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Entrepreneurship During the COVID-19 Pandemic: A Systematic Literature Review and Future Research Agenda

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Abstract. Since the COVID-19 pandemic began, a growing body of literature has emerged that examines different aspects of entrepreneurship. It warrants the need for a systematic review to provide an overview of published research. Accordingly, the current study aims to examine how entrepreneurship research has addressed the COVID-19 pandemic. We achieve this objective by conducting a systematic review of 69 peer-reviewed articles published in 2020 and the first half of 2021. The findings have mainly identified four distinguishable themes: impact of the pandemic on entrepreneurial activities, responses of entrepreneurial firms toward the pandemic, resources and capabilities that facilitate such responses, and effects of government interventions on entrepreneurial activities. Moreover, our results indicate that the majority of research lacks explicit theoretical and methodological foundations, spans a broad range of industries, and is disproportionately concentrated in a few geographic regions. Lastly, our review proposes a comprehensive research agenda for the future of entrepreneurship in the context of the pandemic.

Keywords: COVID-19, crisis, entrepreneurship, opportunities, entrepreneurial resources, literature review, TCCM.

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1. Introduction

The COVID-19 pandemic has disrupted business and society at the global level (Bailey and Breslin, 2021; Amankwah-Amoah, Khan and Wood, 2021). This uncertain situation creates new opportunities and challenges for small businesses (Davidsson, Recker, and Von Briel, 2021; Kuckertz, 2021). Entrepreneurial firm[4]s in different industries with varied resource profiles have adopted different responses to tackle pandemic-induced crises (Ebersberger and Kuckertz, 2021; Greene and Rosiello, 2020; Majchrzak and Shepherd, 2021). Essentially, entrepreneurs are more vulnerable to the uncertain pandemic due to two main reasons. First, they have limited financial resources to deal with the crisis (Fuller-Love, 2006; Klein and Todesco, 2021). Consequently, they rely on government support for their survival in times of crisis (Blackburn and Kovalainen, 2009; Mallett, Wapshott and Vorley, 2019). Second, they lack managerial knowledge to deal with uncertain situations (Fuller-Love, 2006; Kuckertz, 2021). Along with such vulnerabilities, the global crisis also creates new opportunities for entrepreneurs (Soundararajan, Jamali and Spence, 2018). For instance, entrepreneurs can develop new products and services or they can introduce new technological ways to perform their small businesses (Ratten, 2021). Their capacity to innovate stems from their increased adaptability and proximity to customers and other stakeholders (Eggers, 2020).

Since the start of the pandemic in December 2019, a growing body of literature on entrepreneurship has continued to emerge. This literature sheds light on a variety of micro to macro-level issues and their solutions. Yet, entrepreneurship research is highly fragmented and does not provide a clear picture of the pandemic's impact on entrepreneurial firms. For example, we do not know how the pandemic affects entrepreneurial firms positively or negatively and how entrepreneurial firms respond differently to the crisis. Additionally, there is a lack of understanding about the critical firm and individual-level characteristics that facilitate firms' responses to the pandemic. Likewise, how and to what extent government interventions facilitate or hamper small firms' performance deserves closer attention. In sum, there is a need for integrated insights into the various facets of this phenomenon (Bailey and Breslin, 2021).

Against this background, the main objective of our study is to develop a coherent and holistic understanding of how entrepreneurship research has addressed the COVID-19 pandemic. We have conducted a systematic review of published research, which is well suited to offer an integrated understanding (Soundararajan, Jamali and Spence, 2018). By using the TCCM (theory, context, characteristics, methodology) approach (Chen, Mandler, and Meyer-Waarden, 2021; Paul and Rosado-Serrano, 2019), we have analyzed the content of 69

4. We define entrepreneurial firms as businesses that identify and pursue new opportunities to create economic or social value and thus achieve growth and profitability (Daily et al., 2002; Lee et al., 2013).

relevant articles published in the Association of Business Schools (ABS)-ranked journals. The TCCM approach is appropriate because it provides a framework for developing clear understandings and establishing a future research agenda for four critical dimensions of the published research (Paul and Rosado-Serrano, 2019). More specifically, we address five key questions in the current study:

1. What are the key theories/concepts in published research?
2. Which contexts have been examined in the published research?
3. What are the characteristics of key insights/findings in published research?
4. Which methodologies have been employed in published research?
5. Concerning TCCM, what new avenues can be suggested for future research and practice?

By synthesizing the extant knowledge on entrepreneurship research in the context of the current pandemic, our review offers three important contributions. First, we provide an up-to-date overview of published research in terms of theories, contexts, characteristics of findings/insights, and methodologies employed in the extant research. Second, we provide integrated insights into the impact of the pandemic on entrepreneurial firms and their responses based on micro to macro-level factors. More precisely, our results emphasize the pandemic's direct and indirect impact on entrepreneurial firms by creating challenges and opportunities. Lastly, our study establishes an exhaustive research agenda for the future. This will help academics and practitioners in examining entrepreneurship research through the use of various theoretical and contextual methods.

The remainder of the paper is organized into four main sections. First, we will describe the systematic review methodology employed in this study, which includes the data collection and analysis procedures. Second, in line with the TCCM approach, we will present our findings related to the theories, contexts, characteristics, and methodologies employed in the published research. Third, we will propose a future research agenda based on our findings. Finally, we will conclude the study by summarizing its key insights.

2. Methodology

This study employs a systematic literature review to analyze and synthesize the key findings. Thus, it highlights the theoretical, contextual, and methodological underpinnings while identifying future research directions. This approach involves locating existing publications, examining and synthesizing relevant data, evaluating findings and contributions, and stating the evidence in a way that allows conclusions to be drawn about what is known and what remains to be understood (Denyer and Tranfield, 2009). Given that the subject has been discussed in various research streams, it was necessary to establish fairly stringent selection criteria for papers to be included in the review.

Simultaneously, we needed to ensure that our selection process did not overlook pertinent research. As a result, appropriate databases were first identified. Following that, publications for review were identified and selected. Finally, articles were analyzed using the TCCM approach (Chen, Mandler, and Meyer-Waarden, 2021; Paul and Rosado-Serrano, 2019). Denyer and Tranfield's (2009) guidelines for conducting a literature review were particularly helpful in developing the methodology.

2.1. Selection of Articles for the Review

To locate pertinent literature for review, we consulted the Web of Science (WoS) database (Vanhala et al., 2020). The database was chosen because it covers a broad range of business-related peer-reviewed journals and its coverage span is extensive. It covers a wide range of scientific publications from 3,300 carefully chosen publishers and over 12,000 high-impact journals and a reference index containing over 1 billion cited references dating back to 1900. Additionally, the database's search function is precise enough to return relevant results.

To locate pertinent papers, we searched the database thoroughly using a broad range of keywords related to our objective. The search criteria are detailed in Table 1.

Table 1: Search criteria of this study

Topic Search (T.S.) string	TS= ("entrepreneur*" OR "Start-up*" OR "start-up*" OR "Venture*" OR "New-Venture*" OR "self employ*" OR "Self-employ*" OR "SME*" OR "Small and medium enterpr*") *AND* TS= ("COVID 19" OR "COVID-19" OR "coronavirus" OR "SARS19" OR "SARS-19" OR "SARS-2019" OR "SARS2019")
Refined By:	
1. Year	2021 OR 2020
2. Web of Science Categories	BUSINESS OR MANAGEMENT OR BUSINESS FINANCE
3. Document Types	ARTICLE OR EARLY ACCESS OR REVIEW
4. Languages	ENGLISH

As illustrated in Table 1, keywords denoted by asterisks (*) encompass a variety of terminological endings. For instance, the term "entrepreneur*" includes the terms "entrepreneurship," "entrepreneurial," and "entrepreneur." We further refined our search by limiting it to the years 2020-2021 to obtain the most recent studies on the pandemic. The search was performed on 30 June 2021. Consequently, the search does not cover the entire year of 2021. This period was chosen because the first cases of the pandemic were reported at the end of 2019, and the publication process in journals takes at least a few months. We also used the WoS categories to refine and focus our search on the business and management domains. We looked for articles published in peer-reviewed international journals, as these journals typically contain the most up-to-date validated knowledge in a field and have the greatest impact. Furthermore, we included early access and review studies to ensure that the most recent and comprehensive studies were included. Our search included only articles published in the English language due to our language limitations. This search yielded 137 results.

To ensure the quality of the articles included in our work, we carefully reviewed the journals in which they were published and included only those that were included in the ABS journal ranking list, as it is widely regarded as a benchmark database for journals adhering to international standards. As a result, we were left with 97 articles. We carefully read each article's title and abstract to ensure that it falls within the scope of our study. In some cases, we needed to read the articles' introductions and conclusions as well. Finally, we found 69 articles that fit the study's scope and were published in peer-reviewed international journals ranked by the ABS. Table 2 lists the journals that have published at least two articles on the subject. An additional 29 journals published a single article each.

Table 2: Particulars of the journals publishing entrepreneurship research during the pandemic

Journal	No of Articles	Percentage of studies	Exemplary studies
International Small Business Journal	10	14.5%	Lim, Morse and Yu (2020); Kuckertz (2021)
Journal of Entrepreneurship in Emerging Economies	8	11.6%	Portuguez Castro and Gómez Zermeño (2021); Ratten (2020a)
Strategic Change-Briefings in Entrepreneurial Finance	6	8.7%	Apostolopoulos *et al.* (2021); Arslan, Haapanen and Tarba (2021)
Small Business Economics	4	5.8%	Block, Fisch and Hirschmann (2021); Pedauga, Sáez and Delgado-Márquez (2021)
Africa Journal of Management	2	2.9%	Liu *et al.* (2020); Aidoo *et al.* (2021)
International Journal of Entrepreneurial Behavior & Research	2	2.9%	Ratten (2020d); Bressan, Duarte Alonso and Kok (2021)
Journal of Business Research	2	2.9%	Eggers (2020); Ebersberger and Kuckertz (2021)
Journal of Enterprising Communities: People and Places in the Global Economy	2	2.9%	Ratten (2020b); Saleh (2021)

R&D Management	2	2.9%	Battaglia, Paolucci and Ughetto (2021); Corsini, Dammicco and Moultrie (2021)
International Journal of Management Education	2	2.9%	Ratten and Jones (2021a; 2021b)

2.2. Analysis of the Reviewed Literature

We performed a content analysis in Microsoft Excel using the TCCM approach. The excel sheet contains various columns pertaining to each article's primary objective, theories/concepts employed, industries, countries, key findings/ insights, article type, research approach, analysis approach, and suggested future research directions. We thoroughly read all articles to identify pertinent content for categorization into different columns. We classified T (theories) of the TCCM approach into three major categories: theory/key concepts, no theory, and multiple theories/key concepts. Following that, we recorded only the industrial and contextual details of empirical articles. We classified industries into two broad categories: services and manufacturing. Given that some studies were conducted across multiple industries, a single study could be recorded multiple times, increasing the total number of recorded observations above the number of empirical articles. Geographically, we extracted country details from the empirical studies and then combined them at the continent level.

The analysis of the third component of the TCCM approach, characteristics, focused on the key findings (or insights in the case of conceptual approaches) of each study. This helped us identify four key themes, such as the impact of the pandemic, firms' responses to the pandemic, and so on. Next, we classified all articles based on the fourth TCCM component by focusing on the methodology employed in each study, such as reviews, commentaries, and empirical studies. Among them, empirical articles were further scrutinized to determine their qualitative or quantitative nature, as well as their data analysis approach. Finally, we identified future research directions based on our results and by reading the conclusion section of each study. In sum, the systematic inspection and treatment of the data helped us achieve our review objective (Braun and Clarke, 2006).

3. Findings

3.1. Theoretical Approaches in the Reviewed Literature

Our analysis shows that 34 articles (49.27 percent) explicitly referenced theories or related concepts in their conceptual or empirical research. The remaining 35 articles (50.72 percent) did not explicitly refer to supporting theories or key concepts. Entrepreneurship research employed a total of sixteen distinct theories during the pandemic. Seven of these theories were cited in a single article, while four articles used a combination of theories to construct their frameworks. All of the theories are summarized in Table 3.

Table 3: Overview of entrepreneurship theories during the pandemic

Underpinning theory/key concepts	**No. of Articles**	**%**	**Exemplary studies**
Organizational/entrepreneurial resilience	7	10.1%	Portuguez Castro and Gómez Zermeño (2021); Salvato et al. (2020)
Resource-based view	5	7.2%	Lim, Morse and Yu (2020); Battaglia, Paolucci and Ughetto (2021)
Network and ecosystem perspective	5	7.2%	Dai *et al.* (2021); Ratten (2020c)
Innovation theories	3	4%	Ebersberger and Kuckertz (2021); Corsini, Dammicco and Moultrie (2021)
Other theories, for example, business models, feminist perspective, or intersectionality lens	10	14%	Manolova *et al.* (2020); Jaim (2021); Grandy, Cukier and Gagnon (2020)
Studies that combine multiple theories	4	5.8%	Duarte Alonso *et al.* (2021); Block, Fisch and Hirschmann (2021)
Studies without particular theoretical underpinnings	35	51%	Batat (2020); Aidoo *et al.* (2021)
Total	69	100%	

The first group of studies is built around the concept of "organizational/ entrepreneurial resilience" (Portuguez Castro and Gómez Zermeño, 2021; Salvato et al., 2020). The concept of resilience—i.e., individuals' or organizations' capacity to quickly recover from a crisis—has been applied to various issues, including the exploration and exploitation of digital technologies for learning, anticipating, and adapting to changing environments (Klein and Todesco, 2021). Additionally, resilient entrepreneurs exhibit several characteristics (e.g., optimism, proactiveness, learning attitude, perseverance, motivation, flexibility, and self-efficacy) that enable them to more effectively combat the crisis (Portuguez Castro and Gómez Zermeño, 2021).

The second group of studies takes a resource-based approach and its numerous derivatives, such as dynamic capabilities, ambidextrous capabilities, and organizational learning (Battaglia, Paolucci, and Ughetto, 2021; Lim, Morse, and Yu, 2020). Amankwah-Amoah, Khan and Wood (2021) argue that firms experienced in dealing with exogenous shocks are more likely to rely on tried and trusted responses. The dynamic capabilities lens demonstrates that firms with well-developed capabilities that can reconfigure and reposition their resource profiles in response to changing market dynamics grow faster (Lim, Morse, and Yu, 2020). In addition, applying the ambidextrous capabilities perspective broadens our understanding of how firms can balance their resource systems to maintain performance during times of crisis (Nofiani, Indarti, Lukito-Budi, and Manik, 2021).

The third group of theoretical lenses applied by scholars of entrepreneurship is the network and entrepreneurial ecosystem lens. Applying these theories enables us to understand how entrepreneurial firms' resource deficiency can be overcome through external sources (Ratten, 2020a). These theories are also relevant to the study of spatial proximity and its associated benefits. For example, firms located in countries with a high density of informal entrepreneurial networks are less affected by pandemic-induced crises (Dai et al., 2021). Moreover, researchers have examined how the strength of network ties is a critical determinant of entrepreneurial firms' engagement with partners in international markets during times of crisis (Fath et al., 2021). Thus, weak ties become more fragile or even disintegrate entirely, forcing firms to forge new ties in their place. Strong pre-crisis ties, on the other hand, are more resilient during a pandemic, resulting in the formation of new weak ties and business model transformation.

We discovered that the fourth group of studies applied innovation theories or conceptual underpinnings. For instance, Corsini, Dammicco, and Moultrie (2021) examine how frugal innovators demonstrate the ability to rapidly develop solutions to new problems arising from the pandemic crisis despite resource scarcity. Interestingly, Ebersberger and Kuckertz (2021) discover that, when compared to established firms and universities, startup firms are the quickest to develop and implement innovative solutions in a crisis.

Following that, we have grouped theories and concepts referenced in only a few studies under the heading "other theories." For instance, Manolova et al. (2020) used the business model concept to investigate how entrepreneurs leverage discovery-driven business models to mitigate risk while capitalizing on market opportunities during a pandemic-induced crisis. Jaim (2021) used a feminist lens to examine women entrepreneurs' experiences in small businesses in patriarchal developing countries. Similarly, Grandy, Cukier, and Gagnon (2020) examined the impact of the pandemic on women entrepreneurs in Canada through an intersectional lens.

Finally, four studies used a combination of theories to examine various dimensions of entrepreneurial activities, arguing that blending multiple theoretical lenses results in a more holistic understanding. For example, Block, Fisch and Hirschmann (2021) empirically assessed the determinants of bootstrap financing in the context of the pandemic by combining human capital and opportunity cost perspectives. Duarte Alonso et al. (2021) integrated social cognitive theory, entrepreneurial self-efficacy, entrepreneurial mindset, entrepreneurial bricolage, and improvisation to understand and comprehend the relevant facets of the pandemic's impact on, and coping responses of, entrepreneurs.

Additionally, our analysis reveals that more than half of the studies in our literature pool make no reference to a particular theory or body of literature in their research endeavors (Aidoo et al., 2021; Batat, 2020). One reason for this shortage of theory-based research is that the existing literature is still in its infancy, meaning that the underlying theories/concepts have not been fully developed. For example, contrary to conventional reviews, our findings indicate that 41% of studies are conceptual or commentaries. It demonstrates that the constructs that underpin theory-driven empirical research are still being developed.

3.2. Contextual Details of the Reviewed Literature

Our findings related to the context of the studies show the industrial and geographical context of the reviewed studies. Of the 69 articles, 41 were empirical, and based on them, we report the contexts of studies. Notably, several articles examined multiple industries in a single publication and were counted multiple times for each industry category. As a result, the total number of studies (56) exceeds the number of empirical articles (41).

3.2.1. Industrial Context

In terms of industries, our analysis indicates that the reviewed literature falls into two broad categories: "Services" and "Engineering, Manufacturing, and Production." Table 4 summarizes these findings.

Table 4: Industrial context of the empirical entrepreneurship research during pandemic

Industry	No. of Studies	% in Total	Exemplary Studies
Category 1: Services (53.5%)			
Business services	12	21.5%	Pedauga et al. (2021); Saleh (2021)
Hospitality and tourism	11	19.6%	Klein and Todesco (2021)
Sports and hobbies	3	5.4%	Durst, Palacios Acuache and Bruns (2021)
I.T., telecommunication and gaming	4	7%	Arslan et al. (2021); Haneberg (2020)
Category 2: Engineering, Manufacturing, and Production (46.5%)			
Food and beverages	10	17.9%	Batat (2020); Fairlie and Fossen (2021)
Engineering and Manufacturing	10	17.9%	Corsini et al. (2021); Manyati and Mutsau (2021)
Wholesale trade and retail trade	4	7.2%	Manolova et al. (2020); Salvato et al. (2020)
Knowledge based products/services	2	3.5%	Battaglia et al. (2021); Cannavale et al. (2020)

Service industries were mentioned in 53.5 percent of articles. Among them, 21.5 percent of studies focused on accounting and financial services, human resource management, psychological counseling, and temporary employment (e.g., Cannavale, Zohoorian, and Esempio, 2020). This demonstrates that scholarly interests are distributed across industrial contexts and that no particular subcategory of business services has received a disproportionate amount of attention. Additionally, because the hospitality and tourism sectors (e.g., Block, Fisch and Hirschmann, 2021; Klein and Todesco, 2021) have been among the most adversely affected service sectors during this pandemic, we discovered that their level of attention from researchers reflects this (19.6 percent). Following the outbreak of the pandemic, government-imposed lockdowns effectively halted all international travel, putting a strain on large airlines and hotels. The adverse effect trickled down to entrepreneurial ventures in this sector, where individuals or small businesses providing a variety of services (for example, tour operators and tour guides) faced dire consequences. Sports and hobbies (5.4 percent) and information technology, telecommunications, and gaming (7%) received scant attention in the entrepreneurship literature. These categories of studies examined entrepreneurial strategies across a variety of industries and also studied the effect of information technology on the increased use of online media in gaming and education.

We discovered that 46.5 percent of the total reviewed studies are in the second category: engineering, manufacturing, and production. Ten of these studies were concentrated on food-related methods involving poultry and egg production, additive production, fisheries, and agriculture. Similarly, ten (17.6 percent) of the studies examined various types of manufacturing, including agricultural machinery and industrial manufacturing. Finally, four studies focused on retail and wholesale trade, followed by two studies on knowledge-based products in biomedical engineering, nanotechnology, and bioinformatics.

3.2.2. Geographical Context

As shown in Table 5, the majority of empirical studies (34.7 percent) were conducted in Europe, followed by Asia (30.4 percent), North America (15.2%), South America (8.7%), Africa (6.5 percent), and Oceania (4.3 percent). When it comes to individual countries, the majority of studies have been conducted in China and the United States (10.87 percent), followed by the United Kingdom (8.70 percent), Italy (8.70 percent), Spain (6.52 percent), and India (6.52 percent).

Table 5: Countries investigated in entrepreneurship research during the pandemic

Country	No. of Studies	%	Exemplary Studies
Europe	**16**	**34.77%**	
Italy	4	8.70%	Battaglia et al. (2021); Salvato et al. (2020)
U.K.	4	8.70%	Brown et al. (2020); Duarte Alonso et al. (2021)
Spain	3	6.52%	Duarte Alonso et al. (2021); Pedauga et al. (2021)
Norway	1	2.17%	Haneberg (2020)
France	1	2.17%	Batat (2020)
Germany	1	2.17%	Block et al. (2021)
Greece	1	2.17%	Duarte Alonso et al. (2021)
Czech Republic	1	2.17%	Dvorak et al. (2021)
Asia	**14**	**30.41%**	
China	5	10.87%	Brown et al. (2020)
India	3	6.52%	Corsini et al. (2021); Sahoo and Ashwani (2020)
Iran	1	2.17%	Cannavale et al. (2020)
Vietnam	1	2.17%	Nguyen, Ngo and Tran (2021)
Indonesia	1	2.17%	Nofiani et al. (2021)
Bangladesh	1	2.17%	Jaim (2021)
Kuwait	1	2.17%	Saleh (2021)
Saudi Arabia	1	2.17%	Nurunnabi (2020)
North America	**7**	**15.22%**	
USA	5	10.87%	Bacq et al. (2020); Fairlie and Fossen (2021)
Canada	2	4.35%	Grandy et al. (2020); Lim et al. (2020)
South America	**4**	**8.68%**	
Argentina	1	2.17%	Duarte Alonso et al. (2021)
Bolivia	1	2.17%	Duarte Alonso et al. (2021)
Ecuador	1	2.17%	García-Vidal et al. (2020)
Peru	1	2.17%	Duarte Alonso et al. (2021)

Africa	**3**	**6.51%**	
Cambodian	1	2.17%	Brickell et al. (2020)
Ghana	1	2.17%	Aidoo et al. (2021)
Zimbabwe	1	2.17%	Manyati & Mutsau (2021)
Oceania	**2**	**4.34%**	
Australia	1	2.17%	Duarte Alonso et al. (2021)
New Zealand	1	2.17%	Fath et al. (2021)

3.3. Characterizing the Key Findings in the Reviewed Literature

Based on the key findings of each study, we identify four key themes: impact of the pandemic on entrepreneurial activities, responses of entrepreneurial firms toward the pandemic, resources and capabilities that facilitate entrepreneurial firms' responses to the pandemic, and effects of government interventions on entrepreneurial activities.

3.3.1. Impact of the Pandemic on Entrepreneurial Firms

Our analysis shows that the pandemic at once threatened and created opportunities for entrepreneurial firms (Liñán and Jaén, 2020). On the downside, the pandemic harmed entrepreneurial firms, affecting the external environment and firm operations. At the macro level, Aidoo et al. (2021) argue that the pandemic fundamentally altered the relationship between states and markets, resulting in increased stress and tension in the business environment. Greene and Rosiello (2020) estimated that the pandemic's impact on the global economic system would be significantly greater than the 2008 economic recession. It has dealt the global economic system a double blow by disrupting supply chains and altering demand across multiple industries (Manolova et al., 2020). Additionally, the pandemic has resulted in decreased income levels, deteriorated employment conditions, increased government surveillance, and the imposition of border controls and lockdowns (Pedauga, Sáez, and Delgado-Márquez, 2021).

At the firm level, the pandemic has the greatest impact on small and medium-sized entrepreneurial firms' net value addition when compared with bigger firms (Sahoo and Ashwani, 2020). It has impacted various facets of entrepreneurial firms by disrupting demand conditions and supply chains. On the demand side, consumer demand for a variety of products has decreased as a result of rising unemployment, lockdowns, reduced household incomes, and negative consumer perceptions. On the supply side, entrepreneurial firms face challenges due to declining venture capital and business angel investment in new ventures, increased operational costs associated with pandemic-related restrictions, and supply chain disruptions (Liñán and Jaén, 2020). The pandemic has generally exacerbated supply chain and sales uncertainty, restricted financial access, disrupted business networks, and emphasized digitalization and remote work (Greene and Rosiello, 2020). For example, available research indicates that seed and equity financing for early-stage start-ups has decreased and that microfinancing has increased during the pandemic (Brown et al., 2020). While demand for business financing has generally decreased, those businesses that do not have established relationships with banks are even more affected. Some researchers have also investigated the impact of the pandemic on (perceived) health of small business owners while distinguishing between mental and physical health (e.g. Torrès et al., 2021).

On the positive side, the pandemic has transformed the external environment, creating numerous business opportunities across multiple industries (Kuckertz, 2021). It has accelerated the process of fostering an environment more conducive to the emergence and rapid adoption of new technologies by customers. For instance, Arslan, Haapanen, and Tarba (2021) noted that the pandemic was a blessing in disguise for online educational games, as they allow students to virtually accompany their friends and foster social values such as empathy, sharing, group work, communication, and problem solving, as well as trust. Notably, demand for health-related (e.g., masks, sanitizers, ventilators, biomedicine, biochemicals, and other protective equipment) and online products and services has increased exponentially (Liñán and Jaén, 2020). Interestingly, the pandemic has also facilitated the development of resilient local economies that are self-sufficient, deeply contextualized, highly integrated into local markets, and have a diverse resource base, making them less susceptible to pandemics (Korsgaard et al., 2020).

Related to positive factors at the firm level, our results show that the pandemic has heightened entrepreneurial firms' awareness of innovative, socially responsible, and alternative economic behaviors. Batat (2020) noted that during the pandemic, firms' awareness and engagement in socially responsible practices and investment in social entrepreneurial ventures increased significantly. Additionally, it is anticipated that the pandemic will result in the necessity of entrepreneurship as a substitute for employment due to deteriorating economic conditions (Liñán and Jaén, 2020). Some of these necessity entrepreneurs may be highly skilled individuals who start innovative businesses due to job losses during the pandemic, subsequently supporting the development of the entrepreneurial ecosystem.

3.3.2. Responses of the Entrepreneurial Firms Toward the Pandemic

Existing research demonstrates that firms have adopted various strategies to effectively respond to the pandemic's drastic changes. We identify three types of strategic responses in the reviewed literature: *innovative*, *defensive*, and *collaborative*. Regarding *innovative* responses, our analysis reveals that some firms introduce novel products or services, business processes, or business models (e.g., Bressan, Duarte Alonso and Kok, 2021; Ratten and Jones, 2021a). While implementing innovative responses, businesses may undergo digital transformations, expand e-commerce, increase the use of digital payments and social media platforms, and further digitize business processes (Bressan, Duarte Alonso and Kok, 2021; Klein and Todesco, 2021). Notably, digital transformation as a means of coping with the crisis increases business flexibility, improves communication between various value-creating partners, and has become an integral part of business strategy (Ratten, 2021). Saleh (2021) emphasized the exponential growth in the use of digital communication technologies (e.g., WhatsApp, Instagram, Snapchat, email, and websites) for communication and collaboration with partners and customers.

Notably, Ebersberger and Kuckertz (2021) discovered that startup firms are the most responsive to opportunities presented by the crisis to offer innovative solutions. The pandemic has compelled entrepreneurs to embark on strategic renewal processes and devise novel methods for managing emerging risks and uncertainties (Nurunnabi, 2020), compelling businesses to offer novel market solutions that have the potential to boost profitability while alleviating consumer health concerns. Additionally, some scholars argue that innovation in entrepreneurship education should occur by incorporating digital transformations, adopting digital learning platforms, and integrating artificial intelligence and augmented reality-based applications to simulate real-world experiences (e.g., Ratten and Jones, 2021b).

Given the scale of the pandemic-induced disruptions and the resource constraints of entrepreneurial firms in general, some firms have chosen *defensive* strategies to survive. For example, decreased profitability as a result of fallen customer demand has made it difficult for such businesses to maintain a pre-pandemic level of activity. As a result, some of them may decide to maintain their best performers' bare minimum staffing levels while temporarily or permanently laying off other employees. Additionally, some firms sought additional financing through debt supply channels to preserve operational continuity in the short term as their resources dwindled further due to the pandemic-induced crisis (Greene and Rosiello, 2020). Another defensive strategy used by entrepreneurial firms is to negotiate with suppliers and landlords to obtain discounts to lower overall costs (Ratten, 2021). Nurunnabi (2020) emphasized that firms may use any cost-cutting measures available to them to remain financially and operationally viable. If none of these defensive strategies work, entrepreneurial firms may be forced to temporarily or permanently close their doors to avoid bankruptcies (Klein and Todesco, 2021)

Regarding *collaborative* responses, we found evidence from some of the entrepreneurial firms that were strategically collaborating with other stakeholders for their survival. Typically, most entrepreneurial firms lack the internal resources and capabilities required to survive and thrive during a pandemic-induced crisis. As a result, they form appropriate alliances with other parties to leverage their resources and complement their activities (Klein and Todesco, 2021). For example, Majchrzak and Shepherd (2021) emphasize that compassion venturing in collaboration with other community members results in a broadening of the scale and scope of resources, which helps in the rapid production of customized responses. Thus, the community creates favorable conditions and resources for entrepreneurs to initiate new ventures (Majchrzak and Shepherd, 2021). Bacq et al. (2020) discovered that several entrepreneurs, venture capitalists, industry professionals, students, and academics at the global level participated in an idea development event to foster ideation and prototype development of innovative solutions in response to the pandemic. Thus, stimulating and coordinating community members enables an environment conducive to developing novel solutions to pandemic challenges (Bacq et al., 2020).

3.3.3. Resources and Capabilities that Facilitate Entrepreneurial Firms' Responses to the Pandemic

At the firm level, our analysis demonstrates that firms can respond to the pandemic's challenges and opportunities by leveraging their unique bundles of resources and capabilities (Amankwah-Amoah, Khan and Wood, 2021; Lim, Morse, and Yu, 2020). Entrepreneurial firms must quickly rebalance and adjust their resources to avoid initiating vicious growth spirals. The pandemic-induced crisis presents an opportunity for firms that can rapidly reconfigure their resource profiles in response to changing market dynamics to grow through the introduction of new product offerings (Lim, Morse, and Yu, 2020). According to Corsini, Dammicco, and Moultrie (2021), digitization tools (3D printing, laser cutting, and CNC milling) enable firms to adopt frugal innovations to rapidly develop new solutions in response to changing environmental dynamics. Extending the resources argument, Amankwah-Amoah, Khan and Wood (2021) contended that firms with greater knowledge-based resources are more likely to effectively combat the pandemic through the use of trusted and tested responses.

Along with resources, the presence of certain capabilities aids firms in responding to pandemic-induced crises. For instance, Bui et al. (2021) discover that firms with a stronger entrepreneurial orientation (risk-taking, innovativeness, and proactiveness) and market orientation (customer orientation, competitor orientation, and inter-functional orientation) respond more effectively and perform better during a crisis scenario. Similarly, several scholars have established a link between entrepreneurial orientation and firm survival (e.g., Eggers, 2020; Nofiani et al., 2021). Additionally, Duarte Alonso et al. (2021) emphasized how entrepreneurial bricolage and improvisation enable firms to develop more resilient strengths and capabilities, thereby assisting in survival.

Moreover, the research indicates that knowledge management capabilities, resilience, strategic agility, and digital capabilities are additional critical firm-level factors for surviving and growing during a pandemic crisis (Salvato et al., 2020). For example, organizational knowledge management in conjunction with organizational resilience enables businesses to explore and maximize the potential of digital technologies for learning, anticipating, and adapting to changing environments (Klein and Todesco, 2021). Another critical capability that businesses must possess to deal with a pandemic-induced crisis is strategic agility (Liu et al., 2020). In the interest of responding quickly to pandemic impacts, firms should adopt agile and flexible operational approaches that include empowered teams, decentralized decision making, and constant communication with multiple stakeholders. Finally, businesses should develop digital capabilities to assess and comprehend how automation, digital technology, and artificial intelligence can assist them in preparing for future challenges (García-Vidal et al., 2020).

Nonetheless, entrepreneurial firms lack internal resources and capabilities, which they can gain from their ecosystems and networks (Eggers, 2020). Thus, the ecosystem's capabilities and resources can help guide response strategies in the event of a pandemic crisis (Batat, 2020). Dai et al. (2021) suggest, for example, that firms in counties with a high density of informal networks of entrepreneurs from hometowns and proximity to suppliers and customers are more resilient and less affected by the pandemic. Closer proximity to suppliers and customers assists in stabilizing supply chains and mitigating vulnerabilities caused by transportation constraints and market demand fluctuations. Counties with a higher degree of clustering are less susceptible to exogenous shocks (Dai et al., 2021). Regions with a more entrepreneurial culture and established support networks have a greater chance of surviving, adapting, and reinventing themselves during times of crisis (Weaver, 2020).

Additionally, Battaglia, Paolucci, and Ughetto (2021) argued that firms' access to networks and other resources enables them to develop and commercialize novel solutions rapidly. More importantly, strong ties to family, clients, and employees motivate entrepreneurs to navigate the crisis with resilience and perseverance (Bressan, Duarte Alonso and Kok, 2021). Strong pre-crisis ties are more resilient in the face of a pandemic, resulting in the formation of new weak ties and the transformation of business models (Salvato et al., 2020). Firms with strong ties to markets with a negative outlook may temporarily suspend or deprioritize those relationships while maintaining personal contact with partners to discuss long-term business prospects. Strong ties in export markets with a favorable outlook help partners maintain resilience, and they use them to pursue new emerging opportunities through continuous communication and deep trust. On the contrary, during a crisis, weak ties become even weaker or completely break, forcing firms to forge new, potentially opportunistic, ties (Fath et al., 2021).

At the individual level, our review demonstrates that entrepreneurs' age, education level, gender, prior entrepreneurial experience, and knowledge are critical resources for offering effective responses (Jaim, 2021; Kuckertz, 2021; Majchrzak and Shepherd, 2021). Manyati and Mutsau (2021) emphasized that young and formally trained entrepreneurs adopt growth-oriented strategic behaviors, whereas older entrepreneurs primarily employ survivalist strategies through the use of defensive behaviors. Young and educated entrepreneurs are more adaptable to new techniques and approaches, such as using digital tools, accepting digital payments, and virtually entering inaccessible markets, whereas older entrepreneurs rely on more traditional methods (Manyati and Mutsau, 2021).

From the gender perspective, women entrepreneurs are disproportionately impacted by the pandemic because they are primarily responsible for home care and their businesses are typically smaller and younger, with their activities concentrated in the worst-affected industries (Manolova et al., 2020). Villaseca et al. (2020) emphasized the existence of bias on both the supply and demand sides of financing for women entrepreneurs. According to Jaim (2021), women entrepreneurs have a range of experiences in both the public and private sectors, which influences their decision to continue or discontinue business operations during a pandemic. Women entrepreneurs of innovative start-ups, on the other hand, are resilient and exceptionally well-equipped to deal with pandemic-induced uncertainty. Therefore, their entrepreneurial passions are less affected by the pandemic (Kuckertz, 2021). Jaim (2021) further argued that habitual entrepreneurs are better equipped to deal with uncertainty as a result of their prior entrepreneurial experiences. Consequently, they are more likely to establish innovative businesses. Concerning prior knowledge as a facilitator of crisis responses, Majchrzak and Shepherd (2021) noted that compassion entrepreneurs, as members of the impacted community experiencing the same adversity, have in-depth knowledge of community needs to identify and exploit venturing opportunities.

Resilience (Portuguez Castro and Gómez Zermeño, 2021), perceived behavior control (Duarte Alonso et al., 2021), increased adaptability, tolerance for uncertainty, and competence to use virtual tools (Nummela et al., 2020) are some additional individual capabilities that aid firms in responding. Aidoo et al. (2021) argued that adaptive resilience has a greater impact on firm performance via strategic renewal, confirming the critical role of entrepreneurial resilience in providing appropriate responses. Notably, the transition to online education and the pandemic-induced crisis have aided in developing students' resilience and entrepreneurial thinking, which are critical skills for entrepreneurs competing in globally competitive markets (Ratten and Jones, 2021a). Additionally, Bressan, Duarte Alonso and Kok (2021) found, through qualitative case study research, that entrepreneurs' perceived behavioral control, as demonstrated by increased entrepreneurial self-efficacy and controllability, motivates entrepreneurs to consider various responses for mitigating the pandemic's impact. Finally, Nummela et al. (2020) argued that increased adaptability, tolerance for uncertainty, and proficiency with virtual tools have put cosmopolitan entrepreneurs in a better position to respond to the pandemic. Moreover, they suggested that the pandemic has limited the mobility of cosmopolitan entrepreneurs, prompted them to acquire new skills, and strengthened their personal and professional networks (Nummela et al., 2020).

3.3.4. Effects of Government Interventions on Entrepreneurial Activities

Our review of the literature reveals that governments have used various strategies to ensure the survival of businesses while containing the spread of infections. To strike this balance, governments imposed lockdowns and restricted citizens' freedom of movement on the one hand while simultaneously offering substantial stimulus packages on the other. We observed that governments have provided significant support to entrepreneurial firms by deferring tax payments, arranging loan guarantees, funding the income needs of entrepreneurs and their employees, assisting in employee retention, facilitating the creation of new markets, imposing import bans, and assisting in the transition to remote working (Greene and Rosiello, 2020). For instance, the Saudi government provided significant incentives as part of its stimulus package to ensure the stability of entrepreneurial firms' operations (Nurunnabi, 2020). Yue and Cowling (2021) highlighted that government support is critical in the UK because entrepreneurial resilience can break down in the face of a severe crisis, resulting in a decline in subjective well-being among entrepreneurs.

Sahoo and Ashwani (2020) argued that well-planned, systematic, and aggressive fiscal and monetary stimulus measures are necessary to mitigate the pandemic's effects on the Indian economy. Thukral (2021) emphasized the importance of macro- and micro-level government interventions to rehabilitate the ecosystem and equip it to combat the pandemic-induced crisis. Liu et al. (2020) concluded from empirical evidence that Chinese state-owned banks are generally more responsive to the government's call for entrepreneurial support by approving a greater number of applications and not requiring collateral. However, these bailout packages will benefit firms with stronger political ties and insider positions, as they are better positioned to benefit from government bailout packages (Amankwah-Amoah, Khan and Wood, 2021).

In general, governments should assist community members in developing and implementing highly innovative ideas that provide solutions in times of resource scarcity and uncertainty (Bacq et al., 2020). More importantly, rapid growth in innovative entrepreneurship requires institutional and environmental support to ensure a speedy recovery from a pandemic-induced crisis (Liñán and Jaén, 2020). Additionally, government support for social enterprises is critical for them to engage in cutting-edge customer discovery techniques such as design thinking and empathy mapping (Weaver, 2020). As a result, collaborative efforts between governments and entrepreneurs may aid in the recovery and growth of entrepreneurial firms (Vig and Agarwal, 2021).

3.4. Methodological Approaches in the Reviewed Literature

The first subsection highlights the research approaches of the reviewed studies, while the second subsection contains information about the analytical approaches.

3.4.1. Research Approaches in the Reviewed Literature

As shown in Table 6, among the 69 reviewed documents, 41 are empirical papers while the remaining 28 are conceptual papers, literature reviews, or commentaries.

Table 6: Research approaches in the reviewed literature

Research approach	Number of articles	% of articles	Exemplary studies
Empirical	**41**	**59.4%**	
Quantitative	22	31.9%	Aidoo et al. (2021); Ebersberger and Kuckertz (2021)
Qualitative	19	27.5%	Bacq et al. (2020); Batat (2020)
Conceptual	**28**	**40.6%**	
Conceptual papers/Literature Reviews	19	27.5%	Amankwah-Amoah et al. (2021); Audretsch and Moog (2020)
Commentaries/opinions/viewpoint	9	13%	Brown et al. (2020); Greene and Rosiello (2020)

Quantitative and qualitative studies are almost evenly distributed among the empirical studies, representing 22 and 19 articles, respectively. The quantitative studies rely heavily on secondary data, with only six relying on survey data. This is consistent with the broader insight that the majority of quantitative research has focused on macroeconomic factors and the impact of the pandemic on labor markets, which can be easily determined using secondary data (e.g. Pedauga, Sáez, and Delgado-Márquez, 2021). Qualitative research has relied heavily on the case study method (e.g., Battaglia, Paolucci, and Ughetto, 2021; Fath et al., 2021).

Among the conceptual papers, 19 are systematic reviews of the literature or framework development studies, while the remaining 9 are commentaries/points of view. Systematic reviews have primarily sought to synthesize prior research on entrepreneurial activities and critical entrepreneurial and organizational factors in crisis (Eggers, 2020; Villaseca et al., 2020). Most studies on framework development have concentrated on the pandemic's implications for entrepreneurship education (Ratten and Jones, 2021b), online communication channels, digital transformations, and entrepreneurial orientation. Lastly, the most frequently mentioned aspect in commentaries is the pandemic's impact on female entrepreneurs (Greene and Rosiello, 2020; Manolova et al., 2020), followed by entrepreneurial characteristics, cosmopolitan entrepreneurs, and firm growth (e.g., Nummela et al., 2020).

3.4.2. Analytical Approaches in the Reviewed Literature

In this sub-section, we present our findings of different analytical approaches used in the empirical articles (see Table 7 below).

Table 7: Analytical approaches used in the reviewed literature

Data Analysis Approach	Number of articles	% of articles	Exemplary studies
Qualitative Data Analysis			
Thematic/content analysis	14	20.3%	Batat (2020); Battaglia et al. (2021)
Gioia method	4	5.8%	Bressan et al. (2021)
Pattern matching	1	1.5%	Fath et al. (2021)
Quantitative data analysis			
OLS regressions	4	5.8%	Salvato et al. (2020)
Logistic regression	2	2.9%	Kuckertz (2021)
Event-study regression	1	1.4%	Fairlie and Fossen (2021)
Hierarchical regression analysis	1	1.4%	Cannavale et al. (2020)
Entropy-weight coefficient method	1	1.4%	García-Vidal et al. (2020)
Tobit regression	1	1.4%	Haneberg (2020)
RBI forecast	1	1.4%	Sahoo and Ashwani (2020)
Maximum likelihood (QML) regression Panel regression models Specification curve analysis	1	1.4%	Ebersberger and Kuckertz (2021)
Difference-in-differences approach with the propensity score matching (PSM-DID)	1	1.4%	Liu et al. (2021)
ARCH LM test, adjusted Sharpe ratio	1	1.4%	Mirza, Naqvi, Rahat and Rizvi (2020)
Financial social accounting matrix (FSAM), Hypothetical extraction method (HEM), Fixed-priced multiplier model.	1	1.4%	Pedauga et al. (2021)

Path analysis, Independent t-tests	1	1.4%	Nofiani et al. (2021)
Linear mixed models, Two-sample t-tests	1	1.4%	Dvorak et al. (2021)
Univariate analyses, Multivariate analyses, negative binomial regression	1	1.4%	Block et al. (2021)

We found that thematic analysis (20.3 percent of total studies) (e.g., Jaim, 2021) is the most frequently used analytical approach in qualitative research, followed by the Gioia method (5.8 percent) (e.g., Bressan, Duarte Alonso and Kok, 2021) and pattern matching (1.5 percent) (Fath et al., 2021). These findings indicate that prior research has concentrated exclusively on a single method for analyzing qualitative data. On the other hand, quantitative studies have primarily relied on various types of regression models (e.g., OLS regression, logistic regression, and hierarchical regression) for analytical purposes (e.g., Kuckertz, 2021). However, some scholars have also used less-common quantitative data analysis techniques, such as the "difference in difference" approach (Liu et al., 2021) and the financial, social accounting matrix to perform analysis (Pedauga, Sáez, and Delgado-Márquez, 2021).

4. Future Research Agenda

Based on our findings and by scrutinizing the future directions proposed by reviewed studies, we propose a research agenda for the future to draw scholars' attention to the critical but under-researched aspects of the phenomenon (see Table 8).

Table 8: Future research agenda for entrepreneurship research in crisis situations

TCCM dimensions	Future research themes/questions	Exemplary studies that offered these directions
Theories	• Independently or integratively use the extant theories to understand different dimensions of entrepreneurship during crises. • How do entrepreneurial firms adopt business models and use resources from networks and ecosystems to survive and thrive during the pandemic? • How do different groups of entrepreneurs develop opportunities while tackling the challenges of the pandemic? • Apply entrepreneurial agency-centered theoretical frameworks and institutional theory to highlight the role of governments and entrepreneurs during crisis.	Manolova et al. (2020); Battaglia, Paolucci and Ughetto (2021)

Context	• Conduct research in Africa, South America, and other countries to increase the generalizability of the findings • Continue research efforts in the countries where most of the studies are conducted to deepen the knowledge about entrepreneurship in crises situations • As pandemic has disproportionately impacted across industries, future research should focus on multiple industries • How have entrepreneurial firms in worse impacted industries responded to the pandemic crisis?	Greene and Rosiello (2020)
Characteristics	• Explore the impact of the pandemic on entrepreneurial firms • How do entrepreneurial firms learn from the crises, develop capabilities, and adopt new technologies to survive and thrive during the pandemic? • Why and how entrepreneurship education can facilitate in developing entrepreneurial skills, such as resilience	Brown, Rocha and Cowling (2020); Amankwah-Amoah, Khan and Wood (2021) .
Methodology	• Enhance the qualitative toolbox beyond case studies and thematic analysis. • Apply mixed methods to combine real-time data with declarative data. • Apply longitudinal research designs to capture the episodes of transformations during different waves of infections and restrictions.	Bressan, Duarte Alonso and Kok (2021); Jaim (2021)

4.1. Future Theoretical Approaches

Our findings related to the theoretical approaches indicate that most of the existing research lacks explicit theoretical underpinnings. As a result, we recommend that future researchers employ distinct theories and their related concepts to explain various facets of entrepreneurship. For instance, applying business model concepts may help in explaining how entrepreneurs might create innovative business models to survive and thrive during the pandemic (Manolova et al., 2020). Similarly, additional research on entrepreneurial network theory will shed light on how network strength, informality, and structures aid or hinder entrepreneurial actions during or after the pandemic (Fath et al., 2021). Furthermore, we suggest that further research using network and entrepreneurial ecosystem theories can potentially shed light on how entrepreneurs may design and implement collective responses in collaboration with other stakeholders. This will provide valuable insights about collective action and resource acquisition from external sources during the pandemic, as entrepreneurs typically lack the developed resources and capabilities necessary to deal with the pandemic's uncertainties on their own.

Our findings also indicate that entrepreneurship research conducted during the pandemic has largely ignored the extensive literature on the opportunity theory of entrepreneurship. The debate over opportunities is primarily divided into opportunity discovery, creation, and actualization perspectives (Alvarez and

Barney, 2007; Ramoglou and Tsang, 2016). Given the pandemic's unique challenges and opportunities for entrepreneurial firms, it would be beneficial to examine how various groups of entrepreneurs pursue novel opportunities while overcoming pandemic-related obstacles.

Entrepreneurs are the most influential individuals in entrepreneurial firms. Consequently, theories related to the entrepreneurial agency (e.g., social cognitive theory, self-efficacy, heuristics, social capital, and human capital) can shed light on the critical characteristics of entrepreneurs responsible for leading their firms throughout the pandemic. Future scholars can develop and contextualize pertinent theories and constructs derived from individualist-centered research in the entrepreneurship and psychology domains (Block et al., 2021; Greene and Rosiello, 2020).

At the macro level, given the critical role of government support for entrepreneurial firms during times of crisis, the institutional theory is relevant for examining how institutional responses shape entrepreneurial attitudes, intentions, and behaviors. Such studies may play a significant role because they demonstrate how different institutions respond differently, resulting in a range of positive or negative outcomes (Amankwah-Amoah, Khan and Wood, 2021; Manolova et al., 2020). Additionally, theories can be integrated to account for multiple levels of factors concurrently. This is critical because our review demonstrates that various factors at the individual, firm, and macro levels influence entrepreneurial endeavors.

4.2. Future Contexts

Our findings show that the pandemic has disproportionately affected various industries and sectors. Consequently, we suggest examining how the pandemic has impacted various industries, ranging from traditional brick-and-mortar retailers to completely digitalized businesses (Greene and Rosiello, 2020). Additionally, we need to understand how diverse actors can collaborate to foster an ecosystem conducive to researching, prototyping, and commercializing knowledge-based products and services. Similarly, the impact of the pandemic on manufacturing industries and their supply chain management challenges and practices requires additional research. Furthermore, we lack conclusive evidence regarding the response of entrepreneurial firms in the most adversely affected industries and sectors (Nofiani et al., 2021).

Given the diversity of institutional environments, infrastructures, entrepreneurial ecosystems, and behaviors across countries, future research should emphasize other regions beyond China, the United States, Italy, Spain, and the United Kingdom. Thus, we recommend that additional research should be conducted across a broad range of developing and developed countries to examine individual, organizational, industrial, and macroeconomic factors

(Portuguez Castro and Gómez Zermeño, 2021). In particular, African, South Asian, and South American countries require immediate attention to ensure that they are adequately represented in the body of knowledge.

4.3. Future Characteristics

While existing research has identified negative and positive consequences for entrepreneurial firms, the body of knowledge has not matured. Thus, scholars should pay increased attention to the pandemic's impact on entrepreneurial ecosystems (Brown, Rocha and Cowling, 2020), disruption of existing firm routines (Amankwah-Amoah, Khan and Wood, 2021), and entrepreneurial perceptions, intentions, behaviors, outcomes, and growth trajectories (Greene and Rosiello, 2020; Liñán and Jaén, 2020).

Additional research is needed to examine how entrepreneurial firms, nascent entrepreneurs, and firms lacking legitimacy and political influence navigate crises and adopt innovative responses to survive and grow (Liñán and Jaén, 2020). More importantly, future research should examine how firms learn from crises and apply what they have learned to improve their competitive advantage (Haneberg, 2020). Moreover, it would be intriguing to examine how the pandemic has compelled businesses to embrace digital technologies, create novel market solutions, and reimagine their business models. Further research is also required in this area to determine how firms renew their capabilities and resources to mitigate the pandemic's impact (Amankwah-Amoah, Khan and Wood, 2021). Also, future scholars should document women entrepreneurs' efforts to maintain work/life balance and lead the transformation of business models during the pandemic (Jaim, 2021).

4.4. Future Methodologies

Our findings highlight a need to expand the qualitative approaches at hand, although some studies have used case studies and thematic analysis. However, alternative methods for conducting qualitative research may offer valuable theoretical and practical insights. For instance, ethnographic studies can provide detailed information about entrepreneurs' perceptions, intentions, and actions by allowing for a close examination of the context and entrepreneurial behaviors during various pandemic waves. Additionally, we recommend mixed-method research designs to combine real-world data collected by governments via location-based apps with declarative data collected via interviews and surveys. Government-collected data can provide real-time information about various clustering regions, which can be combined with declarative data to document entrepreneurial firms' effects or responses.

Moreover, we invite future scholars to use longitudinal research designs to explore the impacts of the pandemic on entrepreneurs as well as their responses to deal with the uncertain pandemic (Lim et al., 2020). Current research lacks an explanation of how entrepreneurial firms should respond to these vicious shock cycles. The massive amount of data available on social media (e.g., posts, blogs, and news articles) is particularly useful. Concerning data analysis, we suggest new artificial intelligence-based textual analysis approaches (e.g., sentiment analysis) which can provide novel insights into the feelings, emotions, and attitudes of entrepreneurs. Finally, future research techniques such as Delphi could be beneficial for forecasting possible future scenarios and capturing the actions of diverse stakeholders.

5. Conclusion

The systematic review of 69 ABS-ranked studies sought to establish an integrated understanding of entrepreneurship research in the context of the COVID-19 pandemic. We did so by providing a holistic understanding of the applied theories, empirical contexts, key characteristics, and methodologies used in the reviewed literature. In addition, we have established a comprehensive research agenda for future research on entrepreneurship during a pandemic. Our findings indicate that the majority of research lacks explicit theoretical foundations. The empirical studies cover a wide variety of industries, but their geographical scope is skewed toward a few countries (e.g., USA, China, a few European countries, etc.). While characterizing the key findings or insights of the literature, our findings show that the pandemic has affected entrepreneurial firms at both the external and internal levels, creating opportunities and threats for them in turn. As a response, entrepreneurial firms have mainly adopted innovative, defensive, and collaborative strategies to deal with this uncertain situation. Government support for entrepreneurs in the form of stimulus packages and other measures is critical to deal with uncertainty. Finally, our future agenda recommends alternative theory-driven avenues that should be addressed from a variety of methodological, geographical, and contextual perspectives.

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