

COVID-19 adversities: Setting an agenda for research on SME resilience

Abstract

Purpose: This study presents a systematic literature review of research on SME resilience during the COVID-19 pandemic, synthesizing entrepreneurial responses through the lens of ambidexterity, crisis adaptation, and relational support.

Design/methodology/approach: Unlike narrative literature reviews, which are considered less comprehensive, a systematic literature review (SLR) was deemed appropriate for this study. Its methodological rigour enabled a systematic search of several bibliographic databases, resulting in an initial sample of 2,616. Rigorous and structured qualification criteria were applied to ensure that suitable articles were selected for analysis, resulting in 175 articles.

Findings: This study revealed that, due to the pandemic's significant impact on small businesses, their owners had to be ambidextrous in pivoting between exploration and exploitation. This included leveraging their capabilities while adventurously applying technology and innovation, and being flexible, agile, and able to tolerate ambiguity. This involved entrepreneurially identifying previously unexploited opportunities, viewing 'dire circumstances' as opportunities, and continuing business in the face of mounting COVID-19 adversities.

Originality: This paper is unique in that it integrates exploration, bricolage, and ambidexterity within the context of SME resilience, developing a model of SME resilience that incorporates entrepreneurial adaptability and relational networks.

Research implications: This study has both academic and practical implications, as well as social and policy implications. Its perspectives encourage additional research and policy initiatives to mitigate the impacts of a crisis on SMEs. SME owners acquire knowledge in dealing with adversities and learn how to promote a resilient workforce during a pandemic.

Keywords: SME, COVID–19, resilience, sustainability, systematic literature review

Introduction

In the last decade, research focusing on adversities, including COVID-19 in the context of SMEs, has grown exponentially. Research has shown how SMEs in a pandemic situation are saddled with mounting challenges made worse by their smallness, lack of crisis management strategies, and limited resources and bases (Doern, 2021; Klyver and Nielsen, 2021). Extant scholarship details the coping mechanisms that SMEs adopt to confront their adversities, such as COVID-19. These studies describe how SMEs often leverage digital technology (Klein and Todesco, 2021; Mishrif and Khan, 2023; Nariņ, 2022), streamline their supply chain systems (see Lau *et al.*, 2024; Lee *et al.*, 2022) and co-produce the services or products they offer with their customers (Dejardin *et al.*, 2023). Research on COVID-19 and SMEs suggests that small businesses were forced by the pandemic to be creative and innovate to sustain their operations (Shi *et al.*, 2024).

While research focusing on crisis situations in SMEs (Herbane, 2013) or pandemic outbreaks (Liu *et al.*, 2024), such as the COVID-19 pandemic in the context of SMEs, has provided some insights into SMEs' challenges and responses, future research must examine their ability to explore and exploit opportunities induced by such adversities simultaneously. Moreover, such research should focus on their ability to bounce back, particularly the strategies they deploy for their recovery (cf., McCann *et al.*, 2023; Katare *et al.*, 2021) and ultimately resilience. Given that research recognizes SMEs as an essential component of economic development at both the regional and national levels (Wennekers and Thurik, 1999), developing knowledge about how they can sustain operations during and after a crisis or pandemic is crucial for managers, who must reconcile resource constraints with market opportunities (Simba *et al.*, 2021). Likewise, such insights can help policy institutions proactively initiate key policy and social reforms that safeguard SMEs and their capacity to continue operating despite external shocks (cf., Branicki *et al.*, 2017; Korsgaard *et al.*, 2020; Smallbone *et al.*, 2012), thereby preparing them for unexpected disruptions caused by natural disasters, pandemics, or terrorist actions in ways that support their long-term resilience (cf., Zighan *et al.*, 2022; Ozanne *et al.*, 2022) and survival (Katare *et al.*, 2021).

In this context, this systematic literature review (SLR) evaluates and synthesizes 175 research articles to assess the impact of external adversities such as COVID-19 on SMEs and how these businesses confronted the pandemic's widespread disruptions. Unlike traditional or narrative reviews, which tend to critique and summarize a body of literature while drawing conclusions about the topic under question, this study employs SLR techniques to enable a more rigorous and well-defined strategy for identifying, analyzing, critiquing, and synthesizing research on COVID-19 and SMEs (see Cronin et al.'s 2008 step-by-step guide). Given the heightened focus on COVID-19 and SMEs, research in this area has expanded rapidly. However, and notably, this body of research remains fragmented and interdisciplinary, often lacking the conceptual integration needed to develop a coherent understanding of how SMEs respond to crises. Despite the proliferation of studies on SMEs and COVID-19, many follow divergent thematic pathways, making it difficult for researchers to synthesize findings into actionable theory (cf. Doern, 2016; Hebane, 2010).

In response, this SLR contributes by organizing the scattered insights into a cohesive framework that integrates concepts from entrepreneurial resilience, crisis adaptation, and strategic decision-making. Rather than advancing a novel theory, our study provides theoretical clarity by synthesizing key concepts, such as agility, ambidexterity, and adaptive capacity, that recur across the SME resilience literature (cf. Ates and Bititci, 2011). This integration is important because much of the extant scholarship on crisis management has focused on large firms with pre-established contingency plans (Branicki et al., 2017), offering limited relevance for smaller businesses with constrained resources. By mapping the strategies SMEs adopted during the COVID-19 crisis, our SLR highlights the way in which entrepreneurial resilience manifests through adaptive improvisation, relational support, and context-specific opportunity recognition. Building on recent SLRs (e.g., Durst et al., 2024; Ojong et al., 2021), this synthesis identifies conceptual patterns that can guide future theorizations. It also helps address the broader gap in the literature concerning how crises affect entrepreneurial practices (Doern, 2016), especially within the SME sphere, where vulnerabilities are often heightened and under-explored (Herbane, 2010).

Theoretical foundation

Before outlining our methodology, we present a theoretical argument to foreground the SLR. The COVID-19 pandemic exposed a fundamental vulnerability among SMEs: their limited capacity to absorb shocks, pivot operationally, and recover from sudden disruptions. While crisis management remains a key operational concern, this study anchors its conceptual lens in entrepreneurial resilience, understood as the dynamic capacity to absorb, adapt, and transform in the face of adversity (Bhamra et al., 2011; Duchek, 2020). This view sees SMEs not merely as reactive actors but also as entities capable of reflexive learning, innovation, and strategic renewal. Resilience theory, rooted in systems thinking and developed across disciplines ranging from psychology to supply chain management, offers a more encompassing framework for understanding how SMEs respond to turbulent environments (Bhamra et al., 2011). In organizational contexts, resilience is not simply about bouncing back to a pre-crisis state but about evolving through adversity. Resilience is conceptualized as comprising three sequential and interdependent capabilities: anticipation, coping, and adaptation (Duchek, 2020). SMEs that anticipate potential threats (e.g., supply chain breakdowns or market contraction), respond effectively during crises (through coping mechanisms such as cost-cutting or temporary pivots), and adapt by reconfiguring business models or rethinking customer engagement strategies are better positioned to weather long-term shocks (Canwat, 2024; Purnomo et al., 2021).

Building on this, Lengnick-Hall et al. (2011) argue for a transformational view of resilience in which disruption becomes a trigger for renewal. They differentiate resilience from related constructs such as flexibility or agility by emphasizing its developmental trajectory: resilience includes both recovery and innovation (Lengnick-Hall et al., 2011). Organizational resilience is thus not simply an outcome but a capacity cultivated through strategic routines, leadership orientation, and embedded learning systems. It involves leveraging existing resources while dynamically acquiring new resources, a process especially critical for SMEs with limited slack (Adikaram and Surangi, 2024; Roloff, 2023).

Importantly, our study extends the organizational resilience lens to the domain of entrepreneurship by integrating entrepreneurial resilience, not only as structural

capacity but also as behavioural, cognitive, and relational orientation. Theoretically, the paper: (1) integrates fragmented resilience insights into a multidimensional framework, (2) deepens the application of dynamic capabilities theory to SMEs in crisis, (3) advances entrepreneurial resilience as an iterative and behavioural capacity, and (4) embeds SMEs within broader institutional and policy ecosystems.

Methodology

Since this study aimed to examine the impact of the COVID-19 pandemic on SMEs and the ways in which these ventures confronted the pandemic's disruptions, an SLR was selected as the most suitable research design (Kraus et al., 2022; Ojong et al., 2021; Vlačić et al., 2021). An SLR is defined as "research that bears on a particular question, using organized, transparent, and replicable procedures at each step in the process" (Littell et al., 2008, p.1–2). To conduct our SLR, we followed a transparent procedure consisting of various phases (Salmon et al., 2023). For rigour and replicability (Tranfield et al., 2003), we detail each phase below.

Designing our search (phases 1 to 4)

First, given the significance of SMEs globally, the process began by recognizing the importance of an SLR that examines how they were affected by the COVID-19 pandemic and the strategies adopted to address the issues faced.

An SLR on this topic is important for two key reasons. The COVID-19 pandemic has led to an exponential increase in research on SMEs and their resilience strategies across diverse national, institutional, and sectoral contexts. Although this expanding body of work has yielded valuable insights, it remains highly fragmented and lacks conceptual clarity. Without a comprehensive approach, the field may become saturated with disconnected findings, making it difficult for scholars, practitioners, and policymakers to draw coherent conclusions. Our review addresses this gap by critically synthesizing and organizing these disparate contributions, laying the groundwork for a more unified and cumulative body of knowledge. Additionally, the crisis-specific context of COVID-19, and its disproportionate impact on SMEs, demands a reconceptualization of resilience that accounts for the nuances of small business survival, adaptation, and innovation under

unprecedented conditions. By comprehensively analyzing how SMEs respond across geographic areas and sectors, our SLR identifies novel patterns of entrepreneurial behavior, strategic ambidexterity, and digital transformation that expand resilience theory beyond its traditional boundaries. Thus, in June 2024, the research team conducted a search on Google Scholar, which confirmed the absence of an SLR on the impact of COVID-19 adversities on SMEs and how these firms confronted the pandemic's disruptions. Second, given the aim of our study, the team restricted the search to articles from 2020 onwards, as COVID-19 was declared a pandemic by the World Health Organization in March 2020 (Ciotti et al., 2020). Third, since SMEs are not exclusive to small business management journals, the research encompassed various disciplinary journals to capture the extensive literature on the topic (Hansen and Schaltegger, 2016; Salmon et al., 2023). Fourth, following previous reviews on SMEs (Carrasco-Carvajal et al., 2023; Dekel-Dachs *et al.*, 2021; Durst et al., 2024; Saad et al., 2021) and COVID-19 (Elkhwesky et al., 2024), we developed a search string that included the following keywords: SME*, small and medium enterpris*, small and medium busin*, small and medium-sized enterpris*, small and medium busine*, small firm*, small and medium-sized enterprise* COVID-19*, COVID*, SARS CoV-2*, crisis*, virus* and corona*, SMEs resilien*, resilient SMEs, and small and medium enterprises resilience. By utilizing keywords from previous reviews, this study captured the inclusion of relevant articles. Table 1 presents the inclusion and exclusion criteria.

Insert Table 1 here

Executing the search (phase 5)

In the fifth phase, the search was conducted in June 2024 by using two databases that have been widely used in previous reviews, i.e., Scopus and Web of Science (cf. Carrasco-Carvajal et al., 2023; Durst et al., 2024; Ojong et al., 2021; Salmon et al., 2023). Research has identified Scopus and Web of Science as two of the 14 academic search systems well suited for SLRs and evidence synthesis (see Gusenbauer and Haddaway, 2020). Following previous reviews (Dabić et al., 2020; Dekel-Dachs *et al.*, 2021; Poggese et al., 2016; Salmon et al., 2023), the focus of the search was on journal articles, excluding conference proceedings, books, and book

chapters (Table 1). In Scopus, our sample was further refined into three subject areas: Business, Management and Accounting, Social Sciences, Economics, Econometrics and Finance. In Web of Science, the sample was further refined into five categories: Management, Business, Economics, Business Finance, and Social Sciences Interdisciplinary. In both databases, the search was limited to articles published in English. A search string was applied to titles, abstracts, and keywords, resulting in 2,616 articles. That is, there were 1,168 from Web of Science and 1,448 from Scopus.

Insert Figure 1 here

Article Filtering (phase 6)

In phase six, we reviewed the titles and abstracts of all 2,616 articles in our initial sample to ensure alignment with the aim of our paper. We coded the articles as “yes”, “no”, or “maybe”. Specifically, 2,433 articles were coded as “no”, and eight were coded as “maybe”. To ensure reliability, we discussed all “maybe” coded articles until reaching a consensus on their inclusion or exclusion from the final sample. To ensure consistency, we decided that only articles that explicitly focused on resilience or the impact of the pandemic should be retained. Hence, all eight articles coded as “maybe” were rejected. In sum, 2,441 articles were excluded, leaving a final sample of 175 articles: 122 from Web of Science and 53 (excluding duplicates) from Scopus (Figure 1).

Insert Figure 2 here

Data Analysis (phase 7)

In the seventh phase, we conducted an inductive analysis of 175 articles using a bottom-up approach to uncover underlying patterns (Strauss and Corbin, 1990), highlighting nuances. This inductive approach was adopted in other literature reviews, resulting in meaningful insights (Salvi et al., 2023). One of the authors imported all 175 articles into NVivo and engaged in open coding, where descriptive labels (first-order codes) were assigned to meaningful text segments that captured empirical insights related to SME responses to the COVID-19 pandemic, including challenges faced.

Through iterative comparison and constant refinement (Gioia et al., 2013), conceptually similar first-order codes were grouped into higher-level categories (second-order themes) which reflected more abstract patterns, mechanisms, or constructs. That author engaged in multiple cycles of refinement to unpack the significance of each second-order theme, examining its origins and identifying the first-order codes it encompassed (Salvi et al., 2023). The other author verified the codes to ensure that they align with the coding procedure. Following multiple iterations between the data and analysis, the second-order themes were grouped into three aggregated categories (Gioia et al., 2013). The three aggregated categories were selected because they enabled us to present the findings in a way that foregrounds the conceptual logic of SMEs' resilience rather than simply enumerating themes in descriptive form (Figure 2).

Review of findings

Our findings are divided into three interrelated categories: external shocks and vulnerabilities, entrepreneurial adaptiveness, and relational and network-based support. The first category (external shocks and vulnerabilities) highlights the fundamental pressures that trigger adaptive responses, paving the way for the second and third categories, which elucidate adaptive measures.

External Shocks and Vulnerabilities

SMEs faced “exogenous” disruptions during the COVID-19 crisis. These disruptions, manifested as market-related shocks, operational breakdowns, and financial weaknesses, combined to create a turbulent, high-risk environment for many SMEs.

Market shocks and demand fluctuations

SMEs experienced a sharp drop in consumer demand due to pandemic fears, social distancing, and border closures. Businesses reliant on in-person interactions, such as restaurants, tourism, and entertainment, were particularly affected (Adikaram and Surangi, 2020; Musavengane et al., 2022). These sectors experienced declines in person visits and cancellations. Fear of contagion further suppressed demand, as

consumers avoided non-essential spending (Bettiol et al., 2023). With revenue streams drying, many SMEs struggled to plan, invest, or cover basic costs (Haneberg, 2021; Pfister and Lehmann, 2023).

Simultaneously, pandemic-related disruptions to global supply chains created further uncertainty. Many SMEs were unable to secure vital inputs, especially those dependent on global suppliers who were contending with lockdowns and closed borders (Bettiol et al., 2023; Ferreira et al., 2021). In several low- and middle-income countries, nearly half of SMEs reported experiencing serious problems in obtaining materials, which contributed to production halts (Nordhagen et al., 2021; Abu Hatab et al., 2021). Moreover, inventory shortages limited their ability to meet even modest levels of customer orders (Ferreira et al., 2021; Zimon et al., 2021). This intersection of volatile demand and unreliable supply chains introduced unprecedented market fluctuations, undermining SMEs' sales forecasts and operational planning (Marconatto et al., 2022; Huang et al., 2023).

Beyond these demand- and supply-driven shocks, SMEs also had to grapple with sudden changes in consumer behaviour. Conventional businesses with brick-and-mortar models found themselves largely unprepared for the speed at which online shopping, contactless delivery, and virtual services rose to prominence (Ocloo et al., 2024). In sectors such as manufacturing and agri-food, fluctuating export controls and erratic border policies slowed or halted shipments, plunging many SMEs into further vulnerability (Purnomo et al., 2021; Munongo and Poee, 2022).

Operational disruptions

Stringent lockdowns, labour shortages, and disruptions in workforce management emerged as major operational hurdles for SMEs across regions. Many were forced to close temporarily or drastically reduce working hours (Al-Hyari, 2022; Mishrif and Khan, 2023). In places such as Pakistan, 95% of SMEs reported severe reductions in operations (Aftab et al., 2021). Even in contexts with partial lockdowns, SMEs had to cope with new health and safety regulations, altered hygiene protocols, shortened operating hours, and occupancy limits, driving up costs and complicating daily routines (Giotopoulos et al., 2022).

Supply chain breakdowns compounded these pressures. SMEs encountered two interrelated challenges: sudden material shortages and prolonged delays that disrupted production and order fulfilment (Bettiol et al., 2023; Vig and Agarwal, 2021). Firms often lacked viable alternatives or backup supplier networks, making them particularly vulnerable to disruptions beyond their control (Marconatto et al., 2022). These problems were especially pronounced in labour-intensive sectors such as manufacturing, where any pause in input availability rippled across the production cycle, triggering increased downtime and loss of revenue (Robinson and Kengatharan, 2020).

Another dimension of operational upheaval involved managing personnel. Lockdowns and social distancing measures meant that staff were absent, working reduced hours, or forced to shift to telework with little preparation (Howe-Walsh et al., 2023). SMEs in various countries reported an inability to retain or pay employees, which fuelled high staff turnover and uncertainty (Aftab et al., 2021; Gautam and Gautam, 2024; Karacsony, 2023). In industries such as hospitality and tourism, for example, mass layoffs are an unfortunate reality, leaving businesses short-staffed or shuttered when restrictions ease (Guerrero-Amezaga et al., 2022; Naringç, 2022). This volatility often forced entrepreneurs to make strategic trade-offs, either to continue paying wages despite dwindling revenues or to cut labour costs to preserve some measure of cash flow (Durst and Henschel, 2021; Sarker et al., 2022).

Financial fragility

The financial precariousness of many SMEs became acutely visible after COVID-19 began constraining their revenue streams. Declining sales swiftly eroded profit margins (Kim, 2022; Fasth et al., 2022). In some countries, over 70% of SMEs reported plunging sales, and many firms struggled simply to cover salaries and rent (Nordhagen et al., 2021; Iancu et al., 2022). In industries such as consulting, construction, event management, or tourism, businesses are often suspended indefinitely (Ocloo et al., 2024; Tunio et al., 2021).

Another facet of fragility involved liquidity constraints. As revenues decreased, paying off loans, servicing debt, and replenishing inventory became increasingly difficult (Al-Hyari, 2022; Zimon and Tarighi, 2021). Consequently, the risk of insolvency soared

(Gambirage et al., 2023). The lack of readily available credit only worsened the crisis. Financial institutions, wary of lending amid economic chaos, tightened their requirements or demanded higher collateral (Cowling et al., 2023). In the UK, for example, relationship banking did not necessarily translate into easier access to credit, as the pandemic upended conventional lending practices (Zhao et al., 2023). In many low- and middle-income countries, SMEs had to rely on personal savings or informal borrowing networks, highlighting just how precarious their funding base had become (Yao and Liu, 2023).

A widespread outcome of these liquidity woes was deteriorating financial security. Shrinking revenues and ongoing expenses swiftly undermined the stability of countless small firms (Al-Hyari, 2022; Nguyen, 2023). Financial capacity (e.g., adequate cash buffers and credit access) was identified as a core determinant of resilience (Thekkoot, 2024). Some reported tapping into personal assets or business reserves to sustain operations, whereas others delayed paying for suppliers or renegotiated lease agreements (Khan, 2022). Ultimately, the cumulative effect of limited financial reserves, dwindling cash flows, and restricted credit access contributed to an environment of extreme financial fragility for SMEs worldwide (Ntwademela et al., 2024; Sharma et al., 2023).

Entrepreneurial Adaptiveness

In the face of severe disruptions, several SMEs pivoted their business models, overhauled their supply chains, introduced new financial practices, and recalibrated their human resource policies.

Business model reconfiguration

Many SMEs fundamentally altered their business models to address fluctuating demand, lockdowns, and shifting consumer behaviour. Some switched production lines (e.g., from apparel or distilleries to manufacturing personal protective equipment or disinfectants), whereas others seized immediate opportunities in essential goods such as food and health products (Clauss et al., 2022; Purnomo et al., 2021; Canwat, 2024). In Chile, certain businesses pivoted from tourism services (such as hostel provisions) to

health accommodation facilities or delivery-oriented food services (Bianchi, 2022). To survive pandemic-related market shocks, some touristic SMEs in Colombia fully transformed their offerings, including tapping into new tourism niches (e.g., eco-friendly or experiential travel) (Sepúlveda & Bustamante-Caballero, 2024).

Digitalization also became a key lever during this time. As physical distancing measures were implemented, SMEs introduced online ordering, expanded e-commerce platforms, fintech, and leveraged social media for sales, marketing, and relationship building (Ocloo et al., 2024; Mishrif and Khan, 2023; Zhou and Sun, 2024). In India, increased mobile app usage significantly improved SMEs' long-term efficiency (Rakshit et al., 2021). Many SMEs have turned to digital platforms to sustain sales and reduce overhead (Khurana et al., 2022). Some SMEs in Jordan, for example, integrated e-commerce solutions to continue operations and engage with customers (Al-Hyari, 2022; Abuhussein et al., 2023). Many SMEs engaged in temporary business model innovation, experimenting with revenue streams, adapting products for online formats, and targeting new customer segments (Zahoor et al., 2022; Brunelli et al., 2023). SMEs that approached these pivots proactively tended to fare better, although pivot strategies were not universally linked to higher short-term profits (Puumalainen et al., 2023). Fundamental business model innovation, especially in the context of digitalization and subscription-based revenue, directly increased the resilience of SMEs when they entered new markets (Eriksson et al., 2022). That said, Őri et al. (2024) noted that organizational resilience does not have a direct effect on digitalization but works indirectly when it is combined with available resources (e.g., financial, technological).

Supply chain adjustments

Agile supply chain strategies emerged as vital for operational continuity. Many SMEs sought alternative suppliers or adopted multisourcing arrangements to lessen dependency on a single channel (Al-Hyari, 2022; Marconatto et al., 2022; Nariő, 2022). Some agri-food SMEs experienced supply disruptions through local sourcing and digital coordination (Ali et al., 2023). In Southeast Asia, for example, firms that diversified both suppliers and markets were more resilient against disruptions than those that did not (Falciola et al., 2023). Some raised inventory levels to guard against logistical

bottlenecks, whereas others implemented early-warning systems or bulk purchases to secure essential materials (Zimon et al., 2021; Ferreira et al., 2021). SMEs in the Sri Lankan construction sector similarly leveraged flexible supplier partnerships and workforce arrangements to overcome disruptions (Madhavika et al., 2024). In some cases, SMEs worked with larger partners or group purchasing organizations for better leverage, including supply chain finance solutions that provided short-term liquidity and kept operations running (Kaur et al., 2023; Zimon et al., 2021). Innovative approaches such as strategic sourcing, streamlined logistics routes, and cooperative purchasing consortia became part of the arsenal SMEs deployed to handle frequent delays and sudden input shortages (Abdelfattah et al., 2023; Liu et al., 2022). Multitier supply chain transparency and collaborative risk management were critical to SME resilience in volatile global markets, as they fostered more proactive risk mitigation (Stentoft & Mikkelsen, 2024).

Financial and cost management innovations

Under severe revenue pressures, SMEs commonly resorted to reducing operational costs, renegotiating rents, cutting wages, and downsizing (MacGregor Pelikanova et al., 2021; Al-Hyari, 2022; Ntwademela et al., 2024). In hospitality, for example, lowering energy consumption and adopting minimal staff operations were tactics for managing overhead (Howe-Walsh et al., 2023). Conservative working capital practices became widespread, with businesses extending supplier payment terms and scaling back inventory to preserve cash (Zimon and Tarighi, 2021; Pfister and Lehmann, 2023).

SMEs facing liquidity shortfalls pursued novel financing avenues – crowdfunding, donations, informal family-and-friend loans, or securing collateral via intellectual property (Cowling et al., 2023; Ntwademela et al., 2024; Gur et al., 2023). Some firms adopted mixed financing approaches, blending formal loans with informal credit lines to mitigate risk (Sharma et al., 2023; Yao and Liu, 2023). Pricing also evolved: certain SMEs offered discounts or flexible payment terms to retain customers, whereas others raised prices to offset surging input costs (Pillay et al., 2022; Canwat, 2024).

SMEs used wage subsidies, tax deferrals, and concessional loans for short-term relief when these tools were available (Cowling et al., 2023; Belghitar et al., 2022). While these measures sometimes increased survival rates, their effectiveness varied significantly across regions and sectors (Nguyen et al., 2024; Kuchakov and Skougarevskiy, 2023). However, many firms, especially those in low- and middle-income countries, continued to rely on informal credit networks to address cash flow crises (Nordhagen et al., 2021).

Human resource adaptations

Lockdowns and social distancing requirements compelled SMEs to re-envision their workforce strategies. Remote work rapidly gained traction as a cost-effective measure that allowed businesses to continue operations with fewer health risks (Aftab et al., 2021; Gull et al., 2024). In response to distancing mandates, SMEs adopted telework arrangements. However, uptake was uneven and constrained by digital infrastructure gaps and workforce readiness, especially in low-resource settings (Giotopoulos et al., 2022).

Many SMEs reduced hours, implemented pay cuts or resorted to layoffs to manage payroll expenses (Belghitar et al., 2022; Ntwademela et al., 2024). In Pakistan, over 70% of SMEs cut employment or hours, sending more than 80% of staff on unpaid leave (Aftab et al., 2021). Others, however, restructured job roles and retrained local talent to compensate for shortages in foreign labour, especially in hospitality-heavy contexts (Howe-Walsh et al., 2023). Proactive human resource management practices, rather than cost-driven practices, increased resilience and reduced staff turnover during crises (Zhou et al., 2023).

The data also revealed concern for employee morale. Some SMEs strove to maintain job stability and provide emotional support aimed at retaining key staff and preserving institutional knowledge (Zakaria et al., 2023). Productivity-based compensation, schedule flexibility, and mental health resources emerged in certain SMEs as attempts to mitigate stress and sustain engagement (Robinson and Kengatharan, 2020; Gautam and Gautam, 2024).

Opportunity recognition and innovation

A hallmark of resilient SMEs during the COVID-19 pandemic was proactive opportunity recognition. Many firms identified new market niches or repurposed existing resources to introduce novel products and services (Nordhagen et al., 2021; Purnomo et al., 2021). For example, some SMEs in Indonesia pivoted from traditional batik production to create personal protective equipment (Panjaitan et al., 2021), whereas certain distilleries in Austria, Germany, and Liechtenstein temporarily converted their operations to the manufacture of disinfectants (Clauss et al., 2022). In Italy, some service-oriented SMEs transformed crisis conditions into growth opportunities by rapidly modifying service offerings (e.g., contactless delivery, virtual consultations) and capitalizing on new consumer preferences (Corvello et al., 2023). These shifts often entailed accelerated product development: Canadian SMEs, for example, streamlined their innovation processes to bring new offerings to market more quickly, seizing emerging consumer demands (Blais and Cloutier, 2023). Another dimension of this opportunistic behaviour involved expanding into international markets despite travel restrictions, as SMEs with stronger international entrepreneurial orientations (EOs) moved forward in seeking foreign opportunities (Anggadwita et al., 2023; Zahoor et al., 2022). Whether through developing new ventures or rapidly revising product lines, creative problem-solving enabled SMEs to capture revenue streams made newly viable by the pandemic environment (El Chaarani et al., 2022; Pillay et al., 2022).

In addition to core product changes, many SMEs leverage “bricolage”, i.e., “making do” with limited means. Through bricolage, firms blend existing resources to address new challenges, such as reconfiguring distribution channels or using leftover materials for secondary products, even as supply chains faltered (Adikaram and Surangi, 2024; Baier-Fuentes et al., 2023; Roloff, 2023). Across diverse contexts, this adaptive innovation proved essential for survival in crisis conditions.

Organizational ambidexterity and strategic agility

Another recurring factor in SME resilience was organizational ambidexterity, which involved balancing the exploration of new opportunities with the exploitation of existing competencies and markets (Iborra et al., 2022). Firms that successfully

combined both exploratory and exploitative strategies in a coherent manner tended to navigate short-term disruptions and position themselves for longer-term growth (Iborra et al., 2022; Penco et al., 2022; Smara et al., 2024). For example, some businesses exploited established capabilities in digital marketing or production efficiency while exploring fresh verticals such as online retail or home-delivery services (Ocloo et al., 2024).

Strategic agility, the capacity to adjust rapidly to changing circumstances, likewise proved vital (Kryeziu et al., 2022). Several SMEs adopted spontaneous decision-making processes, allowing them to pivot resource allocations and organizational structures in real time (Charoensukmongkol, 2022). Others relied on organizational learning, using feedback from the market to refine their offerings or restructure costs (Klyver and Nielsen, 2021). Moreover, many SMEs embraced dynamic capabilities, such as sensing new market demands by monitoring consumer behavior shifts (Shi et al., 2024; Vasi et al., 2024), seizing opportunities via rapid product or process innovations, such as harnessing data analytics or e-commerce platforms (Almeida and Wasim, 2023; Durst and Henschel, 2021), and reconfiguring resources swiftly, whether by forming new partnerships, introducing new revenue models, or reshuffling internal processes (Ahmad et al., 2023; Lopez et al., 2024). SMEs that excelled in sensing, seizing, and reconfiguring often sustained their competitiveness in the face of shutdowns, shifting regulations, and evolving consumer preferences (Nguyen et al., 2024). Firms with more robust dynamic capabilities adapted faster to unexpected operational hurdles and stabilized their financial health (García-Valenzuela et al., 2023). By blending ambidexterity and dynamic capabilities, exploiting extant strengths while exploring novel avenues, small firms could “bend but not break” under the pressure of the pandemic.

Psychological resilience and leadership mindsets

The human dimension, encompassing psychological resilience, leadership orientation, and overall mental health, was crucial for entrepreneurial fortitude. As sales declined and uncertainty intensified, many SME owners experienced psychological strain, including stress, anxiety, and depressive symptoms (Chhatwani et al., 2022;

Messabia et al., 2022). However, leaders who maintained a proactive mindset, seeing COVID-19 challenges as opportunities rather than just threats, were often able to cope more effectively (Penco et al., 2022; Susanto et al., 2023). “Digital leadership”, part of an entrepreneur’s proactive mindset, fostered a resilient workforce culture, motivating employees to embrace remote tools and flexible work (Lathabhavan et al., 2024). Entrepreneurial resilience underpinned a bolder marketing approach, improving survival odds (Pathak et al., 2024).

EO, which was characterized by proactivity, risk-taking, and innovativeness, facilitated creative crisis responses. Firms with strong EO were more likely to attempt daring pivots or invest in new technologies rather than relying solely on cost-cutting measures (Puumalainen et al., 2023). In parallel, psychological resilience was shown to lower the incidence of owner depression, which in turn supported better decision-making (Chhatwani et al., 2022). Thus, effective leadership fostered staff morale, spurred opportunity seeking, and helped realign business strategies under volatile conditions (Durst and Henschel, 2021).

Furthermore, some entrepreneurs employed perseverance strategies such as reorganizing processes, renegotiating contracts, or forging collaborative partnerships, hence demonstrating a mix of emotional stamina and calculated risk-taking (Klyver and Nielsen, 2021; Thorgren and Williams, 2020). On the employee side, workforce well-being initiatives, open communication, and empathetic leadership further reinforced a sense of cohesion and commitment that boosted collective resilience (Zakaria et al., 2023).

Relational and Network-Based Support

Crucial to SMEs’ crisis responses were the external and network-based support that they leveraged. Partnerships, governmental schemes, customer engagement strategies, and informal community ties all played vital roles in helping SMEs withstand COVID-19 pressures.

Collaborations, alliances, and coopetition

Many SMEs formed partnerships with suppliers, research institutions, and sometimes even direct competitors. These alliances pooled resources and enhanced firm-level agility (Blais and Cloutier, 2023; Almeida and Wasim, 2023). Several tourism SMEs in Malaysia built resilience by forging adaptive, collaborative partnerships when conventional tourist flows were disrupted (Seow et al., 2024). Notably, “coopetition” (i.e., collaborating with competitors), became a strategy for sharing critical knowledge or offsetting production costs (Markovic et al., 2021). Some SMEs deepened ties with key suppliers to secure priority deliveries, navigate border closures, or implement new supply chain finance solutions (Kaur et al., 2023). Other firms engaged university labs or R&D partners to pivot offerings and expedite product development (Blais and Cloutier, 2023). Beyond supply chains, SMEs involved customers in co-creation processes, gleaning ideas for product redesigns, improvements, and market positioning (Markovic et al., 2021). Open innovation practices in SMEs increased resilience by accelerating knowledge sharing and product development (Li, et al., 2024). Through collaborative efforts, SMEs accessed resources, capabilities, or distribution channels that would have been out of reach had they remained isolated (Ashiru et al., 2022). Some SMEs transcended firm-level concerns by engaging in broader sustainability practices that also fostered community resilience (for example, local supply networks, skill-sharing, and environmental stewardship), and SME-driven sustainability efforts and community engagement were reciprocally beneficial – SMEs supported communities, and communities supported SMEs (DiBella et al., 2023). Resource pooling, social capital building (e.g., community ties), and flexible operational planning improved short-term survival (Musavengane et al., 2023).

Government and institutional assistance

Macrolevel policies (subsidies, tax relief, official crisis support) were indispensable for SME resilience (Thukral, 2021; Zhao et al., 2023). Across different regions, SMEs pursued a range of government support, including wage subsidies, grants, and tax relief. In the UK, programmes such as the Bounce Back Loan Scheme (BBLs) and the Coronavirus Business Interruption Loan Scheme (CBILs) provided

liquidity, whereas Australia's JobKeeper Payment helped SMEs retain staff (Cowling et al., 2023; Belghitar et al., 2022; Watson and Buckingham, 2023).

The government responses were inconsistent. While some programmes clearly bolstered SME survival rates, others proved less impactful or created unintended consequences, such as in Japan, where support may have sustained unprofitable "zombie" firms (Fukuda, 2023). Certain countries offered wage subsidies or extended loan terms, but many SMEs found access cumbersome or inadequate. Disruptions in collaboration with local institutions further complicated relief distribution (Markovic et al., 2021; Nariņ, 2022). Some SMEs hence found government aid essential for bridging short-term cash flow gaps, whereas others turned to alternative avenues when institutional help was insufficient (Zhao et al., 2023). However, external funds and supportive policies accelerated digital transformation for SMEs with existing resilience capacities (Ori et al., 2024). In Indonesia, SMEs that actively engaged with local government programmes recovered faster from liquidity shortages and exhibited greater market adaptability (Taneo et al., 2022). In Brazil, financial assistance from the government and other lending institutions played a crucial role in helping SME breweries survive (de Sa et al., 2023).

Customer-centric strategies and social media

The pandemic spurred SMEs to increase their direct engagement with customers, often through digital channels. Platforms such as Facebook, Instagram, and TikTok became crucial, allowing businesses to maintain visibility, conduct sales, and build loyalty despite lockdowns (Nordhagen et al., 2021; Hu et al., 2023). SMEs solicited rapid feedback from customers to fine-tune product offerings, shifting to contactless delivery or curbside pickups as needed (Rahman et al., 2022; Clemente-Almendros et al., 2023). Some firms introduced proactive communication (e.g., regular email or WhatsApp updates) and loyalty programmes, aiming to preserve relationships and gather market intelligence during uncertain times (Mishrif and Khan, 2023; Panjaitan et al., 2021). By embracing customer-centric tactics, personalized outreach, online promotions, and real-time responsiveness, SMEs often mitigated revenue decreases and sustained brand momentum (Lopez et al., 2024).

Informal support mechanisms

In parallel with formal or institutional relief, grassroots financing and community solidarity offered critical lifelines. The use of friends-and-family loans was especially prevalent in contexts where formal lending was scarce or risk averse. For example, small businesses in Istanbul heavily relied on personal networks to raise emergency funds (Gur et al., 2023). Some SMEs engaged in neighbourhood support networks, leveraging volunteer labour or resource sharing, particularly in rural or closely knit communities (Roloff, 2023).

Other SMEs combined informal funds with other sources, such as crowdfunding or small donation drives, bridging immediate liquidity gaps (Sharma et al., 2023; Yao and Liu, 2023). Such informal mechanisms proved vital where government aid was delayed or insufficient, emphasizing the role of personal and community networks in crisis resilience (Nordhagen et al., 2021).

Discussion

Figure 3 depicts how SMEs confront and potentially overcome COVID–19 adversities. Sudden disruptions, such as fluctuating customer demand, chronic supply chain breakdowns, and liquidity crises, served as the initial triggers requiring urgent managerial attention (Bettiol et al., 2023; Nordhagen et al., 2021). These triggers exerted immense pressure on day-to-day operations, often threatening the survival of SMEs if not addressed in a deliberate and adaptive manner (Ferreira et al., 2021). Owing to these pressures, internal responses began to take shape. For many firms, this adaptiveness manifests as cost-cutting, operational pivots, and targeted innovation (Marconatto et al., 2022). Some SMEs swiftly reconfigured their business models to include online channels, whereas others expanded into previously uncharted product lines (Ocloo et al., 2024). SMEs actively exploited their established competencies, particularly those related to digital capabilities, while also exploring new markets and partnerships. This balancing act mirrors the concept of organizational ambidexterity and highlights the versatility needed in a protracted crisis (Clauss et al., 2022; Iborra et al., 2022).

Insert Figure 3 here

Alongside a firm's internal shift, relational and network-based assistance significantly amplified resilience. Government interventions such as wage subsidies and concessional loans offset some of the risks incurred when revenue streams plunged (Cowling et al., 2023). In several contexts, local and regional networks, as well as alliances with larger corporations, helped SMEs gain better access to supply chain financing, crucial raw materials, and knowledge-sharing platforms (Kaur et al., 2023; Markovic et al., 2021). As Figure 3 illustrates, this relational facet was not peripheral; rather, it was an indispensable pillar reinforcing the firm's internal adaptive efforts.

Ultimately, both entrepreneurial adaptiveness and relational and network-based support fostered SME resilience. Resilience here entailed more than merely surviving short-term setbacks; it reflected the capacity to pivot, reorient resources, and protect key stakeholders while retaining enough strategic flexibility to seek out new opportunities (Durst & Henschel, 2021). This included nurturing and retaining a skilled workforce, a critical factor for SMEs that often rely on strong employee commitment to implement sudden shifts (Aftab et al., 2021). Additionally, there is a feedback loop from SME resilience back to entrepreneurial adaptiveness and relational/network-based assistance because going through a crisis can sharpen the ability to sense and seize new prospects (Chhatwani et al., 2022). Having survived a major disruption, some SMEs become even more adept at reorganizing supply chains, securing alternative financing, introducing new revenue models, and developing new business alliances and networks. In other words, once a crisis emboldens an organization to innovate and refine its capabilities, those lessons remain embedded and better position it for future shocks (Klyver & Nielsen, 2021).

In summary, Figure 3 emphasizes that resilience emerges through the interplay of external and internal factors. External shocks and vulnerabilities trigger the need for entrepreneurial adaptiveness, which in turn is reinforced by relational and network-based assistance. The synergy of these dimensions culminates in SME resilience, an adaptive capacity that is not static but continually develops through feedback loops. Hence, we offer a rich agenda for future research on the intricate mechanisms of how SMEs confront, respond, and evolve amid global crises such as COVID-19. By situating

resilience at the heart of the model, we argue that survival is not only purely reactive but also grounded in proactive experimentation, relational ties, and a persistent drive to adapt.

Future Research Agenda

On the basis of our findings, we propose a future research agenda that centres on three interlinked domains: (1) dynamic capabilities and entrepreneurial agency, (2) cultural and institutional contexts of resilience, and (3) network architectures and policy support. These themes are not discrete silos but overlapping terrains through which SMEs navigate crises. Across them, ambidexterity and dynamic capabilities emerge as cross-cutting mechanisms. In examining either digital financing or psychological resilience, future research should examine how SMEs orchestrate internal resources and external networks in context-sensitive ways to navigate uncertainty.

While many studies have documented the immediate strategies SMEs adopted during the COVID-19 pandemic, future work should explore the underlying capabilities that enable such responses. How do SMEs develop adaptive capacity under resource constraints? What processes foster entrepreneurial improvisation, learning, and transformation? In this regard, dynamic capabilities theory, particularly in relation to ambidexterity, agility, and bricolage, offers a valuable lens. For example, family-owned SMEs present compelling sites for such inquiry, as their decision-making is shaped by both affective ties and long-term strategic thinking (Clemente-Almendros et al., 2023; Riepl et al., 2024). Scholars could examine how emotional attachment to legacy or intergenerational continuity constrains or enhances strategic flexibility during crises. Similarly, postcrisis digitalization provides an opportunity to assess how technological adoption reshapes opportunity recognition, resource acquisition, and business model adaptation. Future research should also examine the interplay between entrepreneurial psychology, such as resilience, optimism, and risk perception, and innovation outcomes during recovery phases.

Resilience does not unfold in a vacuum; it is filtered through cultural logics and institutional frameworks. Future research should explore how the national context shapes entrepreneurial responses to crises, particularly in cross-country comparative

studies. For example, the role of collectivism versus individualism may condition whether SMEs rely on community networks or individual ingenuity to survive downturns. Institutional trust, regulatory flexibility, and access to formal support mechanisms also vary widely across settings, influencing SMEs' perceptions of risk and recovery. Additionally, longitudinal work could investigate whether crisis-induced adaptations persist over time and how regulatory learning shapes SMEs' future preparedness. Exploring these institutional dimensions is especially critical in developing economies, where state capacity, informal norms, and structural vulnerabilities intersect.

The resilience of SMEs is often related. Our model (Figure 3) adds conceptual coherence to previously fragmented discussions on SME resilience by foregrounding the relational infrastructures that shape adaptive capacity while illuminating blind spots in the literature. Specifically, we still know little about how network architectures, such as multiplex ties versus brokerage-heavy ties, mediate the effectiveness of policy support. Comparative studies that track how multiplex versus brokerage structures enable the sensing–seizing–reconfiguring cycle at different crisis stages would thus advance dynamic capability scholarship. This is precisely because such designs would expose the relational micro-foundations, trust-based knowledge transfer in multiplex ties versus opportunity pursuit in brokerage ties, identified as missing links between the abstract sensing–seizing–reconfiguring cycle and observable practice (Ambrosini & Bowman, 2009; Teece, 2007), thereby sharpening the boundary conditions under which dynamic capabilities produce advantages across distinct crisis phases.

Implications for Theory and Practice

Theoretical Contributions

Consistent with our initial framing, we extend organizational resilience theory to entrepreneurship by incorporating entrepreneurial resilience. Building on this foundation, our paper makes four key contributions. First, it provides a theoretically informed framework that integrates diverse resilience strategies adopted by SMEs in response to the COVID-19 pandemic. Rather than claiming novelty in theoretical construction, the study's contribution lies in the integration of fragmented insights into a cohesive structure that illuminates the multidimensional nature of resilience. The

framework expands the resource system view (Lim et al., 2020), conceptualizing SMEs as dynamic entities whose financial, social, human, and digital resources coevolve through feedback loops. In contrast to studies that isolate resilience as either financial stability or technological agility, this paper advances a composite understanding – resilience as an iterative process of adaptation, improvisation, and relational recalibration (Barney, 2007; Brinckmann et al., 2011). Given the limited theorization of crisis impacts on small enterprises (Herbane, 2010, 2013), this synthesis provides needed conceptual clarity on how SMEs mobilize internal and external capabilities in high-uncertainty contexts.

Second, the study deepens the application of dynamic capabilities theory to the SME-crisis nexus. This highlights how entrepreneurial ambidexterity was instrumental in navigating pandemic-induced disruptions. Drawing on Duchek's (2020) model of anticipation, coping, and adaptation, the findings illustrate how SMEs shifted between stability-seeking and exploratory behaviours. This process involved both leveraging existing assets (e.g., prior customer networks, community trust) and forming new assets (e.g., digital delivery systems, crowdfunding tools) under tight temporal constraints (Iborra et al., 2020; Lengnick-Hall et al., 2011). In doing so, the paper extends existing research on resilience from a static trait to an emergent capability, one that is activated through crisis-induced recombination of resources (Ates & Bititci, 2011; Herbane, 2013).

Third, the findings contribute to entrepreneurial resilience theory by revealing how crisis responses are shaped by iterative, real-time decision-making rather than linear recovery pathways. The entrepreneurs in the reviewed studies did not simply rebound; they reframed adversity into opportunity, often through adaptive experimentation. This includes digital coproduction strategies, in which SMEs collaborate with customers in real time to cocreate value, and a high tolerance for ambiguity, as entrepreneurs make decisions without clear information (Audretsch et al., 2023; Holl et al., 2024; Klein & Todesco, 2021). These practices highlight the relational and psychological dimensions of resilience: resilience is as much about sustaining morale, improvising with available tools, and keeping clients engaged as it is about financial solvency or operational efficiency (Awad & Martín-Rojas, 2024; Bullough & Renko, 2013; Fatoki, 2018). In this way, entrepreneurial resilience emerges as a

behavioural and affective capacity animated by both human and technological interactions.

Finally, this paper advances resilience theorization by embedding SMEs within broader institutional and policy ecosystems. Our findings suggest that resilience is not an endogenous capacity but is coproduced through supportive environments. For example, government interventions, such as streamlined grants, temporary tax relief, and accelerated digital infrastructure, acted as enabling conditions that helped SMEs buffer shocks and recalibrate strategies (Liu et al., 2024; Ozanne et al., 2022). However, the effectiveness of such measures varies across contexts, highlighting the importance of institutional alignment and timing. Thus, we move resilience research beyond firm-level analyses by emphasizing contextual embeddedness: the interaction between entrepreneurs, their social networks, and institutional actors shapes not only what responses are possible (Doern, 2016; Wieczorek-Kosmala et al., 2021) but also how adaptive strategies unfold over time.

Implications for practitioners and policymakers

Our findings offer numerous crucial insights for practitioners and policymakers working with SMEs, especially during crises such as the COVID-19 pandemic. This highlights the importance of understanding the challenges that SMEs face across various dimensions and how resilience strategies can mitigate these impacts. First, practitioners should prioritize adaptability and flexibility in business operations. SMEs that successfully navigated the pandemic implemented diverse strategies, such as supply chain adjustments, digitalization, and strategic networking. Business leaders should consider building organizational agility by adopting digital tools, improving supply chain resilience, and fostering strong customer relationships. Moreover, investing in employee well-being and adopting flexible work arrangements have proven to be crucial during times of uncertainty. Businesses that were able to leverage available resources innovatively, such as through product diversification or service adaptation, were better positioned to survive and even grow during the crisis (cf, Simba *et al.*, 2021).

Second, our model (Figure 3) calls for practitioners to treat digital capability and network brokerages as joint, not sequential, investments, as SMEs that digitized and

intensified interfirm ties were able to rebound. Moreover, managers need to institutionalize the “adaptive routines” forged under duress so that crisis learning becomes a form of everyday reflex memory. Such routinization is the bridge between surviving one shock and thriving through the next.

Third, our model (Figure 3) offers a clear roadmap for policymakers who are still grappling with the long-tail effects of the pandemic. Liquidity support is necessary but not sufficient. Additionally, the feedback loop between SME resilience and entrepreneurial adaptiveness explains why governments should bundle financial assistance with capability-building programmes – digital upskilling grants, mentorship schemes, and fast-track regulatory measures for business-model experimentation. Additionally, the model’s relational pillar implies that policy must move beyond firm-centric instruments towards network-centric instruments. Cluster-level credit guarantees, public–private procurement pools, and regional “resilience hubs” can institutionalize the informal alliances SMEs spontaneously formed during the crisis, thereby converting ad-hoc collaboration into structural advantages.

Fourth, this study emphasizes the need for policymakers to tailor interventions to specific contexts. SMEs across various industries and regions face distinct challenges, and a one-size-fits-all approach may not effectively address their needs. Governments should focus on providing targeted financial support, particularly for the most vulnerable sectors, such as hospitality and manufacturing, where supply chain disruptions and operating costs are most acute. Additionally, policies that encourage digital transformation and support technological adoption could help SMEs build long-term resilience. Policymakers should also consider creating incentives for SMEs to engage in strategic collaborations and networks, which were instrumental in enabling businesses to adapt and innovate during the pandemic. Furthermore, financial support mechanisms, such as low-interest loans and grants, should be designed to be accessible to smaller firms with limited financial reserves. Policymakers should also consider creating flexible loan repayment schemes to address the liquidity challenges that SMEs often face in times of crisis. Finally, the government’s role in facilitating access to markets through trade policies and infrastructure development will be critical in helping SMEs recover from the long-term economic impacts of COVID-19 and future

crises. By fostering a supportive ecosystem that addresses both immediate survival and long-term growth, policymakers and practitioners can collaborate to ensure that SMEs are better equipped to withstand future shocks.

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