
Bibliometric systematic literature review on SMEs resilience literature

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Bibliometric Systematic Literature Review on SMEs Resilience Literature

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Abstract

Research on the resilience of small and medium-sized enterprises (SMEs) has significantly increased since the COVID-19 pandemic. On the other hand, building resilience is essential not only during crises but also in the current highly competitive business environment. Therefore, a comprehensive understanding is needed to provide strategic knowledge in generating SMEs' resilience. This study aims to develop knowledge maps related to SMEs' resilience based on published articles in the Scopus database through bibliometric analysis and systematic literature review. We reproduce the thematic map into a structured framework of the strategy to generate business resilience in the SME context. Our findings show that the Resource-Based View (RBV) and dynamic capabilities are the primary theoretical frameworks adopted in research on SMEs' resilience. Additionally, we found that the entrepreneurial resilience of owner-managers is crucial for driving the organizational resilience of SMEs. Furthermore, the dynamic business environment due to crises, natural disasters, competition, and technology disruption is identified as an external factor that stimulates resilience responses in SMEs. The findings and discussion section presents a detailed discussion regarding the findings of the bibliometric-systematic literature review and the proposed framework. We also outline future research agendas that will be useful for future researchers and SME scholars.

Keywords: SMEs, Small Business, Resilience, Digital Transformation, Competition, Agility, Dynamic Capabilities, Resource-Based View, RBV

JEL: M15, L26

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This study have no competing of interest to be declare.

Authors' Contribution:

Gaffar Hafiz Sagala: Designing research, collecting and revieweing the article, develop review matrix, interpreting the data, developing the conceptual framework and writing the result.

Dóra Óri: developing research design (literature review technique), reviewing the framework, interpreting the review result, writing the result and proofread the manuscript.

Bibliometric Systematic Literature Review on SMEs Resilience Literature

Abstract

Research on the resilience of small and medium-sized enterprises (SMEs) has significantly increased since the COVID-19 pandemic. On the other hand, building resilience is essential not only during crises but also in the current highly competitive business environment. Therefore, a comprehensive understanding is needed to provide strategic knowledge in generating SMEs' resilience. This study aims to develop knowledge maps related to SMEs' resilience based on published articles in the Scopus database through bibliometric analysis and systematic literature review. We reproduce the thematic map into a structured framework of the strategy to generate business resilience in the SME context. Our findings show that the Resource-Based View (RBV) and dynamic capabilities are the primary theoretical frameworks adopted in research on SMEs' resilience. Additionally, we found that the entrepreneurial resilience of owner-managers is crucial for driving the organizational resilience of SMEs. Furthermore, the dynamic business environment due to crises, natural disasters, competition, and technology disruption is identified as an external factor that stimulates resilience responses in SMEs. The findings and discussion section presents a detailed discussion regarding the findings of the bibliometric-systematic literature review and the proposed framework. We also outline future research agendas that will be useful for future researchers and SME scholars.

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Introduction

SME (Small Medium Enterprise) resilience has become a hot topic of discussion since the crisis caused by the COVID-19 pandemic. Based on the Scopus database, there were only twelve published documents related to SMEs' resilience from 2003 to 2019, and this number increased to twenty-five documents in 2020, forty in 2021, and eighty-two in 2022. Those figures show an exponential increase in the number of publications related to SMEs' resilience after the crisis due to the COVID-19 pandemic. The COVID-19 pandemic, which threatened health by the spread of the virus through close contact and droplets, has resulted in governments worldwide issuing regulations limiting physical interaction. These restrictions impacted limited business mobility and generated uncertainty threatening business continuity (Guo et al., 2023; Nan & Park, 2022; Robertson et al., 2022). This situation was getting more serious for SMEs because they play an essential role in the countries' economy, so the failure of SMEs exacerbated the crisis that occurred due to the stagnation of economic activity during the COVID-19 pandemic (Filser et al., 2016; Iancu et al., 2022; Engidaw, 2022; World Bank, 2020). Moreover, SMEs' knowledge, capital, and infrastructure limitations have raised the risk of failure during the crisis (Iancu et al., 2022; Morris et al., 2022; Rodrigues et al., 2021). Thus, it is reasonable that topics related to SME resilience have grown exponentially in the last three years.

However, the survival issue among SMEs is not new. OECD (2016) reported that over 50% of SMEs would fail in their first five years. This indicates that the crisis was not the only threat to SMEs' resilience. Business competition, market uncertainty, and rapid technology innovation should also be considered as the critical determinants of SMEs' resilience (Andersen et al., 2022; Sullivan-Taylor & Branicki, 2011). Most studies regarding SME resilience associate it with how SMEs survive in passing the crisis. Organisational resilience is defined as the organisational capability to absorb and suffer external shocks or extreme events so that the company can stay in the market even if it lacks competencies and resources (Audretsch & Belitski, 2021; Joseph et al., 2022; Weber & Tarba, 2014). Researchers commonly associate external shock and extreme events with the crisis. Uncertainty in the market often brings a shock to business, like unpredictable innovation by competitors, unstoppable new products and services, inflation, consumer demand and purchasing power, price war, market globalization, and disruption of technology, which bring turbulent environments and challenges for SMEs (Brown et al., 2020; Kurtz & Varvakis, 2016; Saad et al., 2021). Interestingly, scholars also found the unique findings related to the positive influence of crisis on challenging resilience. Isensee et al. (2023), Akgün et al. (2023), and Meier et al. (2023) found that shock causes the widespread adoption of information systems (IS) and escalates digital transformation, which brings a new opportunity to the small business sector. Isensee et al. (2023) stated that SMEs' resilience needs to be defined more comprehensively to organise the growth of knowledge of the related topic. Even though the COVID-19 pandemic has been controllable, the emerging topic related to SMEs' resilience should still be explored and fitted to the alternative unpredictable events and shocks that are probably faced by SMEs in the future.

This study aims to develop knowledge maps related to SME resilience in published articles in the Scopus database. Current study also seeks to construct a framework related to SME resilience to deliver a strategic understanding of how to develop business resilience in the SMEs context based on the research findings of published studies. To organize the information into a valuable form, Schmidt et al. (2010) proposed two elements: 1) reduction of uncertainty so that the problem is more predictable and 2) change in the state of information according to the receiver's perspective in a practical way. Therefore, we performed a bibliometric analysis of the published articles in the Scopus database and managed information regarding SMEs' resilience to generate the knowledge map in the form of a structured conceptual framework. Future research directions were also developed to validate the proposed framework and enrich the practical knowledge regarding SMEs' resilience.

Literature review regarding business resilience in the SME context has been conducted by Gregurec et al. (2020), Saad et al. (2021), Chowdhury (2021), Klein and Todesco (2021), and Hossain et al. (2022). Saad et al. (2021) presented an overview of the theoretical background, conceptualization, and

research stream across SMEs' resilience research. Additionally, Gregurec et al. (2020), Chowdhury (2021), Klein and Todesco (2021), and Hossain et al. (2022) examined the resilience of SMEs in response to the COVID-19 crisis. However, previous literature reviews have not yet conducted a structured framework to develop a comprehensive strategic concept to deal with adversity and generate resilience in the SME context. Previous works have also not yet applied bibliometric analysis to investigate influential literature and thematic maps in published research in the SME resilience field. Through bibliometric systematic literature review (B-SLR), this study conducts a combination of retrospective analysis, thematic analysis, and review of influential academic works to construct a comprehensive understanding of strategies to become resilient SMEs. Additionally, the current study considers adversity beyond the crisis, but the various challenges that SMEs may face include crises, natural disasters, highly competitive business environment, technology disruption, and globalization. Those business dynamics significantly challenge the SMEs' survivability (WEF, 2022). In a straightforward sentence, this study enlightens SME researchers regarding the theoretical foundation and strategy to generate resilience when facing various uncertainties due to crises, business dynamics, and natural disasters. Furthermore, the concept of SME resilience will be developed further by further research in a holistic view and, in turn, will contribute to managing SMEs' survival in the future.

Theoretical Background

The concept of resilience has been developed over time and adapted to various scientific fields, including psychology, sociology, disaster studies, biology, and business. (Herrman et al., 2011). Initially, resilience research was carried out in psychology, which analyzed human intellectual functions in dealing with adversity and challenging and stressful environments experienced by children (Demmer et al., 2011; Garmezy, 1978; Herrman et al., 2011; Manyena, 2006). Furthermore, the term of resilience is widely adopted in disaster management to analyse communities in a hazardous environment and develop disaster management models and survival strategies to reduce risks in impacted communities (Manyena, 2006). In the early 2000s, business researchers began to adopt this concept to analyse how business entities survive external pressures, crises caused by natural disasters, economic crises, and uncertain market competition (Demmer et al., 2011). Scholars examine resilience in business entities from various perspectives, such as risk management to reduce vulnerability (Starr et al., 2003), strategic management to maintain a competitive advantage to be resilient to various pressures (Hamel & Valikangas, 2003), and innovation strategy to keep the company ahead from time to time (Reinmoeller & Van Baardwijk, 2005).

SME resilience is the concept of organizational resilience that specifically applies to the SME context. Although the conception of organizational resilience has shifted as knowledge in the related field has emerged, and the business environment has become more dynamic and uncertain due to

technological innovation, globalization, and high-tension competition (Williams et al., 2017; Sagala & Óri, 2025; Andersen et al., 2022; Sullivan-Taylor & Branicki, 2011), we keep the common thread of the resilience concept among researchers and adapted it to the context of SMEs. According to Meyer (1982), organizational resilience is an organization's ability, embedded in its resources, ideologies, routines, and structures, to absorb shocks and adversity in its related business environment and restore previous order. However, as the business environment becomes more challenging due to the economic crisis, uncertainty, heightened competition, globalization, and rapid technological innovation, resulting in a continuously changing environment, the meaning of organizational resilience is growing simultaneously (Sagala & Óri, 2026). In the more modern meaning, organizational resilience is defined as the ability of an organization to adapt to a continuously changing environment through continuous learning, improved dynamic capabilities, and business transformation to produce new business value aligned with market expectations, resulting in new competitive advantages for the company (Sagala & Óri, 2025; Teece, 2022; Hillmann & Guenther, 2021).

In the SME context, SME resilience refers to SMEs' capability to adapt to change through continuous learning, enabling business transformation and maintaining adaptability and agility in response to uncertainty in the business environment (Sagala & Óri, 2025). Resilient SMEs would be adaptable and sustain their business in the face of uncertainty and adversity (Munoz et al., 2022). Meramveliotakis and Manioudis (2021) highlighted that innovation and change are the drivers of entrepreneurship and SME growth, which are critical for fostering resilience in times of economic shock. Moreover, in studying SME resilience, the role of the owner-manager or entrepreneur is critical, as they are the central drivers of the SME who determine the direction and ensure the organization and system work in line with that direction (Sagala & Óri, 2025; Sagala & Óri, 2026; Wang & Sun, 2025). A human or an individual cannot be separated from the organization of SME because SMEs have a simple structure and are commonly led and managed directly by their owner (Bhamra et al., 2011; Keong & Mei, 2010). Therefore, the individual, the organization, and the system form a unity in SME organizational resilience. According to Williams et al. (2017:742), resilience is *"the process by which an actor (i.e., individual, organization, or community) builds and uses its capability endowments to interact with the environment in a way that positively adjusts and maintains functioning prior to, during, and following adversity"*. Consistently, Kamalahmadi and Parast (2016) found organizational resilience to be a dynamic capability of an enterprise that highly depends on its individuals, groups, and subsystems to face turbulence or unexpected changes proactively by developing flexible and innovative solutions. Yao and Fabbe-Costes (2018) also argued that resilience encompasses individual and collective attitudes in the organization at different levels: individual, organizational, and system. According to that view, we argue that the owner-manager or entrepreneur is the central driver

of SMEs' resilience, who initiates proactive behavior to activate dynamic capability at the organizational level. Entrepreneurial resilience is the key to organizational resilience of SMEs.

The SMEs resilience research stream indicates that business scholars widely adopt dynamic capabilities to explain SME resilience strategies. Accordingly, the current study adopted the dynamic capabilities framework as the theoretical background to understand the capabilities small businesses need to develop to navigate resilience. Dynamic capabilities are the higher-level capabilities from ordinary capabilities to sense requirements and opportunities from the business environment and then integrate and reconfigure internal and external resources to maintain and extend competitive advantage to address a rapidly changing environment (Teece et al., 1997; Teece, 2012). The dynamic capabilities framework was developed in line with and to complement the Resource-Based View (RBV) developed by Barney (1991), with the idea that unique and difficult-to-substitute resources are not enough for a company to achieve sustainable competitive advantage (Teece, 2022). Companies require continuous learning and ongoing orchestration of intangible assets and other resources to reconfigure the business into new combinations to remain in line with market expectations (Teece, 2022). The main factor stimulating dynamic capabilities is market dynamism, which motivates companies to develop their capabilities and evolve their business (Eisenhardt & Martin, 2000). Through dynamic capabilities, a company can create new forms of competitive advantage based on existing path dependencies and market positions (Leonard-Barton, 1992; Teece et al., 1997). These concepts are in line with the capabilities needed by SMEs to develop organizational resilience (Kamalahmadi & Parast, 2016; Sagala & Őri, 2025).

Audretsch and Belitski (2021) indicate that, although dynamic capabilities rely on the availability of unique resources and abilities to orchestrate existing resources to create new value and competitive advantage, SMEs with limited resources can still activate dynamic capabilities through different mechanisms. SMEs may optimize their external resources and establish transactions to share knowledge with customers, suppliers, the business community, and the government (Audretsch & Belitski, 2021). Those mechanisms emphasize learning and upskilling as the key resources of SMEs to generate new value in their business (Sagala & Őri, 2026). Those knowledge transactions with business stakeholders enable SMEs to build absorptive capacity and become more adaptive to meet market demands in an uncertain business environment, which makes them resilient (Audretsch & Belitski, 2021; Teece, 2018). Vogel and Güttel (2012) argue that dynamic capability demands active learning and the ability to adapt through integrating aspects of organizational theory and strategic management. In this case, SMEs need to operationalize continuous learning and proactive behavior to activate dynamic capabilities by exploiting new opportunities and transforming their businesses to generate new competitive advantages in response to market changes (Sagala & Őri, 2025).

Teece (2018) and Adner and Helfat (2003) highlight that while the dynamic capabilities framework is commonly examined at the corporate level, it also exists at the levels of business units, products, or individual managers in the form of dynamic managerial capabilities. In fact, Teece (2012) suggests that top management entrepreneurial and leadership skills are closely related to the ability to sense, seize, and transform capabilities of the companies. These entrepreneurial and leadership skills enable the managers to sense and understand opportunities, take action to exploit them, and incorporate them into business processes to improve them (Teece, 2012). Managerial decision-making that is unique yet relevant to the company's needs, bringing the company to the next big opportunity and addressing challenges, is a key characteristic of a managerial attitude that sustains dynamic capabilities (Teece, 2012). Consistently, in the SMEs context, Kotsios (2023) has investigated the important business resilience skills for SMEs and found that personal characteristics and value are the most important skills for SMEs' resilience. Therefore, we argue that the owner-manager or entrepreneur of SMEs is the central driver who should possess dynamic managerial capabilities to sense new opportunities, take action to seize them through managerial decision-making, and transform business processes to deliver new value and improve competitive advantage. Based on the presented theoretical background, the current study seeks to construct a framework of SME resilience to gain a comprehensive understanding of strategies that enhance competitive advantage, which in turn generate organizational resilience in the SME context. The complex feature of the framework is based on the results of a bibliometric-systematic literature review of published studies in the related field.

Research Method

The current study adapted the Bibliometric-Systematic Literature Review (B-SLR) approach proposed by Marzi et al. (2025). The B-SLR approach is an integrated methodological framework that combines bibliometric techniques and systematic literature review to address the challenges of rapidly increasing academic production (Marzi et al., 2025). The bibliometric analysis provides quantitative rigor, while the systematic literature review provides qualitative depth, facilitating robust theory development (Marzi et al., 2025). To operationalize the B-SLR approach, we first applied the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) article selection framework (Page et al., 2021). Furthermore, the selected articles were analyzed using bibliometric methods, focusing on co-citation and co-occurrence analyses to explore their theoretical roots and emerging topics in the literature. Additionally, we applied the literature review on the co-citation articles and the influenced literature to gain a robust understanding and control bias in interpreting the results of the bibliometric analysis (Marzi et al., 2025).

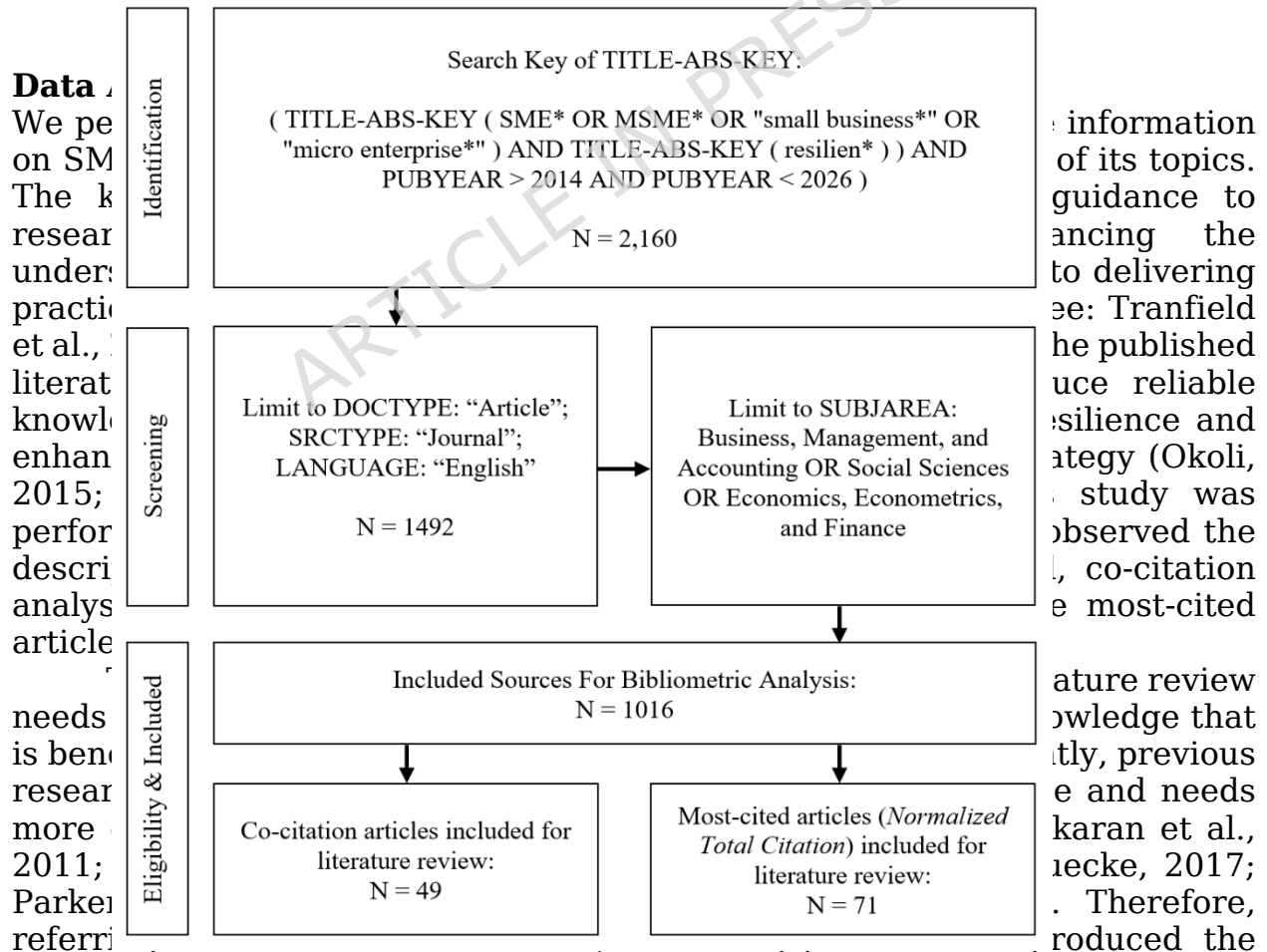
Article Selection Protocol

We adopted the PRISMA framework to gather relevant published articles from the academic article database. The PRISMA approach enables

researchers to develop a systematic, transparent, complete, and accurate selection procedure for the literature to be reviewed and analyzed, which supports the synthesis of review findings (Moher et al., 2009; Page et al., 2021). This study collected the peer-reviewed articles on SMEs resilience from the Scopus database. We used the Scopus database because it lists articles from reputable and significant journals; besides, it provides a wide range of multidisciplinary research areas. [The data was downloaded on 28 June 2025.](#) The article selection protocol for collecting the literature for bibliometric analysis and literature review is presented in Figure 1 and is outlined as follows.

1. *Identification*: At the identification step, we identified the source articles using keywords related to the SMEs' resilience research topic. We applied several keyword variations representing SMEs or small businesses and resilience terms to optimize document identification. We selected articles that were published between 2015 and 2025. We argue that the articles from the last 10 years would deliver the relevant trend of emerging knowledge and represent a retrospective view of emerging research. We applied the following query in the identification step: (TITLE-ABS-KEY (SME* OR MSME* OR "small business*" OR "micro enterprise*") AND TITLE-ABS-KEY (resilien*)) AND PUBYEAR > 2014 AND PUBYEAR < 2026). This query resulted in 2,160 identified documents.
2. *Screening*: In the screening stage, we screened the articles by adding the limitation regarding the type of publication and language. We limited the collection only to journal articles and English language articles to be collected. We consider collecting only journal articles because they have passed the peer-review process and are regarded as complete research work. Therefore, we excluded the conference proceedings articles, book chapters, review articles, data articles, and editorial articles. This step resulted in 1492 documents being screened and selected for the next step.
3. *Eligibility and Included*: The last step was the eligibility to select the documents included in the bibliometric analysis. This study focused on specific subject areas by establishing inclusion criteria to narrow the scope of the investigation of the collected articles. As the current research investigates the SME resilience issue, which represents the business entity, we limited the subject area to "Business, Management, and Accounting," "Social Science," and "Economics, Econometrics, and Finance." In this case, we did not implement strict inclusion and exclusion criteria because we aim to understand the foundation of the emerging knowledge related to SME resilience within the broader research stream in the fields of business and economics. That strategy could avoid uncollected intellectual property that benefits authors to capture a comprehensive view of the academic structure (Webster & Watson, 2002). Finally, we included 1016 articles for bibliometric analysis. [Furthermore, we conducted a literature review of the 71 most-](#)

cited articles to support the interpretation of the co-occurrence analysis and to control for researcher bias in its results (Marzi et al., 2025). In the results section, we refer to the reviewed articles as primary articles. We identified the most cited articles by using normalized total citation (NTC) counts to avoid misleading results from raw counts that favor older articles (Marzi et al., 2025). The normalized citation accounts for the average citation rate based on the document's publication time and the characteristics of the sample, enabling a time-adjusted comparison among documents (Marzi et al., 2025). We selected 71 articles with a normalized total citation count above >2.00 , indicating a strong influence on emerging research in the field. According to the common number of reviewed articles in leading management studies journals, which is 100 with a standard deviation of ± 40 (Marzi et al., 2025), 71 articles fall within this range. The sample also consists of articles published between 2016 and 2025 (before and after the COVID-19 crisis), using multiple research methods (including qualitative, quantitative, and literature review), and covering multiple research subjects, enabling a comprehensive understanding of the related topics to support the control of interpretation bias.



knowledge map into a more structured conceptual framework to better understand how resilience has been developed in the SMEs context.

Findings

Descriptive Statistics of Collected Documents

According to descriptive results of collected articles which are presented in Table 1, we have 1016 collected articles published between 2015-2025 with the annual growth rate of 31,17%. Interestingly, the average age of documents is 2,39 years old. This means the collected articles are mostly published in recent years. The documents contain 1269 keywords plus (automatically assigned keywords) and 3054 author's keywords. Furthermore, there are 114 single-author articles, and the total of authors engaged in the published documents is 2989 authors. It indicates that 88,78% of the collected articles are written by multiple authors and engage a huge number of authors in sum, and 29,92% of the collected articles are written by internationally collaborated authors.

Table 1. Description of the Collected Articles

No.	Description	Results
<i>Main information about data</i>		
1.	Timespan	2015-2025
2.	Sources (Journals, Books, etc)	473
3.	Documents	1,016
4.	Annual Growth Rate %	31.17
5.	Document Average Age	2.39
6.	Average citations per doc	15.75
7.	References	63,824
<i>Document contents</i>		
8.	Keywords Plus (ID)	1,269
9.	Author's Keywords (DE)	3,054
<i>Authors</i>		
10.	Authors	2,989
11.	Single-authored docs	114
12.	Co-Authors per Doc	3.28
13.	International co-authorships %	29.92
<i>Document types</i>		
14.	Article	1,016

Co-Citation Analysis

Co-citation analysis is a valuable method for mapping the relationships between key ideas of the former literature, which helps create a more objective model of the intellectual structure within scientific fields (Small, 1973). This technique identifies two older papers that are cited together by more recent publications (Boyack & Klavans, 2010; Small, 1973). The co-citation mapping will continue to change according to the developments produced by the latest articles (Chen et al., 2010). Based on these changes,

scholars can identify changes or developments in the knowledge that occur about the co-citation network (Small, 1973). Small (1973) argued that co-citation analysis could provide more complex information than bibliographic coupling and direct citation analysis because it can capture citation patterns on the similarity of topics of discussion as well as the continuity of the topics of discussion of a study. Although, co-citation analysis is not able to cluster recent papers because it has not been widely cited by other researchers (Boyack & Klavans, 2010). However, in research that aims to review the development of knowledge in certain specific fields, as in recent studies, co-citation analysis is instrumental in providing references to research that has co-citation and network strength in more recent research. Actually, articles in the same cluster generally propose related information, specifically papers with strong relationships. Small (1973) mentions this type of co-citation network, which indicates strong bibliographic coupling due to the similarity of the subjects. According to the co-citation analysis result, the co-cited documents are grouped into two clusters. We present the results in Figure 2 and Table 2. We limited the number of nodes to only 50 papers.

According to the co-citation analysis result, we found that co-citation articles in Cluster (Clstr) 1 consist of four groups of topics, including 1) Resource-based view (RBV) and Dynamic capabilities, 2) Structural equation modelling (SEM) and measurement model, 3) Supply-chain resilience, and 4) Entrepreneurial orientation. It indicates that the articles in the first cluster are the main references cited to justify the theoretical background and methodological aspect.

The strongest documents in the first cluster are Barney (1991) and Teece et al. (1997), with betweenness (btwnness) scores equal to 244.306 and 292.595. Barney (1991) proposed a resource-based view to get a competitive advantage in the market so that the business entity could win the market when they have unique resources. Teece et al. (1997) proposed dynamic capabilities for the business entity to exploit the resource appropriately in the rapidly changing business environment and the technology innovation era to generate new competitive advantage.

Furthermore, the second strongest documents are Podsakoff et al. (2003), Fornell & Larcker (1981), Hair et al. (2019), and Henseler et al. (2015), with betweenness scores equal to 84.524, 46.289, 46.225, and 12.025. The second group of co-citation articles is commonly referenced by quantitative research that applied survey methods analyzed by SEM. Podsakoff et al. (2003) discussed bias in behavioral research and how to develop the measurement model. Fornell & Larcker (1981) and Henseler et al. (2015) discussed discriminant validity in the SEM, while Hair et al. (2019) discussed all aspects of the analysis technique of SEM.

Furthermore, the third group is articles with supply chain resilience topics. Most-cited articles in this group are Ponomarov & Holcomb (2009), Ivanov & Dolgui (2020), Gölgeci & Kuivalainen (2020), Pettit et al. (2013), Chowdhury & Quaddus (2017), and Jüttner & Maklan (2011), with betweenness scores equal to 1.688, 0.000, 19.947, 60.907, 1.221, and 58.108.

Ivanov & Dolgui (2020), Gölgeci & Kuivalainen (2020), and Chowdhury & Quaddus (2017) investigated the supply chain resilience strategy. They proposed dynamic capabilities, adaptive capability, social capital and networks, and collaboration capabilities as strategies to maintain the supply chain sustainability in response to disturbances. Furthermore, Ponomarov and Holcomb (2009) found the lack of research on supply chain resilience through a literature review. Pettit et al. (2013) developed a measurement tool for Supply Chain Resilience using a mixed-method triangulation approach.

The last group discussed entrepreneurial orientation, including Miller (1983) and Lumpkin & Dess (1996), with betweenness scores equal to 20.476 and 8.584. Miller (1983) stated that entrepreneurship and its drivers differ in different organizational configurations and proposed risk-taking, innovation, and proactiveness as one foundation of entrepreneurial orientation. In later works, Lumpkin and Dess (1996) clarified the concept of entrepreneurial orientation by adopting a contingency framework to explore its relationship with firm performance. Lumpkin and Dess (1996) identified five multidimensional factors comprising entrepreneurial orientation, including autonomy, innovativeness, risk-taking, proactiveness, and competitive aggressiveness.

Figure 2. Co-Citation Analysis

In Cluster 2, the results show that the co-citation articles focus more on the investigation related to organizational resilience and, more specifically, SMEs resilience in times of crisis, which is also distributed in two categories of time that is, before the COVID-19 crisis and in response to the COVID-19 crisis. It differed from the first cluster, which tends to be referenced as the theoretical background.

The first group is Sullivan-Taylor (2011) articles published before the COVID-19 crisis, which investigated organizational resilience, which has the strongest betweenness centrality. It was normal because when the productivity of this field increased during the COVID-19 crisis, articles published before would be referred to as references. Bhamra et al. (2011), Gunasekaran et al. (2011), Linnenluecke (2017), Sullivan-Taylor & Branicki (2011), Ates & Bititci (2011) and Lengnick-Hall et al. (2011) are the strongest co-cited paper with betweenness equal to 87.601, 86.279, 76.873, 64.649, 56.708, and 42.425. Bhamra et al. (2011), Linnenluecke (2017), Gunasekaran et al. (2011) and Sullivan-Taylor and Branicki (2011) explained a theoretical concept and definition of SMEs resilience while Lengnick-Hall et al. (2011) proposed human resource management (HRM) as the strategy in developing organizational resilience and Ates and Bititci (2011) proposed the change process as the key enabler of SME resilience.

Furthermore, Duchek (2020), Bullough & Renko (2013), Burnard & Bhamra (2011), Conz & Magnani (2020), Dahles & Susilowati (2015), Williams et al. (2017), Annarelli & Nonino (2016), Ortiz-de-Mandojana & Bansal (2016), Bullough et al. (2014), Somers (2009), and Ayala & Manzano (2014) are the co-citations article in Cluster 2 with lower betweenness score

equal to 70.027, 3.503, 0.398, 5.230, 6.503, 10.995, 3.320, 1.355, 1.021, 9.818, and 0.798. Duchek (2020), Burnard & Bhamra (2011), Conz & Magnani (2020), Williams et al. (2017), and Annarelli & Nonino (2016) are the theoretical articles and literature reviews that aim to 1) develop conceptual frameworks of organizational or firm resilience, 2) understand the research stream in the organizational resilience fields, and 3) propose further research agenda. These efforts are relevant as organizational resilience is an emerging concept that gained increasing support even before the COVID-19 crisis, and the conceptualization of resilience in business fields still needs further investigation (Burnard & Bhamra, 2011; Conz & Magnani, 2020; Donthu & Gustafsson, 2020). Dahles and Susilowati (2015) examined how local tourism businesses respond to various crises, including natural disasters, economic recessions, and political turmoil and they emphasized that business resilience serves as a vital livelihood strategy. Ortiz-De-Mandojana and Bansal (2016) highlighted that business sustainability concerning environmental aspects activates a company's ability to recognize maladaptive tendencies and cope with unexpected events in positive manner, which is contributing to resilience. Somers (2009) developed a scale to measure latent resilience in organizations to provide a view of crisis planning and adaptive behavior in facing a crisis. Bullough and Renko (2013), Bullough et al. (2014) and Ayala and Manzano (2014) investigated entrepreneurial resilience as the key to business success, particularly in an uncertain environment.

Furthermore, the second group investigates organizational resilience from the SME's point of view, including Smallbone et al. (2012), Iborra et al. (2020), Pal et al. (2014), Herbane (2010), Herbane (2019), and Samantha (2018) with the relatively small betweenness score equal to 1.401, 2.689, 0.678, 0.000, 0.189, 0.000. Smallbone et al. (2012), Iborra et al. (2020), and Pal et al. (2014) investigated SMEs' response to the economic crisis, which highlighted that even though SMEs have vulnerable issues related to their size and limited resources, they show a higher adaptability and flexibility level that enables them to resilience. Samantha (2018) investigated SMEs' resilience in response to natural disasters such as floods in Sri Lanka and found the need for partnership and cooperation among SMEs to be resilient. Iborra et al. (2020) suggested that SMEs should respond to changing environments by employing ambidexterity and strategic competencies. Furthermore, Herbane (2010) highlighted the importance of crisis management in managing SMEs' vulnerability. Herbane (2019) reconfirmed that SMEs' use to formalize crisis management varies based on their geographic location, personal networks, the specific impact of crisis events, and the entrepreneurs' attitudes towards crisis prevention.

Table 2. Co-Citation Analysis

No.	Node	Clstr	Btwnness	Clseness	PgRank	Topic
1.	Barney (1991)	1	244,3068 5	0,0109 8	0,0280 4	Resource-Based View

2.	Teece (1997)	1	292,59510	0,01123	0,03414	Dynamic Capabilities
3.	Teece D.J.	1	59,10619	0,00917	0,02433	Dynamic Capabilities
4.	Fornell (1981)	1	46,28950	0,00885	0,01936	SEM
5.	Hair (2019)	1	46,22531	0,00885	0,01938	SEM
6.	Ponomarov (2009)	1	1,68829	0,00763	0,02152	SC resilience
7.	Henseler (2015)	1	12,02525	0,00813	0,01437	SEM-PLS
8.	Ivanov (2020)	1	0,00000	0,00613	0,01106	SC resilience
9.	Podsakoff (2003)	1	84,52402	0,00885	0,01524	Measurement model
10.	Golgeci (2020)	1	19,94758	0,00813	0,02275	SC resilience
11.	Lumpkin (1996)	1	8,58465	0,00813	0,01853	Entrepreneurial orientation
12.	Miller (1983)	1	20,47636	0,00813	0,01721	Entrepreneurial orientation
13.	Pettit (2013)	1	60,90706	0,00885	0,01162	SC resilience
14.	Chowdhury (2017)	1	1,22162	0,00775	0,01823	SC resilience
15.	Ivanov D.	1	2,99329	0,00709	0,00799	SC resilience
16.	Juttner (2011)	1	58,10884	0,00787	0,01703	SC resilience
17.	Sullivan-Taylor (2011)	2	64,64975	0,01020	0,04805	Org. resilience
18.	Lengnick-Hall (2011)	2	42,42577	0,00980	0,03772	Org. resilience
19.	Bhamra (2011)	2	87,60181	0,01020	0,03755	Org. resilience
20.	Linnenluecke (2017)	2	76,87301	0,01000	0,03852	Org. resilience
21.	Ates (2011)	2	56,70839	0,00980	0,03853	Org. resilience
22.	Eggers (2020)	2	69,30905	0,00862	0,01874	SMEs resilience in time of crisis
23.	Gunasekaran (2011)	2	86,27933	0,01041	0,03250	Org. resilience
24.	Duchek (2020)	2	70,02743	0,00961	0,02960	Org. resilience
25.	Ratten V.	2	3,18321	0,00819	0,01247	Covid impact on entrepreneurship

26.	Bullough (2013)	2	3,50314	0,0081 9	0,0230 2	Entrepreneurial resilience
27.	Coronavirus (Covid-19).	2	3,51638	0,0064 9	0,0125 8	
28.	Burnard (2011)	2	0,39858	0,0080 6	0,0352 3	Org. resilience
29.	Conz (2020)	2	5,23045	0,0080 6	0,0204 2	Org. resilience (Firm)
30.	Dahles (2015)	2	6,50355	0,0078 1	0,0211 4	Org. resilience (Business)
31.	Juergensen (2020)	2	11,90934	0,0086 2	0,0194 9	SMEs resilience
32.	Smallbone (2012)	2	1,40108	0,0076 9	0,0260 2	SMEs resilience
33.	Braun (2006)	2	0,39858	0,0080 6	0,0135 1	Thematic Analysis
34.	Hillmann (2021)	2	9,73144	0,0090 9	0,0220 6	Org. resilience
35.	Williams (2017)	2	10,99554	0,0087 7	0,0278 6	Org. resilience - crisis management
36.	Annarelli (2016)	2	3,32007	0,0084 7	0,0162 0	Org. resilience
37.	Iborra (2020)	2	2,68955	0,0084 7	0,0188 7	SMEs resilience
38.	Donthu (2020)	2	0,39858	0,0080 6	0,0115 7	Editorial - COVID-19 impact on business
39.	Ortiz-De- Mandojana (2016)	2	1,35571	0,0078 1	0,0232 8	Org. resilience
40.	Pal (2014)	2	0,67855	0,0075 7	0,0234 3	SMEs resilience
41.	Bullough (2014)	2	1,02186	0,0076 9	0,0105 2	Entrepreneurial resilience
42.	Herbane (2010)	2	0,00000	0,0057 4	0,0117 5	SMEs resilience
43.	Papadopoulos (2020)	2	15,56940	0,0084 7	0,0137 5	Opinion - SMEs resilience
44.	Small And Medium Enterprises (Smes).	2	0,51298	0,0074 6	0,0066 7	
45.	Somers (2009)	2	9,81882	0,0084 7	0,0124 1	Org. resilience
46.	Adam N.A.	2	0,00000	0,0031 3	0,0058 9	SMEs resilience
47.	Ayala (2014)	2	0,79886	0,0075 7	0,0101 0	Entrepreneurial resilience

48.	Herbane (2019)	2	0,18963	0,0065 7	0,0152 9	SMEs resilience
49.	Samantha G.	2	0,00000	0,0030 5	0,0042 4	SMEs resilience

The third group is the co-citation articles that investigated organizational resilience as the response to the COVID-19 crisis, including Eggers (2020), Ratten (2020), Juergensen et al. (2020), Papadopoulos et al. (2020), and Adam & Alarifi (2021) with betweenness score equal to 69.309, 3.183, 11.909, 15.569, and 0.000. The number of co-citation articles investigating organizational resilience in responding COVID-19 crisis is limited. It was normal because the articles were published later so that only the latest work would be cited. Eggers (2020) and Juergensen et al. (2020) conducted a literature review and a conceptual paper to explore the potential impact of COVID-19 on the business sector and proposed policy recommendations. Eggers (2020) found that the crisis resulted in more challenges regarding resource availability and liquidity among SMEs and proposed flexible decision-making and improved customer relationships to cope with those challenges. Juergensen et al. (2020) described short-term and long-term challenges that SMEs and policymakers should anticipate. Furthermore, Ratten (2020) described the impact of COVID-19 on culture, lifestyle, and social entrepreneurship because it has not yet been explored extensively. Papadopoulos et al. (2020) highlighted the potential of digital technology to enhance SMEs' capability in facing extreme events like COVID-19. Papadopoulos et al. (2020) proposed relevant research avenues for further investigation. Finally, Adam & Alarifi (2021) conducted empirical research on SMEs and found that innovation practices significantly contribute to SMEs' survival in time of COVID-19 crisis, and external support is the critical factor enabling SMEs' innovation practice.

According to the co-citation analysis results, we found that Cluster 1 consists of articles that propose theoretical concepts regarding organizational strategy to gain competitive advantage and achieve business success, such as RBV (Barney, 1991), dynamic capabilities (Teece et al., 1997), entrepreneurial orientation (Miller, 1983; Lumpkin, 1996), and supply chain resilience (Chowdhury & Quaddus, 2017; Gölgeci & Kuivalainen, 2020; Ponomarov & Holcomb, 2009). However, the second cluster consists of articles investigating organizational resilience, specifically in the various contexts of crises, such as economic crises, COVID-19 crisis, and natural disasters. We also found articles focusing on developing the conceptual framework as the resilience topic in business fields is relatively new and needs further investigation (Burnard & Bhamra, 2011; Conz & Magnani, 2020; Donthu & Gustafsson, 2020). We also found two types of resilience in the co-citation articles: supply-chain resilience and organizational resilience. Organizational resilience defined as the comprehensive concept that represents the business entity's ability to cope with uncertainty due to crisis, competitive business environment, and disaster. However, supply chain

resilience discusses explicitly the ability of business entities to maintain their supply chains that are challenged by the same factors of uncertainty. Supply chain resilience suits selected business sectors such as manufacturing, food and beverage, and retail. Nevertheless, through the co-citation analysis result, we identified relevant theoretical frameworks related to the resilience of SMEs and the critical factors that enable them to remain resilient amidst various crises.

Co-occurrence Analysis

This study conducted a co-occurrence analysis using keywords plus data from the collected articles. Analyzing these keywords helps researchers identify thematic areas within the emerging knowledge surrounding SME resilience of the former studies (see: Fakhar Manesh et al., 2021; López-Fernández et al., 2016). This understanding is crucial for developing theoretical frameworks related to SME resilience (Caputo et al., 2021). We used Keyword Plus because it is effective for analyzing the knowledge structure of scientific fields and helps researchers mitigate the researchers' bias and risks on manually tagging content (Caputo et al., 2021; Zhang et al., 2016). The co-occurrence analysis was limited to only 50 words in clustering with a minimum of five words of minimum cluster frequency per thousand documents. After the first run, we found several synonyms and non-relevant words. Therefore, we refined the data by setting up the "small and medium enterprise," "small and medium-sized enterprise," "small-and-medium enterprise," and "small business" as synonyms for small-and-medium enterprise, "digital transformation" and "digitization" as synonyms for digital transformation, and "covid-19" and "pandemic" as a synonym for "pandemic." Furthermore, we removed the word "article," "questionnaire survey," "qualitative analysis," "literature review", "regression analysis," "numerical model", "empirical analysis", "research work", "Indonesia", "united kingdom", "united states", "malaysia", "china", "italy", "india", "european union", "spain", and "malaysia" because they were not relevant with the content of topic about SMEs resilience and tended to represent the area of sampling and research method of collected articles. We also applied those conditions to the word cloud. This analysis strategy resulted in 50 of the 1,269 keywords plus and clustered into two clusters. The co-occurrence analysis results are presented in Table 3. Furthermore, the connections between keywords are presented in Figure 3. Each cluster is differentiated by the colour; the size of connection is represented by the line thickness between keywords, and the occurring score is represented by the size of circle of each keyword.

Figure 3. Thematic Map



10, BC: 36.3298). According to the keywords in Cluster 1, resilience issues of SMEs can arise from various challenges, including natural disasters, business competition, and pandemics (Fang et al., 2020; Cowling et al., 2020; Carayannis et al., 2025; Shore et al., 2024). These challenges can threaten supply chains (Ali et al., 2017; Nayal et al., 2023; Karmaker et al., 2023) and overall SMEs' organizational sustainability (Caldera et al., 2019; Carayannis et al., 2025; Khan et al., 2025). SME supply chain resilience has been a significant focus of researchers in the field of SME resilience. The supply chain of manufacturing SMEs is considerably more vulnerable to global shocks and high market volatility in the current economy. Researchers highlight this issue to encourage SMEs to build supply chain agility through strategic redundancy and flexibility to maintain operational continuity (Dey et al., 2024; Khan et al., 2025). Digital technologies such as AI, Blockchain, and IoT could enable SMEs to continuously anticipate specific barriers with targeted strategies to foster supply chain agility (Dey et al., 2024; Khan et al., 2025). These issues emphasize the importance of digital transformation in improving the agility of SMEs' supply chain and the adaptability of their business model. Holl and Rama (2024) highlighted that digital technology enhances competitiveness, enabling organizations to identify challenges and opportunities more quickly, and that good businesses tend to encourage the adoption of digital innovation.

Furthermore, SMEs need to conduct risk assessments and collaborate with stakeholders to support careful strategic decision-making and develop dynamic capabilities to enhance their resilience (Fang et al., 2020; Gottschalck et al., 2024; Zighan et al., 2022). Risk assessment is critical to ensuring the quality of decision-making by identifying potential risks and managing them to prevent and anticipate them (Dey et al., 2024; Safari et al., 2024). Moreover, collaboration through consortium, community, or stakeholder support can help SMEs to access information, knowledge, skills, human or technological resources, and even financial resources, which improve the company's dynamic capability in order to generate resilience capability (Ali et al., 2017; Han & Trimi, 2022; Sagala & Ori, 2025; Zighan et al., 2022). Safari et al. (2024) emphasize that collaboration, risk management, and the effective use of information technology are crucial for resilience among SMEs.

The second cluster is labeled as "small-and-medium enterprise." The strong occurring keywords in Cluster 2 are small-and-medium enterprise (O: 145, BC: 0), covid-19 (O: 65, BC: 67.2360), sustainability (O: 49, BC: 14.4757), business (O: 35, BC: 48.3476), innovation (O: 29, BC: 19.0351), sustainable development (O: 29, BC: 18.3202), entrepreneur (O: 28, BC: 52.5845), business development (O: 22, BC: 38.4241), manufacturing (O: 19, BC: 60.1389), digital transformation (O: 15, BC: 31.2123), and economic impact (O: 15, BC: 22.3075), vulnerability (O: 13, BC: 9.9203), crisis management (O: 13, BC: 10.8797), economic development (O: 10, BC: 3.5181), and organizational framework (O: 10, BC: 12.8221). The second cluster also indicates the source of the crisis, and the strategies SMEs could implement

to manage adversity and gain resilience. However, it contains more various and specific keywords of strategies. Firstly, we found that sustainability is one of the most occurring keywords. Sustainability terms can be classified into two contexts: business sustainability (Khan et al., 2025; Gregurec et al., 2021; Carayannis et al., 2025) and environmental sustainability (Caldera et al., 2019; Papademetriou et al., 2023; Achuthan et al., 2025).

The environmental issues are also becoming an emerging topic in the field of SMEs' resilience by highlighting climate change, green concerns, and sustainable business practice of SMEs as a critical agenda for resilience (DiBella et al., 2023; Damiano & Valenza, 2025; Papademetriou et al., 2023). Primary researchers highlighted that fostering green competencies and sustainability orientation allows SMEs to adapt to new environmental realities and develop shock-resistant models (Damiano & Valenza, 2025; DiBella et al., 2023; Papademetriou et al., 2023; Xie et al., 2025). A sustainability orientation would benefit SMEs by improving supply chains, strengthening human resources, and enabling a circular economy (Elf et al., 2022; Damiano & Valenza, 2025; Papademetriou et al., 2023). Moreover, researchers promote the adoption of digital technology as a strategic solution to enabling the sustainable business agenda (Damiano & Valenza, 2025; Papademetriou et al., 2023).

At the same time, in terms of business sustainability, it is defined as the long-term survival of the business operations of SMEs. According to Bansal and DesJardine (2014:71), business sustainability is defined as "*the ability of firms to respond to their short-term financial needs without compromising their (or others') ability to meet their future needs.*" Therefore, business sustainability is related to a company's ability to maintain its short-term profitability and long-term income stream through relevant business strategy, innovation, and risk mitigation (Bansal & DesJardine, 2014). At the micro level, business sustainability is related to the survival of the business entity, while at the macro level, it is related to the economic systemic impact of the business entity's survivability when firms collectively fail (Bansal & DesJardine, 2014; Hayes & Abernathy, 1980). In this study, we focus on sustainability from business perspective rather than ecological sustainability. The term business sustainability is more relevant to representing business resilience among SMEs, as the central issue is how the company manages adversity to remain in the market. SME resilience is defined as the ability to withstand exogenous shocks and effectively orchestrate resources to capitalize on market volatility to maintain survivability (Alshebami, 2025; Saad et al., 2021).

Furthermore, in cluster 2, we also found that COVID-19 and the financial crisis are consistently used to indicate circumstances of adversity that challenge SME resilience (Cowling et al., 2020; Roffia & Dabić, 2024; Sharma et al., 2024). The findings also indicate the need for organizational reconfiguration and transformation through factors such as innovation, adaptive management, crisis management, digital transformation, leadership, and policymaking (Xie et al., 2025; Fang et al., 2020; Achuthan et

al., 2025; Gamage et al., 2024; Safón & Iborra, 2025). It also highlighted the actor (entrepreneur), the sector (SMEs, manufacturing, tourism), and the goal (competitiveness, economic development, growth).

The primary articles indicate that entrepreneurs' resilience is the critical antecedent at the individual level that activates the dynamic capabilities at the organizational level to generate SME resilience (Wang & Sun, 2025; Fang et al., 2020). In line with the theoretical framework, entrepreneur is considered as the driver of business transformation in the organizational level in response to the adversity (Teece, 2012; Kotsios, 2023; Sagala & Óri, 2025). Therefore, entrepreneur's actions, such as leadership, individual adaptability, and an innovative mindset, were the critical factors in initiating and executing a strategy to build organizational resilience.

Moreover, primary articles also indicate that SMEs should be adaptive in responding to market volatility to become resilient (Zighan et al., 2022; Sagala & Óri, 2025). Additionally, as the business environment continues to change due to economic crises and market volatility, SMEs must continuously adapt their business models to remain relevant (Zighan et al., 2022; Sagala & Óri, 2025). The co-cited articles highlighted that the resilience of SMEs is determined by their adaptability and flexibility level in response to crises and adversity (Smallbone et al., 2012; Iborra et al., 2020; Pal et al., 2014). Therefore, we emphasize that the improved dynamic capabilities of SMEs in responding to adversity and market volatility are expected to lead SMEs to an adaptive business model. As a result, adaptive SMEs would remain competitive and sustain economic growth during crises and adversity (Carayannis et al., 2025; Shore et al., 2024).

To initiate innovation, adaptive management, and digital transformation, SMEs need dynamic capabilities and appropriate strategies (Teece, 2012). In the context of SMEs, which have limited resources, strategies for innovation, adaptive management, and transformation may differ from those of large companies. In this case, primary and co-cited articles promote an ambidexterity strategy to enable transformation (Iborra et al., 2020; Trieu et al., 2024). Trieu et al. (2024) highlighted the need for an ambidexterity strategy, which balances exploiting current assets for immediate stability with exploring new opportunities to ensure future relevance and long-term survival. Ambidexterity strategy enables SMEs to optimize their existing assets while seeking alternative opportunities from external knowledge and resources during adversity. Consistent with Teece's (2012) dynamic capabilities framework, the primary articles also indicate that the ambidexterity strategy requires learning capabilities and organizational learning mechanisms (Al Omoush et al., 2025; Zighan et al., 2022). Learning allows firms to treat a crisis as a laboratory, using the disruption to refine internal processes and gain knowledge that improves long-term survival (Kyrdoda et al., 2023). Additionally, Safón and Iborra (2025) argue that strategic exploration acts as a countercyclical factor, which likely led to slow growth in the pre-crisis period but will provide significantly better resilience outcomes when shocks occur through an adaptive business model.

In general, the findings from the keyword analysis are consistent with the co-citation analysis findings, which addresses topics relevant to dynamic capabilities, adaptive management, entrepreneurial orientation and innovation, crisis management, security, digital transformation, supply chain resilience, and various disasters impacting businesses. To mitigate bias, we will further explore this subject by reviewing the literature on the 71 most cited articles presenting these insights in the Discussion section. Appendix 1 contains the review tabulation for the 71 most cited articles.

Table 3. Result of Thematic Map

N o.	Words	Occu r- renc es	Cluste r	Btw- Central ity	Clos- Central ity	Pagera nk- Central ity
Cluster Label: <i>Resilience</i>						
1	resilience	26	1	20,0042	0,0112	0,0278
2	decision making	15	1	42,7598	0,0114	0,0216
3	supply chain management	16	1	9,6855	0,0100	0,0203
4	supply chains	15	1	19,1816	0,0102	0,0189
5	climate change	12	1	25,3306	0,0116	0,0140
6	risk assessment	11	1	65,5137	0,0125	0,0155
7	stakeholder	10	1	36,3298	0,0116	0,0156
8	artificial intelligence	7	1	23,0745	0,0112	0,0118
9	cyber security	7	1	2,2222	0,0084	0,0070
10	disaster management	7	1	10,9178	0,0106	0,0092
11	organisational	7	1	16,2948	0,0107	0,0109
12	competition	6	1	19,5973	0,0107	0,0110
13	dynamics capability	6	1	12,4563	0,0098	0,0106
14	flooding	6	1	1,6230	0,0090	0,0078
15	industry 4.0	6	1	5,0117	0,0092	0,0075
16	supply chain resilience	6	1	3,4101	0,0097	0,0095
Cluster Label: <i>small-and-medium enterprise</i>						
17	small-and-medium enterprise	145	2	0	0,0068	0,1467
18	covid-19	65	2	67,2360	0,0119	0,0666
19	sustainability	49	2	14,4757	0,0103	0,0546
20	business	35	2	48,3476	0,0119	0,0375
21	innovation	29	2	19,0351	0,0113	0,0339
22	sustainable development	29	2	18,3202	0,0103	0,0324
23	entrepreneur	28	2	52,5845	0,0121	0,0344
24	business development	22	2	38,4241	0,0117	0,0279
25	manufacturing	19	2	60,1389	0,0126	0,0255

26	digital transformation	15	2	31,2123	0,0117	0,0170
27	economic impact	15	2	22,3075	0,0114	0,0188
28	vulnerability	13	2	9,9203	0,0107	0,0139
29	crisis management	13	2	10,8797	0,0106	0,0198
30	economic development	10	2	3,5181	0,0099	0,0132
31	organizational framework	10	2	12,8221	0,0113	0,0170
32	competitiveness	9	2	22,7868	0,0116	0,0136
33	financial crisis	9	2	14,8763	0,0104	0,0102
34	government	9	2	16,3862	0,0108	0,0164
35	human	9	2	9,9559	0,0096	0,0053
36	adaptive management	8	2	2,6499	0,0094	0,0101
37	developing world	8	2	28,7048	0,0113	0,0121
38	economic growth	8	2	17,1150	0,0112	0,0137
39	industrial performance	8	2	20,1241	0,0108	0,0118
40	strategic approach	8	2	20,7702	0,0111	0,0140
41	ecosystem resilience	7	2	6,9514	0,0101	0,0104
42	employment	7	2	12,6207	0,0108	0,0127
43	epidemic	7	2	11,5258	0,0104	0,0115
44	knowledge	7	2	23,8272	0,0116	0,0128
45	leadership	7	2	19,3006	0,0109	0,0111
46	management practice	7	2	14,6311	0,0112	0,0108
47	policy making	7	2	15,6495	0,0108	0,0126
48	tourism development	7	2	13,4897	0,0103	0,0091
49	marketing	6	2	50,1236	0,0101	0,0105
50	social media	5	2	21,9400	0,0111	0,0104

Discussion

The Concept of SMEs Resilience

Linnenluecke (2017) cited Staw et al. (1981) and Meyer (1982) in explaining the origin concept of organizational resilience. Staw et al. (1981) argue that negatively framed situations lead organizations to avoid risk and maladaptive outcomes through 'threat-rigidity effects'. In these situations, individuals, groups, and organizations rely on well-learned or dominant responses instead of being flexible and adapting to challenges. They suggest that external threats inherently threaten organizations (Staw et al., 1981). However, Meyer (1982) argues that organizations can perform adaptability by absorbing impact through first-order change, which involves single-loop learning or adopting new practices and reconfigurations through second-order change and double-loop learning. Relevant to this, Sheffi and Rice (2005) argue that organizational resilience is driven by the ability to respond

quickly to disruption through building capabilities that can sense threats. Ates and Bititci (2011) also propose the change process as the key enabler of SME resilience. Bhamra et al. (2011) argue that the concept of resilience discusses fundamental change within the element or systems following the impact. Fundamental change may relate to the organization's capacity and capability to respond during periods of difficulty through an adaptation process (Burnard & Bhamra, 2011). In this context, a negative situation or turbulent environment may trigger SMEs to alter their organizational structure to avoid risks. The negative situation could be financial crisis, natural disaster, pandemic like COVID-19, and uncertainty due to highly market competition. To build organizational resilience, SMEs should consistently and proactively prioritize readiness for change in their business strategies, even without a crisis. Additionally, they should focus on implementing changes swiftly and effectively within the organization (Ates & Bititci, 2011).

In the SME context, Sullivan-Taylor and Branicki (2011) argue that an uncertain business environment has become business as usual for small firms, which results in higher tolerance for ambiguity and change. This means that changing processes has become a daily activity for small firms exposed to a highly uncertain business environment. Therefore, flexibility and adaptability have become behavioral characteristics of SMEs (Sullivan-Taylor & Branicki, 2011; Vossen, 1998). However, according to OECD (2016) and WEF (2022), more than 50% of SMEs went bankrupt in the first five years, indicating that SMEs still face survivability issues. Cowling et al. (2020) also found that smaller businesses face more financial constraints that pose more challenges due to uncertainties. Additionally, the lack of resources, human resources, and technology readiness escalates the vulnerability of SMEs in facing a crisis (Lai et al., 2016; Thukral, 2021). SMEs also have an inter-organizational dependency, and the owner or manager tends to 'muddle through' when facing uncertainty (Sullivan-Taylor & Branicki, 2011). Therefore, even though SMEs already have behavioral characteristics supporting their resilience, they still have organizational and managerial issues that hinder them from coping with uncertainty and using it as a momentum to transform.

SMEs need to implement proactive management strategies and continuous learning to enhance their resilience. According to Gunasekaran et al. (2011), resilience is a crucial internal factor that influences organizational behavior and is closely linked to the managerial characteristics of SMEs in shaping their overall effectiveness. In other words, Ates and Bititci (2011) emphasize the importance of organizational and human dimensions in facilitating long-term planning and fostering effective external communication to effectively implement change management in response to disturbances. The quality of relationships between humans and organizations is critical to generating resilience (Bhamra et al., 2011). Therefore, in developing a strategy for resilience, researchers and SME actors should consider the interaction between human and organizational aspects

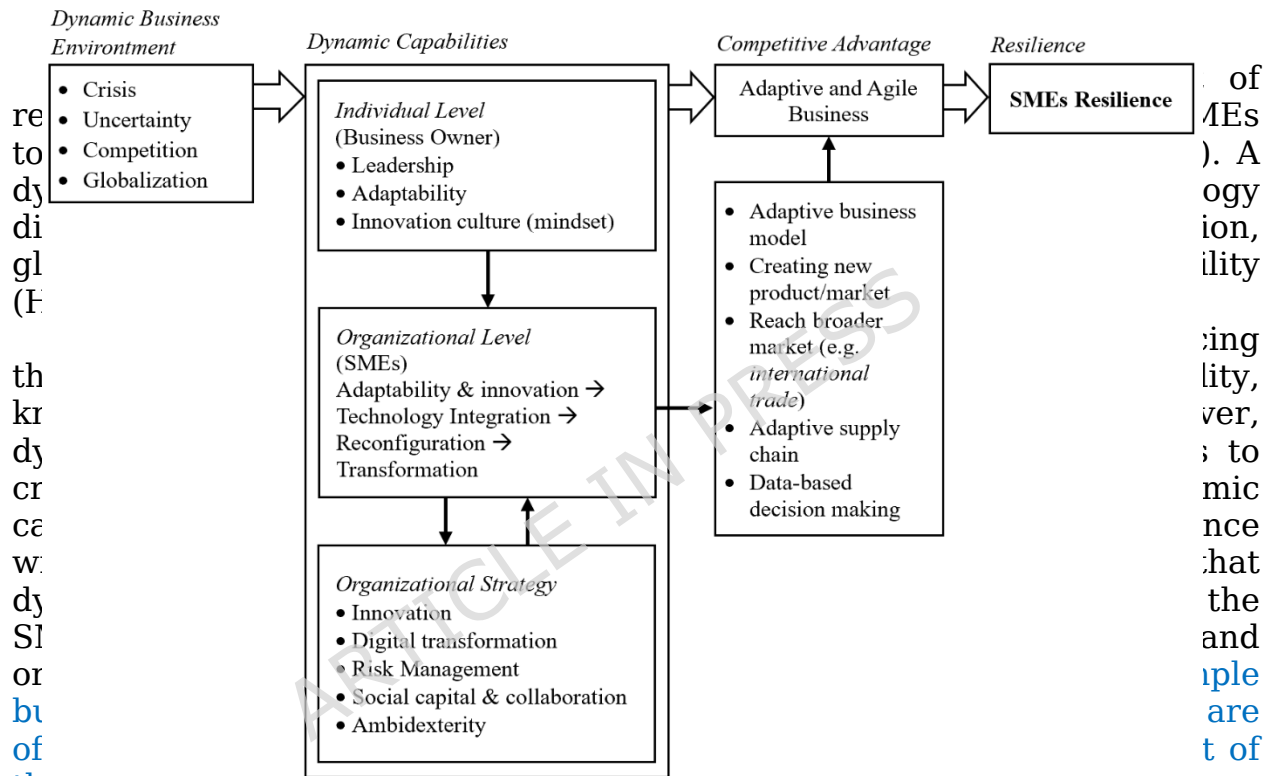
appropriately. Moreover, due to their small size, SMEs' adaptability and flexibility should be leveraged as a significant advantage in navigating changes (Sullivan-Taylor & Branicki, 2011). In this case, the entrepreneur or the owner-manager should initiate actions by sensing opportunities, proactive learning, improving existing capabilities, creating new values to generate new competitive advantages that enable SMEs resilience (Sagala & Ori, 2025).

Strategy to be Resilient SMEs

According to the co-citation analysis, Barney (1991) and Teece et al. (1997) were found to be the strongest co-cited articles. Therefore, we adopted the RBV (Barney, 1991) and dynamic capabilities (Teece et al., 1997) as the theoretical foundation to elaborate the strategy to generate resilience among SMEs. According to Barney (1991), businesses require unique and valuable resources, as well as the capability to manage them, in order to achieve a competitive advantage and win the competition in the market. The company's capacity to overcome the competition is closely linked to an organization's ability to navigate crises or disturbances. By developing competitive advantages that align with the current business environment, companies can enhance their chances of resilience during times of crisis or uncertainty. Ownership of distinctive and diverse resources, including physical, human, and organizational resources, enables companies to create value, which is essential for gaining a competitive advantage (Borch & Madsen, 2007; Ghobakhloo & Tang, 2015; Stacho et al., 2013). However, the ability to effectively manage these resources is the key to creating value and sustaining a competitive advantage (Barney, 1991). That ability would relate to the dynamic capabilities, especially when facing uncertainty and dynamic business environment (Teece et al., 2012). Dynamic capabilities are a company's ability to reconfigure internal and external resources and make an evolution in the company responding to a dynamic business environment (Eisenhardt & Martin, 2000; Teece et al., 1997; Wang & Ahmed, 2007). Dynamic capabilities encompass a company's ability to adapt, absorb, and innovate, enabling the company to integrate, reconfigure, renew, and recreate business processes in a dynamic environment (Wang & Ahmed, 2007). Through those capabilities, the company could create new competitive advantage to help it adapt to the business ecosystems and enhance the performance (Leonard-Barton, 1992; Teece et al., 1997). That concept is relevant to business resilience capabilities, which discusses the company's ability to transform the business when facing a turbulent event to survive in the market and bounce back to the previous equilibrium.

Teece et al. (1997) argue that dynamic capabilities aim to analyze and capture the source of wealth creation of a company operating in a rapid technology change environment. Dynamic capabilities suggest that wealth creation depends on company capabilities in creating new competitive advantages by appropriately emphasizing the critical role of strategic management in transforming the business to meet the demands of a changing environment (Teece et al., 1997). The idea of dynamic capabilities aligns with

the concept of SME resilience, which discusses the ability of SMEs to adapt and sustain to thrive in turbulent change (Ates & Bititci, 2011). SMEs' resilience is the result of SMEs' complex abilities to transform the business when facing adversity or a dynamic business environment. According to the definition of dynamic capabilities, in the proposed framework, we distribute the antecedents of resilience into three phases of construct, including the dynamic business environment as the stimulus, the dynamic capabilities as the capabilities that SMEs should develop, and the competitive advantage as the constructive response to the uncertainty to achieve resilience. The structured knowledge map of SMEs resilience is presented in Figure 4.



the decision-making in SMEs will turn to a person who is the entrepreneur or owner-manager (Bhamra et al., 2011; Keong & Mei, 2010). Branicki et al. (2018), Doern (2016), and Fang et al. (2020) found that SME owners play a crucial role in fostering organizational resilience strategies through their attitudes, behaviors, and leadership approaches. The entrepreneurial resilience of the SME owner-manager is a critical factor in activating appropriate responses to adversity during the crisis, leading to proactive decision-making at the organizational level to build organizational resilience (Fang et al., 2020; Fatoki, 2018; Santoro et al., 2020). Therefore, the resilience of an entrepreneur or owner-manager, represented by their leadership, adaptability, and innovation, is considered the primary driver of adaptability and transformation at the organizational level. The SME's owner or manager is the key person who should initiate transformation in the business model to respond to the dynamic business environment.

SME's dynamic capabilities are the essential antecedent to designing appropriate strategies to transform businesses to face adversity. A set of capabilities that work in harmony and consider strategic business alignment carefully in addressing the actual company's business problem would result in a new competitive advantage for SMEs. Adaptability and innovation are the key factors of SME to respond to uncertain environments (Gregurec et al., 2021; Klein & Todesco, 2021). Innovation would be the enabler of SMEs to identify opportunities and drivers to direct strategy to execute that opportunity (Hrivnák et al., 2021). Innovation has been proposed by most business researchers as the critical factor of SMEs to gain competitive advantage (Abrahám et al., 2015; Robertson et al., 2022; Toomsalu et al., 2019). Additionally, researchers propose digital transformation as an innovative response to earn competitive advantage and resilience (Audretsch & Belitski, 2021; Han & Trimi, 2022; Hossain et al., 2022; Khurana et al., 2022; Klein & Todesco, 2021). Therefore, we propose technological integration on the SME business model at the organizational level to thoroughly support reconfiguration and business transformation.

At the strategic level, we consistently promote innovation and digital transformation as the organizational strategy for enabling SME business adaptability. We also emphasize risk management strategies to anticipate the negative impact of future crises or shocks (Starr et al., 2003). Furthermore, we propose leveraging social capital to initiate collaboration among SMEs to manage resource limitations during crises and natural disasters (Fang et al., 2020; Ozanne et al., 2022; Suriyankietkaew et al., 2022; Torres et al., 2019). Social capital provides SMEs with opportunities to receive support from their stakeholders, including business partners, the community, customers, or investors, through collaborative work. Therefore, we also included collaboration as one of the critical strategies to generate SME resilience. Finally, we propose ambidexterity as a significant strategy for fostering SME adaptability during the crisis (Iborra et al., 2020; Trieu et al., 2024). The ambidexterity strategy is closely related to the adaptive business model, as it encourages SMEs to exploit their current resources and explore more resources and opportunities simultaneously to create new business value. It would demand SMEs to adapt the business model continuously.

In the proposed framework, we consider the adaptive business model to be the outcome of the dynamic capabilities that SMEs develop in the face of uncertainty. As mentioned by Teece (2022), dynamic capabilities of the organization enable it to reconfigure its business in response to a rapidly changing environment to sustain competitive advantage. Therefore, we argue that dynamic capabilities should yield an adaptive business model that enhances SMEs' agility in the face of uncertainty (Fang et al., 2020; Klein & Todesco, 2021; Gregurec et al., 2020; Ashiru et al., 2022; Kamalahmadi & Parast, 2016). The capability of SMEs to adapt their business models in response to market changes indicates their agility in confronting uncertainties. This agility contributes to SMEs' competitiveness during unpredictable times, which, in turn, generates resilience (Girod et al., 2023).

SMEs that maintain stable performance in dynamic environments are classified as resilient SMEs.

According to the contingency principles, the proposed strategy is adaptable depending on the company's needs. The appropriate strategy would help the company to create new competitive advantages. The nature of these competitive advantages may vary depending on the industry, target market, and company's unique characteristics. The key point is that SMEs should have a new and adaptive business model, creating new value in their business process and product, reaching a broader market, creating more robust supply chain channels, and making decisions based on data. Adaptive and agile businesses are the new competitive advantage of SMEs that are expected to lead them toward a resilient organization.

Further Research Agenda

According to conceptual knowledge, we propose strategic topics for further research agenda as follows.

- 1. Validating the proposed framework through empirical study.*

Validating the proposed framework, both qualitatively and quantitatively, is the priority of the research agenda. Researchers need to validate the proposed knowledge map to get internal consistency related to the theoretical foundation of the framework and the reliability of the framework to explain the empirical phenomena of SME resilience. The empirical study would deliver a robust model and framework for explaining SMEs' resilience. The robust framework contributes to provide trustworthy knowledge that could be adopted as the resilience strategy by the SME actors and practitioners.

- 2. Applied research in identifying resilience strategy in facing uncertainties due to high tension competition and rapidly changing business environment.*

Most of the primary studies investigate SMEs' resilience in response to the crisis resulting from COVID-19. However, the business environment is currently becoming more challenging for SMEs' survival due to technology destruction, globalization, and massive innovation. Additionally, the current study builds on theoretical perspectives and the findings of previous research, which provide general knowledge. Meanwhile, SMEs need explicit practical knowledge as guidance in dealing with dynamic business environments. Therefore, exploring further practical strategic actions in digital transformation, risk management, ambidexterity, and collaboration to respond to unpredictable or competitive situations in the SME context is essential. Business scholars, SME actors, and regulators need practical guidance on operationalizing that strategy in the field. Therefore, research into practical strategic actions must also be further explored. A quasi-experiment, action research, and the Delphi method would be beneficial research methods for this topic.

- 3. Investigation of the relation of supply chain resilience and business resilience among SMEs.*

The primary studies have not clearly discussed the relationship between supply chain resilience and SME resilience. Further investigation regarding the extent to which supply chain resilience can cover a specific issue based on the type of business sector (e.g., manufacture, service, culinary, retail) is also significant in adding theoretical and practical insight into the SMEs' resilience fields. The investigation of specific mechanisms of adaptive supply chain would be beneficial in practice, such as collaborative work with the supplier, integration into the global value chain, or social capital improvement through engagement in the business community in a certain field. Exploratory case study research and a quasi-experiment would be effective research methods for investigating this topic.

4. *Investigating the relation of financial management and resilience.*

Regarding financial issues, financial management skills did not rise in the analysis as the critical factors. This indicates no significant research concerning financial management strategy in the SME resilience field. However, financial resources have become a critical barrier that challenges SMEs' resilience. Emerging financial technologies, venture capital, peer-to-peer lending, financial literacy and inclusion, and data-based decision-making were relevant topics to investigate in identifying an appropriate strategy for SMEs to manage their limited financial resources. Further investigation into the financial management strategy on SMEs' resilience would provide significant insight and enrich practical knowledge in the field.

5. *Empirical research and case study from developing countries.*

We found that European countries, specifically the United Kingdom and Italy, still dominate research productivity. There are still much space and area to elaborate on the specific characteristics of SMEs' resilience in developing countries. Institutional environments in developing countries may result in different resilience strategies compared to those in developed countries, following different contingency factors. Geographic (locational) landscape, market expectations, digital infrastructure, accessible knowledge, idiosyncratic factors, government institutional support, local regulation, and resource availability may affect the unique resilience strategy of SMEs in a developing country. Therefore, exploring and investigating SMEs' resilience strategies in developing countries would provide significant insights into the field of SME resilience studies. Comparative study between developing and developed countries would also yield insights into the generalizability and comparability of research findings.

Conclusion

This study aimed to develop knowledge maps related to SME resilience in published articles in the Scopus database. Based on the bibliometric analysis, we reproduced the knowledge map into structured mapping to deliver more systematic knowledge regarding SMEs' resilience. RBV and dynamic capabilities are the mainstream foundations of knowledge construction in

SME resilience research. The literature review of the co-citation and most-cited articles shows the interaction of individual and organizational aspects as the critical dimension in building SMEs' resilience. Entrepreneurial resilience was the critical driver of creating business strategy at the organizational level to manage resilience among SMEs. Furthermore, the current study also found that SMEs should practice adaptive strategy and transform their business to create a new competitive advantage to develop business resilience. The proposed framework provides the theoretical foundation for SMEs' strategies to build business resilience. Theoretically, the framework added a comprehensive view of SMEs' resilience strategy, both from an external point of view that considers the business environment as a challenge to SMEs' business resilience and the individual and organizational factors as the enablers of SMEs' business resilience. It implies guiding SMEs to operationalize the strategy to face disturbances in the business environment that challenge business survivability. By applying the framework to the SMEs' business model, SMEs could reform their business to generate new competitive advantages and resilience in the market.

Further research is needed to validate the proposed framework and explore more evidence from the fields. The organizational element contains several essential factors that SMEs should consider for further research: Innovation, digital transformation, collaborative work, and ambidexterity. In the individual aspect, entrepreneur resilience also needs further exploration as it is a topic with strong centrality. Finally, crisis, adversity, high-tension competition, rapid innovation of technology, and globalization are defined as a dynamic business environment that we consider to be the external aspects that stimulate resilience response in SMEs. A detailed further research agenda has been proposed in the previous section to explore more insight related to SMEs' resilience in facing a dynamic business environment.

This study has limitations regarding the limited database selection (only the Scopus database) and the fact that the study focuses on exploring knowledge only in published articles. Therefore, empirical investigation is necessary to confirm and validate the proposed knowledge map. Furthermore, this study probably does not cover the unique phenomenon as it needs more exploration in specific subjects. Inquiry into unique phenomena is also required to address appropriate decision-making in particular communities or countries.

References

- Abrahám, J., Strielkowski, W., Vošta, M., & Šlajs, J. (2015). Factors that influence the competitiveness of Czech rural small and medium enterprises. *Agricultural Economics (Czech Republic)*, 61(10), 450-460. <https://doi.org/10.17221/63/2015-AGRICECON>
- Achuthan, K., Sankaran, S., Roy, S., & Raman, R. (2025). Integrating sustainability into cybersecurity: insights from machine learning based topic modeling. *Discover Sustainability*, 6(1), 44.
- Adam, N. A., & Alarifi, G. (2021). Innovation practices for survival of small and medium enterprises (SMEs) in the COVID-19 times: the role of external

- support. *Journal of Innovation and Entrepreneurship*, 10(1). <https://doi.org/10.1186/s13731-021-00156-6>
- Adner, R., & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, 24(10), 1011-1025.
- Akgün, A. E., Cemberci, M., & Kircovali, S. (2023). The relationship between extreme contexts, organizational change capacity, and firm product and process innovation. *Management Decision*, 61(7), 2140-2172. <https://doi.org/10.1108/MD-06-2022-0856>
- Al Omoush, K., Lassala, C., & Ribeiro-Navarrete, S. (2025). The role of digital business transformation in frugal innovation and SMEs' resilience in emerging markets. *International Journal of Emerging Markets*, 20(1), 366-386.
- Ali, I., Nagalingam, S., & Gurd, B. (2017). Building resilience in SMEs of perishable product supply chains: enablers, barriers and risks. *Production Planning and Control*, 28(15), 1236-1250. <https://doi.org/10.1080/09537287.2017.1362487>
- Alshebami, A. S. (2025). Purpose-driven resilience: A blueprint for sustainable growth in micro-and small enterprises in turbulent contexts. *Sustainability*, 17(5), 2308.
- Andersen, T. C. K., Aagaard, A., & Magnusson, M. (2022). Exploring business model innovation in SMEs in a digital context: Organizing search behaviours, experimentation and decision-making. *Creativity and Innovation Management*, 31(1), 19-34. <https://doi.org/10.1111/caim.12474>
- Annarelli, A., & Nonino, F. (2016). Strategic and operational management of organizational resilience: Current state of research and future directions. *Omega (United Kingdom)*, 62, 1-18. <https://doi.org/10.1016/j.omega.2015.08.004>
- Ashiru, F., Nakpodia, F., & You, J. J. (2023). Adapting emerging digital communication technologies for resilience: evidence from Nigerian SMEs. *Annals of Operations Research*, 327(2), 795-823.
- Ates, A., & Bititci, U. (2011). Change process: A key enabler for building resilient SMEs. *International Journal of Production Research*, 49(18), 5601-5618. <https://doi.org/10.1080/00207543.2011.563825>
- Audretsch, D. B., & Belitski, M. (2021). Knowledge complexity and firm performance: evidence from the European SMEs. *Journal of Knowledge Management*, 25(4), 693-713. <https://doi.org/10.1108/JKM-03-2020-0178>
- Ayala, J. C., & Manzano, G. (2014). The resilience of the entrepreneur. Influence on the success of the business. A longitudinal analysis. *Journal of Economic Psychology*, 42, 126-135. <https://doi.org/10.1016/j.joep.2014.02.004>
- Bansal, P., & DesJardine, M. R. (2014). Business sustainability: It is about time. *Strategic organization*, 12(1), 70-78.
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>
- Bhamra, R., Dani, S., & Burnard, K. (2011). Resilience: The concept, a literature review and future directions. *International Journal of Production Research*, 49(18), 5375-5393. <https://doi.org/10.1080/00207543.2011.563826>
- Borch, O. J., & Madsen, E. L. (2007). Dynamic capabilities facilitating innovative strategies in SMEs. *International Journal of Technoentrepreneurship*, 1(1), 109-125. <https://doi.org/10.1504/IJTE.2007.014731>
- Boyack, K. W., & Klavans, R. (2010). Co-citation analysis, bibliographic coupling, and direct citation: Which citation approach represents the research front

- most accurately? *Journal of the American Society for Information Science and Technology*, 61(12), 2389-2404. <https://doi.org/10.1002/asi.21419>
- Branicki, L. J., Sullivan-Taylor, B., & Livschitz, S. R. (2018). How entrepreneurial resilience generates resilient SMEs. *International Journal of Entrepreneurial Behaviour and Research*, 24(7), 1244-1263. <https://doi.org/10.1108/IJEBR-11-2016-0396>
- Brown, R., Rocha, A., & Cowling, M. (2020). Financing entrepreneurship in times of crisis: exploring the impact of COVID-19 on the market for entrepreneurial finance in the United Kingdom. *International Small Business Journal*, 38(5), 380-390. <https://doi.org/10.1177/0266242620937464>
- Bullough, A., & Renko, M. (2013). Entrepreneurial resilience during challenging times. *Business Horizons*, 56(3), 343-350. <https://doi.org/10.1016/j.bushor.2013.01.001>
- Bullough, A., Renko, M., & Myatt, T. (2014). Danger zone entrepreneurs: The importance of resilience and self-efficacy for entrepreneurial intentions. *Entrepreneurship: Theory and Practice*, 38(3), 473-499. <https://doi.org/10.1111/etap.12006>
- Burnard, K., & Bhamra, R. (2011). Organisational resilience: Development of a conceptual framework for organisational responses. *International Journal of Production Research*, 49(18), 5581-5599. <https://doi.org/10.1080/00207543.2011.563827>
- Caldera, H. T. S., Desha, C., & Dawes, L. (2019). Evaluating the enablers and barriers for successful implementation of sustainable business practice in 'lean' SMEs. *Journal of Cleaner Production*, 218, 575-590.
- Caputo, A., Pizzi, S., Pellegrini, M. M., & Dabić, M. (2021). Digitalization and business models: Where are we going? A science map of the field. *Journal of Business Research*, 123(September 2020), 489-501. <https://doi.org/10.1016/j.jbusres.2020.09.053>
- Carayannis, E. G., Dumitrescu, R., Falkowski, T., Papamichail, G., & Zota, N. R. (2025). Enhancing SME resilience through artificial intelligence and strategic foresight: A framework for sustainable competitiveness. *Technology in Society*, 81, 102835.
- Chen, C., Ibekwe-Sanjuan, F., & Hou, J. (2010). The Structure and Dynamics of Co-Citation Clusters: A Multiple-Perspective Co-Citation Analysis. *Journal of the American Society for Information Science and Technology*, 61(7), 1386-1409. <https://doi.org/10.1002/asi.21309>
- Chowdhury, M. M. H., & Quaddus, M. (2017). Supply chain resilience: Conceptualization and scale development using dynamic capability theory. *International Journal of Production Economics*, 188(September 2015), 185-204. <https://doi.org/10.1016/j.ijpe.2017.03.020>
- Chowdhury, P., Paul, S. K., Kaisar, S., & Moktadir, M. A. (2021). COVID-19 pandemic related supply chain studies: A systematic review. *Transportation Research Part E: Logistics and Transportation Review*, 148(August 2020), 102271. <https://doi.org/10.1016/j.tre.2021.102271>
- Conz, E., & Magnani, G. (2020). A dynamic perspective on the resilience of firms: A systematic literature review and a framework for future research. *European Management Journal*, 38(3), 400-412. <https://doi.org/10.1016/j.emj.2019.12.004>

- Cowling, M., Brown, R., & Rocha, A. (2020). Did you save some cash for a rainy COVID-19 day? The crisis and SMEs. *International Small Business Journal*, 38(7), 593-604. <https://doi.org/10.1177/0266242620945102>
- Dahles, H., & Susilowati, T. P. (2015). Business resilience in times of growth and crisis. *Annals of Tourism Research*, 51, 34-50. <https://doi.org/10.1016/j.annals.2015.01.002>
- Damiano, R., & Valenza, G. (2025). Enacting resilience in small and medium enterprises following the sustainability path: a systematic literature review. *Strategic Change*, 34(2), 237-252.
- Demmer, W. A., Vickery, S. K., & Calantone, R. (2011). Engendering resilience in small-and medium-sized enterprises (SMEs): A case study of Demmer Corporation. *International Journal of Production Research*, 49(18), 5395-5413. <https://doi.org/10.1080/00207543.2011.563903>
- Dey, P. K., Chowdhury, S., Abadie, A., Vann Yaroson, E., & Sarkar, S. (2024). Artificial intelligence-driven supply chain resilience in Vietnamese manufacturing small-and medium-sized enterprises. *International Journal of Production Research*, 62(15), 5417-5456.
- DiBella, J., Forrest, N., Burch, S., Rao-Williams, J., Ninomiya, S. M., Hermelingmeier, V., & Chisholm, K. (2023). Exploring the potential of SMEs to build individual, organizational, and community resilience through sustainability-oriented business practices. *Business Strategy and the Environment*, 32(1), 721-735.
- Doern, R. (2016). Entrepreneurship and crisis management: The experiences of small businesses during the London 2011 riots. *International Small Business Journal: Researching Entrepreneurship*, 34(3), 276-302. <https://doi.org/10.1177/0266242614553863>
- Doern, R., Williams, N., & Vorley, T. (2019). Special issue on entrepreneurship and crises: business as usual? An introduction and review of the literature. *Entrepreneurship and Regional Development*, 31(5-6), 400-412. <https://doi.org/10.1080/08985626.2018.1541590>
- Donthu, N., & Gustafsson, A. (2020). Effects of COVID-19 on business and research. *Journal of Business Research*, 117(June), 284-289. <https://doi.org/10.1016/j.jbusres.2020.06.008>
- Duchek, S. (2020). Organizational resilience: a capability-based conceptualization. *Business Research*, 13(1), 215-246. <https://doi.org/10.1007/s40685-019-0085-7>
- Eggers, F. (2020). Masters of disasters? Challenges and opportunities for SMEs in times of crisis. *Journal of Business Research*, 116(May), 199-208. <https://doi.org/10.1016/j.jbusres.2020.05.025>
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: what are they? *Strategic Management Journal*, 21(10-11), 1105-1121. [https://doi.org/10.1002/1097-0266\(200010/11\)21:10/11<1105::AID-SMJ133>3.0.CO;2-E](https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E)
- Elf, P., Werner, A., & Black, S. (2022). Advancing the circular economy through dynamic capabilities and extended customer engagement: Insights from small sustainable fashion enterprises in the UK. *Business Strategy and the Environment*, 31(6), 2682-2699.
- Engidaw, A. E. (2022). Small businesses and their challenges during COVID-19 pandemic in developing countries: in the case of Ethiopia. *Journal of innovation and entrepreneurship*, 11(1), 1.

- Fakhar Manesh, M., Pellegrini, M. M., Marzi, G., & Dabic, M. (2021). Knowledge Management in the Fourth Industrial Revolution: Mapping the Literature and Scoping Future Avenues. *IEEE Transactions on Engineering Management*, 68(1), 289-300. <https://doi.org/10.1109/TEM.2019.2963489>
- Fang, S., Prayag, G., Ozanne, L. K., & de Vries, H. (2020). Psychological capital, coping mechanisms and organizational resilience: Insights from the 2016 Kaikoura earthquake, New Zealand. *Tourism Management Perspectives*, 34(March 2019), 100637. <https://doi.org/10.1016/j.tmp.2020.100637>
- Fatoki, O. (2018). The impact of entrepreneurial resilience on the success of small and medium enterprises in South Africa. *Sustainability (Switzerland)*, 10(7). <https://doi.org/10.3390/su10072527>
- Filser, M., Brem, A., Gast, J., Kraus, S., & Calabrò, A. (2016). Innovation in family firms—examining the inventory and mapping the path. *International Journal of Innovation Management*, 20(06), 1650054. <https://doi.org/10.1142/S1363919616500547>
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39. <https://doi.org/10.2307/3151312>
- Gamage, A., Pyke, J., & de Lacy, T. (2024). Building resilience and sustainable HRM in the visitor economy: An uneasy relationship. *Journal of Hospitality and Tourism Management*, 58, 497-505.
- Garnezy, N. (1978). Attentional processes in adult schizophrenia and in children at risk. *Journal of Psychiatric Research*, 14, 3-34.
- Ghobakhloo, M., & Tang, S. H. (2015). Information system success among manufacturing SMEs: case of developing countries. *Information Technology for Development*, 21(4), 573-600. <https://doi.org/10.1080/02681102.2014.996201>
- Girod, S. J. G., Birkinshaw, J., & Prange, C. (2023). Business agility: key themes and future directions. *California Management Review*, 65(4), 5-21. <https://doi.org/10.1177/00081256231186641>
- Gölgeci, I., & Kuivalainen, O. (2020). Does social capital matter for supply chain resilience? The role of absorptive capacity and marketing-supply chain management alignment. *Industrial Marketing Management*, 84(March 2019), 63-74. <https://doi.org/10.1016/j.indmarman.2019.05.006>
- Gottschalck, N., Branner, K., Rolan, L., & Kellermanns, F. (2024). Cross-level effects of entrepreneurial orientation and ambidexterity on the resilience of small business owners. *Journal of Small Business Management*, 62(1), 103-139.
- Gregurec, I., Furjan, M. T., & Tomićić-pupek, K. (2021). The impact of covid-19 on sustainable business models in smes. *Sustainability (Switzerland)*, 13(3), 1-24. <https://doi.org/10.3390/su13031098>
- Gunasekaran, A., Rai, B. K., & Griffin, M. (2011). Resilience and competitiveness of small and medium size enterprises: An empirical research. *International Journal of Production Research*, 49(18), 5489-5509. <https://doi.org/10.1080/00207543.2011.563831>
- Guo, Y., Chen, Y., Usai, A., Wu, L., & Qin, W. (2023). Knowledge integration for resilience among multinational SMEs amid the COVID-19: from the view of global digital platforms. *Journal of Knowledge Management*, 27(1), 84-104. <https://doi.org/10.1108/JKM-02-2022-0138>

- Hair, J., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2-24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hamel, G., & Valikangas, L. (2003). The quest for resilience. *Harvard Business Review*, 81(9), 52.
- Han, H., & Trimi, S. (2022). Towards a data science platform for improving SME collaboration through Industry 4.0 technologies. *Technological Forecasting and Social Change*, 174(September 2021), 121242. <https://doi.org/10.1016/j.techfore.2021.121242>
- Hayes, R. H., & Abernathy, W. J. (1980). Managing our way to economic decline. *Harvard Business Review (United States)*, 58(4).
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Herbane, B. (2010). Small business research: Time for a crisis-based view. *International Small Business Journal*, 28(1), 43-64. <https://doi.org/10.1177/0266242609350804>
- Herbane, B. (2019). Rethinking organizational resilience and strategic renewal in SMEs. *Entrepreneurship and Regional Development*, 31(5-6), 476-495. <https://doi.org/10.1080/08985626.2018.1541594>
- Herrman, H., Stewart, D. E., Diaz-Granados, N., Berger, E. L., Jackson, B., & Yuen, T. (2011). What is resilience? *Canadian Journal of Psychiatry*, 56(5), 258-265. <https://doi.org/10.1177/070674371105600504>
- Hillmann, J. (2021). Disciplines of organizational resilience: contributions, critiques, and future research avenues. *Review of Managerial Science*, 15(4), 879-936. <https://doi.org/10.1007/s11846-020-00384-2>
- Hillmann, J., & Guenther, E. (2021). Organizational resilience: a valuable construct for management research?. *International Journal of Management Reviews*, 23(1), 7-44.
- Holl, A., & Rama, R. (2024). Spatial patterns and drivers of SME digitalisation. *Journal of the Knowledge Economy*, 15(2), 5625-5649.
- Hossain, M. R., Akhter, F., & Sultana, M. M. (2022). SMEs in Covid-19 Crisis and Combating Strategies: A Systematic Literature Review (SLR) and A Case from Emerging Economy. *Operations Research Perspectives*, 9(July 2021), 100222. <https://doi.org/10.1016/j.orp.2022.100222>
- Hrivnák, M., Moritz, P., & Chreneková, M. (2021). What kept the boat afloat? Sustainability of employment in knowledge-intensive sectors due to government measures during COVID-19 pandemic. *Sustainability (Switzerland)*, 13(15). <https://doi.org/10.3390/su13158441>
- Hu, M. K., & Kee, D. M. H. (2022). Fostering sustainability: reinventing SME strategy in the new normal. *Foresight*, 24(3-4), 301-318. <https://doi.org/10.1108/FS-03-2021-0080>
- Iancu, A., Popescu, L., Varzaru, A. A., & Avram, C. D. (2022). Impact of Covid-19 Crisis and Resilience of Small and Medium Enterprises. Evidence from Romania. *Eastern European Economics*, 60(4), 352-374. <https://doi.org/10.1080/00128775.2022.2032177>
- Iborra, M., Safón, V., & Dolz, C. (2020). What explains the resilience of SMEs ? Ambidexterity capability and strategic consistency. *Long Range Planning*, 53(6), 101947. <https://doi.org/10.1016/j.lrp.2019.101947>

- Isensee, C., Teuteberg, F., & Griesse, K. M. (2023). Success factors of organizational resilience: a qualitative investigation of four types of sustainable digital entrepreneurs. *Management Decision*, 61(5), 1244-1273. <https://doi.org/10.1108/MD-03-2022-0326>
- Ivanov, D., & Dolgui, A. (2020). Viability of intertwined supply networks: extending the supply chain resilience angles towards survivability. A position paper motivated by COVID-19 outbreak. *International Journal of Production Research*, 58(10), 2904-2915. <https://doi.org/10.1080/00207543.2020.1750727>
- Joseph, N., Totawar, A. K., & Sam, O. (2022). Fostering resilience through the culture of excellence (CoE) practices: explorative insights from a talent management SME. *Measuring Business Excellence*, 26(2), 163-179. <https://doi.org/10.1108/MBE-06-2021-0082>.
- Juergensen, J., Guimón, J., & Narula, R. (2020). European SMEs amidst the COVID-19 crisis: assessing impact and policy responses. *Journal of Industrial and Business Economics*, 47(3), 499-510. <https://doi.org/10.1007/s40812-020-00169-4>
- Jüttner, U., & Maklan, S. (2011). Supply chain resilience in the global financial crisis: An empirical study. *Supply Chain Management*, 16(4), 246-259. <https://doi.org/10.1108/13598541111139062>
- Kamalahmadi, M., & Parast, M. M. (2016). A review of the literature on the principles of enterprise and supply chain resilience: Major findings and directions for future research. *International Journal of Production Economics*, 171, 116-133. <https://doi.org/10.1016/j.ijpe.2015.10.023>
- Karmaker, C. L., Al Aziz, R., Palit, T., & Bari, A. M. (2023). Analyzing supply chain risk factors in the small and medium enterprises under fuzzy environment: Implications towards sustainability for emerging economies. *Sustainable Technology and Entrepreneurship*, 2(1), 100032.
- Keong, F. W. F., & Mei, L. Y. (2010). Sustainable development: the effect of adopting green technology on small and medium enterprises' (smes) business resilience and competitiveness. In *International conference on business and economic research (ICBER 2010)* (pp. 15-16).
- Khan, S. A. R., Sheikh, A. A., Shamsi, I. R. A., & Yu, Z. (2025). The implications of artificial intelligence for small and medium-sized enterprises' sustainable development in the areas of blockchain technology, supply chain resilience, and closed-loop supply chains. *Sustainability*, 17(1), 334.
- Khurana, I., Dutta, D. K., & Singh Ghura, A. (2022). SMEs and digital transformation during a crisis: The emergence of resilience as a second-order dynamic capability in an entrepreneurial ecosystem. *Journal of Business Research*, 150(June), 623-641. <https://doi.org/10.1016/j.jbusres.2022.06.048>
- Klein, V. B., & Todesco, J. L. (2021). COVID-19 crisis and SMEs responses: The role of digital transformation. *Knowledge and Process Management*, 28(2), 117-133. <https://doi.org/10.1002/kpm.1660>
- Korber, S., & McNaughton, R. B. (2018). Resilience and entrepreneurship: a systematic literature review. *International Journal of Entrepreneurial Behaviour and Research*, 24(7), 1129-1154. <https://doi.org/10.1108/IJEBR-10-2016-0356>
- Kotsios, P. (2023). Business resilience skills for SMEs. *Journal of Innovation and Entrepreneurship*, 12(1), 37.

- Kurtz, D. J., & Varvakis, G. (2016). Dynamic capabilities and organizational resilience in turbulent environments. In *Competitive Strategies for Small and Medium Enterprises: Increasing Crisis Resilience, Agility and Innovation in Turbulent Times* (pp. 19-37). https://doi.org/10.1007/978-3-319-27303-7_2
- Kyrdoda, Y., Balzano, M., & Marzi, G. (2023). Learn to survive crises: The role of firm resilience, innovation capabilities and environmental dynamism. *Technology in Society*, 74, 102285.
- Lai, Y., Saridakis, G., Blackburn, R., & Johnstone, S. (2016). Are the HR responses of small firms different from large firms in times of recession? *Journal of Business Venturing*, 31(1), 113-131. <https://doi.org/10.1016/j.jbusvent.2015.04.005>
- Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. (2011). Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review*, 21(3), 243-255. <https://doi.org/10.1016/j.hrmr.2010.07.001>
- Leonard-Barton, D. (1992). Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, 13(S1), 111-125.
- Linnenluecke, M. K. (2017). Resilience in Business and Management Research: A Review of Influential Publications and a Research Agenda. *International Journal of Management Reviews*, 19(1), 4-30. <https://doi.org/10.1111/ijmr.12076>
- López-Fernández, M. C., Serrano-Bedia, A. M., & Pérez-Pérez, M. (2016). Entrepreneurship and Family Firm Research: A Bibliometric Analysis of An Emerging Field. *Journal of Small Business Management*, 54(2), 622-639. <https://doi.org/10.1111/jsbm.12161>
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the Entrepreneurial Orientation Construct and Linking It to Performance. *Academy of Management Review*, 21(1), 135-172. <https://doi.org/10.2307/258632>
- Manyena, S. B. (2006). The concept of resilience revisited. *Disasters*, 30(4), 434-450. <https://doi.org/10.1111/j.0361-3666.2006.00331.x>
- Marzi, G., Balzano, M., Caputo, A., & Pellegrini, M. M. (2025). Guidelines for bibliometric-systematic literature reviews: 10 steps to combine analysis, synthesis and theory development. *International Journal of Management Reviews*, 27(1), 81-103.
- Meier, M., Maier, C., Thatcher, J. B., & Weitzel, T. (2023). Shocks and IS user behavior: a taxonomy and future research directions. *Internet Research*, 33(3), 853-889. <https://doi.org/10.1108/INTR-10-2021-0764>
- Meramveliotakis, G., & Manioudis, M. (2021). History, knowledge, and sustainable economic development: The contribution of John Stuart Mill's grand stage theory. *Sustainability*, 13(3), 1468.
- Meyer, A. D. (1982). Adapting to environmental jolts. *Administrative Science Quarterly*, 27(4), 515-537.
- Miller, D. (1983). The Correlates of Entrepreneurship in Three Types of Firms. *Management Science*, 29(7), 770-791. <https://doi.org/10.1287/mnsc.29.7.770>
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Bmj*, 339.
- Morris, J., Morris, W., & Bowen, R. (2022). Implications of the digital divide on rural SME resilience. *Journal of Rural Studies*, 89(January), 369-377. <https://doi.org/10.1016/j.jrurstud.2022.01.005>

- Munoz, A., Billsberry, J., & Ambrosini, V. (2022). Resilience, robustness, and antifragility: Towards an appreciation of distinct organizational responses to adversity. *International Journal of Management Reviews*, 24(2), 181-187.
- Nan, W., & Park, M. (2022). Improving the resilience of SMEs in times of crisis: The impact of mobile money amid Covid-19 in Zambia. *Journal of International Development*, 34(4), 697-714. <https://doi.org/10.1002/jid.3596>
- Nayal, K., Raut, R. D., Queiroz, M. M., & Priyadarshinee, P. (2023). Digital supply chain capabilities: mitigating disruptions and leveraging competitive advantage under COVID-19. *IEEE Transactions on Engineering Management*, 71, 10441-10454.
- Nordhagen, S., Igbeka, U., Rowlands, H., Shine, R. S., Heneghan, E., & Tench, J. (2021). COVID-19 and small enterprises in the food supply chain: Early impacts and implications for longer-term food system resilience in low- and middle-income countries. *World Development*, 141, 105405. <https://doi.org/10.1016/j.worlddev.2021.105405>
- OECD. (2016). Entrepreneurship at a Glance 2016. OECD Publishing, Paris, https://doi.org/10.1787/entrepreneur_aag-2016-en.
- Okoli, C. (2015). A guide to conducting a standalone systematic literature review. *Communications of the Association for Information Systems*, 37(1), 879-910. <https://doi.org/10.17705/1cais.03743>
- Ortiz-de-Mandojana, N., & Bansal, P. (2016). The long-term benefits of organizational resilience through sustainable business practices. *Strategic Management Journal*, 37(8), 1615-1631. <https://doi.org/10.1002/smj.2410>
- Ozanne, L. K., Chowdhury, M., Prayag, G., & Mollenkopf, D. A. (2022). SMEs navigating COVID-19: The influence of social capital and dynamic capabilities on organizational resilience. *Industrial Marketing Management*, 104(April), 116-135. <https://doi.org/10.1016/j.indmarman.2022.04.009>
- Page, M. J., Moher, D., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & McKenzie, J. E. (2021). PRISMA 2020 explanation and elaboration: updated guidance and exemplars for reporting systematic reviews. *bmj*, 372.
- Pal, R., Torstensson, H., & Mattila, H. (2014). Antecedents of organizational resilience in economic crises - An empirical study of Swedish textile and clothing SMEs. *International Journal of Production Economics*, 147(PART B), 410-428. <https://doi.org/10.1016/j.ijpe.2013.02.031>
- Papademetriou, C., Ragazou, K., Garefalakis, A., & Passas, I. (2023). Green human resource management: Mapping the research trends for sustainable and agile human resources in SMEs. *Sustainability*, 15(7), 5636.
- Papadopoulos, T., Baltas, K. N., & Balta, M. E. (2020). The use of digital technologies by small and medium enterprises during COVID-19: Implications for theory and practice. *International Journal of Information Management*, 55(July), 102192. <https://doi.org/10.1016/j.ijinfomgt.2020.102192>
- Parker, H., & Ameen, K. (2018). The role of resilience capabilities in shaping how firms respond to disruptions. *Journal of Business Research*, 88(December 2017), 535-541. <https://doi.org/10.1016/j.jbusres.2017.12.022>
- Pettit, T. J., Croxton, K. L., & Fiksel, J. (2013). Ensuring supply chain resilience: Development and implementation of an assessment tool. *Journal of Business Logistics*, 34(1), 46-76. <https://doi.org/10.1111/jbl.12009>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and

- Recommended Remedies. *Journal of Applied Psychology*, 88(5), 879-903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Ponomarov, S. Y., & Holcomb, M. C. (2009). Understanding the concept of supply chain resilience. *The International Journal of Logistics Management*, 20(1), 124-143. <https://doi.org/10.1108/09574090910954873>
- Ratten, V. (2020). Coronavirus (covid-19) and entrepreneurship: changing life and work landscape. *Journal of Small Business and Entrepreneurship*, 32(5), 503-516. <https://doi.org/10.1080/08276331.2020.1790167>
- Reinmoeller, P., & Van Baardwijk, N. (2005). The link between diversity and resilience. *MIT Sloan Management Review*, 46(4), 61-66.
- Robertson, J., Botha, E., Walker, B., Wordsworth, R., & Balzarova, M. (2022). Fortune favours the digitally mature: the impact of digital maturity on the organisational resilience of SME retailers during COVID-19. *International Journal of Retail and Distribution Management*, 50(8-9), 1182-1204. <https://doi.org/10.1108/IJRDM-10-2021-0514>
- Rodrigues, M., Franco, M., Sousa, N., & Silva, R. (2021). Covid 19 and the business management crisis: An empirical study in SMEs. *Sustainability (Switzerland)*, 13(11). <https://doi.org/10.3390/su13115912>
- Roffia, P., & Dabić, M. (2024). The role of management control and integrated information systems for the resilience of SMEs. *Review of Managerial Science*, 18(5), 1353-1375.
- Saad, M. H., Hagelaar, G., van der Velde, G., & Omta, S. W. F. (2021). Conceptualization of SMEs' business resilience: A systematic literature review. *Cogent Business and Management*, 8(1). <https://doi.org/10.1080/23311975.2021.1938347>
- Safari, A., Balicevac Al Ismail, V., Parast, M., Gölgeci, I., & Pokharel, S. (2024). Supply chain risk and resilience in startups, SMEs, and large enterprises: a systematic review and directions for research. *The International Journal of Logistics Management*, 35(2), 680-709.
- Safón, V., & Iborra, M. (2025). Braking before the curve and accelerating inside? Exploration, countercyclical behavior, and SMEs' resilience during economic downturns. *ERQ Business Research Quarterly*, 28(1), 252-264.
- Sagala, G. H., & Őri, D. (2025). Exploring digital transformation strategy to achieve SMEs resilience and antifragility: a systematic literature review. *Journal of Small Business & Entrepreneurship*, 37(3), 495-524.
- Sagala, G. H., & Őri, D. (2026). Resilience and digital transformation: a small to medium enterprise resilience framework. *Management Decision*, 64(13), 126-161.
- Samantha, G. (2018). The Impact of Natural Disasters on Micro, Small and Medium Enterprises (MSMEs): A Case Study on 2016 Flood Event in Western Sri Lanka. *Procedia Engineering*, 212, 744-751. <https://doi.org/10.1016/j.proeng.2018.01.096>
- Santoro, G., Bertoldi, B., Giachino, C., & Candelo, E. (2020). Exploring the relationship between entrepreneurial resilience and success: The moderating role of stakeholders' engagement. *Journal of Business Research*, 119(November 2018), 142-150. <https://doi.org/10.1016/j.jbusres.2018.11.052>
- Schmidt, K. A., Dall, S. R. X., & van Gils, J. A. (2010). The ecology of information: An overview on the ecological significance of making informed decisions. *Oikos*, 119(2), 304-316. <https://doi.org/10.1111/j.1600-0706.2009.17573.x>

- Sharma, G. D., Kraus, S., Talan, A., Srivastava, M., & Theodoraki, C. (2024). Navigating the storm: the SME way of tackling the pandemic crisis. *Small Business Economics*, 63(1), 221-241.
- Sheffi, Y., & Rice Jr, J. B. (2005). A supply chain view of the resilient enterprise. *MIT Sloan Management Review*, 46, 85-90.
- Shore, A., Tiwari, M., Tandon, P., & Foropon, C. (2024). Building entrepreneurial resilience during crisis using generative AI: An empirical study on SMEs. *Technovation*, 135, 103063.
- Small, H. (1973). Co-citation in the scientific literature: A new measure of the relationship between two documents. *Journal of the American Society for Information Science*, 24(4), 265-269.
- Smallbone, D., Deakins, D., Battisti, M., & Kitching, J. (2012). Small business responses to a major economic downturn: Empirical perspectives from New Zealand and the United Kingdom. *International Small Business Journal*, 30(7), 754-777. <https://doi.org/10.1177/0266242612448077>
- Somers, S. (2009). Measuring resilience potential: An adaptive strategy for organizational crisis planning. *Journal of Contingencies and Crisis Management*, 17(1), 12-23. <https://doi.org/10.1111/j.1468-5973.2009.00558.x>
- Stacho, Z., Urbancová, H., & Stachová, K. (2013). Organisational arrangement of human resources management in organisations operating in Slovakia and Czech Republic. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 61(7), 2787-2799. DOI: 10.11118/actaun201361072787
- Starr, R., Newfrock, J., Delurey, M. (2003). Enterprise resilience: managing risk in the networked economy. *Strategy and Business*, 30, 70-79.
- Staw, B. M., Sandelands, L. E., & Dutton, J. E. (1981). Threat rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly*, 26(4), 501-524.
- Sullivan-Taylor, B., & Branicki, L. (2011). Creating resilient SMEs: Why one size might not fit all. *International Journal of Production Research*, 49(18), 5565-5579. <https://doi.org/10.1080/00207543.2011.563837>
- Suriyankietkaew, S., Krittayaruangroj, K., & Iamsawan, N. (2022). Sustainable Leadership Practices and Competencies of SMEs for Sustainability and Resilience: A Community-Based Social Enterprise Study. *Sustainability (Switzerland)*, 14(10), 1-36. <https://doi.org/10.3390/su14105762>
- Teece, D. J. (2012). Dynamic capabilities: Routines versus entrepreneurial action. *Journal of Management Studies*, 49(8), 1395-1401.
- Teece, D. J. (2018). Dynamic capabilities as (workable) management systems theory. *Journal of Management & Organization*, 24(3), 359-368.
- Teece, D. J. (2022). The evolution of the dynamic capabilities framework. In *Artificiality and sustainability in entrepreneurship: Exploring the unforeseen, and paving the way to a sustainable future* (pp. 113-129). Cham: Springer International Publishing.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Thukral, E. (2021). COVID-19: Small and medium enterprises challenges and responses with creativity, innovation, and entrepreneurship. *Strategic Change*, 30(2), 153-158. <https://doi.org/10.1002/jsc.2399>
- Toomsalu, L., Tolmacheva, S., Vlasov, A., & Chernova, V. (2019). Determinants of innovations in small and medium enterprises: A European and international

- experience. *Terra Economicus*, 17(2), 112-123.
<https://doi.org/10.23683/2073-6606-2019-17-2-112-123>
- Torres, A. P., Marshall, M. I., & Sydnor, S. (2019). Does social capital pay off? The case of small business resilience after Hurricane Katrina. *Journal of Contingencies and Crisis Management*, 27(2), 168-181.
<https://doi.org/10.1111/1468-5973.12248>
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. *British Journal of Management*, 14(3), 207-222. <https://doi.org/10.1111/1467-8551.00375>
- Trieu, H. D., Nguyen, P. V., Tran, K. T., Vrontis, D., & Ahmed, Z. (2024). Organisational resilience, ambidexterity and performance: the roles of information technology competencies, digital transformation policies and paradoxical leadership. *International Journal of Organizational Analysis*, 32(7), 1302-1321.
- Vogel, R., & Güttel, W. H. (2013). The dynamic capability view in strategic management: A bibliometric review. *International Journal of Management Reviews*, 15(4), 426-446.
- Vossen, R. W. (1998). Relative strengths and weaknesses of small firms in innovation. *International Small Business Journal*, 16(3), 88-94.
<https://doi.org/10.1177/0266242698163005>
- Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, 9(1), 31-51.
<https://doi.org/10.1111/j.1468-2370.2007.00201.x>
- Wang, X., & Sun, M. (2025). Enhancing SMEs resilience through digital innovation: a stage-based analysis. *European Journal of Innovation Management*, 28(6), 2607-2629.
- Weber, Y., & Tarba, S. Y. (2014). Strategic agility: A state of the art introduction to the special section on strategic agility. *California Management Review*, 56(3), 5-12. <https://doi.org/10.1525/cmr.2014.56.3.5>
- Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly*, 26(2), xiii-xxiii.
- WEF. (2022). Future Readiness of SMEs and Mid-Sized Companies: A Year On - INSIGHT REPORT, NOVEMBER 2022, World Economic Forum.
- Williams, T. A., Gruber, D. A., Sutcliffe, K. M., Shepherd, D. A., & Zhao, E. Y. (2017). Organizational response to adversity: Fusing crisis management and resilience research streams. *Academy of Management Annals*, 11(2), 733-769.
<https://doi.org/10.5465/annals.2015.0134>
- World Bank. (2020). The World Bank Group's Early Support to Addressing the COVID-19 Economic Response, April 2020-June 2021.
- Xie, Y., Xia, Q., Song, J., & Hu, S. (2025). Can sustainability orientation make firms more resilient? Exploring the role of digital business model innovation, digital orientation, and environmental dynamism. *Sustainable Development*, 33(1), 364-378.
- Yao, Y., & Fabbe-Costes, N. (2018, October). Can you measure resilience if you are unable to define it? The analysis of Supply Network Resilience (SNRES). In *Supply chain forum: an international journal* (Vol. 19, No. 4, pp. 255-265). Taylor & Francis.
- Zhang, J., Yu, Q., Zheng, F., Long, C., Lu, Z., & Duan, Z. (2016). Comparing keywords plus of WOS and author keywords: A case study of patient adherence

- research. *Journal of the Association for Information Science and Technology*, 67(4), 967-972. <https://doi.org/10.1002/asi.23437>
- Zighan, S., Abualqumboz, M., Dwaikat, N., & Alkalha, Z. (2022). The role of entrepreneurial orientation in developing SMEs resilience capabilities throughout COVID-19. *The International Journal of Entrepreneurship and Innovation*, 23(4), 227-239.

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Appendix 1: Literature Review of Influence Papers

No.	Paper	TC	TC per Year	NT C	Objectives	Methods Used	
1.	Al Omoush et al. (2025)	28	14,00	34,09	Examine the relationships between digital business transformation, organizational learning, frugal innovation and Small and Medium Enterprises (SMEs) resilience in emerging markets.	Survey, questionnaire	1) Digital business transformation, frugal innovation and emerging markets; 2) The significance of SMEs' resilience; 3) The impact of digital business transformation on SMEs' resilience.
2.	Chowdhury et al. (2021)	737	122,83	21,01	Systematically review existing research on COVID-19's impact on supply chains.	Systematic literature review (SLR)	1) Main themes: pandemic, technology's role, and resilience. Further rigorous empirical research is needed.
3.	Dey et al. (2024)	78	26,00	16,21	Examine antecedents to Supply Chain Resilience and AI adoption, considering AI adoption as a pivot for facilitating SCR by integrating resource orchestration and knowledge-based view theoretical perspectives.	Quantitative (SEM), survey, SMEs in Vietnam	Leadership will drive digital, and conducive employees' skills and adoption positively in risk management, the Resilience.
4.	Avelar et al. (2024)	74	24,67	15,38	Explore how SMEs and start-ups can adopt long-term sustainability, innovation, and digitalization strategies.	Quantitative, secondary (archival data), statistical modelling designed using different estimation techniques	1) Level of investment in digitalization, and sustainable growth; 2) The company's maturity level and digitalization strategies more relevant than human training.
5.	Belhadi et al. (2024)	54	18,00	11,22	Investigate how supply chains could leverage digital technologies to design resilience strategies to manage uncertainty stemming from the external environment disrupted by a geopolitical event.	Qualitative, multi-case-study analysis, 14 African firms	1) Downstream firms seizing and transforming case assumptions and mitigation actions; 2) cooperatives, and small advanced technological analytics) to develop formulate a "wait-and-chain uncertainty and
6.	Do et al. (2022)	271	54,20	11,09	Examine the relationship between resource-based management initiatives and resilience in Vietnamese SMEs.	Quantitative, survey, snowball and stratified sampling, CEO of SMEs	1) Resource-based management innovation and positive resilience; 2) Organizational dynamism mediate the
7.	Leonelli et al. (2025)	9	4,50	10,96	Explore how the individual resilience of entrepreneurs and organizational resilience affect the resilient response of their SMEs.	Quantitative (SEM), survey, SMEs in Italy	Positive relationship between entrepreneurs and the shows that organizational relationship.
8.	Clemente-Almendros et al. (2025)	8	4,00	9,74	Present an empirical framework that incorporates different factors of the impact of COVID-19 on SMEs, in relation to the value chain, gender and family business and allows the evaluation the impacts on the SMEs' outcomes.	Quantitative (exploratory - ordinary least squares linear regression), survey, SMEs (La Rioja, Spain)	The impact of COVID adding value, such as marketing contribution
9.	Damiano & Valenza (2025)	8	4,00	9,74	Investigate entrepreneurship literature insights into whether and how changing organizational strategies and processes toward more sustainable ones can allow small and medium enterprises (SMEs) to gain resilience.	Systematic literature review, thematic analysis	Reorienting business processes can facilitate business models and
10.	Khurana et al. (2022)	216	43,20	8,84	Examine how SMEs build resilience capability during a crisis through digital technology adoption.	Qualitative, inductive approach, semi-structured interviews, entrepreneurs	1) Three first-order constructs (and transforming) is Resilience is identified influenced by dynamic organizational, and digital primarily drives resilience while seizing and transforming organizational and digital
11.	Achuthan et al. (2025)	7	3,50	8,52	Investigate the integration of environmental sustainability into cybersecurity practices by identifying	Text mining, machine learning	1) Highlighted the contribution of sustainable development sustainable cybersecurity

					six pivotal themes through a textual analysis of related publications via machine learning based topic modeling.		sustainable digital p solutions for SMEs a consumption; 3) Pro innovations across fo policy shifts, AI utiliz technology adoption efficiency.
12	Sangboon & Schjoedt (2025)	7	3,50	8,52	Analyze whether small business resilience helps them bounce back quickly to survive and succeed, and is particularly pronounced when they perceive the environment to be hostile.	Quantitative (regression analysis), survey (SME in Thailand)	Small business owne performance are pos perceive the environ resilience is stronger
13	Caldera et al. (2019)	29 7	37,1 3	7,90	1) Explore the co-evolution of 'lean and green thinking' in SMEs for sustainable business practices; 2) Identify key enablers and barriers to sustainable business practices in manufacturing SMEs.	Qualitative, exploratory approach, semi-structured interviews, content analysis, thematic analysis	1) The study identifi SMEs' sustainability and lack of governm engagement and pro
14	Klein & Todesco (2021)	27 6	46,0 0	7,87	Explore the responses of SMEs to the COVID-19 crisis and their financial challenges and opportunities arising from digital transformation.	Systematic literature review	1) Balancing explor survival; 2) Flexibilit economic downturns affects survival.
15	Chen & Barcus (2024)	37	12,3 3	7,69	Explore the strategies of rural women entrepreneurs (RWE) in inventing and transforming themselves through personal training, professional education, capacity building, gaining individual success, and building confidence.	Qualitative, case study (China), ethnography	Women entrepreneur and social limitation achievements in reso improvement, and so entrepreneurs could despite various cons
16	Carayannis et al. (2025)	6	3,00	7,30	Investigate how generative artificial intelligence (Gen AI) can enhance the resilience and competitiveness of small and medium enterprises (SMEs).	Literature review, case Study, survey	1) Gen AI offers tran automating processe fostering innovation adapt and thrive am AI integration is imp challenges; 3) There recommendations to sustainable growth.
17	Karmaker et al. (2023)	93	23,2 5	7,17	Identify the supply chain resilience factors and analyzing their interactions using an integrated approach.	Pareto analysis, total interpretive structural modeling (TISM), Matriced' Impacts Cruoses Multiplication Applique a un Classement (MICMAC) analysis	1) Lack of enthusias sustainable practices of skilled and educat modern technologies are crucial risks that development of SME
18	Shore et al. (2024)	33	11,0 0	6,86	Understand how small and medium-sized firms have utilised Gen AI-based tools to cope with the market's high level of turbulence caused by the COVID-19 pandemic, geopolitical crises, and economic slowdown, researchers have conducted an empirical study.	Quantitative (SEM), survey, SMEs in France	1) Gen AI and EO ha entrepreneurial resil dynamic capabilities moderating effect on orientation and entre assumption that high effects on dynamic c is not always true.
19	Cowling et al. (2020)	23 6	33,7 1	6,55	Explore the impact of COVID-19 on SMEs and their cash retention strategies.	Quantitative, secondary data (UK - IFF), multivariate probit procedure	1) Smaller businesse financial constraints finance is critical for especially during eco management is vital
20	Herbane (2019)	24 1	30,1 3	6,41	Examine how SMEs vary in formalisation of activities for strategic growth and resilience against operational interruptions.	Quantitative, survey, managing directors of SMEs (UK), cluster analysis	1) Four SME cluster planners, rooted str highlighting resilien developmental, and resilience and forma businesses rely more reflecting resource a
21	Branicki et al. (2018)	22 9	25,4 4	6,23	Investigate how entrepreneurial behaviors support SME resilience.	Qualitative, exploratory approach, focus groups, 19 SMEs (UK)	1) Entrepreneurial b resilience; 2) SMEs resilience of individu

							needed to foster info to uncertainty in SM
22	Sudan & Taggar (2025)	5	2,50	6,09	Present the impact of Economic Policy Uncertainty (EPU)-induced Trade Supply Chain Vulnerability (TSCV) on the SMEs in India by leveraging the World Bank Enterprise Survey data for 2014 and 2022.	Quantitative (Econometric), secondary survey data	1) EPU-induced TSCV on employment and firm technological adoption performance; 2) TSCV participation, particu
23	Nakandala et al. (2025)	5	2,50	6,09	Investigate the antecedents of supply chain resilience of SMEs and the effects of government assistance and disruption intensity in long-term disruptions.	Quantitative (SEM), survey, SMEs in North Carolina, USA	1) Digital capabilities, supplier proximity, and supply chain resilience; 2) government assistance and relationship between robustness; 3) The relationships between robustness with supply disruptions weaken experiences and supply resilience.
24	Khan et al. (2025)	5	2,50	6,09	Develop the theoretical framework to examine metaverse-related technologies (artificial intelligence and blockchain technology—BCT) and their direct and indirect effects on sustainable business performance.	Quantitative (SEM), survey, SMEs	1) AI capabilities are analyzing, and decision BCT facilitates ensuring and immutable supply resilient and improve system with positive significant effects on performance (SBP).
25	Roffia & Dabić (2024)	28	9,33	5,82	Investigate the resilience of small and medium-sized enterprises (SMEs) in relation to the COVID-19 pandemic, particularly the influence exerted by certain factors related to management control, integrated information systems (enterprise resource planning [ERP]), information and communication technology (ICT) systems, and financial resources.	Quantitative (multivariate regression), survey, SMEs in Italy	1) Budgeting, business supplementary financial entrepreneur have a resilience and the on SMEs with a high int high resilience levels
26	Trieu et al. (2024)	26	8,67	5,40	1) Understand how organisational resilience functions and its outcomes; 2) Investigate links between organisational resilience and internal capabilities in information technology (IT) applications, exploitation-exploration activities and organisational leadership, which are represented by IT competencies, organisational ambidexterity and paradoxical leadership, respectively; 3) Investigate the role of government digital transformation policies after the COVID-19 pandemic as an external resource.	Quantitative, survey, questionnaire	1) IT competencies a strengthen organisational opportunities and in market volatility; 2) and resilience enhance 3) Paradoxical leadership ambidexterity and re transformation polic SMEs' IT competenc show how integrating capabilities such as resilience can help S competitive advantage
27	Nayal et al. (2023)	26	8,67	5,40	Investigate a model for achieving a competitive advantage in contexts of uncertainty, such as the COVID-19 pandemic.	Quantitative (SEM), survey, SMEs in India	1) Digital Supply Chain supply chain resilience, robustness sustainable supply chain practices positive 4) The effect of Digital sustainable supply chain resilience, robust
28	Kumar et al. (2024)	25	8,33	5,20	Utilize the Technology, Organization, and Environment (TOE) framework to conduct a comprehensive literature review and identified the key barriers in investigate it empirically.	Questionnaire-based survey	1) Identified barriers lack of in-house technology adverse operational planning, and inadequate performance monitoring digitalization of SME operational realities readiness barriers of such as workforce tu

							design changes, over infrastructure can le in suboptimal strateg processes.
29	Gottschalk et al. (2024)	24	8,00	4,99	Explore the effect of a firm's entrepreneurial orientation on the individual resilience of small business owners and how this relationship is moderated by firm-level ambidexterity.	Quantitative (SEM), survey, SMEs in Australia	1) Risk-taking orient and that an innovati suffer when an explo firms with a proactiv positive moderating
30	Trieu et al. (2023)	64	16,00	4,94	Explore how SMEs can leverage information technology (IT) to overcome crises, capitalize on innovative opportunities, adapt to shifting market conditions, and drive new competitive initiatives.	Quantitative (SEM), survey, SMEs in Vietnam	1) IT capabilities pla organizational ambic performance; 2) The of government supp resilience.
31	Alshebami (2025)	4	2,00	4,87	1) Investigate how coping with unexpected challenges, described as the ability to manage and adapt to unexpected challenges; 2) investigate whether business resilience, described as the ability of a business to adapt effectively to changing unstable environments; 3) examine whether business resilience can positively mediate the relationship between coping with unexpected challenges.	Quantitative (SEM), survey, SMEs in Yemen	1) Coping with unexp purposes positively i economic sustainabi and significantly infl and could partially m with unexpected cha having business econ
32	Thukral (2021)	170	28,33	4,85	Explore entrepreneurship as an iterative and integrative process influenced by entrepreneurs' characteristics and external enablers.	Narrative study	1) SMEs are signific 2) Government inter negative effects; 3) T systematic initiatives enables SMEs to ide uncertainty.
33	Aghazadeh et al. (2024)	23	7,67	4,78	1) Examine the indirect effects of digital platform capability and digital resilience on digital transformation (DT) outcomes for small- and medium-sized enterprises (SMEs); 2) investigate how digital business model maturity influences these indirect effects.	Quantitative, survey, questionnaire	1) Digital platform c connecting digital re business model matu moderating effect on
34	Gamage et al. (2024)	23	7,67	4,78	Analyze small and medium enterprises' (SMEs') experiences of the 2019/2020 Victorian (Australia) bushfires and COVID-19 to explore organizations' capacity to achieve Sustainable Human Resource Management (S-HRM) and organizational resilience outcomes within crisis contexts.	Qualitative, semi-structured interview, thematic analysis, SMEs in Victoria (Australia)	1) Macro, meso and type, location and w managers' skill sets crises; individual we processes; and hous SMEs' sustainability faced by SMEs, such social sustainability, wellbeing, were reve
35	Suriyankietkaew et al. (2022)	116	23,20	4,75	Investigate essential sustainable leadership practices and competencies for sustainability and resilience in a CBSE context. Explores how CBSE businesses can apply theoretical frameworks to thrive during the COVID-19 era.	Qualitative, in-depth interviews (exploratory), focus groups, document analysis, thematic analysis, triangulation	The research empha social capital, and pr sustainability and re
36	Han & Trimi (2022)	115	23,00	4,70	Provide a roadmap for applying I4.0 technologies to enhance the collaboration capabilities of SMEs.	Systematic literature review	1) Technology, trust, SMEs in adopting I4 importance of inform collaboration betwee
37	Ozanne et al. (2022)	114	22,80	4,66	Explore organizational resilience in SMEs during the COVID-19 pandemic context. Investigates the role of social capital in enhancing organizational resilience. Examine resilience-building practices and their competitiveness during and post-pandemic.	Quantitative, survey (knowledgeable individuals within SMEs), PLS-SEM	1) Social capital (SC SMEs during the CO capabilities (DC) me and external SC and

38	Ali et al. (2017)	153	15,30	4,58	Develop a holistic framework for building resilience in SMEs of perishable product supply chains (PPSCs).	Qualitative, exploratory case study, open, axial, and selective coding	1) Supply and demand chain risk; 2) SMEs' resilience and performance; collaboration is needed
39	Sharma et al. (2024)	22	7,33	4,57	Examine research articles focused on the barriers encountered by SMEs and their strategic responses during the COVID-19 pandemic.	Bibliometric analysis	1) Researchers present highlights prominent barriers (e.g., financial reduced purchasing scarcity of skilled workers materials), technological forecasting capabilities resource limitations Approaches to overcome resilience and innovation
40	Martín-Rojas et al. (2023)	57	14,25	4,40	1) Analyze the role of social media use as an antecedent of corporate entrepreneurship and firm performance in Spanish SMEs; 2) examine the mediating role of organizational resilience in this process.	Quantitative (SEM), survey, SMEs in Spain	1) Use of social media entrepreneurial capabilities relevance of organizational perfect mediating impact
41	Gregurec et al. (2021)	147	24,50	4,19	Investigate how SMEs in service industries cope with COVID-19 disruptions.	Systematic literature review, content analysis	1) SMEs' adaptation COVID-19 disruption survival chances; 2) is the key to transformation
42	Holl & Rama (2024)	20	6,67	4,16	Study the spatial patterns of drivers for the implementation of new digital technologies in SMEs in Europe.	Spatial pattern analysis	1) The adoption of digital competitiveness, resilience firms; 2) Location growth European SMEs adopt small-town SMEs are business environment digitalisation technology location of an SME; especially when they management innovation are part of a business export, are all more
43	Hansen et al. (2025)	20	6,67	4,16	Investigate how can the approach to competence development in SMEs explain patterns of slow digital transformation.	Multiple case-studies	1) While manufacturing for additional competence towards obtaining smart manufacturing needed to support SMEs to increase understanding concepts and available integration capabilities management capabilities
44	Hossain et al. (2022)	101	20,20	4,13	Investigate the impacts of the COVID-19 pandemic on SMEs and to identify potential strategies for mitigating these impacts.	Systematic literature review	1) Cash flow shortages found as critical consequences pandemic; 2) Digital succeed through technology
45	Hadjielias et al. (2022)	100	20,00	4,09	Analyze the concept of psychological resilience, focusing on individual owner-managers, and examine business resilience in the context of the COVID-19 pandemic.	Qualitative, longitudinal study, SMEs in Cyprus	The responses and resilience both the personal and resilient actions at the
46	Shipman et al. (2023)	53	13,25	4,09	Examine one of the top five industries for small businesses within the state of Maryland, to understand the challenges small businesses faced in pivoting amidst the COVID-19 response.	Qualitative, case study, African-American-owned operated real estate company in Maryland, USA	1) Small businesses the way that they survive COVID-19-induced to well-being, and aspects
47	DiBella et al. (2023)	53	13,25	4,09	Explore the types of sustainable business practices that SMEs can adopt to contribute to individual, organizational, and community resilience.	Qualitative, exploratory, American & European countries	SMEs can pursue transformation sustainability that are economically sustainable shocks like the COVID contributors to community

48	Iborra et al. (2020)	147	21,00	4,08	Operationalize the organizational ambidexterity (OA) construct across industries using secondary data from the Orbis® database.	Quantitative, secondary data (Orbis® database - 2765 manufacturing SMEs)	1) Organizational ambidexterity (OA) is critical for achieving SMEs resilience; 2) OA is critical for achieving SMEs resilience.
49	Nagariya et al. (2024)	19	6,33	3,95	Find the blockchain-based resilience strategies that can help the supply chains of micro, small, and medium-sized enterprises (MSMEs) to recover from the disruptions and work effectively in a resource-based view perspective.	Literature review, Delphi study, strategy experts	"Building social capital capabilities," "sensitivity process and product time," and "having a plan" are the top strategies to overcome the situation and improve the performance of MSMEs.
50	Doern (2016)	228	20,73	3,93	Examine the impact of crises on small firms through qualitative interviews with affected businesses.	Qualitative, phenomenology, entrepreneurs (UK)	1) SMEs owner-managers felt secure due to preventative measures.
51	Santoro et al. (2020)	133	19,00	3,69	Evaluate the effect of entrepreneurial resilience on perceived success. Investigates the moderating role of stakeholders' engagement in this relationship.	Quantitative methodology, survey (entrepreneurs of small firms - Italy)	1) Entrepreneurial resilience leads to success among entrepreneurs; 2) Stakeholders' engagement moderates the relationship between stakeholder engagement and success.
52	Xie et al. (2025)	3	1,50	3,65	1) Investigate how sustainability orientation (SO) in digital context can enhance firm resilience by driving digital business model innovation (DBMI); 2) examines the moderating effects of digital orientation (DO) and environmental dynamism (ED) on the relationship between SO and DBMI based on contingency theory.	Quantitative, survey (questionnaire)	1) SO can improve firm resilience, mediating role between SO and DO can be confirmed; 2) the relationship between them will be moderated by environmental dynamism.
53	Annamalah et al. (2025)	3	1,50	3,65	Analyze the resilience strategy utilized by SMEs, enabling them to effectively adapt their operations in response to varying conditions by providing them with essential resources.	Quantitative (SEM), survey, SMEs	1) Ambidexterity has a positive organizational effect; 2) Resilience strategies have a positive effect on performance; 3) Interactions involving resilience strategies and performance.
54	Sagala & Ori (2025)	3	1,50	3,65	Construct a digital transformation strategy framework for SMEs to generate resilience and antifragility.	Systematic literature review	1) Critical values for SMEs transformation, including digital capability, digital innovation, and knowledge management, need a deeper level of flexibility, and agility capabilities are the key to investigate how a firm can achieve resilience.
55	O'Connor et al. (2025)	3	1,50	3,65	Evaluate existing literature on hospitality and tourism SMEs and resilience using bibliometric analysis to synthesize existing knowledge, identify major developments, themes, and issues, and stimulate future research.	Literature review, bibliometric Analysis	1) A comprehensive corpus of knowledge on themes and gaps in the literature; 2) the lack of integration into the existing knowledge and tourism.
56	Safón & Iborra (2025)	3	1,50	3,65	Investigate how exploration affects pre-crisis and crisis growth, on the relationship between pre-crisis and crisis growth, and SME resilience outcomes.	Quantitative, secondary data (regression), SMEs in Spain	1) Firm's willingness to explore and accept variation in the countercyclical factor before the external shock during the crisis, and
57	Trupp et al. (2025)	3	1,50	3,65	Examine challenges faced by MSEs in the tourism industry.	SLR, PRISMA, Scopus database	1) Policymakers need funding, skills, training, and infrastructure to hinder MSEs; 2) The need for sustainable solutions for sustainable tourism.
58	Koura et al. (2025)	3	1,50	3,65	Investigate the impact of public support on Moroccan SME growth metrics in the post-COVID-19 era, focusing on subsidies, guarantee schemes, and incubation services, among other firm characteristics and financing choices.	Quantitative (Principal Component Analysis), survey, SMEs in Morocco	1) Subsidies play a positive role, but don't strongly impact growth; 2) Guarantee schemes help SMEs growth; 3) Incubation programs have a smaller effect on growth; 4) There is a need for stronger government support; 5) Government offer only modest growth; 6) Government involvement and effective support out as key growth drivers; 7) Government gradually, underscore the long-term approach to support SMEs.

59	Nordhagen et al. (2021)	124	20,67	3,54	Analyze the impact of the COVID-19 pandemic on agri-food micro, small and medium enterprises (MSMEs) in 17 countries.	Quantitative, survey (MSMEs across 17 countries)	The youngest firms are less likely to be severely affected.
60	Elf et al. (2022)	83	16,60	3,40	Examine how micro, small, and medium enterprises (MSMEs) in the UK fashion industry advance the circular economy (CE).	Qualitative (exploratory), longitudinal study, interview, SMEs in UK	1) The distinctive capabilities enable MSMEs to introduce, test, and provide them with new products. 2) Fashion MSMEs are adopting (CEBMs) by going beyond current approaches currently used. 3) MSMEs' ability to extend the extension of existing interactions with the importance and potential engagement in business.
61	Fang et al. (2020)	121	17,29	3,36	Explore how PsyCap components affect organizational resilience in post-disaster contexts.	Qualitative, case study (small tourism firms), in-depth interview, thematic analysis (interpretivist paradigm)	1) Leadership is important in small tourism businesses (realistic optimism and critical for business). 2) Social capital are crucial for business survival.
62	Kyrdoda et al. (2023)	43	10,75	3,32	Investigate the role of learning in response to exogenous crises and how firm resilience, innovation capabilities, and environmental dynamism influence this relationship.	Mixed method, Regression analysis and Fuzzy Set Qualitative Comparative Analysis (fsQCA), SMEs in Italy	1) Learning from crises is crucial for survival; 2) Highlight opportunities in crises; 3) MSMEs deal with crises could be internal processes and external factors.
63	Safari et al. (2024)	16	5,33	3,32	Analyze the academic literature to understand supply chain risk and resilience across different organizational sizes and industries.	Systematic literature review (High Rank Journal Papers)	1) Supply chain risk management, supply, organization, network/control risk, plans developed by SMEs are not necessarily the most crucial resilience. Applying lean and quality utilizing information technology.
64	Zighan et al. (2022)	80	16,00	3,27	Investigate operational practices that SMEs have either adopted or improvised to support SMEs' resilience in the face of coronavirus disease 2019.	Qualitative, semi-structured interview, thematic analysis, SMEs in Jordan	1) Five-pillars practice: resilience capability, adaptive-capability, absorptive-capability, and learning-orientation has been resilience to survive. Entrepreneurial orientation, innovation and proactiveness capabilities that shield SMEs from crises.
65	Papademetriou et al. (2023)	42	10,50	3,24	Propose the theoretical framework of a business model that will help SMEs adjust to the new environment, address their sustainable goals and gaps in the field, and build a resilient, agile business ecosystem.	Bibliometric analysis, Scopus database, R	1) Green competences as the requirement to be identified as critical business model; 2) SMEs antecedents of green business model, which is one of the most important to adopt green human resources.
66	Khan et al. (2024)	15	5,00	3,12	Develop a decision model to determine a suitable configuration for entrepreneurial orientation to help small firms manage circular economy challenges and improve their performance.	Multiple qualitative studies, in-depth interviews, quality function deployment technique, qualitative comparative analysis, SMEs in Bangladesh	Set of challenges revealed how to combine the negative components of entrepreneurial orientation combination will improve performance.
67	Garrido-Ruso et al. (2024)	15	5,00	3,12	Analyse the impact of these variables on corporate performance, taking into account factors such as the pandemic period, level of disclosure, and the size effect.	Quantitative (regression), survey (secondary data), SMEs in Spain	1) The importance of measuring ESG with individual level, all dimensions, relationship, but the social and labor dimensions for enhancing indices for enhancing performance. It is more difficult for investment and that impact.

68	Neri et al. (2024)	15	5,00	3,12	Qualitatively assess SMEs' overall level of organizational cybersecurity readiness.	Explanatory Sequential Mixed Method (Qualitative - semi structured interview, Quantitative - survey), SMEs in Italy	1) Although many te organizational resilie results, there are sti improvement; 2) The cybersecurity aware 3) The areas in need are most important i organizational cyber
69	Isensee et al. (2023)	40	10,00	3,08	Distinguish different types of sustainable digital entrepreneurs (SDEs) and explore their approaches toward enhancing organizational resilience.	Qualitative, interview, grounded theory	1) Authors present a descriptions of the fo System Thinker, Unc Visionary and Succes propose a conceptual organizational resilie influence of SDEs on environment.
70	Saad et al. (2021)	107	17,83	3,05	Inventory research methods applied in resilience research for SMEs. List theories deployed in SME resilience literature. Provide an overview of SMEs' resilience literature.	Systematic literature review	1) The literature in S regarding measurem paper underscores th policymakers with in in developing countr
71	Agarwal et al. (2023)	39	9,75	3,01	Understand and analyze the key challenges for building resilience in handicraft MSMEs by scrutinizing the existing literature and interactions with stakeholders.	Quantitative, survey, exploratory factor analysis (EFA) and the Decision-Making Trial and Evaluation Laboratory (DEMATEL), SMEs in India (top management)	1) The influencing cl such as competition insufficient governm and inefficient mana internationalization, causal relationships challenges to the var government may allo ensure resilience, as relationship.