insights into how external pressures and internal experimentation interact dynamically during critical strategic transitions.

Yellow Cluster: Dynamic Capabilities. Future research related to the Yellow cluster would greatly benefit from a more thorough investigation of how pivoting strategies interact with organisational innovation capabilities. In particular, scholars could further develop and empirically test constructs such as "digital reorientation," as introduced by Abebe et al. (2024). This effort may involve creating a validated multi-item measurement scale to empirically examine the antecedents and consequences of digital reorientation. Studying these aspects would enhance our understanding of how digitalisation transforms the strategic pivoting process, particularly for businesses undergoing significant organisational changes due to technological disruption. Moreover, future research could empirically examine the connections between digital reorientation and effective organisational turnaround strategies. Such studies would specifically investigate the organisational and stakeholder factors that influence these relationships, providing a more detailed understanding of the conditions impacting successful strategic pivots. Abebe et al. (2024) also advocate for in-depth empirical research in specific industries that have undergone significant digital transformations—such as media, publishing, or retail—to gain insights into how digital reorientation aids strategic renewal. This industry-focused research could reveal the conditions and organisational factors that facilitate successful strategic adjustments in rapidly digitalising environments, thereby adding significant depth and practical relevance to the existing literature on pivoting.

Meanwhile, Sadeghiani et al. (2023) highlight the importance of deeper theoretical and epistemological reflection on entrepreneurial practices, especially regarding the intricate relationship between theoretical constructs and entrepreneurs' real-life practices. They recommend investigating the tensions between theoretical models and practical entrepreneurial behaviours through lenses such as Bourdieu's reflexivity. Implementing reflexivity in entrepreneurship research could shed light on how theoretical concepts—such as the Lean Startup approach—are influenced by scholars' assumptions and epistemological leanings, improving the transparency and self-awareness of future research. Furthermore, Sadeghiani et al. (2023) advocate for employing alternative theoretical frameworks, such as Actor-Network Theory (ANT), to enhance our understanding of pivoting practices in modern techno-social contexts. ANT could offer a unique viewpoint by treating both human and non-human actors (e.g., digital technologies, algorithms, and automated systems) as equally significant in shaping entrepreneurial activities. Examining pivoting through these theoretical perspectives would provide a novel and nuanced understanding of how digitalisation and technological artefacts interact in innovation processes and strategic pivots, thereby enriching both the conceptual and practical aspects of entrepreneurial strategy literature.

Green Cluster: Crisis Management. Future research within the Green cluster should enhance the exploration of how contextual elements—including crises, institutional frameworks, and ecosystem dynamics—affect pivoting processes and their long-term effects. Specifically, Trincato (2024) emphasises the importance of broadening empirical research on startup pivots in heavily regulated sectors such as healthcare, where institutional limitations and regulatory structures can impact the feasibility and success of pivots. Future studies should examine the limitations of current models in these settings, investigating how startups manage sector-specific entrepreneurial capabilities and regulatory challenges while revamping their business models. Additionally, further research could explore platform-mediated solutions and

their impact on value co-creation in regulated industries, particularly analysing how technological advancements either support or impede pivots in intricate B2B environments. Another critical avenue of research stems from Santos (2023), suggesting the expansion of methodological approaches used to study entrepreneurial resilience and pivot effectiveness. While much of the existing research relies on qualitative insights, future studies should integrate quantitative, longitudinal analyses to measure the dynamic impact of pivots over time, especially in crisis contexts. This could include measuring how resilience correlates with performance outcomes, quantifying the extent to which digital technologies enhance pivot effectiveness, and exploring how different industries implement and sustain pivots in response to external shocks. Furthermore, future work should examine unobtrusive archival data sources to capture real-time entrepreneurial decision-making and gain a better understanding of the evolution of strategic pivots in volatile environments. In summary, research in this cluster should focus on how firms respond to exogenous shocks, particularly in regulated industries, how they balance temporary and permanent pivoting strategies, and how resilience, digital adoption, and ecosystem dynamics influence the long-term success of these strategic adjustments. These directions would significantly advance our knowledge of how startups and established firms navigate crises and adapt to changing macroeconomic circumstances conditions.

Blue Cluster: Entrepreneurial Reorientation. Research in the Blue cluster should explore the cognitive and psychological factors that drive entrepreneurial pivoting. This includes examining how decision-making, crisis rumination, and stakeholder interactions influence strategic shifts. As Nguyen (2024) notes, crisis rumination significantly impacts pivoting behaviour, but its timing remains poorly understood. Future studies ought to investigate the duration of entrepreneurs' rumination before deciding to pivot, as well as whether extended periods of crisis reflection enhance or hinder sound decision-making. Additionally, it is

important to explore alternative mediators between crisis rumination and pivoting, such as risk attitudes and coping strategies, to deepen our understanding of the psychological drivers behind strategic changes. Another key area for research is the unintended effects of cognitive strain on pivoting choices. Nguyen (2024) points out that crisis rumination is resource-intensive, which may lead entrepreneurs to engage in unethical pro-organisational actions or misdirect funds towards non-business endeavours. Future inquiries should determine whether cognitive overload during crises results in entrepreneurs making poor or irrational pivot decisions, which may have adverse long-term implications. Furthermore, studying the evolving identities of entrepreneurs during the pivoting process can enhance our understanding of how identity changes influence business model adjustments and strategic choices amid uncertainty.

In his 2024 work, Allen adds depth by differentiating between survival pivots and opportunity pivots, emphasising the dilemma entrepreneurs face with limited resources during decision-making. Future studies should analyse how entrepreneurs manage the necessity of pivoting for survival alongside the resources available for a successful pivot. Exploring whether there exists a critical point where resource limitations hinder effective pivots could greatly enhance our understanding of strategic agility in startups. Furthermore, Allen proposes research into the motivational similarities between survival and opportunity pivots, examining whether entrepreneurs pivot primarily due to external threats or in anticipation of future prospects. This inquiry could illuminate how cognitive framing influences pivot strategies and their outcomes. Additionally, Allen posits that prospect theory, which addresses decision-making amid loss aversion, may have limitations concerning pivoting. While the theory clarifies why entrepreneurs pursue survival pivots, it inadequately explains opportunity pivots, as decision-makers often shy away from risks, even when substantial rewards are possible. Future research should seek alternative theoretical frameworks that can more effectively explain different pivot types, potentially merging cognitive psychology with entrepreneurial learning theories for a

comprehensive view of strategic reorientation processes. By examining these cognitive and decision-making aspects, research in this domain can offer profound insights into how entrepreneurs perceive crises, deal with uncertainty, and adjust their strategic direction in evolving business landscapes. Such findings would be vital for devising cognitive training programmes and decision-support tools to assist entrepreneurs in refining their pivoting strategies in practical environments.

6. Conclusion

This study advances the understanding of pivot decisions in start-ups by synthesising the existing literature and proposing an integrated framework that highlights the multifaceted nature of pivots and maps their transitions. Through a systematic literature review, the research identified several conceptual streams and literature foundations on which academic discourse is based. The emerging theoretical foundations address gaps in the discussion and clarify the terminological ambiguity surrounding the pivot concept, providing researchers with a solid basis for future studies. The state of the art was further explored through a co-occurrence analysis, which revealed a clear transition due to the contributions of post-pandemic crisis management. This transition reconnected the concepts of Lean Startup (Ries, 2011) and Effectuation (Sarasvathy, 2001), distinguishing pre-pandemic from post-pandemic pivots and emphasising their strategic and adaptive nature. From a theoretical perspective, the proposed framework represents a structured tool for analysing how entrepreneurs address uncertainty, manage stakeholder dynamics, and align pivot decisions with leading theories of entrepreneurship, such as Lean Startup and Effectuation. Future research could investigate the cognitive and emotional processes underlying pivoting and consider contextual factors, including ecosystem interactions and regulatory conditions that influence such decisions. From a practical perspective, this study offers valuable guidance to entrepreneurs in identifying the

need for pivoting, evaluating available alternatives, and effectively implementing strategic transformations. Despite its significant contributions, this study has certain limitations. The reliance on peer-reviewed English-language articles may exclude valuable insights from alternative sources. Furthermore, although mitigated by rigorous validation processes, the inherent subjectivity of qualitative synthesis (Corbin and Strauss, 2015) could influence interpretation. These limitations present opportunities for future research to expand the scope and robustness of pivot studies, contributing to a deeper understanding of their implications for entrepreneurial success.

7. References

- Abebe, M. A., Tangpong, C., & Ndofor, H. (2024).** Hitting the ‘reset button’: The role of digital reorientation in successful turnarounds. *Long Range Planning*, 57(1), 102102.
- Allen, J. S., Combs, J. G., Carr, J. C., Michaelis, T. L., & Joseph, D. L. (2024).** More Than One Way to Pivot: The Case for Opportunity and Survival Pivots. *Journal of Management*, 01492063241236763.
- Angus, R. W. (2019).** Problemistic search distance and entrepreneurial performance. *Strategic Management Journal*, 40(12), 2011-2023.
- Andries, P., Debackere, K., & Van Looy, B. (2020).** Simultaneous experimentation as a learning strategy: Business model development under uncertainty—Relevance in times of COVID-19 and beyond. *Strategic Entrepreneurship Journal*, 14(4), 556-559.
- Armitage, A. and Keeble-Allen, D. (2008),**“Undertaking a structured literature review or structuring a literature review: tales from the field”, *The Electronic Journal of Business Research Methods*, Vol. 6 No. 2, pp. 103-114.

- Axelsson, M., & Bjurström, E.** (2019). The role of timing in the business model evolution of spinoffs: The case of C3 technologies. *Research-Technology Management*, 62(4), 19-26.
- Bahrami, H., & Evans, S.** (2011). Super-flexibility for real-time adaptation: Perspectives from Silicon Valley. *California Management Review*, 53(3), 21-39.
- Barrett, G., Dooley, L., & Bogue, J.** (2021). Open innovation within high-tech SMEs: A study of the entrepreneurial founder's influence on open innovation practices. *Technovation*, 103, 102232.
- Bajwa, S. S., Wang, X., Nguyen Duc, A., & Abrahamsson, P.** (2017). “Failures” to be celebrated: an analysis of major pivots of software startups. *Empirical Software Engineering*, 22, 2373-2408.
- Berends, H., van Burg, E., & Garud, R.** (2021). Pivoting or persevering with venture ideas: Recalibrating temporal commitments. *Journal of Business Venturing*, 36(4), 106126.
- Boddington, M., & Kavadias, S.** (2018). Entrepreneurial pivoting as organizational search: Defining pivoting in early stage ventures. In *Academy of Management Proceedings* (Vol. 2018, No. 1, p. 12065). Briarcliff Manor, NY 10510: Academy of Management.
- Blank, S., & Dorf, B.** (2020). *The startup Owner's manual: The Step-By-Step Guide for Building a Great Company*. John Wiley & Sons.
- Brenk, S., Lüttgens, D., Diener, K., & Piller, F.** (2019). Learning from failures in business model innovation: solving decision-making logic conflicts through intrapreneurial effectuation. *Journal of Business Economics*, 89, 1097-1147.
- Burnell, D., Stevenson, R., & Fisher, G.** (2023). Early-stage business model experimentation and pivoting. *Journal of Business Venturing*, 38(4), 106314.

- Camuffo, A., Cordova, A., Gambardella, A., & Spina, C. (2020).** A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. *Management Science*, 66(2), 564-586.
- Camuffo, A., Gambardella, A., Messinese, D., Novelli, E., Paolucci, E., & Spina, C. (2024).** A scientific approach to entrepreneurial decision-making: Large-scale replication and extension. *Strategic Management Journal*.
- Chandra, Y. (2018).** Mapping the evolution of entrepreneurship as a field of research (1990-2013): a scientometric analysis. *PLoS ONE* Vol. 13 No. 1, e0190228, doi: 10.1371/journal.pone.0190228.
- Chesbrough, H. (2010).** Business model innovation: opportunities and barriers. *Long range planning*, 43(2-3), 354-363.
- Christensen, C. M., McDonald, R., Altman, E. J., & Palmer, J. E. (2018).** Disruptive innovation: An intellectual history and directions for future research. *Journal of management studies*, 55(7), 1043-1078.
- Conway, T., & Hemphill, T. (2019).** Growth hacking as an approach to producing growth amongst UK technology start-ups: an evaluation. *Journal of Research in Marketing and Entrepreneurship*, 21(2), 163-179.
- Corbo L., Pirolò L. and Rodrigues V. (2018).** Business model adaptation in response to an exogenous shock: an empirical analysis of the Portuguese footwear industry. *International Journal of Engineering Business Management*, 10, 184797901877274.
- Corbin J. & Strauss A. (2015).** *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. 4th edn Thousand Oaks, CA: SAGE.
- Cosenz, F., & Noto, G. (2018).** A dynamic business modelling approach to design and experiment new business venture strategies. *Long range planning*, 51(1), 127-140.

- Di Vaio, A., Hassan, R., Chhabra, M., Arrigo, E., & Palladino, R.** (2022). Sustainable entrepreneurship impact and entrepreneurial venture life cycle: A systematic literature review. *Journal of Cleaner Production*, 378, 134469.
- Denyer, D. and Tranfield, D.** (2009). Producing a systematic review in Buchanan, D.A. and Bryman, A. (Eds). *The Sage Handbook of Organizational Research Methods*, Sage Publications, pp. 671-689.
- Eggers, J. P., & Kaplan, S.** (2013). Cognition and capabilities: A multi-level perspective. *Academy of Management Annals*, 7(1), 295-340.
- Evansluong, Q., Ramirez Pasillas, M., & Nguyen Bergström, H.** (2019). From breaking-ice to breaking-out: Integration as an opportunity creation process. *International Journal of Entrepreneurial Behavior & Research*, 25(5), 880-899.
- Fischer, E., & Reuber, A. R.** (2011). Social interaction via new social media:(How) can interactions on Twitter affect effectual thinking and behavior?. *Journal of business venturing*, 26(1), 1-18.
- Flechas Chaparro, X. A., & de Vasconcelos Gomes, L. A.** (2021). Pivot decisions in start-ups: a systematic literature review. *International Journal of Entrepreneurial Behavior & Research*, 27(4), 884-910.
- Frederiksen, D. L., & Brem, A.** (2017). How do entrepreneurs think they create value? A scientific reflection of Eric Ries' Lean Startup approach. *International Entrepreneurship and Management Journal*, 13, 169-189.
- Foss, N. J., Klein, P. G., & Bjørnskov, C.** (2019). The context of entrepreneurial judgment: organizations, markets, and institutions. *Journal of Management Studies*, 56(6), 1197-1213.

- García-Gutiérrez, I., & Martínez-Borreguero, F. J.** (2016). The Innovation Pivot Framework: Fostering Business Model Innovation in Startups: A new tool helps entrepreneurs design business models by identifying the sources of competitive advantage embedded in an innovation. *Research-Technology Management*, *59*(5), 48-56.
- Ghezzi, A.** (2019). Digital startups and the adoption and implementation of Lean Startup Approaches: Effectuation, Bricolage and Opportunity Creation in practice. *Technological Forecasting and Social Change*, *146*, 945-960. doi: 10.1016/j.techfore.2018.09.017.
- Ghezzi, A.** (2020). How Entrepreneurs make sense of Lean Startup Approaches: Business Models as cognitive lenses to generate fast and frugal Heuristics. *Technological Forecasting and Social Change*, *161*, 120324.
- Gomes, L. A. D. V., Facin, A. L. F., & Hourneaux Junior, F.** (2019). Building a bridge between performance management, radical innovation, and innovation networks: a systematic literature review. *Creativity and Innovation Management*, *28*(4), 536-549.
- Granstrand, O., & Holgersson, M.** (2020). Innovation ecosystems: A conceptual review and a new definition. *Technovation*, *90*, 102098.
- Greenwood, R., & Hinings, C. R.** (1996). Understanding radical organizational change: Bringing together the old and the new institutionalism. *Academy of management review*, *21*(4), 1022-1054.
- Grimes, M. G.** (2018). The pivot: How founders respond to feedback through idea and identity work. *Academy of Management Journal*, *61*(5), 1692-1717.
- Grimes, M. G., & Vogus, T. J.** (2021). Inconceivable! Possibilistic thinking and the sociocognitive underpinnings of entrepreneurial responses to grand challenges. *Organization Theory*, *2*(2), 26317877211005780.

- Gundolf, K., & Filser, M.** (2013). Management research and religion: A citation analysis. *Journal of Business Ethics*, *112*, 177-185.
- Hampel, C. E., Tracey, P., & Weber, K.** (2020). The art of the pivot: How new ventures manage identification relationships with stakeholders as they change direction. *Academy of Management Journal*, *63*(2), 440-471.
- Hermann, C. F.** (1963). Some consequences of crisis which limit the viability of organizations. *Administrative science quarterly*, 61-82.
- Hirvikoski, K.** (2014). Startups pivoting towards value. *Data-and Value-Driven Software Engineering with Deep Customer Insight*, *1*.
- Kirtley, J., & O'Mahony, S.** (2023). What is a pivot? Explaining when and how entrepreneurial firms decide to make strategic change and pivot. *Strategic Management Journal*, *44*(1), 197-230.
- Leatherbee, M., & Katila, R.** (2020). The lean startup method: Early-stage teams and hypothesis-based probing of business ideas. *Strategic Entrepreneurship Journal*, *14*(4), 570-593.
- Massa, L., Tucci, C. L., & Afuah, A.** (2017). A critical assessment of business model research. *Academy of Management annals*, *11*(1), 73-104.
- Marzi, G., Ciampi, F., Dalli, D., & Dabic, M.** (2020). New product development during the last ten years: The ongoing debate and future avenues. *IEEE Transactions on Engineering Management*, *68*(1), 330-344.
- Manolova, T. S., Brush, C. G., Edelman, L. F., & Elam, A.** (2020). Pivoting to stay the course: How women entrepreneurs take advantage of opportunities created by the COVID-19 pandemic. *International Small Business Journal*, *38*(6), 481-491.
<https://doi.org/10.1177/0266242620949136>.

- Maurya, A.** (2012), *Running Lean: Iterate from Plan A to a Plan that Works*, O'Reilly, Sebastopol, California.
- McDonald, R., & Gao, C.** (2019). Pivoting isn't enough? Managing strategic reorientation in new ventures. *Organization Science*, 30(6), 1289-1318.
- McMullen, J. S.** (2015). Entrepreneurial judgment as empathic accuracy: A sequential decision-making approach to entrepreneurial action. *Journal of Institutional Economics*, 11(3), 651-681.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group*, T.** (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine*, 151(4), 264-269.
- Mongeon, P., & Paul-Hus, A.** (2016). The journal coverage of Web of Science and Scopus: a comparative analysis. *Scientometrics*, 106, 213-228.
- Mota, R. D. O., Bueno, A., Gonella, J. D. S. L., Ganga, G. M. D., Godinho Filho, M., & Latan, H.** (2022). The effects of the COVID-19 crisis on startups' performance: the role of resilience. *Management Decision*, 60(12), 3388-3415.
- Morgan, T., Anokhin, S., Ofstein, L., & Friske, W.** (2020). SME response to major exogenous shocks: The bright and dark sides of business model pivoting. *International Small Business Journal*, 38(5), 369-379.
- Mukherjee, A., Scott, J. M., Deakins, D., & McGlade, P.** (2023). "Stay home, save SMEs"? The impact of a unique strict COVID-19 lockdown on small businesses. *International Journal of Entrepreneurial Behavior & Research*, 29(8), 1884-1905.
- Nguyen, B., Tran, H. A., Stephan, U., Van, H. N., & Anh, P. T. H.** (2024). "I can't get it out of my mind"-Why, how, and when crisis rumination leads entrepreneurs to act and pivot during crises. *Journal of Business Venturing*, 39(4), 106395.

- Pearson, C. M., & Clair, J. A.** (1998). Reframing crisis management. *Academy of management review*, 23(1), 59-76.
- Pereira, D., Leitão, J., Oliveira, T., & Peirone, D.** (2023). Proposing a holistic research framework for university strategic alliances in sustainable entrepreneurship. *Heliyon*, 9(5).
- Pillai, S. D., Goldfarb, B., & Kirsch, D. A.** (2020). The origins of firm strategy: Learning by economic experimentation and strategic pivots in the early automobile industry. *Strategic Management Journal*, 41(3), 369-399. doi: 10.1002/smj.3102.
- Prexl, K. M., Hubert, M., Beck, S., Heiden, C., & Prügl, R.** (2019). Identifying and analysing the drivers of heterogeneity among ecosystem builder accelerators. *R&D Management*, 49(4), 624-638.
- Randhawa, K., Wilden, R., & Hohberger, J.** (2016). A bibliometric review of open innovation: Setting a research agenda. *Journal of product innovation management*, 33(6), 750-772.
- Ratten, V.** (2020). Coronavirus (Covid-19) and entrepreneurship: cultural, lifestyle and societal changes. *Journal of entrepreneurship in emerging economies*, 13(4), 747-761.
- Ries, E.** (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses.* Crown Business. New York.
- Rodrigues, S. P., Van Eck, N. J., Waltman, L., & Jansen, F. W.** (2014). Mapping patient safety: a large-scale literature review using bibliometric visualisation techniques. *BMJ open*, 4(3), e004468.
- Sadeghiani, A., & Anderson, A.** (2023). What pivot is: Touching an elephant in the dark. *Digital Business*, 3(1), 100056.

- Sadeghiani, A., Anderson, A., Ahmadi, S., Shokouhyar, S., & Hajipour, B.** (2023). Sayings and doings become 'practice' through 'practice thirdness': pivot in recipes for practice. *Entrepreneurship & Regional Development*, 35(9-10), 788-811.
- Sala, P. K., Philbin, S. P., & Barikzai, S.** (2022). A qualitative research study of the tech startup journey through entrepreneurial pivoting. *International Journal of Entrepreneurial Behavior & Research*.
- Sanasi, S.** (2023). Entrepreneurial experimentation in business model dynamics: Current understanding and future opportunities. *International Entrepreneurship and Management Journal*, 19(2), 805-836.
- Sanasi, S., & Ghezzi, A.** (2022). Pivots as strategic responses to crises: Evidence from Italian companies navigating Covid-19. *Strategic Organization*, 14761270221122933.
- Santos, S. C., Liguori, E. W., & Garvey, E.** (2023). How digitalization reinvented entrepreneurial resilience during COVID-19. *Technological Forecasting and Social Change*, 189, 122398.
- Sarasvathy, S. D.** (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of management Review*, 26(2), 243-263.
- Sarasvathy, S. D., & Dew, N.** (2005). New market creation through transformation. *Journal of evolutionary economics*, 15, 533-565.
- Scheidgen, K., Gümüşay, A. A., Günzel-Jensen, F., Krlev, G., & Wolf, M.** (2021). Crises and entrepreneurial opportunities: Digital social innovation in response to physical distancing. *Journal of Business Venturing Insights*, 15, e00222.

- Scheve, C., Reihlen, M., & Gegenhuber, T.** (2024). Pivot to Persevere: Temporary Pivots as a Response to Exogenous Shocks. *Schmalenbach Journal of Business Research*, 76(1), 113-149.
- Shepherd, D. A., & Gruber, M.** (2021). The lean startup framework: Closing the academic–practitioner divide. *Entrepreneurship Theory and Practice*, 45(5), 967-998.
- Snihur, Y., & Clarysse, B.** (2022). Sowing the seeds of failure: Organizational identity dynamics in new venture pivoting. *Journal of Business Venturing*, 37(1), 106164.
- Spigel, B., & Harrison, R.** (2018). Toward a process theory of entrepreneurial ecosystems. *Strategic entrepreneurship journal*, 12(1), 151-168.
- Stayton, J., & Mangematin, V.** (2016). Startup time, innovation and organizational emergence: A study of USA-based international technology ventures. *Journal of International Entrepreneurship*, 14, 373-409.
- Teece, D. J.** (2018). Business models and dynamic capabilities. *Long range planning*, 51(1), 40-49.
- Tekic, Z., & Koroteev, D.** (2019). From disruptively digital to proudly analog: A holistic typology of digital transformation strategies. *Business Horizons*, 62(6), 683-693.
- Thomas, L. and Autio, E.** (2019). Innovation ecosystems. *SSRN Electronic Journal*, Vol. 39 No. 6. 10.2139/ssrn.3476925.
- Trincanato, E., & Vagnoni, E.** (2024). Beyond the land of the living death: early-stage transformational entrepreneurs in digital healthcare as liminality navigator. *International Journal of Entrepreneurial Behavior & Research*, (ahead-of-print).
- Turzo, T., Marzi, G., Favino, C., & Terzani, S.** (2022). Non-financial reporting research and practice: Lessons from the last decade. *Journal of Cleaner Production*, 345, 131154.

- Van Mumford, J., & Zettinig, P.** (2022). Co-creation in effectuation processes: A stakeholder perspective on commitment reasoning. *Journal of Business Venturing*, 37(4), 106209.
- Vinagre, V., Fidélis, T., & Luís, A.** (2023). How can we adapt together? Bridging water management and city planning approaches to climate change. *Water*, 15(4), 715.
- Wood, M. S., Palich, L. E., & Browder, R. E.** (2019). Full steam ahead or abandon ship? An empirical investigation of complete pivot decisions. *Journal of Small Business Management*, 57(4), 1637-1660.
- Zupic, I., & Čater, T.** (2015). Bibliometric methods in management and organization. *Organizational research methods*, 18(3), 429-472.

Chapter 2. From Crisis to Response: How Start-up Founders Navigate Uncertainty through Pivoting²

Abstract: In recent years, exogenous shocks have significantly influenced the behaviour of start-ups. To address the challenges posed by disruptive events, start-ups have employed a strategic response known as pivoting, i.e., structured course correction on the start-up business model. Although extensive research has analysed the pivoting process, only a few studies have taken an entrepreneurial perspective to understand how entrepreneurs adopt pivots following an external shock and the stakeholders' role. This study aims to fill this gap using the Lean Start-up Approach (LSA) as a theoretical lens to explore how start-up founders and stakeholders interplay in the pivoting process. The analysis is conducted on twenty Italian entrepreneurs who adapted their activities in response to the COVID-19 pandemic. The findings show that the pivoting process involves four interconnected phases at the cognitive level: 1) Suggestions' gathering, 2) Rationalisation, 3) Evaluation, and 4) Pivot Adoption. We develop a conceptual model highlighting the variations in strategic responses based on a combination of entrepreneurs' attitudes towards crises and stakeholders' recommendations. This framework enhances our understanding of founders' strategies to overcome external shocks.

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1. Introduction

Over the past two decades, firms have faced various challenges that brought high levels of uncertainty in the economic scenario. Among these, the recent global health crisis caused by COVID-19 and the geopolitical tensions surrounding the war in Ukraine and the Israel-Palestine conflict made the economic context increasingly unpredictable and difficult to anticipate. For this, recent challenges particularly impacted start-ups, hindering their ability to create, expand, and adapt (Kuckertz et al., 2020; Shepherd and Williams, 2020), forcing them to reorganise their resources to cope with the constantly changing scenario (Klein, 2020; Rindova and Courtney, 2020).

In response to these situations, the entrepreneur may pivot, which involves taking a new path to create value (Sala, Philbin and Barikzai, 2022). Several critical theoretical contributions have deepened this concept and applied it to the analysis of response strategies when the profitability of the business model is affected by an unexpected event (Berends et al., 2021; Kirtley and O'Mahony, 2020). Studies in this area have shown that pivoting is a valid and effective measure to strategically realign organisations, mitigate the uncertainty caused by crises, and turn adversity into opportunity (Andries et al., 2020; Berends et al., 2021; Hampel et al., 2020; Salvato et al., 2020).

While research has identified what types of pivot start-ups can adopt as a rapid response to crises, less is known about the mechanisms through which entrepreneurs select and implement the pivot that may better fit their firms. Moreover, relatively few studies have focused on how entrepreneurs integrate inputs from stakeholders in the decision-making process, leading to the definition of a pivot strategy. Using the theoretical lens provided by the Lean Start-up Approach (LSA), this research addresses the following questions: 1) How do stakeholders' recommendations affect the start-up founders' decision-making in the pivoting process? 2) How do start-up founders define and execute pivot strategies when responding to uncertainty?

From an empirical standpoint, we interviewed 20 Italian start-up founders who adopted pivot strategies during the outbreak of COVID-19. Using an inductive approach, we have explored start-uppers reactions to COVID-19, focusing on the inception and elaboration of pivot strategies and their execution.

Our study reveals that in times of uncertainty, start-up founders delineate pivot strategy based on four phases: 1) Suggestions' gathering, 2) Rationalisation, 3) Evaluation, and 4) Pivot adoption. Our model elucidates how uncertainty leads entrepreneurs to interact with firm stakeholders from which they receive suggestions that affect the pivot process in response to an environmental shock.

Our study makes two main contributions to the research on pivot strategies. First, it analyses pivoting from an entrepreneurial perspective, deepening our understanding of the role of stakeholders in the pivot process, particularly how entrepreneurs incorporate stakeholders' inputs in the pivot decision-making process. Second, by focusing on the pivot as a response to a crisis, our analysis adds valuable insights to the existing discussion on how external shocks can impact a start-up business model dynamic.

2. Literature Review: Pivot and Crisis

Pivot is an essential aspect of the Lean Start-up methodology, introduced by Eric Ries in his book "The Lean Start-up" (2011). Ries describes it as a "structured course correction aimed at testing a fundamental new hypothesis related to the product, strategy, and growth engine" (p. 149). The literature interprets pivoting through various conceptual frameworks, viewing it as strategic adjustments or directional changes (Axelson & Bjurström, 2019; Hampel et al., 2020; Pillai et al., 2020), corrective actions following setbacks (Conway & Hemphill, 2019; Leatherbee & Katila, 2020; Shepherd & Gruber, 2021), iterative processes with ongoing experimentation (Camuffo et al., 2020; Ghezzi, 2019), or contextual factors (Bahrami & Evans,

2011). Despite this variety, there is a general consensus among scholars regarding the experimental and hypothesis-driven nature of pivots (McDonald & Gao, 2019; Pillai et al., 2020).

Researchers have identified specific types of pivoting concerning their timing and phases. Hampel et al. (2020) differentiate between "conceptual pivots," which are typical for early-stage ventures, and "real pivots," which are more common among established SMEs. Early-stage pivoting involves an evolutionary process comprising idea generation, prototyping, iterative testing, validation, and eventual growth (Boddington & Kavadias, 2018; Ghezzi, 2019). Conversely, late-stage pivots usually happen after a long commitment to a predetermined strategic path (Hampel et al., 2020).

Moreover, pivots can be triggered by various factors, generally classified as endogenous or exogenous. Endogenous triggers refer to internal weaknesses within business models, such as inadequate market penetration (Hampel et al., 2020), low customer engagement (Kirtley & O'Mahony, 2020), or new competitive challenges (Pillai et al., 2020). In contrast, exogenous triggers are related to unexpected disruptions, including financial downturns (Berends et al., 2021) or major global occurrences, such as the COVID-19 pandemic (Sanasi & Ghezzi, 2022). During the COVID-19 crisis, many startups faced severe threats to their business models, requiring swift adjustments to ensure their survival. Sanasi and Ghezzi (2022) provide a valuable theoretical framework for understanding pivoting in response to external crises. Their model suggests that pivoting shifts from a gradual, experimental approach to a more urgent, reactive strategy due to the pressures of exogenous shocks. This perspective challenges the conventional lean startup view of pivots as primarily systematic, hypothesis-driven actions (Frederiksen & Brem, 2017; Andries et al., 2020). Indeed, crises necessitate faster decision-making that frequently skips incremental validation processes (Kirtley & O'Mahony, 2020; Sanasi & Ghezzi 2022).

This research builds on the theoretical insights from Sanasi and Ghezzi (2022), using their perspective as a framework to examine how entrepreneurs respond to crises through pivoting. Specifically, their framework highlights the important influence of time constraints and the urgency for action—elements that remain largely overlooked in entrepreneurial literature (Flechas Chaparro & de Vasconcelos Gomes, 2021). Consequently, there is a need for further exploration to enhance the understanding of how entrepreneurs choose and implement pivots during crises, as well as the roles that stakeholders can either support or obstruct in these rapid processes.

3. Research Context and Methodological Approach

We adopted a qualitative methodology to understand better how start-up founders respond to radical uncertainty through pivoting and the role of stakeholders in this process. In particular, we identified twenty founders of Italian start-ups who adopted pivot strategies in response to the COVID-19 pandemic and gained data through semi-structured interviews. Indeed, COVID had a significant and unprecedented impact on the economy, reducing the profitability of many start-ups and thus making pivoting a crucial decision. The pandemic, therefore, represents an interesting empirical context for examining uncertainty and firm responses.

The research process, as highlighted in Figure 1, involved several phases. First, leveraging on a partnership with three Italian incubators, Le Village by CA Parma, Le Village by CA Milano, and CRIT - Cremona Information Technology, we identified firms matching the criteria of a) being in the start-up phase during the Covid-19 outbreak (foundation between 2015 and March 2020); b) adopting a pivot strategy as a response to the pandemic. We obtained an initial list of 50 firms. We then screened their websites, LinkedIn pages, and social profiles to determine their eligibility for our study. The next step involved contacting the founders and

building a purposeful sample to ensure diversity in terms of the start-ups' age, size, location, and industry, thus increasing the generalizability of our results.

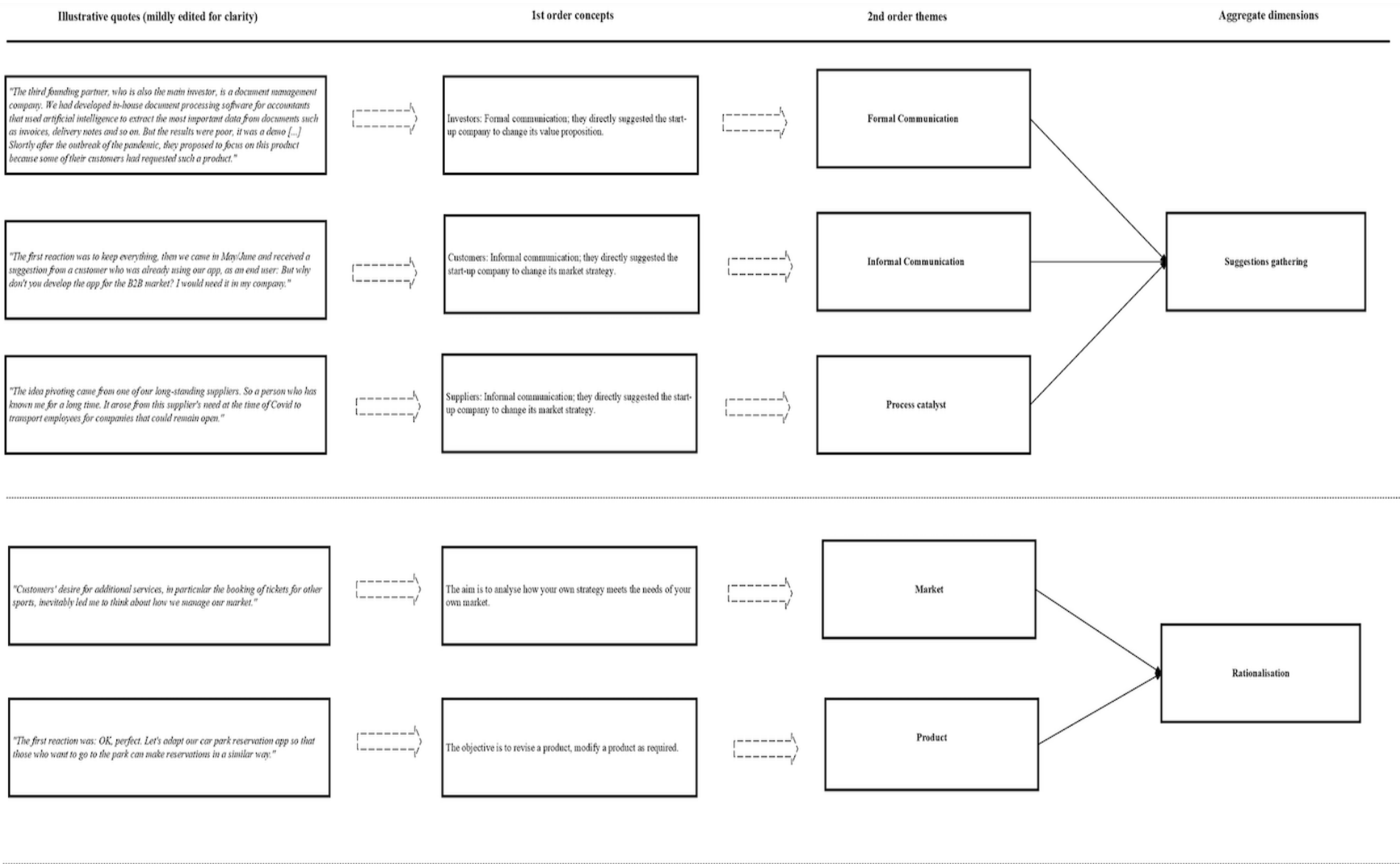
Figure 1. Research process

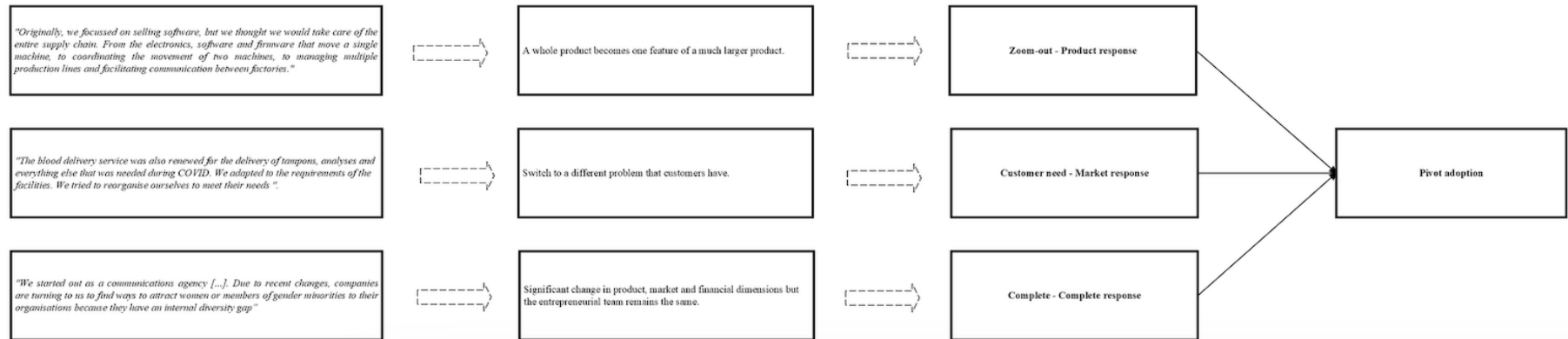
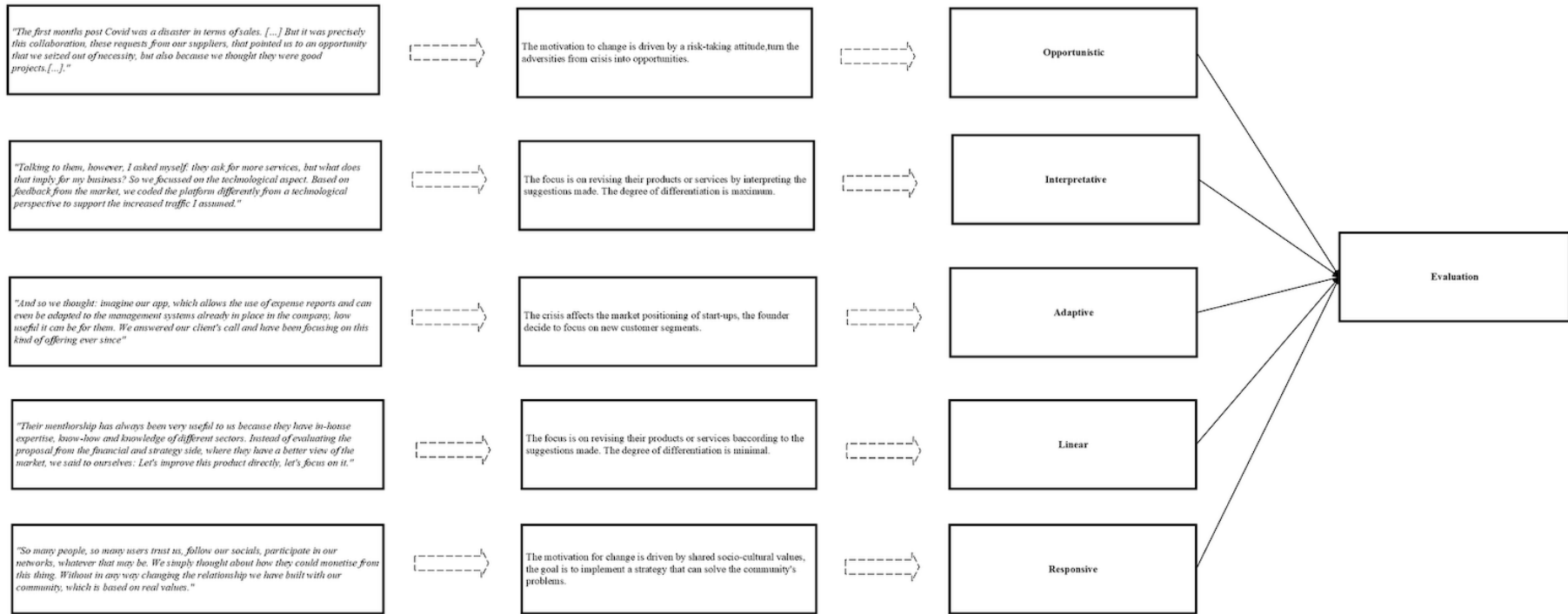
	Pre-selection phase	Data collection	Data triangulation
Types of data collected	Websites data	20 semi-structured interviews (average 60 minutes)	Social Media profiles: Facebook, Instagram, LinkedIn (45 profiles)
	Social media profiles	20 follow-ups (average 15 to 20 minutes)	Websites (20 websites)
	Field notes were taken	Field notes were taken	Official report (3 innovation report)

Data collection took place between April and August 2023 and included field observations and semi-structured interviews with founders or co-founders of start-ups. The complete list of interviewees can be found in Table 1 of the Appendix section. Interviews were structured across four macro-sections: (I) a presentation of the start-up and its value proposition before the crisis; (II) the reaction to the COVID-19 pandemic; (III) the response strategy employed by entrepreneurs to face the crisis; (IV) the impact of pivoting strategies on the present value proposition of start-ups. Overall, we conducted 20 interviews with the founders of these companies and followed up with each of them in a subsequent meeting that lasted between 15 and 20 minutes. Interviews were conducted until theoretical saturation was reached when no new insights or concepts emerged (Eisenhardt, 1989; Corbin e Strauss, 2015). The authors also gathered additional documents, websites, press releases, social media posts, and specialised reports as secondary data sources to supplement the primary data collected through the interviews.

Following the Gioia Methodology (Gioia et al., 2013), we compared interview data to inductively build insights from concealed meanings that theoretically advance a phenomenon (Glaser and Strauss, 1967). The Gioia methodology allowed us to illustrate how the data progress towards "the process of model building" (Gioia, 2021, p. 26), aiming to "generate a well-founded process model that displays the most probable explanations of the phenomena of interest" (Magnani and Gioia, 2023, p. 3). Therefore, following Gioia et al. (2013), we began by individually analysing the raw data from a large sample of first-order concepts, as shown in Table 2 of the Appendix section. The two researchers then compared the concepts derived from this first step to find alignment, reducing them to a more manageable number. The concepts were then labelled by referring to the literature, and data were further analysed to uncover second-order theoretical themes. Finally, these were collapsed into aggregate dimensions. An example of the following process is shown in Figure 2.

Figure 2. Representation of the data structure

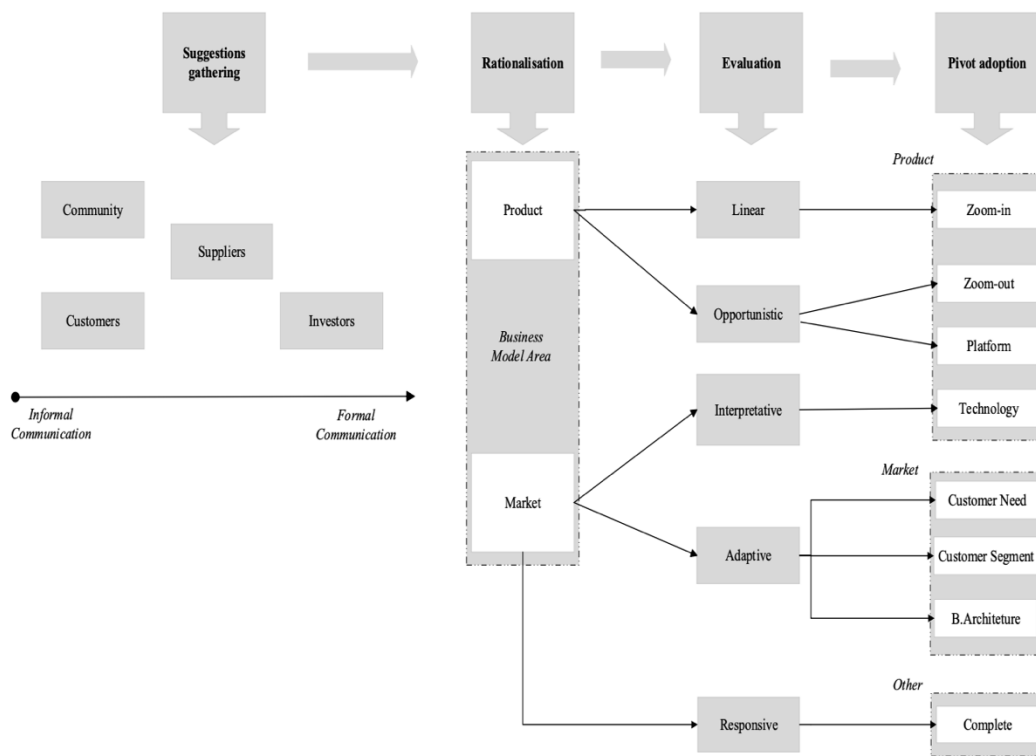




4. Results

Data show that all pivots are a sequence of adaptive and non-experimental steps unfolding in four distinct stages: 1) Suggestions' gathering, 2) Rationalisation, 3) Evaluation, and 4) Pivot adoption. Figure 3 illustrates the empirical framework based on the results of the analysis.

Figure 3. How start-up founders define pivot strategies in times of crisis



4.1. Suggestions' Gathering and Rationalisation

Insights from interviewee [#17] highlight the initial stage of the pivot process that entrepreneurs experience during the crisis: *suggestions' gathering*. In this phase, entrepreneurs collect resources through exchanges with key stakeholders: suppliers, investors, customers, and the community. *“The third founding partner, the main investor, is a document management company. We developed in-house document processing software for accountants that used AI*

to extract critical data from documents like invoices and delivery notes. The results were poor; it was a demo [...] Shortly after the pandemic began, they proposed focusing on this product because some customers had requested it". This citation reveals that the investors' formal request prompted the entrepreneur to concentrate on a specific product feature. The pandemic created new needs among the partner company's customers, leading investors to call for a focus on this product feature instead of on the initial value proposition. This pattern appeared across all analysed pivot types but varies in its form and the types of stakeholders involved. For example, founder [#8] indicated that customer recommendations drove the decision to expand service offerings: *"When the pandemic broke out [...]. One client, a big corporate client, asked why we didn't handle everything since we are more flexible and offer customised solutions. So, we started considering expanding our service to offer the entire technology chain, as we had those capabilities"*.

Following an initial phase of informal exchanges between customers and the entrepreneur, an informative interaction indicates the potential for expanding service offerings. Similar to interviewees' statements [#1, #4, #5, #11, #9, #14], shortly after the pandemic outbreak, customers directly suggested innovative solutions to ensure the resilience and continuity of start-ups.

These informal interactions offer new directions for products or markets. Entrepreneurs [#10, #16] introduce the community as an actor in the initial process phase. This community comprises individuals who share common interests, values, objectives, or practices and interact in various ways: *"I started doing social media marketing as a marketing agency, targeting women entrepreneurs, primarily to discuss topics like women entrepreneurship, the gender gap in business, and successful brands addressing these issues [...] The change occurred within the community [...] Because individuals and companies that care about these topics and share these values wanted to integrate these mindsets into their organisations"*.

As the founder's citation [#10] illustrates, the relational link between entrepreneurs and community members is even more informal than that with typical start-up customers. Shared values and the collective fear generated by the exogenous event foster an environment where people feel motivated to suggest significant changes. These suggestions, often involving substantial changes to the value proposition, impact not just specific product or service aspects but the entire company offering. Respondents [#2] and [#3] discuss information exchange with suppliers. This exchange is formal in crises, as suppliers fear the situation might hinder service optimisation and economic sustainability.

“Our specific pandemic response emerged from discussions with key institutional stakeholders and suppliers, including municipalities and museums. We developed and implemented ideas to meet their needs, like remote activities”. Conversely, in long-term relationships, information exchange is informal ([#3]).

The second phase, involving rationalising information resources, relates acquired information to relevant business model areas, products, or markets. Entrepreneurs assess the strategic implications and decide if the info necessitates product adjustments, market changes, or value proposition modifications. This phase follows suggestions gathering in a process logic but occurs during the relationship exchange ([#3]). *“You realised your supplier had a cost problem and considered how our B2C system could assist companies [...]”.*

The passage emphasises the cognitive rationalisation process of entrepreneurs during interactions with involved actors. The interviewee asks and answers questions about proposals, identifying strategic implications for the start-up's business model. For example, from a B2C customer's service request, the entrepreneur rationalised the intervention area and assessed the impact of entering a new market, such as B2B. Recommendations about the business model's scope elicit the most rational response, as noted by Participant [#11]: *“Then we realised that*

this project wasn't resonating with the market, while the product we were developing was highly regarded by industry players”.

Participant [#4] illustrates another rationalisation approach related to the product: *“Our initial reaction was to adapt our car park reservation app so that customers could similarly reserve park spaces”.* This shows how the entrepreneur rationalised customer requests for new services related to the app's functionality within the context of the business model. Similarly, interviewees [#17, #2] explain how they rationalised the product despite suggestions to enhance services and focus on specific products. *“Faced with this fact, we realised that we could achieve an immediate result by extending the use of our digital models. These virtual visits, these digital experiences, were tools we had but were underutilising”* [#2].

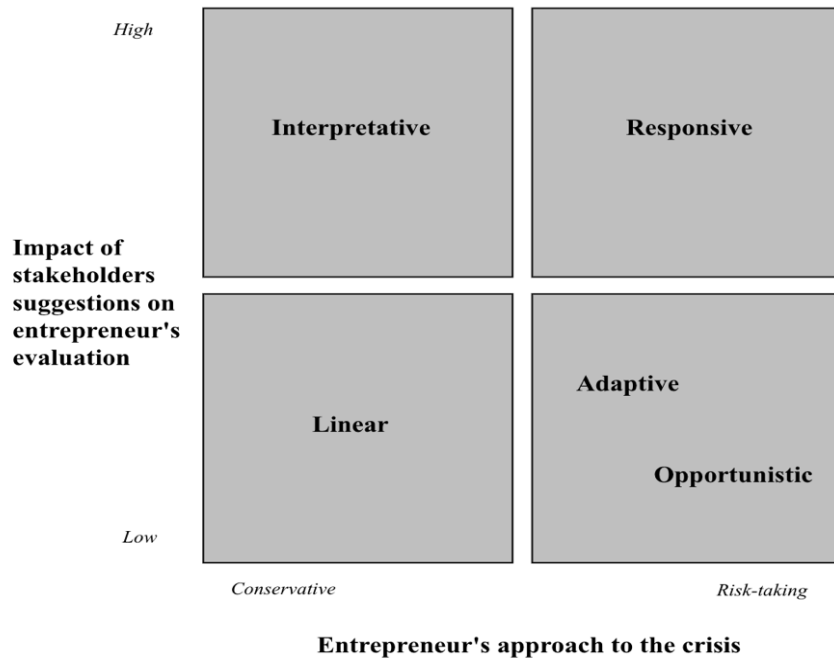
4.2. Evaluation

In the *evaluation* phase, start-up founders analyse suggestions and devise plans to address crises. This step is essential for identifying various types of pivots and is connected to the prior phase. Procedurally, it follows the rationalisation of suggestions, and temporally, it signifies a subsequent, cognitive, and exclusively entrepreneurial analysis. The evaluation process can be categorised into five types: *linear, opportunistic, interpretive, adaptive, and responsive*. Differences between these evaluation types are detectable by observing two variables: first, the impact of stakeholders' suggestions on entrepreneur evaluation, and second, the entrepreneur's approach to the crisis. Figure 4 illustrates the different evaluation types determined by these two variables.

In a *linear* approach, the entrepreneur adheres to suggestions without hesitation, maintaining a conservative stance focused on stability. The experience of entrepreneur #17 provides an example of this: *“Their comparison has always been very useful to us because they have in-house expertise, know-how, and knowledge of different sectors. Instead of evaluating the*

proposal from the financial and strategy side, where they have a better view of the market, we told ourselves: Let's improve this product directly; let's focus on it”.

Figure 4. Categorisation of evaluation type



The investors recommended focusing the value proposition on a specific product feature. The entrepreneur chose a conservative approach, with minimal differentiation from the nature of the suggestions; the primary variation lies in the entrepreneur's crisis management. This approach aims to mitigate risk, turn a challenging situation into a favourable opportunity, and make decisions based on available information to achieve the desired outcome.

“[Name of start-up] also reinvented itself during Covid as a booking platform for other things, aiming to stabilise the business in a difficult time and capitalise on the opportunity”.

The quote from interviewee [#4] forms the basis for another classification of the evaluation phase: opportunistic. The focus is not on strategy formulation but on adopting short-term

tactical adjustments and offers. These opportunistic strategies emphasise modifying products or services in response to suggestions. While the specific nature of these suggestions shows modest differentiation, the entrepreneurial risk-taking and willingness to seize opportunities amid adversity vary. Unlike other identified categories, these strategies prioritise short-term survival over long-term planning. They are speculative, aiming for economic sustainability during the crisis rather than outlining a strategic transformation process. A quote from interviewee [#2] confirms this evaluation: *“The first months post-Covid were a disaster in terms of sales. [...] But it was precisely this collaboration, these requests from our suppliers, that pointed us to an opportunity that we seized out of necessity, but also because we thought they were good projects [...]”*.

In *interpretative* evaluation, as shown by interviewee #5, entrepreneurs often reassess customer feedback post-pandemic. *“Talking to them, I asked myself: they ask for more services, but what does that imply for my business? So we focussed on the technological aspect. Based on market feedback, I assumed we coded the platform differently to support the increased traffic”*. Thus, the entrepreneur focuses on improving the technological efficiency of the core platform, which represents a completely different approach to the nature of the suggestion. However, although the intention is to change the technological aspects of the platform offered, the attitude towards defining a response is remarkably conservative.

In *adaptive* evaluation, exogenous crises can impact the market positioning of start-ups. Interviewee [#13] noted: *“Covid was an opportunity for us because it made us realise that the business segment we were targeting was wrong [...]. Talking to customers, we realised that the need was mostly for shop owners and businesses”*.

This statement illustrates how external events can shift market trends and needs, making current positioning ineffective. Entrepreneurs may then focus on new market segments or emerging customer needs to enhance profitability or ensure long-term viability. Compared to

the suggestions received, the difference in evaluation remains modest. The entrepreneur takes a risk-oriented but not opportunistic approach. The key difference is the long-term perspective, with the entrepreneur maintaining this strategy even after the crisis. This distinction is evident in a statement [#9]: *“The target group has evolved. We originally thought we would target the entire Italian and European SME markets and other start-ups. Still, we realised significant interest from corporate customers, who have different needs from the market we had in mind”*.

Analysing the interviewee's quote [#13] reveals a final type of evaluation, termed *responsive*. *“From these confrontations with some community members came the first insight [...] that we had previously given the artists a crucial tool, a distribution channel to sell their works. But the pandemic made them acutely aware of their insecurity about the initial part [...] the entire structure needed to make the artist a professional”*.

During crises, community-based start-up founders recognise and address the community's concerns, focusing beyond traditional market and product dimensions to tackle social and economic issues affecting the user group. Shared social and cultural values between entrepreneurs and the community motivate founders to shift from purely financial to socio-cultural goals. As the interviewee [#10] stated, this motivation is driven by a willingness to drive necessary change for the community by following their risk-taking attitude.

“So many people and users trust us, follow our socials, participate in our networks. We thought about how they could monetise this. Without altering the relationship, which is built on real values with our community”.

4.2. Pivot Adoption

In the final phase of defining pivot types, the entrepreneur formulates a strategy into three categories: 1) product response, 2) market response, and 3) complete response. We classified the pivot types that emerged in our results using the well-consolidated model from Bajwa (2017), as shown in Table 3.

The interviewee highlights the first product-oriented pivot, the Zoom-in Pivot [#17]. This occurs when a start-up founder focuses on a specific feature or technology rather than the entire product. According to interviewee [#5] in Table 3, some pivots involve changing a start-up's technological infrastructure, programming languages, and processes, termed Technology Pivot. Our research identified another strategic change, the Platform Pivot, which shifts from a specific product to an underlying platform or vice versa, as noted by the entrepreneur [#4]. Conversely, interviewee [#8] describes a strategic response called the Zoom-out Pivot, where founders expand their offerings by adding more product functionalities and services. The first market reaction type is the Customer Need Pivot. Interviewee [#20], whose start-up uses drones to transport blood to hospitals, adopted this pivot. During the pandemic, hospitals urgently required rapid medication delivery. Consequently, the founder repurposed his service for medication transport to meet his target group's evolving needs.

Conversely, entrepreneur [#9] highlighted how crises can prompt a focus on a new target group, termed the Customer Segment Pivot. Our study observed that experience reports during the pandemic necessitated re-evaluating company architecture, known as the Business Architecture Pivot. This strategy involves transitioning from a high-profit margin, low sales volume business model (B2B) to a low-profit margin, high sales volume model (B2C). The identified cases showed a clear shift from B2C to B2B markets, as noted by the founder [#13].

Finally, our study identifies the last type of pivot process: complete. The concept of a Complete Pivot emerged from an interview with an entrepreneur [#10]. Initially a communications agency focused on social issues like inclusion, diversity, and female entrepreneurship, the company wholly pivoted during the pandemic at the community's request. It transformed into a recruitment agency addressing the gender gap and providing jobs for non-binary workers, overhauling its operations and introducing an AI algorithm to offer innovative solutions for closing the labour market gender gap.

Table 3. Different pivot types were adopted by the interviewed founders

Dimension	Interviewee	Illustrative quotes	Second-order Themes	Pivot Types
Product	17	<i>"Compared to the original idea [...] we have focussed on the development of our technology for the automatic processing of document processes. More specifically [...] using artificial intelligence algorithms"</i>	A single feature of a product becomes the whole product.	Zoom-in
	5	<i>"We have not focussed on the commercial aspect [...]. We added some technological features and coded the platform differently than when we started, so that the technological infrastructure can support more traffic."</i>	The same solution using different technology.	Technology
	4	<i>"We utilized the booking platform for park access. Some customers would call us and request this service, so we adapted the platform accordingly."</i>	A product becomes a platform or vice versa.	Platform
	8	<i>"Originally, we focussed on selling software, but we thought we would take care of the entire supply chain. From the electronics, software and firmware that move a single machine, to coordinating the movement of two machines, to managing multiple production lines and facilitating communication between factories."</i>	A whole product becomes one feature of a much larger product.	Zoom-out
Market	20	<i>"The blood delivery service was also renewed for the delivery of tampons, analyses and everything else that was needed during COVID. We adapted to the requirements of the facilities. We tried to reorganise ourselves to meet their needs"</i>	Switch to a different problem that customers have.	Customer need
	9	<i>"The target group has evolved [...] we have noticed that there is a lot of interest from corporate customers. Especially in the fashion market."</i>	Move to a different customer segment than originally conceived.	Customer segment
	13	<i>"During the COVID period, we realised that the business segment we were targeting was wrong [...]. Our platform was focused on buying and selling between private individuals. When we talked to customers, we realised that the need was mainly for shop owners and businesses."</i>	A start-up switches business architecture e.g. from B2C to B2B or vice versa.	Business Architecture
Others	10	<i>"We started out as a communications agency [...]. Due to recent changes, companies are turning to us to find ways to attract women or members of gender minorities to their organisations because they have an internal diversity gap"</i>	Significant change in product, market and financial dimensions but the entrepreneurial team remains the same.	Complete

5. Discussion and Contributions

Our study examines how twenty start-up founders leveraged pivots as strategic resources to navigate the challenges of the COVID-19 pandemic and explore the role of stakeholders in this

process. Our four-stage pivot process model (see Fig. 3) provides new insights into the academic discussion on pivots, consolidating and contrasting some existing perspectives. The results of this study offer insightful contributions to two main research topics: they delve deeper into the role that pivot can play in facing uncertainty and crises, and they increase the knowledge about the pivot process, particularly investigating the impact that stakeholders can have on the decision-making of pivoting.

Drawing from the lean start-up methodology (Ries, 2011), we have developed a micro-level model offering a new process-oriented perspective on crises and entrepreneurship. The model explains how and why certain entrepreneurs adopt various strategic approaches in response to crises. While COVID-19 has spurred research on crises and entrepreneurship, much of this research has focused on how firms respond, overlooking the entrepreneur's pivotal role in shaping these responses. Our findings enhance the understanding of how entrepreneurs navigate the unpredictability and complexity of crises when previous business models may fail. Indeed, crises challenge existing assumptions and undermine their feasibility (Andries et al., 2020; Klein, 2020; Shepherd, 2020). Our findings demonstrate that pivots serve as efficient mechanisms for entrepreneurs to develop new strategies (Eisenmann et al., 2013; Ries, 2011) and facilitate their identification and exploitation of emerging opportunities (Alvarez and Barney, 2020).

Furthermore, this study extends the concept of pivots as adaptive strategies and realignments conducive to rapid responses. In line with recent studies, our model shows that crises have accelerated the evolution of this definition into an adaptive process in uncertain conditions (Andries et al., 2020). This process is characterised as a reactive and adaptive mechanism, enabling entrepreneurs to rapidly reconfigure existing resources (Contigiani and Levinthal, 2019) and transform environmental adversity into new opportunities for their start-ups (Snihur and Clarysse, 2022). Our findings highlight how this perspective overlooks two critical aspects

of pivots during periods of uncertainty: the limited time for organisational response and the uncertainty of crisis duration. Sanasi and Ghezzi (2022) explore these aspects, corroborating our entrepreneurial pivot process representation. In addition to recent research (Andries et al., 2020; Klein, 2020) and studies on rapid responses (Giones et al., 2020; Kuckertz et al., 2020) examining the diverse reactions of firms to COVID-19 crises, this study contributes to this discourse by providing significant insights on experimentation during crises (Björklund et al., 2020). The proposed pivot process model demonstrates how uncertainty reduces the available time and how direct input from start-up stakeholders renders experimentation unnecessary. The outcomes of each stage stem from the revision and strategic reorientation of the entrepreneur's cognitive resources, which are directly aligned with the implementation of the received suggestions. The findings also underscore the significance of the entrepreneurial figure in identifying opportunities during periods of uncertainty (Alvarez and Barney, 2020). Research conducted by Sanasi and Ghezzi (2022) provides insights into how organisations can transform adversity into opportunity through strategic pivots (Salvato et al., 2020).

This study presents an alternative perspective on the start-up pivot process. Given the entrepreneur's role as a social actor, the dissemination of information to the company's stakeholders emerges as the primary catalyst in identifying opportunities rather than an internal process. In the initial phase, the entrepreneur transforms adversities into opportunities based on received suggestions, while subsequent revision phases involve aligning personal concepts with received external suggestions. Previous research (Bojovic et al., 2020; Grimes, 2018; Kirtley and O'Mahony, 2020; McDonald and Gao, 2019) has examined the role of stakeholders in the pivot process, particularly their resistance to adoption (Snihur and Clarysse, 2022; Berends et al., 2021). These studies emphasise communication with external stakeholders during the pivot process (Hampel et al., 2020).

In contrast, our model identifies stakeholders as catalysts of entrepreneur-initiated pivots. This distinction arises because previous studies have focused on experimental pivots driven by entrepreneurs' assumptions and contexts unaffected by uncertainty. Conversely, our results demonstrate how pandemic-induced uncertainty aligned entrepreneurs and stakeholders, facilitating the collaborative pursuit of optimal solutions. Our findings thus characterise entrepreneurial pivot processes as strategic responses to crises, emphasising their socially situated nature, in which relational dynamics function as catalysts and guide strategic goal setting.

In line with previous studies (Berends et al., 2016; Sanasi and Ghezzi, 2022), our research indicates that uncertainty during crises involves, for the entrepreneur, a dynamic interplay between cognitive rationalisation and action. Our study aligns with Sanasi and Ghezzi's (2022) findings, indicating that the proposed pivot process model comprises three levels: Confrontation, Reflection, and Realisation. These distinct levels occur at different stages but collectively form a pivot process integrating behaviour, cognition, and emotion. However, the model we propose incorporates cues from social interactions with stakeholders, as the entrepreneur is inevitably influenced by cognitive rationalisation processes. During the rationalisation and evaluation of received suggestions, the entrepreneur engages in cognitive reflection, which is foundational to the pivot strategy. Although our study did not profoundly explore this dynamic due to a different research focus, the transition between comparison and reflection in the proposed model shows a different sequentiality from that of the experimental pivot model often discussed in the literature. For example, Flechas Chaparro and de Vasconcelos Gomes (2021) suggest an experimental model where cognitive reflection precedes stakeholder confrontation. The sequentiality between confrontation and reflection in our model invites broader discussion, aligning with Snihur (2022), Berends (2021), and Hampel (2020) on stakeholders as barriers to strategic change prompted by the pivot. In our model, the

entrepreneur's cognitive rationalisation is shaped by stakeholder opportunities, leading to an initial equal footing confrontation without resistance to change. This raises the question of whether our model should apply to typical situations to enhance stakeholder acceptance.

Our proposed categorisation of pivot types aligns with Ries (2011), Hirvikoski (2014), and Bajwa (2017). Our findings expand on the concepts of technology, customer needs, and Complete Pivot. We suggest including strategies involving app coding changes for the Technology Pivot, treating them as technological for non-software-based start-ups (Bajwa, 2017). We recommend extending the definition of the Customer Need Pivot to encompass changes driven by exogenous events affecting consumer needs. Additionally, our analysis extends the Complete Pivot concept to include strategies addressing concerns raised by the user community. These findings contribute to research on the relationship between business models and corporate identity (Bojovic et al., 2020). They show that in start-ups with founders having strong socio-cultural ties to their community, significant strategic realignment via the Complete Pivot does not harm corporate identity and reputation. This is because entrepreneurs act as representatives for community-driven changes, sharing strong personal values with the community closely linked to the company's business.

6. Limitations and Future Research Directions

This study presents limitations that offer opportunities for future research. The COVID-19 pandemic provided a unique natural experiment for our investigation and enabled us to gather rich data on how startups respond to unpredictable environmental shocks. However, the specificity of that crisis, in terms of scope and scale, may hinder the generalizability of our results. We thus acknowledge that pivot strategies as responses to crisis may differ depending on the nature of the crisis. More research is needed on the entrepreneurs' decision-making processes under conditions of uncertainty or environmental shocks.

Another limitation of the study is related to the timing of data collection, as it relies primarily on data collected approximately three years after the onset of the pandemic. Longitudinal studies and papers based on immediate and contemporary data collection from other uncertain situations could further elucidate the concept of pivots as rapid crisis responses.

Our model demonstrates that entrepreneurs consider feedback from various stakeholders when deciding on pivots. Thus, we call for future research on how entrepreneurial social capital triggers the pivot process, especially delving deeper into identifying resources that stakeholders can bring to the entrepreneur's decision-making process.

Finally, future studies could expand our results by employing a sensemaking perspective to investigate further the cognitive processes that guide entrepreneurs from collecting suggestions to executing the pivot.

7. References

- Alvarez, S. A., & Barney, J. B.** (2020). Insights from creation theory: The uncertain context rendered by the COVID-19 pandemic. *Strategic Entrepreneurship Journal*, 14(4).
- Andries, P., Debackere, K., & Van Looy, B.** (2020). Simultaneous experimentation as a learning strategy: Business model development under uncertainty—Relevance in times of COVID-19 and beyond. *Strategic Entrepreneurship Journal*, 14(4), 556-559.
- Axelsson, M., & Bjurström, E.** (2019). The role of timing in the business model evolution of spinoffs: The case of C3 technologies. *Research-Technology Management*, 62(4), 19-26.
- Bahrami, H., & Evans, S.** (2011). Super-flexibility for real-time adaptation: Perspectives from Silicon Valley. *California Management Review*, 53(3), 21-39.

- Bajwa, S. S., Wang, X., Nguyen Duc, A., & Abrahamsson, P.** (2017). “Failures” to be celebrated: an analysis of major pivots of software start-ups. *Empirical Software Engineering*, 22, 2373-2408.
- Björklund, T. A., Mikkonen, M., Mattila, P., & van der Marel, F.** (2020). Expanding entrepreneurial solution spaces in times of crisis: Business model experimentation amongst packaged food and beverage ventures. *Journal of Business Venturing Insights*, 14, e00197.
- Boddington, M., & Kavadias, S.** (2018). Entrepreneurial pivoting as organizational search: Defining pivoting in early stage ventures. In *Academy of Management Proceedings* (Vol. 2018, No. 1, p. 12065). Briarcliff Manor, NY 10510: Academy of Management.
- Bojovic, N., Sabatier, V., & Coblenz, E.** (2020). Becoming through doing: How experimental spaces enable organizational identity work. *Strategic Organization*, 18(1), 20-49.
- Berends, H., van Burg, E., & Garud, R.** (2021). Pivoting or persevering with venture ideas: Recalibrating temporal commitments. *Journal of Business Venturing*, 36(4), 106126.
- Camuffo, A., Cordova, A., Gambardella, A., & Spina, C.** (2020). A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. *Management Science*, 66(2), 564-586.
- Chesbrough, H.** (2010). Business model innovation: opportunities and barriers. *Long range planning*, 43(2-3), 354-363.
- Contigiani, A., & Levinthal, D. A.** (2019). Situating the construct of lean start-up: Adjacent conversations and possible future directions. *Industrial and Corporate Change*, 28(3), 551-564.
- Conway, T., & Hemphill, T.** (2019). Growth hacking as an approach to producing growth amongst UK technology start-ups: an evaluation. *Journal of Research in Marketing and Entrepreneurship*, 21(2), 163-179.

- Corbin J. & Strauss A. (2015).** Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. 4th edn Thousand Oaks, CA: SAGE.
- Eisenhardt, K. M. (1989).** Building theories from case study research. *Academy of management review*, 14(4), 532-550.
- Eisenhardt, K. M. (2021).** What is the Eisenhardt Method, really?. *Strategic Organization*, 19(1), 147-160.
- Eisenmann, T. R. (2013).** Entrepreneurship: A working definition. *Harvard Business Review*, 10(5), 1-3.
- Flechas Chaparro, X. A., & de Vasconcelos Gomes, L. A. (2021).** Pivot decisions in start-ups: a systematic literature review. *International Journal of Entrepreneurial Behavior & Research*, 27(4), 884-910.
- Frederiksen, D. L., & Brem, A. (2017).** How do entrepreneurs think they create value? A scientific reflection of Eric Ries' Lean Startup approach. *International Entrepreneurship and Management Journal*, 13, 169-189.
- Ghezzi, A. (2019).** Digital startups and the adoption and implementation of Lean Startup Approaches: Effectuation, Bricolage and Opportunity Creation in practice. *Technological Forecasting and Social Change*, 146, 945-960. doi: 10.1016/j.techfore.2018.09.017.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013).** Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, 16(1), 15-31.
- Gioia, D. (2021).** A systematic methodology for doing qualitative research. *The Journal of Applied Behavioral Science*, 57(1), 20-29.

- Giones, F., Brem, A., Pollack, J. M., Michaelis, T. L., Klyver, K., & Brinckmann, J. (2020).** Revising entrepreneurial action in response to exogenous shocks: Considering the COVID-19 pandemic. *Journal of Business Venturing Insights*, 14, e00186.
- Glaser, B. G., & Strauss, A. L. (1967).** The discovery of grounded theory: strategies for qualitative research (grounded theory). Taylor & Francis eBooks DRM Free Collection.
- Greenwood, R., & Hinings, C. R. (1996).** Understanding radical organizational change: Bringing together the old and the new institutionalism. *Academy of management review*, 21(4), 1022-1054.
- Grimes, M. G. (2018).** The pivot: How founders respond to feedback through idea and identity work. *Academy of Management Journal*, 61(5), 1692-1717.
- Hampel, C. E., Tracey, P., & Weber, K. (2020).** The art of the pivot: How new ventures manage identification relationships with stakeholders as they change direction. *Academy of Management Journal*, 63(2), 440-471.
- Hirvikoski, K. (2014).** Startups pivoting towards value. *Data-and Value-Driven Software Engineering with Deep Customer Insight, 1*.
- Kirtley, J., & O'Mahony, S. (2020).** What is a pivot? Explaining when and how entrepreneurial firms decide to make strategic change and pivot. *Strategic Management Journal*, 44(1), 197-230.
- Klein, P. G. (2020).** Uncertainty and entrepreneurial judgment during a health crisis. *Strategic Entrepreneurship Journal*, 14(4), 563-565.
- Kuckertz, A. (2021).** Standing up against crisis-induced entrepreneurial uncertainty: Fewer teams, more habitual entrepreneurs. *International Small Business Journal*, 39(3), 191-201.

- Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Reyes, C. A. M., Prochotta, A., ... & Berger, E. S. (2020).** Startups in times of crisis—A rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*, 13, e00169.
- Leatherbee, M., & Katila, R. (2020).** The lean startup method: Early-stage teams and hypothesis-based probing of business ideas. *Strategic Entrepreneurship Journal*, 14(4), 570-593.
- Magnani, G., & Gioia, D. (2023).** Using the Gioia Methodology in international business and entrepreneurship research. *International Business Review*, 32(2), 102097.
- McDonald, R., & Gao, C. (2019).** Pivoting isn't enough? Managing strategic reorientation in new ventures. *Organization Science*, 30(6), 1289-1318.
- McMullen, J. S. (2015).** Entrepreneurial judgment as empathic accuracy: A sequential decision-making approach to entrepreneurial action. *Journal of Institutional Economics*, 11(3), 651-681.
- Pillai, S. D., Goldfarb, B., & Kirsch, D. A. (2020).** The origins of firm strategy: Learning by economic experimentation and strategic pivots in the early automobile industry. *Strategic Management Journal*, 41(3), 369-399. doi: 10.1002/smj.3102.
- Ries, E. (2011).** *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses.* Crown Business. New York.
- Rindova, V., & Courtney, H. (2020).** To shape or adapt: Knowledge problems, epistemologies, and strategic postures under Knightian uncertainty. *Academy of Management Review*, 45(4), 787-807.
- Saebi, T., Lien, L., & Foss, N. J. (2017).** What drives business model adaptation? The impact of opportunities, threats and strategic orientation. *Long range planning*, 50(5), 567-581.

- Sala, P. K., Philbin, S. P., & Barikzai, S.** (2022). A qualitative research study of the tech startup journey through entrepreneurial pivoting. *International Journal of Entrepreneurial Behavior & Research*.
- Salvato, C., Sargiacomo, M., Amore, M. D., & Minichilli, A.** (2020). Natural disasters as a source of entrepreneurial opportunity: Family business resilience after an earthquake. *Strategic Entrepreneurship Journal*, 14(4), 594-615.
- Sanasi, S., & Ghezzi, A.** (2022). Pivots as strategic responses to crises: Evidence from Italian companies navigating Covid-19. *Strategic Organization*, 14761270221122933.
- Shepherd, D. A., & Williams, T.** (2020). Entrepreneurship responding to adversity: Equilibrating adverse events and disequilibrating persistent adversity. *Organization Theory*, 1(4), 2631787720967678.
- Shepherd, D. A., & Gruber, M.** (2021). The lean startup framework: Closing the academic–practitioner divide. *Entrepreneurship Theory and Practice*, 45(5), 967-998.
- Snihur, Y., & Clarysse, B.** (2022). Sowing the seeds of failure: Organizational identity dynamics in new venture pivoting. *Journal of Business Venturing*, 37(1), 106164.
- Teece, D. J.** (2018). Business models and dynamic capabilities. *Long-range planning*, 51(1), 40-49.
- Tekic, Z., & Koroteev, D.** (2019). From disruptively digital to proudly analog: A holistic typology of digital transformation strategies. *Business Horizons*, 62(6), 683-693.
- Zuzul, T., & Tripsas, M.** (2020). Start-up inertia versus flexibility: The role of founder identity in a nascent industry. *Administrative Science Quarterly*, 65(2), 395-433.

Chapter 3. Pivot in response to crises: a sense-making perspective³

Abstract. This article investigates entrepreneurs' cognitive processes when implementing pivots in response to external shocks. To counter these challenges, start-ups adopt strategic responses known as pivots (Ries, 2011). While many studies have explored the pivoting process and its effects on firm restructuring, few have focused on the entrepreneurial level, particularly from a cognitive perspective. This study addresses this gap by using Weick's (1995) sense-making theory as a framework and analysing semi-structured interviews with Italian entrepreneurs who adapted their businesses during the Covid-19 pandemic. Additionally, we triangulated the data with secondary sources to enhance the analytical framework and verify the findings' robustness. Our results provide insight into the cognitive processes underpinning pivot strategies in response to external events. We highlight the crucial role of sense givers and the social dimension, extending the analysis of the sense-receiving process. Our study presents a new perspective on pivots, defining the process as a rapid and strategic response to crises, cognitively situated in the entrepreneur and socially shared with start-up stakeholders.

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1. Introduction

Over the past 15 years, start-ups have faced various challenges that have hindered their ability to create, expand, and adapt (Kuckertz et al., 2020; Shepherd and Williams, 2020). These challenges include the global health crisis caused by Covid-19 and the geopolitical tensions surrounding the war in Ukraine and the war in Israel. In a rapidly changing environment, start-ups must reorganise their resources to cope with increased uncertainty (Klein, 2020; Rindova and Courtney, 2020). In response to these situations, the entrepreneur may pivot, which involves taking a new path to create value (Sala, Philbin and Barikzai, 2022). Several important theoretical contributions have deepened this concept and applied it to the analysis of response strategies when the business model's profitability is affected by an unexpected event (Berends, Van Burg and Garud., 2021; Kirtley and O'Mahony, 2020). Studies in this area have shown that pivoting is a valid and effective measure to strategically realign organisations, mitigate the uncertainty caused by crises, and turn adversity into opportunity (Andries et al., 2020; Berends, Van Burg and Garud, 2021; Hampel, Tracey and Weber, 2020; Salvato et al., 2020).

While research has extensively explored the processes underlying the pivot concept and its impact on the realignment of business strategies, the literature has focused on examining this process at the organisational level and neglected the central role of the entrepreneur in setting such strategies. Even less attention has been paid to the sense-making process in the transition period between the exogenous event and the definition of the pivot strategy. Using a sense-making perspective, it is possible to investigate the process that occurs because ideas within firms arise from how entrepreneurs make sense of their environment (Gartner et al., 2016). Furthermore, entrepreneurs often seek advice, emotional support, and resources from family members and others in their network (Arregle et al., 2015; Leyden et al., 2014). The significance of other sense-givers in determining pivot strategies to address a crisis is equally essential. By employing the constructs of sense-making, sense-giving, and sense-receiving, this study aims

to provide a fresh perspective on the pivot process of start-ups in crisis management. Specifically, it focuses on the sense-making and sense-giving of the exogenous event and the sense-giving and sense-receiving of other actors in the entrepreneur's support network. This research aims are as follows: *1) How do start-up founders interpret external events to implement pivot strategies? 2) How does the entrepreneur's social dimension affect this process?* Methodologically, we conducted twenty semi-structured interviews with Italian founders who restructured their start-ups in response to the exogenous shock of the COVID-19 pandemic. Our sample was chosen to reflect heterogeneity concerning geographical location, sector, size, and stage of the start-up. Our study employs an exploratory, qualitative approach using semi-structured interviews, and we utilise a grounded theory methodology (Glaser and Strauss, 1967) to develop our findings inductively.

Our study reveals that entrepreneurs enact pivots as cognitive processes rather than predetermined events within the organisation, allowing firms to respond strategically to crises within a limited timeframe. Our proposed model of pivots as inherently cognitive and socially situated entrepreneurial responses comprises three distinct phases: crisis, pivot, and evaluation. At each stage, entrepreneurs engage in a sense-making process directly influenced by information exchange with sense givers. Specifically, we have emphasised how sense receiving from formal and informal social dimensions shapes the definition and sustainability of pivot processes within start-up strategy. Our findings significantly contribute to the discourse on pivots as a strategic response to the crisis and provide a fresh perspective on the entrepreneurial sense-making process in defining business model changes.

2. Theoretical Background

2.1. Pivot During Times of Uncertainty

The literature has presented various definitions of the pivot (Flechas Chaparro & de Vasconcelos Gomes, 2021). However, the original concept was introduced by Erick Ries in 2009 in a blog post titled "Pivot, do not jump to a new vision". Ries (2011, p. 149) subsequently provided an initial definition and categorisation of pivot types in his book *The Lean Start-up*, describing the pivot as a "structured course correction designed to test a new fundamental hypothesis about the product, strategy, and growth engine." Pivots are a central element of the lean start-up methodology (Contigiani & Levinthal, 2019; Frederiksen & Brem, 2017). They represent one of the possible decisions to be made as a result of a company's business model experimentation process, as an alternative to continuing with the same business model or abandoning the company altogether in the face of unsatisfactory results, external pressures that change the environment, or internal needs (McMullen, 2015). As the lean startup approach has gained increasing legitimacy and attention among management scholars, several studies have revisited the concept of pivoting to examine its nature and implications, looking at both startups and established companies (e.g., Grimes, 2018; Hampel, Tracey, & Weber, 2020; Kirtley & O'Mahony, 2020; McDonald & Gao, 2019; Pillai, Goldfarb, & Kirsch, 2020; Snihur & Clarysse, 2022; Yoo, Huang, & Arifoglu, 2021). Despite differences in conceptual definition, these studies agree that pivots are inherently experimental (Pillai, Goldfarb, & Kirsch, 2020). The inherent experimentation allows companies to redefine their business model (Hampel, Tracey, & Weber, 2020; McDonald & Gao, 2019) through a systematic approach based on well-defined phases described in the framework by Flechas Chaparro & de Vasconcelos Gomes (2021).

Several studies indicate that exogenous shocks significantly drive business model change (Devece, Peris-Ortiz, & Rueda-Armengot, 2016; Corbo, Pirolo, & Rodrigues, 2018). The literature is replete with companies adapting and reconfiguring their strategies in response to

external shocks (Saebi, Lien, & Foss, 2017). Pivoting processes can be useful for companies facing exogenous crises (Zuzul & Tripsas, 2020). However, crises present a different context for pivots, leading to questions about the applicability of the systematic model in such circumstances.

Indeed, various studies suggest that pivots as a strategic response to crises may require modifications compared to the traditional concept (e.g. Hampel, Tracey, & Weber, 2020; Kirtley & O'Mahony, 2020; McDonald & Gao, 2019). This involves shifting from a hypothesis-falsification process centred on experimentation to an adaptive process. This view appears to contrast with the experimental nature of pivots, which aim to systematically investigate the feasibility of hypotheses about the business model in response to unforeseen events (Andries, Debacker, & Van Looy, 2020; Frederiksen & Brem, 2017). However, in a crisis context, organisations do not have the time to gradually test and validate strategic changes as is typically done in the pivot process (Kirtley & O'Mahony, 2020). Based on previous studies that have identified pivots as a response to unforeseen events (Berends, van Burg, & Garud, 2021), the literature suggests that pivots in crises address the temporary nature of the crisis itself, as organisations must balance the tension between immediate survival and long-term sustainability. Moreover, there are differences in the definition and process of pivots. Sanasi and Ghezzi (2022) distinguish three phases: the reaction phase to the unforeseen event, the response phase, and the retrospective evaluation phase. These phases outline an immediate reaction process followed by a retrospective analysis of the decisions' validity. In this context, it is of utmost importance to carry out an accurate assessment and identify the key success factors in the different phases of the process.

2.2. Sense-Making as a Theoretical Framework for Interpreting Uncertainty

The theorist of social organisation, Karl Weick, defined sense-making as the cognitive activity that entails the continuous development of plausible explanations that justify the actions of individuals (Weick, Sutcliffe, & Obstfeld, 2005). According to this socio-psychological approach, organisational actors extract cues from their surroundings and give them meaning in a plausible manner (Maitlis & Christianson, 2014). Therefore, sense-making is a dynamic process in which individuals attempt to make sense of new problems or events that arise due to uncertainty (Weick, 1995). Various perspectives on sense-making exhibit some differences in conceptualisation. Some view it as an individual cognitive process (Klein et al., 2006; Starbuck and Milliken, 1988), while others perceive it as a result of social interactions and collective actions (Maitlis, 2005; Porac et al., 1989; Weick et al., 2005). Despite these discrepancies, all perspectives are grounded in the essential characteristics of sense-making identified by Weick (1995) and subsequently by Weick et al. (2005): identity, socialness, retrospective, ongoing, uncertainty, enactment, plausibility, and language (Balogun and Johnson, 2004; Cornelissen, 2012; Gephart et al., 2010; Sonenshein, 2010). In this study, we specifically focus on uncertainty's social and ambiguous aspects.

Sense-making is inherently social, as a person's thoughts, feelings, and actions are influenced by the real, imagined, or implicit presence of others (Maitlis, 2005). Thus, The sense-making process results from social interactions between the individual sense-maker (entrepreneur) and others. This is particularly relevant in the context of the entrepreneurial process, as entrepreneurs are often seen as advocates of change who challenge the status quo to create new products, services, and opportunities, often in defiance of social or institutional market norms (Beckert, 1999). On the other hand, entrepreneurs need to establish links with socialising actors and interact with or be influenced by them (Zimmer, 1986). Consequently, the entrepreneurial process is increasingly viewed by scholars as highly contextualised (Welter, 2011) and with

prominent social components (Johnston et al., 2018). With this in mind, Hoyte (2019) delves deeper into the topic and examines how socialisation factors and symbiotic relationships within social networks influence entrepreneurial trajectories. Specifically, he explores how sense-giving exchanges between the entrepreneur and others impact the transition from business idea to business creation.

Following Weick, Sutcliffe, and Obstfeld (2005), individuals try to overcome a cognitive gap in situations of incomplete information. The process of seeking clarity and a reasonable explanation for events during times of ambiguity and uncertainty is essential to decision-making in organisational settings. Crises represent suitable examples of uncertainty that Weick illustrates and further analyse by applying the sense-making approach to different crises (e.g., Weick, 1990, 1993, 2010; Weick & Sutcliffe, 2003). The emergence of identities within collective settings during periods of uncertainty has been a focal point for numerous scholars. Identity is rooted in an individual's social dimension as a meaning-making entity (Wenger, 2010). Wenger (2010) additionally contends that a social participant transcends mere cognitive existence, embodying a comprehensive individual with human experiences who undergoes transformation and development by assimilating information from the collective sphere. In general, sense-making is an individual process; however, in extreme and uncertain situations, individuals try to get more information by communicating with others who might have missing information (Pentina & Tarafdar, 2014; Stieglitz et al., 2017). McKeever et al. (2015) and Shepherd (2015) emphasised the importance of networks, places, and communities in this process. These findings raise whether and how the cognitive process of defining events, a critical input in implementing pivot strategies in response to a crisis, is socially influenced. Consequently, the perspective provided by sense-making theory facilitates an examination of the social dimension's role in the entrepreneur's definition and design of the pivot process as a strategic response to a crisis.

3. Methodology

3.1. Research Setting and Design

We employed a grounded theory approach to develop an inductive theory, systematically identifying conceptual categories from the data and using interview codes to demonstrate the relationship between these categories and the data (Glaser and Strauss, 1967). We gathered data through semi-structured interviews with founders and co-founders of Italian start-ups, guided by a research protocol focusing on four main areas: (I) the sector definition and value proposition of start-ups before the crisis; (II) pivoting strategies implemented in response to the Covid-19 pandemic; (III) the pivot structure; and (IV) the impact of pivoting strategies on the value proposition of start-ups.

3.2. Sampling and Data Collection

The initial sampling process (Charmaz, 2014) began with collaboration from two incubators, Le Village di Parma and Le Village di CA Milano, part of the Crédit Agricole banking group. Additionally, the project worked with CRIT - Cremona Information Technology, a consortium in Cremona hosting numerous ICT sector start-ups. The aim was to identify companies for analysis. We reviewed the start-ups' websites, LinkedIn pages, and social profiles to determine their relevance to our research. In a subsequent phase, we contacted founders via LinkedIn to ensure a diverse sample in age, start-up size, location, and sector. Selected entrepreneurs must have shifted their start-up's strategic focus post-foundation. Interested entrepreneurs received e-mails with detailed information about the research and interview methodology.

We employed purposeful sampling (Strauss and Corbin, 1998; Eisenhardt, 1989) to select sources providing highly relevant data for our research questions. We chose entrepreneurs who established their start-ups before the COVID-19 pandemic outbreak in Italy, before March

2020. Interviews continued until theoretical saturation, at which point no new insights or concepts emerged (Eisenhardt, 1989; Corbin and Strauss, 2015). Data collection occurred between April and August 2023.

Table 1. Information on the Interviewees

Interviewee (#)	Founders' Role	Start-up industry	Founding year	Employees (range)
1	CEO	MedTech	2018	2-10
2	CEO	Creative	2017	2-10
3	CEO	Booking platform	2017	11-50
4	CEO	Booking platform	2017	11-50
5	CEO	Booking platform	2018	2-10
6	CEO	Agri-food	2018	2-10
7	CEO	Real estate	2017	2-10
8	CEO	IoT e ICT	2020	11-50
9	COO	Blockchain provider	2019	11-50
10	CEO	Networking platform	2018	2-10
11	CSO	Fintech & Insurtech	2018	2-10
12	CEO	Agri-food	2019	2-10
13	CEO	Marketplace	2019	11-50
14	CEO	Fintech & Insurtech	2018	2-10
15	CEO	Green Lending Crowdfunding	2018	11-50
16	CEO	Networking platform	2019	2-10
17	CEO	Fintech & Insurtech	2019	2-10
18	CEO	Agri-food	2020	2-10
19	CEO	Digital Recruiting Platform	2020	11-50
20	COO	MedTech	2018	2-10

We conducted 20 semi-structured interviews with key informants from various start-ups, each lasting an average of 60 minutes. Each participant was interviewed again during a follow-up session lasting 15-20 minutes on average. All interviews were recorded and transcribed. We

triangulated the data by supplementing initial findings with secondary sources, including companies' websites and social media profiles.

Table 2. Data sources

Data sources	Data gathering	N.
Social Media profiles (Facebook, Instagram, LinkedIn)	Start-ups' social media profiles for screening information about: pivot, innovation activities post crisis, and interactions with social actors	45 social media profiles
Websites	Start-ups' website screening in search of pivot-related information	27 websites
Official reports about innovation activities	Analysis of official start-up reports to understand their innovation-related activities	3 reports

3.3. Data Analysis

Using recommended techniques, we began coding data with line-by-line open coding to stay open to emerging theoretical possibilities (Charmaz, 2014). We aggregated first-order codes into more abstract second-order themes to better understand and describe observations (Gioia, Corley, and Hamilton, 2013). These second-order themes were then grouped into theoretical constructs, completing the data coding structure (Gioia, Corley, and Hamilton, 2013). Table 3 in the Appendix illustrates the data analysis, showing quotes, second-order themes, and third-order dimensions, aiding in understanding the pivot concept.

The coding structure evolved iteratively, with repeated comparison and refinement based on data fit (Eisenhardt, 1989). During interviews, we took field notes and reviewed them afterwards, involving a researcher who did not conduct the discussions. Two authors primarily conducted the interviews, and all authors jointly carried out the coding and analysis to ensure triangulation, enhancing the credibility of qualitative analysis (Patton, 1999; Thurmond, 2001).

Table 3 summarises the most important issues analysed in the results section, divided into the two identified phases.

Table 3. Data structure, main topics

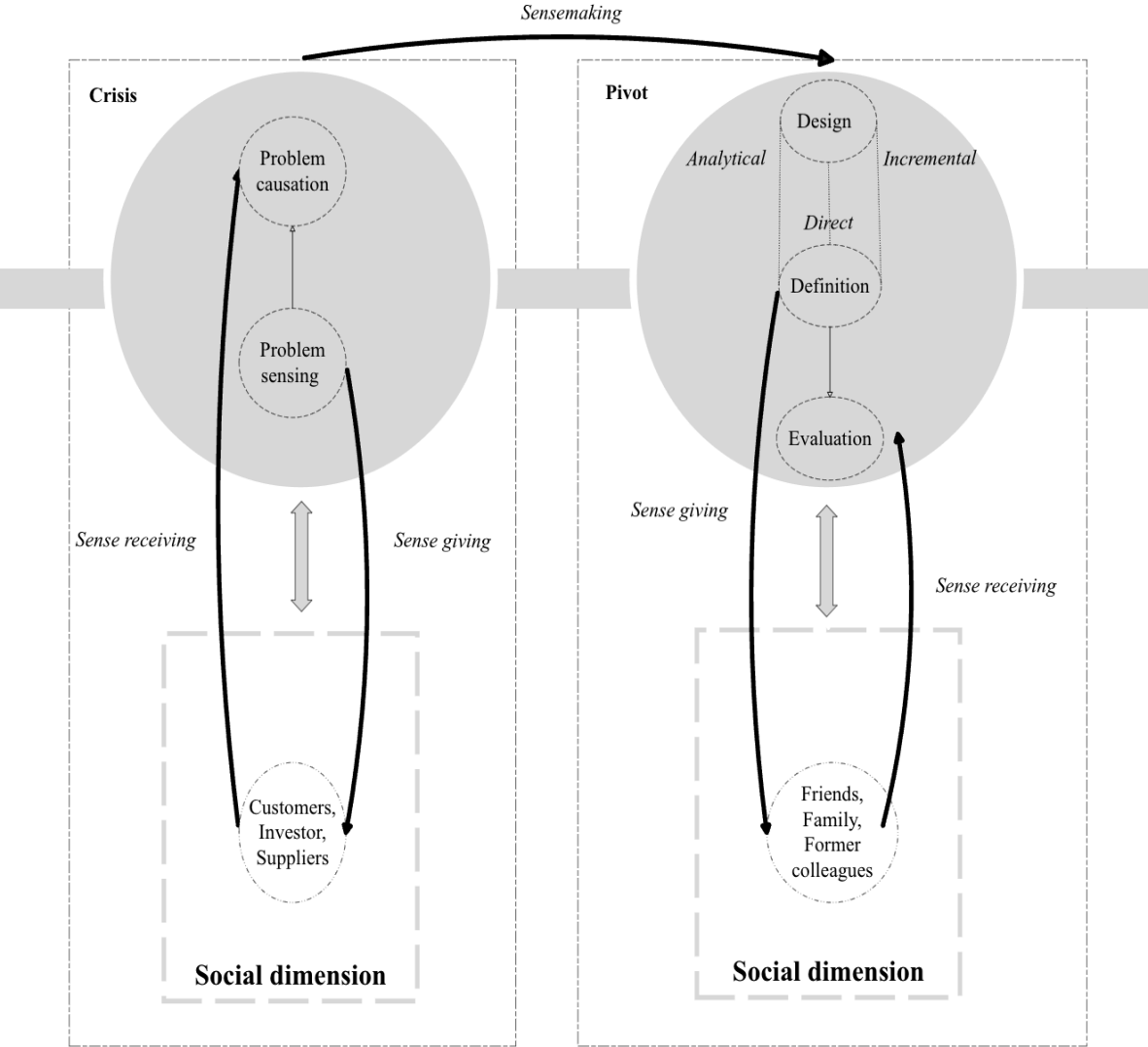
Data structure			
Representative quotations	Second-order themes	Theoretical constructs	Phases
<i>Then Covid, we transport people to big events, so we realised that there would not be any big events for a long time. So we started to think: What do you do with 15 employees? At that time, we had the office in Venice and another office in Lecce with 15 employees. What should we do? Do we secure the company? But what about the others?</i>	Problems in their market	Problem sensing	Crisis
	Fear dictated by an unprecedented crisis, inability to understand the correct strategic decision		
	No perspective, first response action aimed at maintaining the status quo	Problem causation	
	Immediate readiness for social interaction	Social interaction	
<i>As soon as Covid broke out, I started having daily contact with our customers, sometimes just to ask them how they were doing. When we talked about Covid, the crisis and the lockdowns, it was inevitable that we would talk about the benefits of our relationship and there were important consequences for the start-up. Both in terms of renegotiating contracts and because they proposed adjustments to overcome the crisis, new services that were possible during that time.</i>	First action resulting from the crisis: seeking social confrontation with close customers	Sense receiving	
	Strategic implication: willingness to internalise the feedback received, make them resources to overcome the period		
	Exchange of strategic information resources		
<i>The first reaction was to keep everything as it was, then in May/June we received a suggestion from a customer who was already using our app as an end user: "But why don't you develop the app for the B2B market? I would need it in my company". That was crucial, because we realised that we could overcome the period by focusing on this project.</i>	No perspective, first response action aimed at maintaining the status quo	Sense-making	
	Social confrontation changes the perspective of the crisis		
	Fear becomes an opportunity to solve a problem, to undertake new projects		
<i>Following the outbreak of the pandemic [...], we received very positive feedback from our customers. They confirmed that the concept was sound, but they had other needs. This feedback really helped us to re-evaluate both the concept and the product we had originally developed, which prompted us to create a second version of the product with significant changes. This allowed us to expand and enrich the offering and respond directly to customer needs: Telemedicine.</i>	The sensemaking process of crisis, leads the entrepreneur to consider strategic changes	Pivot design	
	Strategic changes directly customised on the feedback received from their customers	Social interaction	
	Strategy influenced by social confrontation with customers, relationship structure of informal nature, role of formal stakeholders		
<i>The action plan was initiated during an internal brainstorming session, and it quickly gained momentum. We conducted a thorough analysis to determine the pricing, the pricing model, and most importantly, the model for adapting the platform to the needs of the B2B market. These plans were logical, so we crafted the pitch that made the most sense to me, and from there, we go out on the market.</i>	Internal strategic definition plan	Pivot definition	
	Area of the business model that is directly related to the type of suggestions received		
	Definition and market exit. The aim is to exploit the identified opportunity as quickly as possible.		
<i>We are two start-uppers with previous work experience, so we had our own network, our own network of friends and former colleagues. A network that helped us in the time of the pandemic, in the sense that picking up the phone and calling the friend you remembered, very often meant finding an immediate connection, a support to understand that what we had defined might be right</i>	Sharing the pivot idea with others	Sense-giving	
	The comparison of one's own work is sought through contact with personal relationships		
	The entrepreneur is driven by a search for confrontation, whose goal is to find emotional support, security		
<i>After a few months of revitalisation, we realised the complexity of the change. Partly because of the time it took, but also because we spoke to some founder friends who expressed great concern about what they were seeing. It was too complicated and unattractive, so we went back to a pure B2B version.</i>	The feedback of the entrepreneur's personal relationships is of primary value	Sense receiving	
	Feedbacks influence the maintenance of the strategy of the value proposition offered	Pivot evaluation	

4. Results

Despite the diverse nature of the sample in terms of size, industry, and start-up phase, similarities emerged in the way entrepreneurs employed sense-making and sense-giving to address a pivot process in response to a crisis. This finding is depicted in Figure 1 and serves to structure the subsequent section of the results. To begin, we can delineate the analysis period into three primary phases: the crisis, the adoption of a pivot strategy, and the evaluation phase. We have organised the results as a management process encompassing these three phases by

detailing how the entrepreneurial sense-making process is impacted in each phase by iterative transitions from sense-making to sense-giving, culminating in sense-receiving as theorised by Hoyte et al. (2019).

Figure 1. Pivot in response to a crisis: framework of sense-making perspective



4.1. Crisis: Navigating and Interpreting Uncertainty

In the aftermath of the Covid-19 pandemic, business owners swiftly grasped the gravity of the situation and the ensuing challenges. For instance, one entrepreneur interviewed [3]

recognised the severity of the problem, as their start-up company was responsible for organising and transporting people to major events:

“Then, Covid, we transported people to big events, so we realised there would not be any big events for a long time. So we started to think: What do you do with 15 employees? At that time, we had an office in Venice and another in Lecce with 15 employees. What should we do? Do we secure the company? But what about the others?”.

The initial recognition of a problem (problem sensing) is the first action in the sense-making process following an exogenous event. The sudden occurrence of the exogenous event forced the respondents to acknowledge that the problem would inevitably disrupt their production process, leading them to pause and consider the situation and their course of action. It is essential to recognise that seeking an answer to the problem externally, through contact with other meaning-makers, presupposes a demonstration of prospective sensitivity or the ability to think about the future. As emphasised in the quote, the inability to create a casual map of the event automatically triggers the process of communicating fears, concerns, and judgments about the exogenous event to key stakeholders, including customers, investors, and suppliers.

The study's findings indicate that once the interviewees became aware of the event, they attempted to understand the thoughts of others by sharing their views and projecting their fears, concerns, and thoughts. This behaviour is rooted in the concept of sense-giving. As illustrated by the entrepreneur [5], whose business relies on a ticket booking platform for amateur and professional sporting events:

“As soon as Covid broke out, I started having daily contact with our customers, sometimes just to ask them how they were doing. When we talked about COVID-19, the crisis and the lockdowns, it was inevitable that we would talk about the benefits of our relationship and there were important consequences for the start-up. Both in terms of renegotiating contracts and

because they proposed adjustments to overcome the crisis, new services were possible during that time”.

The quote highlights another concept: sense-receiving. This involves how respondents have absorbed and processed the sense-giving offered by others regarding the repercussions of external events on society, the potential impact on their business, and the organisation's response.

The exchange between social actors or sense givers extended beyond a basic understanding of the external event. Instead, it comprised a set of strategic information that helped to redefine the entrepreneur's causal map of the event.

After initially recognising the issue, interviewees attributed meaning to the problem (problem causation) based on the meaning they received from the start-up's key stakeholders. The identification of the consequences that the external event would have for the company and the subsequent rationalisations of the entrepreneurs were based on their awareness of the situation, their assessment of the external event, and the role the company should have played at that time. The subsequent rationalisation of the strategic implications for the start-up, resulting from the exogenous event, is the outcome of the problem causation phase and contributes to the crisis phase' sense-making. In the crisis phase, the entrepreneurs create a causal map of the event by transforming the adversities into opportunities and changing the causal map of the event defined in the first phase of problem identification. This sense-making process in the crisis phase is a crucial driver for the second phase, i.e., the definition of the pivot strategy.

4.2.Pivot: Defining and Responding to Uncertainty

The pivot phase comprises two distinct sub-phases: *Design, Definition and Evaluation*. The initial phase, *Design*, entails the entrepreneur constructing another sense-making process based

on the exogenous crisis's sense-making results. This process aims to align the sense-making of stakeholders, including consumers, suppliers, investors, and value proposition strengths. In practical terms, the pivot strategy is designed to integrate and harmonise the received information. What differs between the groups of interviewees is the extent to which the sense-making process required to define this step differs from the nature of the proposals received and the sense received from the business stakeholders.

The results show a sense-making process in the design phase that can be categorised into three types: *direct, analytical, and incremental*.

Table 4 provides an overview of further quotations and the coding process that forms the basis for the defined categorisation. Firstly, results demonstrate a sense-making process that underlies the design of the pivot strategy, which is characterised as direct. In this case, the sense givers' information significantly influences the response formulation during the crisis rationalisation phase. The sense-making is driven by the objective of reallocating internal resources to develop new services, introduce new product features, or target other markets, as indicated by the interviewee [1].

“Following the outbreak of the pandemic [...], we received very positive feedback from our customers [...]. This feedback helped us re-evaluate both the concept and the product we had originally developed, which prompted us to create a second version with significant changes. This allowed us to expand and enrich the offering and respond directly to customer needs: Telemedicine”.

The interviewee's experience [5] shows a further categorisation: *analytical*.

“Talking to them, however, I asked myself: they ask for more services, but what does that imply for my business? So, we focussed on the technological aspect. Based on feedback from the market, we coded the platform differently from a technological perspective to support the

increased traffic, I assumed". The entrepreneur [5] highlights how he interpreted the sense-making he received from the sense-givers differently from their strategic nature.

Table 4. Categorisation of sense-making processes in the design phase

<i>Representative quotations</i>	<i>Second-order themes</i>	<i>Design categorisation</i>
<i>Following the outbreak of the pandemic [...], we received very positive feedback from our customers. They confirmed that the concept was sound, but they had other needs. This feedback really helped us to re-evaluate both the concept and the product we had originally developed, which prompted us to create a second version of the product with significant changes. This allowed us to expand and enrich the offering and respond directly to customer needs: Telemedicine.</i>	The definition of the process is similar to the nature of the suggestions received.	Direct
	The degree of personal elaboration is minimal; the process is based on feedback received.	
<i>Talking to them, however, I asked myself: they ask for more services, but what does that imply for my business? So we focussed on the technological aspect. Based on feedback from the market, we coded the platform differently from a technological perspective to support the increased traffic I assumed.</i>	The definition of the process is different to the nature of suggestions received.	Analytical
	The extent to which the process is based on the entrepreneurial interpretation of the proposals received is very high.	
<i>"We started with the idea of creating a fully digital asset management service to serve savers [...]. Then, after the pandemic, thanks to some customers suggestions, we realised that this project was not generating enough interest on the B2C market, while the product we were developing was very popular on the B2B market. So we realised we had to change our platform."</i>	The definition of the process is similar to the nature of the suggestions received.	Incremental
	Personal elaboration involves different steps. In order to follow the nature of the suggestions received, the entrepreneur must also evaluate secondary aspects.	

Instead of following what his customers explicitly suggested and demanded, he focused on developing technological alternatives to support the platform's growth. This case demonstrates how information exchanges can influence sense-making and how it can be analytically reworked.

Furthermore, the results suggest a specific process: incremental. As the interviewee [11] explains, their clients' proposals made it clear that they had to adapt their approach to the market after the crisis. This experience illustrates how they were forced to re-evaluate previously secondary aspects due to the initial nature of the feedback received. This was done to translate the suggestions into a concrete and functional response.

"We started with creating a fully digital asset management service to serve savers [...]. Then, after the pandemic, thanks to some customer suggestions, we realised that this project was not generating enough interest in the B2C market. At the same time, the product we were developing was very popular in the B2B market. So we realised we had to change our platform." As the

entrepreneur [11] notes in the inserted quote, he had to change the platform underpinning his value proposition to realise the market change demanded by some customers. This implication highlights the need to create a sense-making process to shape the strategy, which inevitably requires the creation of a subsequent one in the definition phase.

Definition phase is a crucial step in crafting a response, which occurs due to the entrepreneur's independent sense-making efforts. This phase is shaped by the outcome of the previous sense-making process, which was influenced by the cues received during the crisis phase, as well as a second internal definition process necessary to define the strategic aspects of the response. *“The action plan was initiated during an internal brainstorming session, and it quickly gained momentum. We conducted a thorough analysis to determine the pricing, the pricing model, and, most importantly, the model for adapting the platform to the needs of the B2B market. These plans were logical, so we crafted the pitch that made the most sense to me, and from there, we went out on the market”.*

During the definition phase, the entrepreneur engages in a process of reflection and analysis to identify the areas of change necessary to implement the planned pivot strategy. This involves reviewing and developing key strategy elements, such as pricing, the platform model, and the go-to-market plan. Unlike the previous phases, the definition phase is not subject to feedback from sense givers, as the iterative processes with social actors in the earlier phases have already made the strategic go-to-market plan reliable and secure. Despite the autonomy afforded by the design phase, the entrepreneur remains committed to acting quickly and turning challenges into opportunities in the short term, which guides their autonomous construction of sense-making.

The results suggest that once the respondents had internalised the pivot idea, i.e., by problematising action areas, creating cognitive maps of actions, and consistently translating the strategy into their value proposition, they attempted to project the strategy onto others. This involved seeking feedback from relatives, friends, and former colleagues, as illustrated by the

interviewee [3]. *“We are two startupperes with previous work experience, so we had our network, our network of friends and former colleagues. A network that helped us during the pandemic in that picking up the phone and calling the friend we remembered very often meant finding an immediate connection and support to understand that what we had defined might be right”*.

The sense-giving process emphasises the significance of the social dimension. Entrepreneurs do not aim to influence others' thoughts; instead, they seek to obtain additional information about the validity of their decisions to complete the sense-making process. Informal social actors, such as those mentioned, facilitate the exchange of tacit knowledge and demand for technical information on strategy. However, the exchange with informal sense-givers also reveals the need for entrepreneurs to receive emotional support for their actions, as the rationalisation of validity is already evident in the interviewees' minds due to the formal exchanges that initiated this process in the previous phases.

The activation of sense-making exchanges between entrepreneurs and sense-givers initiates the final phase identified: the evaluation phase. The information obtained, as evidenced in the interviewee's quote [3], forces the founder to consider evaluating the sustainability of the pivot strategy. The findings suggest that at this stage, founders assess the long-term sustainability of the implemented strategy and decide whether to continue on the new path or return to their core business once the effects of the crisis have subsided. However, it is evident from the interviewees' statements that the decision to persist on the new path is not determined by the individual's ability to predict and anticipate the future developments of the changes made. Instead, this decision is influenced by a process of sense receiving. The exchanges of information with the informal social sphere not only support the founder emotionally and professionally in the post-launch phase but also act as a catalyst and validator for the founder's ability to integrate the introduced changes into his value proposition. Further support for this

thesis comes from the analysis of the informant [15], for whom the pivot was a short-term strategy.

“After a few months of revitalisation, we realised the complexity of the change. Partly because of the time it took, we spoke to some of our founder friends, who expressed great concern about what they were seeing. It was too complicated and unattractive, so we returned to a pure B2B version”. The interviewee, the founder of a matchmaking platform between companies and remote workers, experienced increased activity during the pandemic due to the growing demand for remote work. Initially targeting the B2B market, the company expanded its focus to the B2C market at the suggestion of some users and offered training opportunities. However, a few months after the launch, the founders received critical feedback from colleagues who doubted the long-term viability and the departure from the start-up's core values. The entrepreneur's interpretation of the sense received led to reconsidering the decision. This testimony emphasises how the sense-making process at this phase directly relates to how the entrepreneurs perceive the sense received and highlights the fundamental importance of the sense givers.

5. Discussion and Implications

Our research aimed to investigate how entrepreneurs define and execute pivot processes to address exogenous crises. Employing Weick's (1979) theory of sense-making as a theoretical framework, our findings shed light on how pivot processes in start-ups during exogenous crises are inherently cognitive and socially contextualised strategies. The statements made by the interviewees reveal how start-up founders made sense of the exogenous event and how they developed a pivot process towards a new strategic direction by rationalising the problems related to the exogenous event (sense-making), sharing their ideas with others (sense-giving), and internalising the feedback received from others (sense receiving).

Our study, as evidenced in the theoretical framework presented in Figure 1, demonstrates that pivots are implemented as cognitive processes by entrepreneurs rather than as pre-programmed events within the firm, enabling firms to respond strategically to crises within a limited time frame. Considering the potential continuation of the crisis, pivots provide a swift reaction in the short term while simultaneously preserving the company's potential for survival. Although pivots are initially employed to address short-term adversities, our research has demonstrated that an entrepreneur's strategic reorientation can also be sustained in the long term and integrated into the start-up strategy.

Our proposed model of pivots as inherently cognitive and socially situated entrepreneurial responses encompasses three distinct phases: crisis, pivot, and evaluation. We have observed that at each stage, entrepreneurs undertake a sense-making process directly influenced by information exchange with sense givers. In particular, we have highlighted how sense receiving from the formal and informal social dimensions affects the definition and maintenance of pivot processes in start-up strategy. Our findings significantly contribute to the discourse on pivot as a strategic response to the crisis and offer a new perspective on the entrepreneurial sense-making process in defining business model change.

5.1. Contributions to Sense-making Theory

Our study conducted 20 interviews with start-up entrepreneurs to analyse and interpret the pivot process through the theoretical framework of sense-making, mainly focusing on its social dimension. Although other characteristics such as retrospective vision, identity, and language were observed during the study, they were not considered as they were not the focus of the research. Our findings, like Hoyte's (2019) research - on developing the sense-making process from entrepreneurial idea to business formation- contrast with Weick's (1995) sequential view, which posits that sense-making progresses as a logical and defined sequence of different properties. Instead, our results indicate that these properties do not follow a logical

sequence, and the sense-making process - underlying a pivot strategy in response to a crisis - is fundamentally driven and influenced by the social dimension of this process. Therefore, we contribute to the sense-making theory by emphasising how the social dimension is necessary in times of uncertainty and takes precedence over the others.

It is essential to note that the respondents did not undertake the sense-making process in isolation. Our research revealed that they shared their ideas, fears, and concerns about the current crisis with others (Gioia and Chittipeddi, 1991). Unlike previous research, our findings suggest that the desire to confront others and express one's sense-making process during crisis and pivot phases is not motivated by a desire to influence others' thinking. On the contrary, entrepreneurs seek confrontation to receive feedback that can affect their rational response process.

The process outlined in Figure 1 demonstrates a distinct pattern, especially during the initial phase (crisis). During this phase, entrepreneurs examined the notion of a crisis, which involved identifying problems (problem sensing; Hoyte et al., 2019) arising from external events and impacting both their company and society. However, unlike Hoyte's (2019) findings, the determination of the causes of the issue (problem causation) and the subsequent formulation of the required response occurred only after the outcomes of the previous phase had been shared with their stakeholders (sense-giving and sense-receiving). Thus, we can posit that the sense-making procedures that underlie the problem-solving and problem-causation phases in crises are not solely internal processes. Rather, the rationalisation of the problem and the crisis response are significantly influenced by the exchange of ideas with formal social actors.

The primary contribution of our research to the existing sense-making literature is the empirical evidence we provide, which sheds light on how entrepreneurs attribute meaning to third-party feedback (Pryor et al., 2016). Our study focuses on the entrepreneur's sense-making process during the transition from rationalising an exogenous event to defining a pivot strategy,

emphasising that the entrepreneur only defines the meaning of the strategy after internalising feedback from others. This builds upon the work of Wood and McKinley (2010), who theorise that entrepreneurs accept or reject business ideas through a process of sense-making involving the entrepreneur and their peers. Additionally, we extend the work of Hoyte et al. (2019) by examining the role of the sense-receiving process in the relational dimension of the entrepreneurial ecosystem, which is especially important in exogenous crises. This is because our findings illustrate how individual entrepreneurs are influenced by and interact with a community of interdependent actors (Johnston et al., 2018; Stam, 2015).

Moreover, our research suggests that receiving feedback early in the process, which influences making sense of the exogenous event and the entrepreneur's subsequent response to the crisis, is valued differently when respondents rationalise the need to implement a pivot strategy. This leads them to choose between three different approaches to strategy design: direct, analytical, and incremental. These approaches vary depending on how much the strategy design differs from the feedback received. Our findings contribute to the literature by demonstrating how the entrepreneurial figure and individual characteristics can influence the process of sense receiving.

Our findings underscore the essential role of feedback in ensuring the long-term viability and upkeep of a pivot strategy within a company's overall strategy, even after the crisis has subsided. As previously discussed, feedback from the less formal social dimension is crucial in determining the sense-making process for entrepreneurs to decide whether to continue along the chosen path. This feedback significantly impacts the cognitive process required. It catalyses a process inherently linked to the design and definition phase of the pivot process, both in terms of timing and strategy.

5.2. Contributions to the Pivot Literature

Our study significantly contributes to the ongoing discourse on strategic crisis responses (Sanasi and Ghezzi, 2022; Wenzel et al., 2021) by scrutinising pivot processes during unforeseen events. Our unique perspective on pivoting, conceived as a strategic crisis response and based on an entrepreneur's sense-making process, offers valuable insights into the flourishing academic discussion on pivoting. This standpoint contrasts with some earlier views on the pivot concept and validates others, ultimately enriching the overall understanding of the phenomenon.

In the lean startup approach, pivots were initially introduced as a drastic revision of business models (Ries, 2011), triggered by falsifying fundamental business model assumptions (Blank, 2013; Frederiksen and Brem, 2017). Recent research has demonstrated how crises have expedited the transformation of this definition into an adaptive process view amid uncertainty (Andries et al., 2020). However, these studies posited that organisations could shift to an adaptive perspective via a process pivot involving multiple, incremental strategic changes over time based on experimentation (Kirtley and O'Mahony, 2020). This view fails to account for two distinctive aspects of pivots during crises: the limited time frame available for firms to formulate a crisis response and the uncertainty connected with the persistence of the crisis. These aspects are effectively analysed by Sanasi and Ghezzi (2022) and corroborated by the pivot vision we present, which contributes to the characterisation of pivot as a reactive and adaptive tool capable of enabling companies to respond swiftly and redeploy existing resources (Contigiani and Levinthal, 2019) to transform adversity into new opportunities (Snihur and Clarysse, 2022).

According to the results section, our representation of the pivot process highlights an evaluative phase of the decision-making process, which is strongly influenced by the social dimension of the entrepreneur. This contrasts with the rigorous view of strategy irreversibility

proposed by Pillai et al. (2020). This observation questions the rigidity of the process and suggests that firms may reverse their decisions. This perspective aligns with the formulation and theorisation of the Lean startup approach by Ries (2011), as viewing pivots as irreversible strategic decisions undermine the flexibility they offer companies to change fundamental aspects of their business model.

Our research makes a significant contribution to the pivot literature by emphasising the centrality of the cognitive dimension of the entrepreneur. Our findings provide a comprehensive perspective that it is practically impossible to study pivoting processes at a single level, namely the firm's level (Langley, 1999). Our conclusions suggest that pivots occur through underlying and coexisting mechanisms that define pivoting as a process understood as a realignment of the firm's business model. Behaviours, cognitions, and emotions influence these underlying mechanisms. Our view of pivot emphasises the cognitive dimension, the entrepreneur's process of making sense of the exogenous event and the resulting need to revise their ideas, thus underlining the centrality of this figure in the definition of pivoting.

Furthermore, we extend this view by analysing the role of different stakeholders already explored in previous studies (Berends et al., 2021; Bojovic et al., 2020; Grimes, 2018; Hampel et al., 2020; Kirtley and O'Mahony, 2020; McDonald and Gao, 2019; Snihur and Clarysse, 2022) that considered pivots as firm-level processes. Our study provides an overview of the exchange of information and cognitive representations of exogenous events between stakeholders and entrepreneurs and how these influence the entrepreneur's overall pivot. This information exchange forms the basis for defining the pivot process as a response to a crisis. This process is cognitively located within the entrepreneur and socially shared with the firm's stakeholders. Our study offers a new perspective for viewing pivots, a behavioural, cognitive, and affective lens of these crucial processes.

5.3. Implications for Practice

Our study's results are focused on delivering practical implications for founders and entrepreneurial teams confronting a crisis. The study's findings guide addressing external challenges and opportunities during a crisis, bringing targeted pivots to realign one's business strategy and ensure business survival. When entrepreneurs, particularly start-up founders, face a situation such as the one caused by the COVID-19 pandemic, it is essential not to handle it in isolation but to actively utilise the social relationships built over time. These relationships, including suppliers, customers, investors, family members, and former colleagues, can provide valuable insights that enable a rapid and targeted response to current challenges. Therefore, the best approach is not to develop an isolated internal response but to collaborate with key social relationships. Based on the different stages of the pivot process and the role of social dimensions in the entrepreneur's cognitive process at each stage, our framework can serve as a practical reference point for founders and entrepreneurial teams. This framework enables them to directly involve key people who can actively improve the change process. These findings will be helpful for founders and entrepreneurial teams to make decisions in times of uncertainty and change.

6. Limitations and Research Avenues

Our research has certain limitations that must be taken into consideration. First and foremost, our study primarily relies on Weick's perspective on sensemaking (1995). Critics have argued that Weick's approach has inadequate consideration of power dynamics and, in some instances, emotions (Mills et al., 2010), which has sparked theoretical debates about its applicability in our research. Second, our study is restricted by the limitations of its research design, which is mainly dependent on informants' recollections and data collected at a later stage, approximately three years after the onset of the pandemic.

Nevertheless, the shortcomings of our study can provide a foundation for future research. Longitudinal studies with data from various uncertain situations could help to further elucidate the concept of pivot as an immediate response to a crisis. Additionally, it would be beneficial to investigate whether and how entrepreneurs can employ pivots in more predictable and endogenous crises. Although previous studies have scrutinised pivots in different entrepreneurial contexts, comparing the effectiveness of pivots as a strategic response to various situations - both crises and “normal”- could offer valuable insights for future research. Lastly, the theoretical limitations of using Weick's (1995) theory point to the need for future research focusing on the role of emotions in information exchange processes between entrepreneurs and the social dimensions involved.

7. References

- Andries, P., Debackere, K., & Van Looy, B. (2020).** Simultaneous experimentation as a learning strategy: Business model development under uncertainty—Relevance in times of COVID-19 and beyond. *Strategic Entrepreneurship Journal*, 14(4), 556-559.
- Arregle, J. L., Batjargal, B., Hitt, M. A., Webb, J. W., Miller, T., & Tsui, A. S. (2015).** Family ties in entrepreneurs' social networks and new venture growth. *Entrepreneurship theory and Practice*, 39(2), 313-344.
- Balogun, J., & Johnson, G. (2004).** Organizational restructuring and middle manager sensemaking. *Academy of management journal*, 47(4), 523-549.
- Berends, H., van Burg, E., & Garud, R. (2021).** Pivoting or persevering with venture ideas: Recalibrating temporal commitments. *Journal of Business Venturing*, 36(4), 106126.

- Beckert, J.** (1999). Agency, entrepreneurs, and institutional change. The role of strategic choice and institutionalized practices in organizations. *Organization studies*, 20(5), 777-799.
- Blank, S.** (2013). Why the Lean Start-Up Changes Everything. *Harvard Business Review*, 91(5), 63–72.
- Bojovic, N., Sabatier, V., & Coblence, E.** (2020). Becoming through doing: How experimental spaces enable organizational identity work. *Strategic Organization*, 18(1), 20-49.
- Charmaz, K.** (2014). *Constructing Grounded Theory*. 2nd edn Los Angeles, CA: SAGE.
- Contigiani, A., & Levinthal, D. A.** (2019). Situating the construct of lean start-up: Adjacent conversations and possible future directions. *Industrial and Corporate Change*, 28(3), 551-564.
- Corbin J. & Strauss A.** (2015). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. 4th edn Thousand Oaks, CA: SAGE.
- Corbo L., Pirolo L. and Rodrigues V.** (2018). Business model adaptation in response to an exogenous shock: an empirical analysis of the Portuguese footwear industry. *International Journal of Engineering Business Management*, 10, 184797901877274.
- Cornelissen, J. P.** (2012). Sensemaking under pressure: The influence of professional roles and social accountability on the creation of sense. *Organization Science*, 23(1), 118-137.
- Devece, C., Peris-Ortiz, M., & Rueda-Armengot, C.** (2016). Entrepreneurship during economic crisis: Success factors and paths to failure. *Journal of Business Research*, 69(11), 5366-5370.
- Eisenhardt, K. M.** (1989). Building theories from case study research. *Academy of management review*, 14(4), 532-550.

- Eisenhardt, K. M.** (2021). What is the Eisenhardt Method, really?. *Strategic Organization*, 19(1), 147-160.
- Flechas Chaparro, X. A., & de Vasconcelos Gomes, L. A.** (2021). Pivot decisions in startups: a systematic literature review. *International Journal of Entrepreneurial Behavior & Research*, 27(4), 884-910.
- Frederiksen, D. L., & Brem, A.** (2017). How do entrepreneurs think they create value? A scientific reflection of Eric Ries' Lean Startup approach. *International Entrepreneurship and Management Journal*, 13, 169-189.
- Gephart, R., Topal, Ç., & Zhang, Z.** (2010). Future-oriented sensemaking: Temporalities and institutional legitimation. In *Process sensemaking and organizing*. Oxford.
- Gioia, D. A., & Chittipeddi, K.** (1991). Sensemaking and sensegiving in strategic change initiation. *Strategic management journal*, 12(6), 433-448.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L.** (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, 16(1), 15-31.
- Glaser, B. G., & Strauss, A. L.** (1967). The discovery of grounded theory: strategies for qualitative research (grounded theory). *Taylor & Francis eBooks DRM Free Collection*.
- Grimes, M. G.** (2018). The pivot: How founders respond to feedback through idea and identity work. *Academy of Management Journal*, 61(5), 1692-1717.
- Hampel, C. E., Tracey, P., & Weber, K.** (2020). The art of the pivot: How new ventures manage identification relationships with stakeholders as they change direction. *Academy of Management Journal*, 63(2), 440-471.

- Hoyte, C., Noke, H., Mosey, S., & Marlow, S.** (2019). From venture idea to venture formation: The role of sensemaking, sensegiving and sense receiving. *International Small Business Journal*, 37(3), 268-288.
- Johnston, A., Lassalle, P., & Yamamura, S.** (2018). Re-conceptualising entrepreneurial ecosystems: A theoretical exploration of evolution over space and time. In *Geography, open innovation and entrepreneurship* (pp. 221-235). Edward Elgar Publishing.
- Kirtley, J., & O'Mahony, S.** (2020). What is a pivot? Explaining when and how entrepreneurial firms decide to make strategic change and pivot. *Strategic Management Journal*, 44(1), 197-230.
- Klein, G., Moon, B., & Hoffman, R. R.** (2006). Making sense of sensemaking 1: Alternative perspectives. *IEEE intelligent systems*, 21(4), 70-73.
- Klein, P. G.** (2020). Uncertainty and entrepreneurial judgment during a health crisis. *Strategic Entrepreneurship Journal*, 14(4), 563-565.
- Kuckertz, A.** (2021). Standing up against crisis-induced entrepreneurial uncertainty: Fewer teams, more habitual entrepreneurs. *International Small Business Journal*, 39(3), 191-201.
- Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Reyes, C. A. M., Prochotta, A., ... & Berger, E. S.** (2020). Startups in times of crisis—A rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*, 13, e00169.
- Langley, A.** (1999). Strategies for theorizing from process data. *Academy of Management review*, 24(4), 691-710
- Maitlis, S.** (2005). The social processes of organizational sensemaking. *Academy of management journal*, 48(1), 21-49.

- Maitlis, S., & Christianson, M.** (2014). Sensemaking in organizations: Taking stock and moving forward. *Academy of management annals*, 8(1), 57-125.
- Maitlis, S., & Sonenshein, S.** (2010). Sensemaking in crisis and change: Inspiration and insights from Weick (1988). *Journal of management studies*, 47(3), 551-580.
- McDonald, R., & Gao, C.** (2019). Pivoting isn't enough? Managing strategic reorientation in new ventures. *Organization Science*, 30(6), 1289-1318.
- McKeever, E., Jack, S., & Anderson, A.** (2015). Embedded entrepreneurship in the creative re-construction of place. *Journal of business venturing*, 30(1), 50-65.
- McMullen, J. S.** (2015). Entrepreneurial judgment as empathic accuracy: A sequential decision-making approach to entrepreneurial action. *Journal of Institutional Economics*, 11(3), 651-681.
- Patton, M. Q.** (1999). Enhancing the quality and credibility of qualitative analysis. *Health services research*, 34(5 Pt 2), 1189.
- Pillai, S. D., Goldfarb, B., & Kirsch, D. A.** (2020). The origins of firm strategy: Learning by economic experimentation and strategic pivots in the early automobile industry. *Strategic Management Journal*, 41(3), 369-399. doi: 10.1002/smj.3102.
- Pryor, C., Webb, J. W., Ireland, R. D., & Ketchen, Jr, D. J.** (2016). Toward an integration of the behavioral and cognitive influences on the entrepreneurship process. *Strategic Entrepreneurship Journal*, 10(1), 21-42.
- Ries, E.** (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses.* Crown Business. New York.

- Rindova, V., & Courtney, H.** (2020). To shape or adapt: Knowledge problems, epistemologies, and strategic postures under Knightian uncertainty. *Academy of Management Review*, 45(4), 787-807.
- Saebi, T., Lien, L., & Foss, N. J.** (2017). What drives business model adaptation? The impact of opportunities, threats and strategic orientation. *Long range planning*, 50(5), 567-581.
- Sala, P. K., Philbin, S. P., & Barikzai, S.** (2022). A qualitative research study of the tech startup journey through entrepreneurial pivoting. *International Journal of Entrepreneurial Behavior & Research*.
- Salvato, C., Sargiacomo, M., Amore, M. D., & Minichilli, A.** (2020). Natural disasters as a source of entrepreneurial opportunity: Family business resilience after an earthquake. *Strategic Entrepreneurship Journal*, 14(4), 594-615.
- Sanasi, S., & Ghezzi, A.** (2022). Pivots as strategic responses to crises: Evidence from Italian companies navigating Covid-19. *Strategic Organization*, 14761270221122933.
- Shepherd, D. A., Williams, T. A., & Patzelt, H.** (2015). Thinking about entrepreneurial decision making: Review and research agenda. *Journal of management*, 41(1), 11-46.
- Shepherd, D. A., & Williams, T.** (2020). Entrepreneurship responding to adversity: Equilibrating adverse events and disequilibrating persistent adversity. *Organization Theory*, 1(4), 2631787720967678.
- Snihur, Y., & Clarysse, B.** (2022). Sowing the seeds of failure: Organizational identity dynamics in new venture pivoting. *Journal of Business Venturing*, 37(1), 106164.
- Starbuck, W. H., & Milliken, F. J.** (1988). Executives' perceptual filters: What they notice and how they make sense.
- Strauss, A., & Corbin, J.** (1998). Basics of qualitative research techniques.

- Stam, E.** (2015). Entrepreneurial ecosystems and regional policy: a sympathetic critique. *European planning studies*, 23(9), 1759-1769.
- Thurmond, V. A.** (2001). The point of triangulation. *Journal of nursing scholarship*, 33(3), 253-258.
- Weick, K.E.** (1979). *The Social Psychology of Organizing*. McGraw-Hill, 294.
- Weick, K. E.** (1995). *Sensemaking in organizations* (Vol. 3, pp. 1-231). Thousand Oaks, CA: Sage publications.
- Weick, K. E., Sutcliffe, K. M., & Obstfeld, D.** (2005). Organizing and the process of sensemaking. *Organization science*, 16(4), 409-421.
- Welter, F.** (2011). Contextualizing entrepreneurship—conceptual challenges and ways forward. *Entrepreneurship theory and Practice*, 35(1), 165-184.
- Wenzel, M., Stanske, S., & Lieberman, M. B.** (2020). Strategic responses to crisis. *Strategic Management Journal*, 41(7/18), 3161.
- Wood, M. S., & McKinley, W.** (2010). The production of entrepreneurial opportunity: a constructivist perspective. *Strategic entrepreneurship journal*, 4(1), 66-84.
- Yoo, O. S., Huang, T., & Arifoğlu, K.** (2021). A theoretical analysis of the lean start-up method. *Marketing Science*, 40(3), 395-412.
- Zimmer, C.** (1986). Entrepreneurship through social networks. *The art and science of entrepreneurship*. Ballinger, Cambridge, MA, 3, 23.
- Zuzul, T., & Tripsas, M.** (2020). Start-up inertia versus flexibility: The role of founder identity in a nascent industry. *Administrative Science Quarterly*, 65(2), 395-433.

Final remarks

In recent years, academic interest in how entrepreneurs manage crises through pivot strategies and decision-making has increased exponentially (Sanasi & Ghezzi, 2022; Kuckertz et al., 2020). In this context, however, our understanding of entrepreneurs' decision-making processes and strategic adaptations during periods of extreme uncertainty is relatively limited. Indeed, while the literature has mostly examined the macro-level effects of crises on small businesses and the connected policy measures (Belitski et al., 2021; Shepherd & Williams, 2020), studies focusing on the role of entrepreneurs in navigating resource constraints and uncertainty remain scarce.

Pivoting has emerged as a promising area of investigation with regard to entrepreneurial adaptability. First introduced by Ries (2011) as a “structured course correction to test a new fundamental hypothesis about the product, strategy, or business model”, pivots are a key mechanism for responding to uncertainty. However, much of the existing literature on pivots is definitional and focuses on their role as an experimental tool for business model validation (Shepherd and Gruber, 2021). While foundational, this perspective does not fully capture the dynamic and context-specific nature of pivoting during a crisis. Recent studies have challenged this traditional view, highlighting the limitations of the experimental approach in crisis contexts, where both time and resources are scarce (Kirtley & O'Mahony, 2023). Scholars such as Sanasi and Ghezzi (2022) have argued that in situations of extreme uncertainty, pivoting becomes a rapid, iterative process aimed at immediate rather than incremental testing. This conceptual shift underscores the need to reframe pivoting as a multifaceted strategy integrating cognitive, emotional, and social dimensions, particularly in resource-constrained environments. This dissertation addresses these gaps by exploring pivots as strategic responses to crises through three interconnected studies.

The first study, "Entrepreneurs in Action: A Systematic Literature Review on Pivot Strategies," employs bibliometric and qualitative methods to examine the evolution of pivot-related literature from 2012 to 2024. By analysing 110 articles across two time periods – before and after COVID-19 -the study uncovers a well-defined structure within the literature, which has gained increased relevance due to the surge in academic interest following the pandemic. The findings indicate a shift in perspective from a Lean Startup focus, characterised by hypothesis testing and iterative business model experimentation, to a more strategic, adaptive approach. Here, pivoting is viewed as a swift and effective response to external shocks, aligning with the principles of Effectuation Theory. Furthermore, the cluster-based organisation of the literature not only enhances theoretical clarity but also establishes a foundation for future research, particularly advocating for studies at the individual level. Thus, this research enriches the theoretical understanding of pivots and underscores their growing significance during times of crisis.

The second study, "From Crisis to Response: How Start-up Founders Navigate Uncertainty through Pivoting," examines the Italian entrepreneurial ecosystem during the COVID-19 pandemic. By conducting an in-depth analysis of twenty start-ups, it uncovers a pivoting process that is cognitively situated, influenced by the entrepreneurs' perceptions, and significantly shaped by active stakeholder participation, which acts as a catalyst for strategic redirection. These findings contribute to the growing literature that frames pivoting as an adaptive strategy for navigating external shocks, demonstrating that strategic change emerges both reactively and through the cognitive processes that entrepreneurs develop in close interaction with their environment. Additionally, from a managerial perspective, it offers a practical framework for founders to navigate crises by leveraging stakeholder feedback and cognitive agility, ultimately enhancing decision-making in uncertain environments.

The third study, “Pivots in Response to Crises: A Sense-Making Perspective”, employs Karl Weick's sense-making theory to examine the cognitive and social dimensions of pivoting processes. By exploring the experiences of Italian entrepreneurs, it provides interesting insights into how the social sphere significantly shapes these entrepreneurs' perceptions of meaning following external shocks. Importantly, the findings diverge from existing research on startup formation, emphasising how reception and sense-making within the social sphere influence the identification of opportunities and shape cognitive responses. Therefore, pivoting is revealed not merely as a reactive strategy or isolated decision but rather as a socially-constructed and cognitively mediated phenomenon. This perspective expands the understanding of pivoting beyond traditional notions of business model experimentation, redefining it as a recursive sense-making process that is intrinsically linked to the entrepreneur's interactions within their social and contextual environment.

Collectively, the findings present practical strategies for enhancing resilience and fostering innovation in uncertain situations. Results from the three studies serve as valuable frameworks that highlight the crucial role of cognitive flexibility for entrepreneurs during crises. The ability to reassess original strategic assumptions, adapt rapidly, and remain open to various interpretations of events is essential when confronting external shocks. Furthermore, actively listening to and incorporating perspectives from key stakeholders - such as customers, partners, and institutional players - is crucial, as they can provide valuable signals for necessary adjustments. These insights underscore the importance of creating spaces for dialogue and interaction within entrepreneurial ecosystems. Promoting collaboration and expanding opportunities for meaningful engagement between startups, investors, incubators, and support organisations fosters mutually beneficial relationships. For policymakers, these findings offer guidance on developing/designing more effective support systems that address the unique challenges faced by small and emerging businesses during crises. This includes not only

financial support but also initiatives aimed at enhancing network connectivity, strategic learning, and access to mentoring and knowledge-sharing resources.

Building on the findings of this thesis, future research could explore two main areas/lines of inquiry. Firstly, how entrepreneurs modify their beliefs and reshape strategic priorities while pivoting may represent an intriguing avenue. Specifically, a more in-depth analysis of the cognitive and emotional processes involved in entrepreneurial decision-making during pivots may clarify the nature of belief changes. Additionally, it is crucial to understand the role played by social actors - especially the entrepreneurial team -in these cognitive transitions, especially at different stages of organisational maturity and with varying market positioning. A second valuable direction involves expanding the unit of analysis from individuals to organisations, particularly in understanding entrepreneurial ecosystems. To this end, conducting ethnographic qualitative research could help explore how networks of cooperation and collaboration influence startup pivoting processes. Furthermore, analysing the effects of pivot decisions on startups' relationships with ecosystem participants- like suppliers, investors, and partners- could offer valuable insight into how firms navigate legitimacy, trust, and network integrity during crucial strategic shifts. These avenues may further contribute to both theoretical advancements and practical strategies for entrepreneurs navigating uncertainty.

References

Belitski, M., Guenther, C., Kritikos, A. S., & Thurik, R. (2022). Economic effects of the COVID-19 pandemic on entrepreneurship and small businesses. *Small Business Economics*, 1-17.

- Kirtley, J., & O'Mahony, S.** (2023). What is a pivot? Explaining when and how entrepreneurial firms decide to make strategic change and pivot. *Strategic Management Journal*, 44(1), 197-230.
- Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Reyes, C. A. M., Prochotta, A., ... & Berger, E. S.** (2020). Startups in times of crisis—A rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*, 13, e00169.
- Ries, E.** (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses.* Crown Business. New York.
- Sanasi, S., & Ghezzi, A.** (2022). Pivots as strategic responses to crises: Evidence from Italian companies navigating Covid-19. *Strategic Organization*, 14761270221122933.
- Shepherd, D. A., & Gruber, M.** (2021). The lean startup framework: Closing the academic–practitioner divide. *Entrepreneurship Theory and Practice*, 45(5), 967-998.
- Shepherd, D. A., & Williams, T.** (2020). Entrepreneurship responding to adversity: Equilibrating adverse events and disequilibrating persistent adversity. *Organization Theory*, 1(4), 2631787720967678.
- Weick, K. E.** (1995). *Sensemaking in organizations* (Vol. 3, pp. 1-231). Thousand Oaks, CA: Sage publications.