

Entrepreneurial Resilience and Adaptation in Times of Crisis: A Bibliometric Study on Business Continuity in SMEs

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ABSTRACT

This bibliometric analysis investigates the evolving landscape of research on small and medium-sized enterprises (SMEs) focusing on entrepreneurial resilience and adaptation strategies in times of crisis. By utilizing VOSviewer for thematic clusterization and trend analysis, the study maps out the interrelationships among key research themes and tracks their evolution from 2019 to 2022. The analysis identifies foundational themes such as crisis management and performance, alongside emergent themes like digital transformation and gender issues. Furthermore, the research highlights underexplored areas, including the impacts of natural disasters and the role of employees in organizational resilience, presenting potential avenues for future scholarly work. Additionally, an examination of author collaboration networks reveals robust partnerships and suggests areas for potential interdisciplinary research.

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1. INTRODUCTION

Small and medium-sized businesses (SMEs) play a crucial role in the global economy, greatly boosting GDP and employment across a range of nations [1], [2]. However, during economic downturns and crises, their operational frameworks frequently expose businesses to greater risk [3]. The COVID-19 pandemic and other recent worldwide disasters have highlighted the significance of resilience and adaptation techniques in preserving business continuity [4]. Research shows that one important factor in determining how successfully SMEs are

able to continue operating and recover from crises is entrepreneurial resilience [5].

Entrepreneurial resilience in SMEs involves the capacity to endure and bounce back from challenges while maintaining or quickly resuming business operations [6]. This resilience is not just about survival but also encompasses the ability to seize opportunities that emerge during turbulent times [6], [7]. The literature suggests that resilience is multifaceted, involving emotional, strategic, and operational dimensions [6]–[9]. Yet, there is a gap in comprehensive studies that combine these aspects to provide a clear picture of how SMEs

adapt to and recover from disruptions [6], [10].

Bibliometric analysis offers a powerful tool to explore the vast array of academic literature on this subject, identifying key trends, patterns, and gaps in the research [11]. By mapping the existing research landscape, we can uncover the primary factors that contribute to the resilience and adaptability of SMEs [12]. Such an analysis is instrumental in synthesizing knowledge, setting the stage for future research, and guiding policy-making [13]. Therefore, understanding the trajectory of research on entrepreneurial resilience and adaptation helps in pinpointing where further inquiry and intervention are necessary [14], [15].

Despite the recognized importance of entrepreneurial resilience, there is a notable scarcity of systematic studies that integrate various dimensions of resilience and adaptation strategies in SMEs. Many studies focus narrowly on specific aspects, such as financial resilience or technological adaptation, without a holistic approach to business continuity. This research gap hinders the development of comprehensive strategies that encompass all critical facets of resilience, making it difficult for SMEs to effectively prepare for and respond to crises.

The primary objective of this research is to conduct a bibliometric study to analyze the trends and patterns in the literature concerning entrepreneurial resilience and adaptation strategies in SMEs. This study aims to map the key themes and identify the most influential works and authors in the field. Through this analysis, the research seeks to create a consolidated view of the current knowledge and emerging trends, providing a foundation for future studies. This research is significant as it aims to enhance the understanding of how SMEs can develop resilience and adapt effectively in the face of crises. The findings will potentially inform policymakers and business leaders, enabling the design of better support mechanisms and strategies for SMEs. Moreover, by identifying key gaps in the literature, this study will direct future research efforts towards areas that are

critical yet underexplored. Ultimately, this research contributes to the broader discourse on business continuity and resilience in the challenging economic landscape faced by SMEs.

2. LITERATURE REVIEW

2.1 *Entrepreneurial Resilience and Adaptation in Times of Crisis*

Entrepreneurial resilience and adaptation in times of crisis are crucial for the survival and success of businesses [16], [17]. During the COVID-19 pandemic, startups faced challenges in marketing, operations, and organizational support, requiring flexibility, agility, and technological innovation for success [9]. Similarly, SME owners in India displayed resilient behavior through bricolage, estimating the duration of adversity and focusing on alternative actions [18]. Understanding the sequence of antecedents leading to resilient behavior is essential for SMEs to navigate crises effectively [19]. Moreover, the story of a Greek couple highlights career resilience and adaptability, showcasing the importance of psychological strategies and adaptability in overcoming career shocks [20]. Entrepreneurial resilience involves proactive responses, innovative strategies, and adaptability to thrive in challenging times [21].

2.2 *Business Continuity in SMEs*

Business continuity for small and medium-sized enterprises (SMEs) is essential as it involves strategies and planning to ensure these businesses can maintain or resume critical operations during a disruption [22]. SMEs are particularly vulnerable to crises due to their limited resources and financial constraints, making effective continuity planning crucial for operational continuity and

competitive advantage [23]. The process includes risk assessment, business impact analysis, development of continuity strategies, incident management, and post-crisis recovery plans. Despite challenges such as resource limitations and a lack of expertise, it is important for SMEs to regularly update and test their continuity plans based on new risks and business changes [24], [25]. This proactive approach not only helps in managing compliance with regulations but also in maintaining market share and customer trust during turbulent times [26].

3 METHODS

This bibliometric study employs a quantitative research design to systematically analyze the literature on entrepreneurial resilience and adaptation strategies in SMEs during times of crisis. The research focuses on identifying patterns, trends, and key themes within the existing body of academic work. By employing bibliometric methods, the study quantitatively assesses the distribution of publications over time, citation analysis, co-authorship networks, and keyword co-occurrence to map the intellectual structure of the field.

The data for this study will be collected from multiple academic databases, including Web of Science, Scopus, and Google Scholar, to ensure comprehensive coverage of the literature. The search strategy will involve using specific keywords such as "entrepreneurial resilience," "SMEs," "business continuity," "crisis management," and "adaptation strategies." The inclusion criteria are peer-reviewed articles published in English from 2000 to the present. Duplicates and publications not directly related to the scope of SMEs and resilience will be excluded.

The collected data will be analyzed using bibliometric software tools like VOSviewer and CiteSpace. These tools facilitate the creation of visualizations such as bibliometric maps and networks that illustrate the relationships between authors, institutions, countries, and keywords. The analysis will include citation analysis to identify the most influential studies, co-citation analysis to understand the theoretical foundations, and keyword analysis to detect emerging trends and thematic clusters in the research.

4. RESULTS AND DISCUSSION

4.1 Research Data Metrics

Table 1. Data Citation Metrics

Publication years	1998-2024
Citation years	26 (1998-2024)
Paper	980
Citations	54753
Cites/year	2105.88
Cites/paper	55.87
Cites/author	25397.28
Papers/author	450.37
Author/paper	2.77
h-index	106
g-index	217
hI,norm	68
hI,annual	2.62
hA-index	49
Papers with ACC	: 1,2,5,10,20:754,636,441,301,161

Source: Publish or Perish Output, 2024

Table 1 presents a comprehensive set of bibliometric indicators derived from a dataset of 980 papers published between 1998 and 2024, analyzed using Publish or Perish software. Over these 26 years, the corpus has accumulated 54,753 citations, translating to an average of 2,105.88 citations per year and 55.87 citations per paper. The high level of citations per author (25,397.28) and papers per author (450.37) suggests a substantial collaborative effort within this research field, with an average of 2.77 authors per paper. Notably, the dataset achieves a strong h-index of 106, indicating that at least 106 papers have received 106 citations each—a marker of significant impact. The g-index is even higher

at 217, reflecting that the top 217 papers have collectively garnered at least 47,189 citations. The normalized h-index (hI_{norm}) is 68, and the annualized version (hI_{annual}) is 2.62, underscoring sustained relevance and influence over time. The hA -index stands at 49, providing further insight into the dataset's citation depth. Furthermore, the analysis of papers with accumulated citation counts (ACC) at various thresholds—1, 2, 5, 10, 20—reveals that a large number of papers continue to be highly cited, with diminishing counts as the citation threshold increases, demonstrating the depth and breadth of the research impact in this field.

Table 2. Top Cited Research

Citations	Authors and year	Title
1901	[27]	Resilience: the concept, a literature review and future directions
1582	[28]	Entrepreneurship and marketing strategy: The SME under globalization
1392	[29]	Startups in times of crisis—A rapid response to the COVID-19 pandemic
1025	[30]	Entrepreneurial orientation and growth of SMEs: A causal model
986	[31]	Relationships, layoffs, and organizational resilience: Airline industry responses to September 11
958	[32]	Danger zone entrepreneurs: The importance of resilience and self-efficacy for entrepreneurial intentions
914	[33]	Organizational absorptive capacity and responsiveness: An empirical investigation of growth-oriented SMEs
905	[34]	Masters of disasters? Challenges and opportunities for SMEs in times of crisis
856	[35]	Organisational resilience: development of a conceptual framework for organisational responses
848	[36]	Adaptive fit versus robust transformation: How organizations respond to environmental change

Source: Publish or Perish Output, 2024

Table 2 showcases the top-cited research within the field of entrepreneurial resilience and SME adaptation strategies, reflecting a broad array of studies that have significantly influenced academic and practical approaches to business continuity. The most cited paper, by R Bhamra, S Dani, and K Burnard (2011), which received 1901 citations, reviews and sets future directions for resilience, highlighting its foundational role in subsequent studies. Close behind, G Knight's 2000 study on entrepreneurship and

marketing strategy under globalization has accrued 1582 citations, emphasizing the challenges and strategies for SMEs in a global context. More recent work by A Kuckertz et al. (2020) with 1392 citations, discusses startups in the context of the COVID-19 crisis, reflecting the urgency and relevance of research during sudden economic shocks. Other notable papers include studies on the causal models of growth for SMEs, the impact of organizational culture on resilience, and strategic responses to crises and

environmental changes. These papers not only contribute to understanding SMEs' operational strategies but also enrich the theoretical framework around organizational resilience and adaptive capacities in

challenging times. This table, derived from Publish or Perish outputs in 2024, underscores the diverse yet interconnected aspects of research that inform SME strategies across different crises and operational challenges.

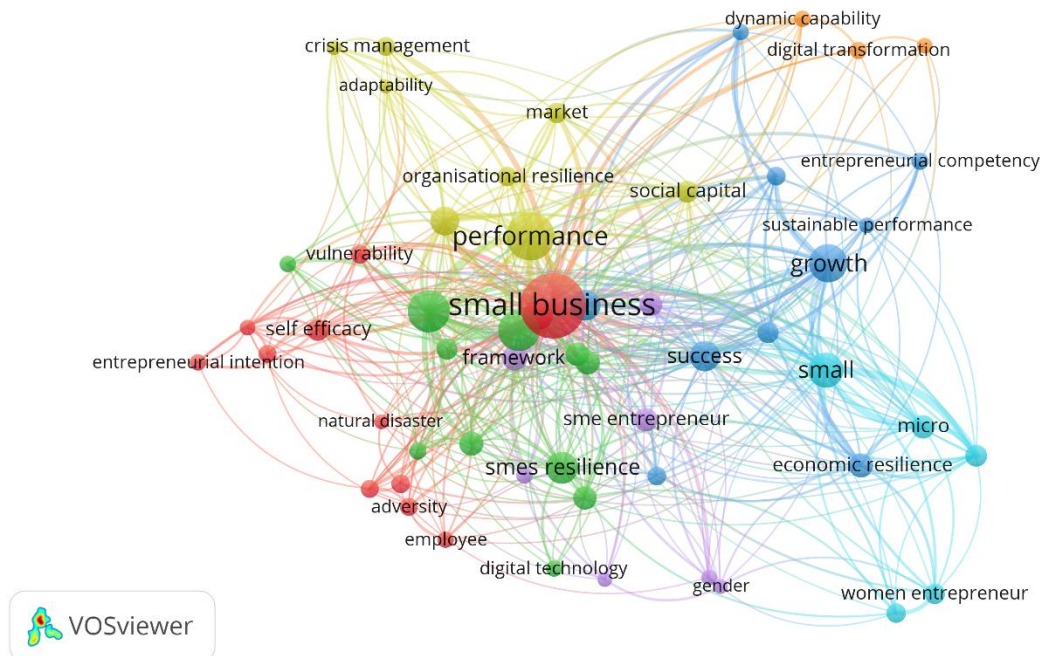


Figure 1. Network Visualization

Source: Data Analysis Result, 2024

The first visualization above displays a thematic clusterization of terms related to small business and SME resilience. In this network, different colors represent distinct thematic clusters, each indicating a grouping of interconnected concepts.

1. **Red Cluster: Resilience and Challenges**
This cluster focuses on the core attributes of resilience and the challenges faced by small businesses and entrepreneurs. Terms like "adversity," "self-efficacy," "entrepreneurial intention," and "natural disaster" highlight the focus on the personal and operational capacities to withstand and recover from difficult situations.
2. **Green Cluster: Business Operations and Performance**

Central to this cluster are terms like "performance," "framework," "success," and "employee," which relate to the operational aspects of SMEs and the frameworks that support business performance and management practices.

3. **Blue Cluster: Growth and Capability**
This cluster encompasses terms such as "growth," "sme entrepreneur," "dynamic capability," and "sustainable performance," pointing towards the strategic dimensions of SME management, emphasizing growth, sustainability, and the capabilities needed to adapt and thrive in various conditions.
4. **Yellow Cluster: Market and External Factors**

Featuring terms like "market," "digital transformation," "social capital," and "organizational resilience," this cluster likely deals with the external business environment and how SMEs interact with and adapt to market conditions and digital changes.

5. Purple Cluster: Demographics and Inclusivity

With terms like "gender" and "women entrepreneur," this cluster seems focused on demographic factors that influence entrepreneurship,

particularly how gender impacts business opportunities and challenges in the SME sector.

The network illustrates the complexity of factors influencing SME resilience and adaptation, from internal capabilities and performance to external market dynamics and demographic considerations. This visualization aids in understanding how various research themes are interlinked and which areas might be pivotal for further exploration to support the resilience and growth of small businesses.

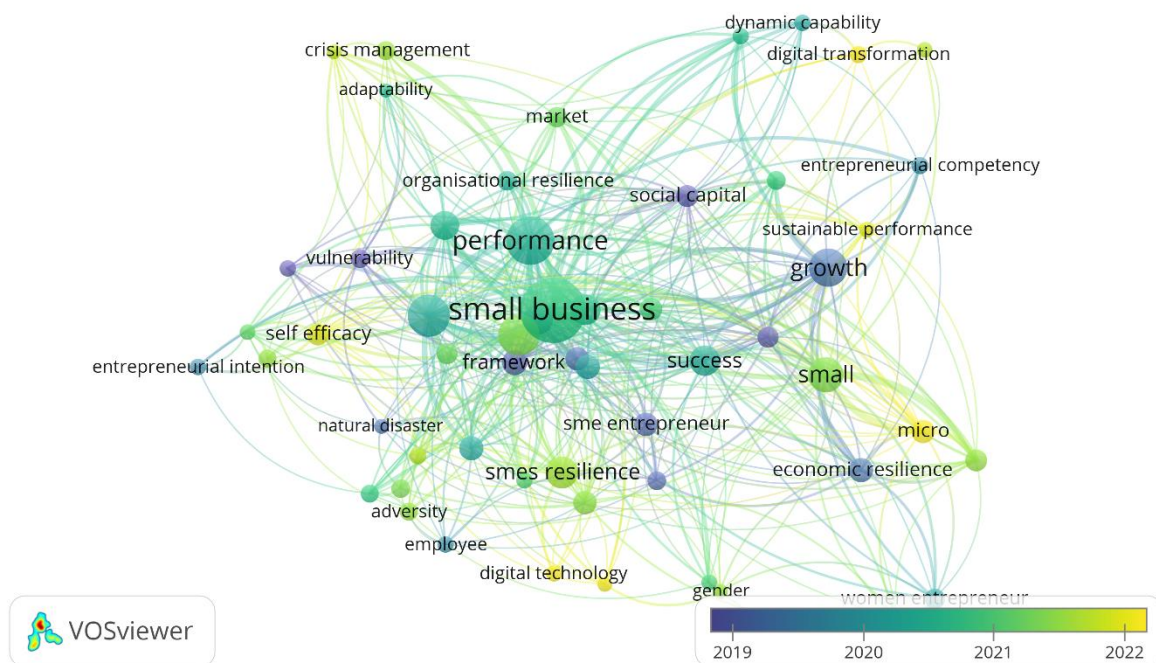


Figure 2. Overlay Visualization
 Source: Data Analysis Result, 2024

This VOSviewer visualization with the temporal overlay provides an insightful perspective on the evolution of research themes related to small business and SME resilience over the years 2019 to 2022. This timeline view helps identify shifting focuses and emerging trends in the field.

1. Early in this period, the emphasis appears to be on foundational aspects such as "self-efficacy," "adversity," and

"entrepreneurial intention," colored in darker hues (suggesting 2019 focus). This indicates a strong interest in understanding the internal dynamics of entrepreneurs and their resilience capabilities in the face of challenges, likely influenced by the onset of global disruptions like the COVID-19 pandemic.

2. As the visualization transitions into lighter colors (indicating the progression into 2020 and 2021), there is a noticeable shift towards "digital transformation," "economic resilience," and "sustainable performance." This shift suggests a growing recognition of the need for SMEs to adapt to digital technologies and sustainable practices as crucial resilience strategies during ongoing global challenges.
3. By 2021 and into 2022, the focus shifts further towards themes like "micro," indicating a zoom into micro-level strategies and perhaps microenterprises specifically. The continued emphasis on "economic

resilience" and the appearance of newer terms like "gender" and "women entrepreneur" in lighter shades highlight an increased attention to diversity and inclusivity in entrepreneurship research.

Throughout these years, the central theme of "small business" remains a consistent and prominent node, indicating that it is a perennial focus of research, acting as the core around which other thematic explorations revolve. This consistent focus on small businesses likely anchors the broader discourse on resilience and adaptation strategies, ensuring a continuous link between varied research aspects and the central subject of SME resilience.

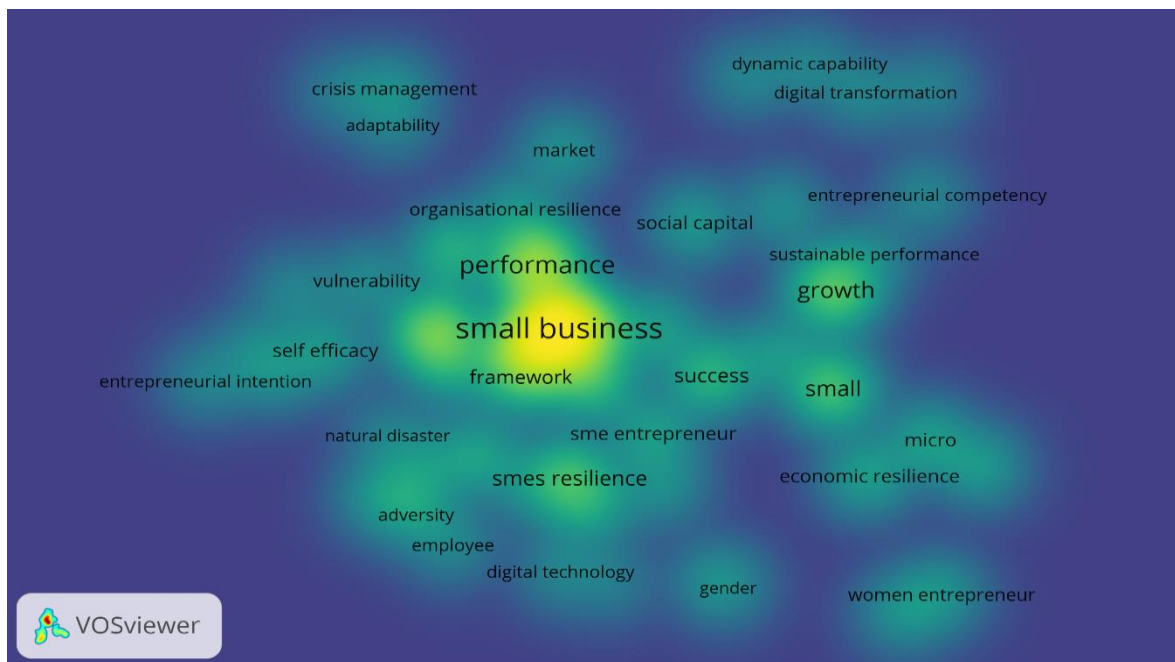


Figure 3. Density Visualization

Source: Data Analysis, 2024

In this visualization, areas with less brightness or fainter colors might indicate topics that are less explored or underrepresented in the current body of literature, suggesting potential opportunities for further research.

1. Natural Disaster and Adversity

These terms appear in a less bright or fainter area of the visualization, suggesting that while the broader themes of resilience and crisis management are well-trodden, specific

impacts of natural disasters and how SMEs navigate adversity might be less explored. Research could focus on detailed case studies of SMEs recovering from specific types of natural disasters, evaluating the effectiveness of different resilience strategies.

2. Gender and Women Entrepreneur

The terms related to gender issues and women entrepreneurs are also less prominently highlighted. This indicates a potential gap in understanding how gender influences entrepreneurial resilience and success, particularly in crisis situations. Further studies could explore the unique challenges and opportunities faced by women entrepreneurs in SMEs, potentially leading to more tailored support mechanisms.

3. Employee

While the term 'employee' is included, its less bright

representation suggests that the role of employees in fostering organizational resilience might be underexplored. Research could delve into how employee engagement, skills development, and welfare impact the overall resilience of SMEs. There's an opportunity to study the internal human resource strategies that contribute to better crisis management and recovery.

4. Micro

The term 'micro' suggests a focus on micro-enterprises, which are smaller than SMEs. This area's less bright appearance could imply that fewer studies address the specific contexts and needs of micro-enterprises during crises. Research could focus on the distinct resilience strategies of micro-enterprises, which might differ significantly from larger SMEs due to resource constraints and operational scopes.

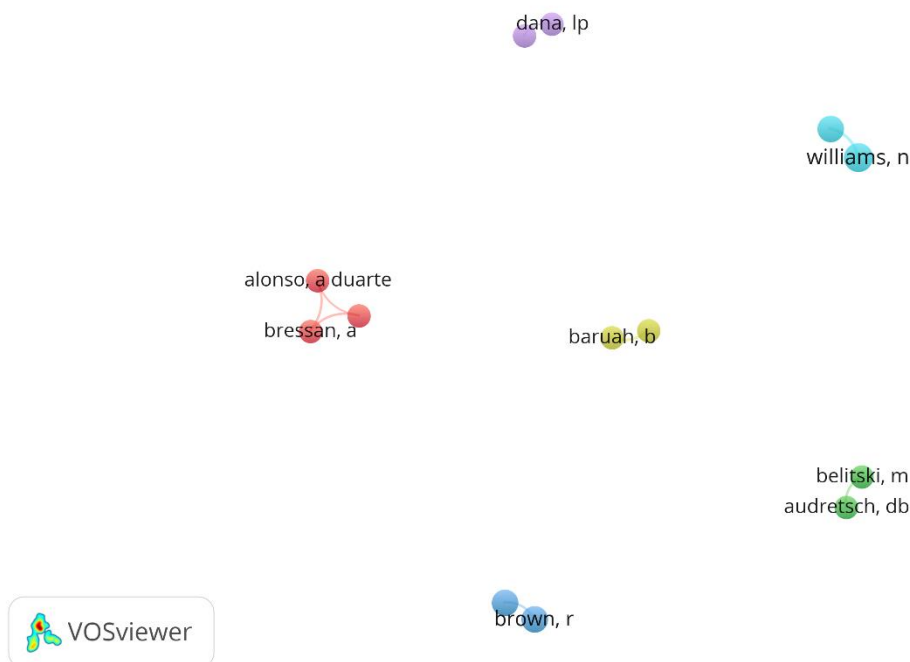


Figure 4. Author Collaboration Visualization

Source: Data Analysis, 2024

In this last figure, each node (dot) represents an author, and the lines between nodes indicate collaborations between them. The size of the nodes may represent the number of publications or the centrality of the authors within the network, and the thickness of the lines might indicate the strength or frequency of collaboration between the authors.

1. Red cluster, this cluster includes "alonso, a," "duarte," and "bressan, a." The tight clustering and the connections between these authors suggest a strong collaboration, likely indicating that they have co-authored multiple papers together or frequently collaborate in their research endeavors.
2. Yellow cluster, here, "barauh, b" appears to be a central figure with links to other authors like "belitski, m" and "audretsch, db." This suggests that Baruah is possibly engaged in interdisciplinary or multi-institutional research, bridging connections to other significant researchers.
3. Blue cluster: "williams, n" and "brown, r" represent another group but seem to have a more isolated position compared to the rest, indicating that their collaborations might be more focused or limited to a specific niche within the field.
4. Authors like "dana, lp" do not show any connections to others in this visualization. This could indicate that Dana works independently or with authors outside the scope of this

particular dataset.

5. CONCLUSION

This comprehensive bibliometric analysis spanning thematic clusterization, research trends over time, identification of future research opportunities, and author collaboration networks provides deep insights into the field of SME resilience and adaptation strategies. Thematic clusterization reveals that while traditional themes like performance and crisis management are robustly explored, there are significant interconnections among diverse topics such as digital transformation and gender issues, highlighting the multidimensional nature of SME research. The temporal trend analysis indicates a clear shift towards more current concerns such as digital adaptation and economic resilience, especially evident during and after the global disruptions caused by the COVID-19 pandemic. The identification of less explored areas like the impacts of natural disasters on SMEs and the role of women entrepreneurs suggests untapped opportunities for future research that could fill critical gaps in the literature and offer fresh insights into enhancing SME resilience. Lastly, the author collaboration network underscores the importance of scholarly partnerships in fostering rich, interdisciplinary dialogues and advancing our understanding of complex issues facing SMEs, pointing towards a continued need for collaborative efforts that bridge diverse research clusters and geographic boundaries. Together, these analyses not only map the current landscape but also chart a course for future inquiries and collaborations that can significantly enhance the theoretical and practical understanding of small business resilience.

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