



# Small and medium enterprises (SMEs) in a pandemic: A systematic review of pandemic risk impacts, coping strategies and resilience

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## ABSTRACT

Small and Medium Enterprises (SMEs) are particularly vulnerable to pandemics. Therefore, resilience and adaptation to shocks from pandemics such as COVID-19 are urgently needed. However, despite some coping strategies already in place among SMEs, research on their nature and effectiveness is limited. Thus, it remains unclear how effectively and sustainably documented coping strategies reduce SMEs' vulnerability and increase their resilience to pandemic risk. This article reviews academic literature for evidence of pandemic risk impacts on SMEs, coping strategies in response to these impacts, and the degree to which these strategies reduce SMEs' vulnerability and increase their resilience. According to the literature review, seven essential pandemic risk impacts were identified for SMEs - human movement restrictions, financial constraints, operational challenges, logistics difficulties, delayed business reopening, short-term policy focus and tacit knowledge workers. The study also outlined eleven critical coping strategies, notably structural or physical and behavioural changes. Study analysis reveals that resilience research among SMEs is predominantly conceptual with limited empirical evidence. To conclude, this study urges more adaptation research focused on developing new forms of pandemic risk education for SMEs addressing their complexities.

## 1. Introduction

Small and Medium Enterprises (SMEs) have become iconic in the pandemic discourse because of their conspicuous vulnerability [1, 2]. There has been a significant impact on organisations and people worldwide due to pandemics. Different industries have experienced different impacts, and these impacts are far-reaching. In nearly all countries, the COVID-19 pandemic has affected diverse sectors of the economy to varying degrees [3]. This explains why the COVID-19 pandemic, while boosting e-commerce adoption and increasing sales for SMEs in Information Technology (IT), also negatively affected SMEs' key activities such as transport, retail trade, accommodation, and food services, real estate, and other personal services (entertainment and recreation activities, hairdressing, etc.)

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[4,5]. Furthermore, new data indicate that lockdown rules and interventions in different locations affected SMEs differently during the pandemic, including in urban and regional areas [6]. Most of the reviewed articles focused on service-based SMEs as the most impacted group [1]. This review follows the European Commission's definition of SMEs, which is enterprises with less than 250 employees [6]. SMEs can further be classified as microenterprises (less than 10 employees), small enterprises (10–49 employees), and medium-sized enterprises (50–249 employees), and all these groups were considered in this study.

The COVID-19 crisis that has exposed SMEs to greater vulnerability than their larger counterparts have, in many cases, placed SMEs at a disadvantage [7–9]. This disproportionate impact is attributed to several factors. SMEs are overrepresented in sectors most affected by the crisis, particularly those that require personal contact, such as tourism, entertainment and recreation activities, hairdressing, and real estate [10,11]. In addition, SMEs often have smaller cash buffers and weaker supply chains [12,13]; limited supply chain capabilities [14,15]; lag in the adoption of new technologies and tools [8,12], and difficulty adapting their business operations to the current environment [2,7]. Policymakers and researchers have looked for ways to improve their resilience as the COVID-19 pandemic has become a more significant burden for SMEs. SME adaptation can be improved by carefully designing strategic coping strategies to sense and respond to the disruptive and unpredictable business environment accelerated by COVID-19.

SMEs' status as the least adaptable to pandemics makes them a particularly suitable group to study the effectiveness of resilience policies and practices. An increasing body of research is devoted to assessing SMEs' vulnerability to pandemics and their ability to cope or adapt [16,17]. Nonetheless, coping capacities do not automatically translate into effective, sustainable resilience policies and plans [18,19]. In addition, the ability to cope does not always translate into concrete resilience actions in SMEs, particularly those with institutional, capacity, and cultural constraints [20,21]. Due to this, it remains unclear how effectively and sustainably documented coping strategies decrease the vulnerability of SMEs and increase their resilience to pandemic risks.

The purpose of our research was to identify those empirical and theoretical studies that examined pandemic risks, coping strategies, and resilience in the context of SMEs. Even though numerous studies have been conducted, their results are inconsistent, implying a fragmented, inconclusive, and multi-faceted approach to COVID-19 pandemic risks, coping strategies, and resilience. In the years since COVID-19 hit, the field has grown exponentially and is expected to continue to develop as a place for theorising, empirical investigation, and methodological research. An SLR has the advantage of adopting a replicable, robust, and transparent process [22,23] to evaluate the field's current state and synthesize divergent studies pertaining to pandemic risks and resilience building in SME research. In this SLR, both categories of papers were included, consistent with previous systematic reviews [22]. Consequently, our research can fill important theoretical lacunae and bring together a field that has been fragmented and inadequately defined. In this study, we assess and synthesize literature-based theoretical and conceptual foundations, identify dominant content issues, and define outcomes. Three research questions guide our analysis.

1. What are the pandemic risk impacts on SMEs?
2. What are the coping strategies of SMEs for pandemic risk impacts?
3. To what extent can these coping interventions reduce SMEs' vulnerability and increase their resilience to pandemic risk impacts?

There are three main strengths of our review. First, by focusing on systematic reviews, we are able to summarise findings more comprehensively than by consulting individual original studies. A key feature of this SLR is that it formally categorizes these key themes according to their specific fields of activity and categories, which are not covered in other reviews. Second, by synthesising findings across all included studies and according to the pandemic risks-coping strategy-resilience nexus among SMEs, we provide a clear, detailed and unique summary of the current state of evidence and knowledge gaps concerning how coping strategies may influence SMEs' resilience to pandemic risks. Researchers, policymakers, and business owners can benefit from this summary. Furthermore, it provides direction for future research within the academic community.

The paper proceeds as follows. Section 2 presents the motivation for the study. A description of the method is presented in section 3. Then, section 4 captures the study results, while section 5 discusses the results. Finally, findings and recommendations are outlined in Section 6.

## 2. Motivation of the study

Several studies prior to COVID-19 examined various factors and their implications on SMEs and their performance [24,25]. As evident from COVID-19, these studies often lack evidence of how SMEs adapt to pandemics and other economic shocks and sustain their adaptation. While economic research on pandemic effects is sparse, there are similarities in their worldwide distribution and death patterns. One of the shocks of COVID-19 is its rippling effect across businesses, especially SMEs. The COVID-19 crisis means businesses must adapt to new environmental conditions in the short term and deal with an unintended cultural shift in the long term [26]. Despite the vast array of literature on the issue, there is no comprehensive review of pandemic risks and coping strategies among SMEs after COVID-19 hit. To date, existing empirical and theoretical studies have often narrowed the focus on either a subset of pandemic risks (e.g. financial risk) or coping strategies. Studies in this stream of literature did not follow systematic procedures and tended to draw on a limited range of sources. Even though such studies contribute to understanding how SMEs cope with pandemic shocks in the business space, the broad and separate scope of the reviews means that a holistic picture of the issue is still lacking. Also, some of these studies have identified various actors pertaining to coping strategies and provided avenues for exploring how such strategies address pandemic shocks in a specific organisational context. However, COVID-19 was not a specific focus of these review studies. The few early review studies focused on COVID-19 are purely health-related articles and fail to offer the business dimension of the debate [27,28]. Several other studies have also focused solely on the pandemic risks posed to large businesses [29–32]. This is

problematic as scholars and policymakers researching pandemic risk and coping strategies among SMEs would have to either limit themselves to a single-facet pandemic risk and coping strategies among SMEs or face the difficult task of navigating through the existing fragmented literature to inform future research and policy.

In contrast to previous studies, our systematic review focuses only on studies identifying the pandemic risk-coping strategy nexus in the SME content. Additionally, peer-reviewed journals published from March 2019 to February 2022 are included to provide the most complete and up-to-date accounts of recent research. Recent years have seen an increase in high-quality studies in this area. As a result, this systematic review is the first to account for the pandemic risk-coping strategy nexus, which could affect the decisions of millions of SMEs each year. It is understood, even from an anecdotal standpoint, that COVID-19 poses unwavering risks of unimaginable scale to businesses operating on limited resources, such as SMEs. However, the extent of these risk factors was unclear/unknown, as were the coping strategies adopted by these SMEs. As demonstrated above, this study aimed to systematically identify these risk factors and the coping strategies SMEs adopt to remain in business.

Drawing from Table 1, the literature has begun identifying how coping capacity is translated into resilience action in SMEs. A key element of this research strand is the role of governance, institutions, resources, and capacity and SME owners' perceptions of pandemic risks. This explains whether coping strategies are implemented effectively (considering local environmental and socio-economic circumstances) and sustainably (in the sense that interventions will continue over time). A need exists to understand how pandemic risks manifest in SMEs, what coping interventions are implemented, and whether these interventions reduce vulnerability and build resilience.

### 3. Method

This systematic review followed the PRISMA guidelines [40,41]. The process adopted for this systematic review were search strategy, screening, and data analysis.

#### 3.1. Planning and brainstorming

Prior to the study, a review panel was formed consisting of the authorship team with expertise in circular economy, waste management, and sustainability. The purpose of the review panel was to discuss the boundaries of urban mining research, define the scope and research questions for the study and establish the need for and contribution of the study. The brainstorming session lasted 45–60 min, and all emerging ideas were noted. This was followed by a further discussion to consolidate the main ideas into a large idea map with clearly stated research questions and study contributions.

#### 3.2. Search strategy

Following PRISMA, relevant databases (Scopus, EBSCOhost, ScienceDirect and ProQuest) were thoroughly searched to establish evidence-based knowledge for articles that focused on SMEs and the COVID-19 pandemic and general unexpected disruption and

**Table 1**  
Research gaps and study contributions.

Research Gap	Supporting literature	Key findings	Contribution
<b>Limited knowledge of pandemic adaptation among SMEs</b>	[29–32]	Large businesses that were technologically inclined and resourced were better positioned to cope with the crisis through digital platforms and innovations. Technological adaptation and innovation helped large enterprises endure the pandemic crisis better. For example, adopting digital platforms such as Zoom, Google Meet, and Skype allowed large enterprises to operate remotely during the lockdown period. More studies are required to examine the nexus between SMEs and pandemic coping strategies	This systematic review offers insights into SMEs' technological capacities within the pandemic risk-coping strategy nexus framework. This highlights how digital technologies now offer abilities to business models that enable them to 'sense and response' to uninformed external/environmental changes.
<b>Existing literature remains inconsistent and fragmented.</b>	[9,33–36]	Study findings on SMEs' adaptive capacities against pandemic risk remain inconclusive and mixed. Absence of comprehensive taxonomy of COVID-19 risk impacts and coping strategies.	This study offers a holistic perspective on the matter and presents a comprehensive pandemic risk-coping strategy taxonomy. This is because systematic reviews are exhaustive and systematically collate available but fragmented or patchy results that cannot be leveraged for any conclusive decision-making at practice and policy-making levels.
<b>Limited systematic review on SMEs and pandemic coping strategies</b>	[27,37–40]	Majority of existing studies on SMEs and pandemic risks have a health focus, with a limited number considering the issue from a business lens. Most studies conducted on SMEs and pandemic coping strategies have been empirical and conceptual review	This study synthesises existing findings and consolidates discussions on pandemic risk-coping strategy. The findings of this study provide policymakers and practitioners with a 'one-stop shop' for reliable results and informed decision-making.

shocks to economies and SMEs published from March 2019–February 2022. Specifically, this systematic review identified and collated all studies related to the COVID-19 pandemic and how SMEs responded. The Scopus, EBSCOhost, ScienceDirect and ProQuest databases were used because they are known to contain high-quality peer-reviewed journals and are linked with a significant number of publishers [42].

Given the above objective, only articles that reported on the impact of COVID-19 on SMEs and how they responded to them were considered to meet the inclusion criteria. The following keywords and phrases were combined in the search: “Pandemic risks in SMEs”, “Digital transformation among SMEs in pandemics”, “SMEs in pandemics”, “SMEs response to pandemics”, “Coping strategies for SMEs during pandemics”, “SME resilience”. The search strategy returned 2430 records. The initial result for the search encompasses 931 in ScienceDirect, 608 in Scopus, 453 in EBSCOhost, and 430 in ProQuest.

### 3.3. Screening process

After 2430 results were screened and validated by the authors, the records were exported to the Mendeley Reference Manager Version 2.84 to assist in study selection. During the first phase of the screening process, 2027 records were excluded from the study (See Fig. 1). This includes duplicates (n = 59), conference proceedings/papers (n = 492), book chapters (n = 793), books (n = 648) and editorial (n = 35). A total of 403 papers qualified for the next screening stage by a set of criteria. The remaining articles were further screened using their titles and abstract, removing 103 articles.

In selecting the final articles to include in this review, inclusion criteria were set by the authors. Among these criteria include: 1) Fundamentally, SMEs focus on the context of dealing with an event that has had far-reaching health, economic and social consequences. 2) Be peer-reviewed 3) Written in English and/or written in a non-English language but has corresponding English sections. 4) Has employed any acceptable/recognised research methodology, 5) From any region/country. The authors contend these criteria would allow the inclusion of as many relevant articles as possible, given the fragmented nature of available scholarship. Studies of the following characteristics were excluded, given the focus and objective of this exhaustive study: 1) Non-SME but pandemic impact-focused studies, 2) SME studies that did not focus on pandemic impact, 3) Papers published prior to March 2019, even if they were SME focused, 4) SME pandemic-focused but with no English language version/components. Subjecting the papers to the set criteria, 76 were analysed. The authors then developed a coding scheme to help answer the research questions.

### 3.4. Quality Checks

Each of the 45 articles identified as meeting the inclusion and exclusion criteria was independently assessed by two researchers using the six quality assessment checks suggested by Abdallah et al. (2020). The quality assessment criteria included i) credibility and sufficiency of datasets, ii) scope of work distinctly identified, iii) clarity of the research questions/objectives, iv) appropriateness of methodology adopted, v) quality of analysis and critical discussions and vi) study contributions to urban mining literature. Two

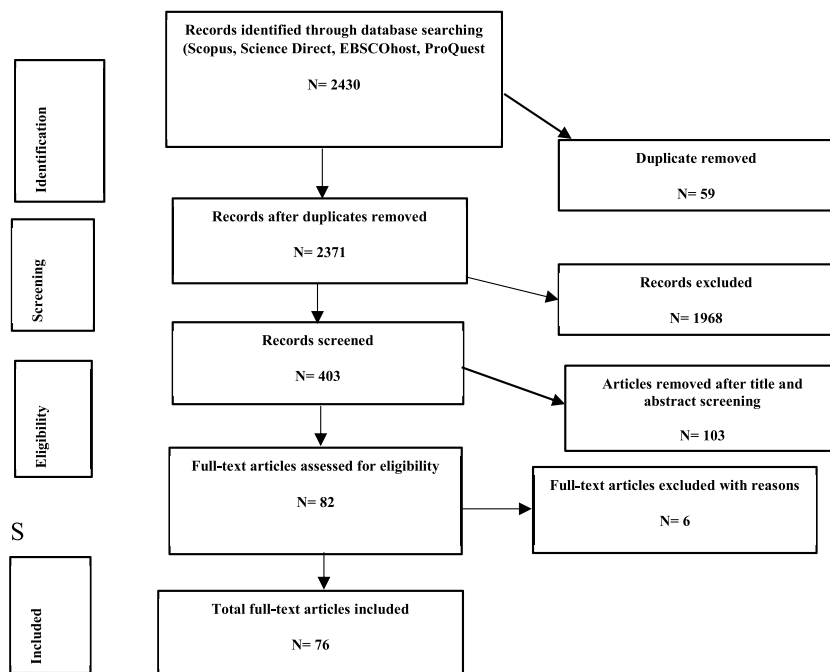


Fig. 1. PRISMA.

researchers read all the articles thoroughly, and each paper was assigned a score of 1 when the criteria were fulfilled, 0.75 for major fulfilment, 0.50 for partial fulfilment, 0.25 for poor fulfilment, and zero when the criteria were not met. Only articles that attained a score of 4.5 or higher were considered and included in the study. The final scores were validated by an external researcher. Overall, all 45 articles achieved the recommended cut-off score.

#### 4. Study results

In this section, the three research questions are addressed in turn before discussing the overall findings in the discussion section. Table 2 presents the research method adopted by the papers included in this paper. Also, three overarching themes addressing the research questions emerged from the 76 papers.

The very nature of the COVID-19 pandemic made it nearly impossible for any empirical studies to be conducted. However, online research tools enabled researchers to collect empirical data, and any unwillingness of research subjects/population is understandable given alarming concerns over residual public health concerns, such as stress emanating from lockdowns and other restrictions imposed by states to contain the rapid spread of COVID-19. The highest number/percentage of included papers were recorded in the category of literature review and conceptual papers at 21 (29%). Quantitative and qualitative studies papers constituted 31 (41%) and 16 (20%). In addition, mixed-method studies and systematic reviews constituted 4 (5%) each (negligible).

##### 4.1. What are the pandemic risk impacts on SMEs

Unlike start-up models, SMEs are generally structured and designed by local businesses, which depend on locals for their sustainability. Table 3 presents the pandemic risk impacts identified in the reviewed articles for this study.

With limited resources and smaller supply chain facilities, SMEs operate on marginal profit, mainly for in-person buyers. As a result, when locals cannot move around due to lockdowns and other restrictions – travel restrictions, social distancing, and self-isolation – poor business-to-business relationships and weaker supply chain services become the orders of the day [31,58,65,66]. These resulted in cash flow pressure – poor sales from shutdowns, various event, accommodation, and travel booking cancellations, revenue decline and defaults of various payment contributions for service industries [65,67–70,94,110], resulting in operational difficulties [44,45,60,69,71,106] and logistical challenges [7,26,30,46–48,59,68,72–74,95–99]. Also, 17 (36%) of the 48 papers topping the list of pandemic risks demonstrate the vital role that the local environment within which SMEs operate, such as lockdowns and restrictions on the movement of people, play in their survival and resilience. Logistics in organisations focus on managing the flow of goods between production and consumption points to meet consumer and business requirements. Pandemic risks exacerbate employee layoffs, compound productivity challenges, and delay the reopening of closed businesses [60,75–78].

One other most salient SME pandemic risk factor was the short-term government support measures in the context of policy directives. These support measures, among others, were hasty and heuristic in the early stages, focusing on immediate effect rather than structural and long-term focus [7,66,76,79]. Whilst these short-term focused policies have been criticised, their direct impact was positive [91,111–119]. For example, in developing countries, the absence of government support would have increased the failure rate of SMEs by 9.1% points, representing 4.6% of private-sector employment [12].

According to the United Nations Conference on Trade and Development (UNCTAD), COVID-19 - has brought catastrophic consequences across the globe [120,121]. The very nature of SMEs with limited resources implied they lacked the agility to transform their operations at the speed the pandemic travelled due to a lack of adoption of digital technologies [122]. However, the “new normal” would require businesses to undergo significant changes, including business and operational innovation, including online transformation [31,65]. For example, SMEs in the manufacturing industry generally lacked the adoption of digital technologies of Industry 4.0 [49] despite the high usage of digital channels, mainly social media [37,122]. This is primarily due to a lack of advanced technologies, lack of finance for investment, poor management vision, lack of clear returns on investment, and, overarchingly, lack of knowledge workers [37,61,80–82]. The few that adopted Industry 4.0 were driven by expected benefits, market opportunities, labour problems, customer requirements, competition, and quality image [123].

As a result, most SMEs in the production/manufacturing industry employed a “just-in-time” approach instead of any proactive risk management innovation and risk mitigation. For example, the agri-food business compromised its resilience to the realities of the pandemic [124,125]. This prevented SMEs from tapping into any benefits of digital technologies, leading to logistical challenges and demand [125].

**Table 2**  
The distribution of research methods used in the studies included in this study.

Methods	Citations/References/Source
Conceptual	[2, 7, 31, 38, 43, 44, 45, 46, 47, 48, 49, 50–59]
Systematic review	27, 37, 38, 39
Quantitative	60–90
Qualitative	30, 91, 92, 93, 94–105
Mixed	106–109

**Table 3**  
Taxonomy of COVID-19 risk impacts.

Risk factor	Source
Human movement restriction (Lockdowns)	[31,58,65,66] 4
Financial constraints/cashflow pressure	[65,67–70,94,110] 7
Operating difficulties	[44,45,60,69,71,106] 6
Logistical challenges	[7,30,46–48,59,60,68,72–74,91,95–99]17
Delayed business reopening	[60,75–78] 5
Short-term policy focus	[7,66,76,79] 4
Tacit knowledge workers	[37,61,80–82] 5
Total	[48]

#### 4.2. What are the coping strategies of SMEs for pandemic risk impacts

The principal concern in the minds of businesses is how to develop strategies to cope and respond to the evolving situations of the pandemic or what is now popularly referred to as the “new normal”. The concepts of coping and resilience have widely been associated with human psychology. As applied to humans, on the one hand, coping has been referred to as the cognitive and behavioural approaches to dealing with and managing traumatic situations [126,127]. On the other hand, resilience is the ability of individuals to recover from traumatic or stressful situations or adversity [128]. These two concepts are not exclusive in their meaning in the broader sense. As a result, they have been used interchangeably to mean the same, given their strong relationship [129–132]. For example, Ambulkar et al. [133] used the two themes interchangeably when referring to “coping or that resilience [as] the ability of a firm to be alert to, adapt to and quickly respond to the changes brought about by supply chain disruption” (p.112). Table 4 captures our study’s key pandemic coping strategies discussed in sampled literature.

To cope with pandemics’ rapid economic downturns and health and social consequences, SMEs need to adopt behaviours that involve considering a timely, purposeful change of capacity, commonly called organisational behaviour [141]. Forty-six papers associated several factors with SMEs’ successful coping/adaptation in a pandemic or turbulent business environment. Salient among these factors were digital and technological adoption and adaptation, such as powerful mobile apps (44–49); [69,83–85,95,100–102,107,134]). This suggests that SMEs can remain highly competitive and agile and cope in this fast-paced, changing business environment based on limited knowledge and technological assets. The trajectory to digital technology adoption in SMEs begins with digital awareness, enquiries, collaboration, and transformation [85], as shown in Fig. 2. For example, Germany’s “Digital in NRW” offers several services, from informing people by demonstrating solutions in smart factories to discussing and designing digital solutions, which constitute SMEs’ digital strategy and transformation roadmap [141].

In contrast, few studies focus on strategy-as-practice, considering a broader range of pandemic risks. Among the reviewed studies, only dynamic capability is documented [9]. In this review, evidence was gathered to show that attention should not just be focused on addressing the effects of pandemic risks but should be given to a comprehensive, in-depth analysis of how strategy is formulated, planned, and implemented, making it a key business function. In addition, since it is a practical approach, a practice perspective enables SMEs to understand how their capabilities develop, change, and evolve, making strategy-as-practice (SAP) an integral part of their pandemic strategy.

The rest of the coping strategies are governments’ financial supports/packages [2,7,51,69,86,87,135], modification of business operations and new business models [53–56, 85, 102, 103, 107][53–56, 85, 102, 103, 107]; improved internal/operational competence and realigning business strategies to firm strategies [55,57,92,104]; supply chain and business agilities [88,100,109]; and critical business transformation [55,105,107]. An operative business transformation implies the ability of firms to survive in a highly volatile environment.

**Table 4**  
SMEs pandemic coping strategies.

Pandemic coping strategies	Source
Digital and technological adoption/adaption	(39, 55, 56, 61, 64, 69, 71, 83–85, 95, 100–102, 107, 134) 16
Government financial support/packages	[2,7,51,60,86,87,135] 7
Modification of business models	[53–56,85,102,103,107] 8
Improving internal operations	[55,57,92,104] 4
Supply chain and business agility	[88,100,109,136] 4
Critical business transformation	[55, 105, 107] 3
Retrenchment	[56,137,138] 3
Strategy-as-practice	[9] 1
Employee training	[105,139] 2
Hygienic operations	[105] 1
Convergence innovation	[140] 1
Total	[50]

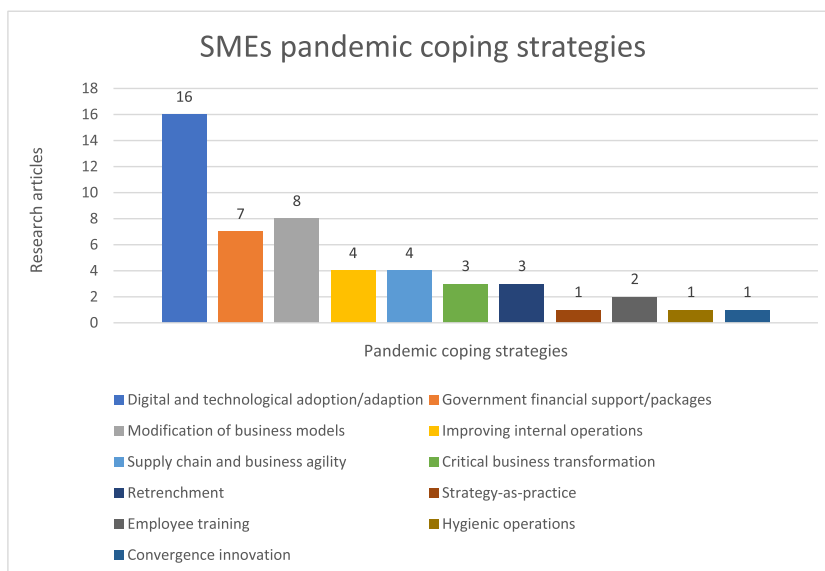


Fig. 2. Coping strategies of SMEs for pandemic risk impacts.

#### 4.3. How do coping strategies reduce SMEs' vulnerability and increase their resilience to pandemic risk impacts?

Only three studies defined coping/or resilience [135,141,142]. However, as applied to businesses, resilience is a shared consequence of SMEs' weaknesses, coping approaches, and capacities when faced with unfriendly business conditions [142]. Better still, businesses or organisations can weather external shocks and continue to operate [141]. Resilience can be achieved through collaboration [58,135], openness, victory, innovation, and durability [135]. Openness can potentially increase a firm's active competencies, effectively improving its resilience when faced with economic downturns such as one brought about by COVID-19 [143]. It comprised end-to-end transparency with key stakeholders in all-channel communication to maintain a healthy business relationship using digital technologies such as social media. This coping strategy also requires a high level of digital transformation-enabled agility to dynamically engage stakeholders to meet the changing and uncertain business operating environments. Whilst the path seemed challenging for SMEs, the need to meet the present and build for future innovation to achieve competitive advantage is prominent.

SME coping strategies tend to be autonomous and reactive. They primarily focus on changes in behaviour and internal business structures and tend to focus on everyday pandemic challenges rather than long-term resilience, even though the latter may justify a particular intervention. At least in the current pandemic risk landscape, many of the reviewed strategies indicate high coping capabilities and emphasise the importance of sharing and spreading risk, notably through social networks and revenue diversification [100, 105]. However, there is evidence that coping strategies can reduce SME resilience, for instance, when savings are used, or assets are sold to restore operations after pandemics [135,136].

Innovation involves investing in transferrable skills and resources from individual to organisational levels with candidate areas such as business transactions support and circular economy [135]. Ali and Suleiman further found that supply chain engineering, agility, and risk management culture are necessary conditions for actual resilience [58]. It is evident in this review that factors contributing to resilience are sparsely distributed. There was a woefully inadequate definition/elaboration on the concepts of "resilience" in ex-ante literature. To successfully journey through this cycle, SMEs must take advantage of readily available resources to quickly respond to the changes in crises whilst transforming these existing resources into products and services capable of killing customer pain points. Furthermore, after killing customer pain points, SMEs can mobilise additional/new resources and knowledge from their network that facilitate the implementation of major changes in their business models [103].

To Teece and colleagues [143], the firm's capacity to innovate, adapt to change and create change favourable to customers and competitors offers the firm a competitive advantage. Dynamic capabilities result from activities that allow conscious and skillful modification of a firm's strategic potential. They are key drivers of a firm's value creation, competitive advantage, and above-average performance in changing environments [84]. Adaptive strategies need to sense and respond to changes in external business conditions through internal insight. Therefore, the strategy inherently needs to be flexible and adaptable. Flexibility is generally related to systems' intrinsic property, enabling them to respond to changes within pre-established constraints [141,142]. Employee training [105], strategy-as-practice "through collective sensing" in an economic recession [93], and hygienic operations [105] are among other sparsely discovered factors of SMEs' pandemic coping strategic factors. Strategy-as-practice is a tacit practice concerned with regular actions organisations and employees undertake that result in strategic outcomes [144–146]. Strategy-as-practice thrives in business and organisational environments where knowledge, trust and innovation are recognised, resulting in the dynamic interplay of stability, adaptation and sustainability shaped by individual, organisational, and market contexts [147].

## 5. Discussion

Several articles in our review describe generic barriers to and enablers of coping strategies for pandemic risk impacts. Still, they do not assess the resilience success or failure of such interventions within the SMEs they studied. This is partly due to the lack of longitudinal data to enable such a long-term evaluation. Although SMEs' coping interventions are not explicitly evaluated, studies report positive and negative aspects. The effectiveness of the coping strategy is determined by its ability to reduce SMEs' vulnerability and increase their resilience to pandemic risks, as indicated in this review. SMEs' resilience can be enhanced through participatory and collaborative interventions incorporating local knowledge and promoting culturally appropriate measures. SME resilience can be optimised by promoting participatory coping interventions to maximise their buy-in for resilience [57,71].

The coping interventions used by SMEs varied widely. This variety of responses reflects the diversity and complexity of SMEs and their long histories of resilience [5,148,149], which have positive implications for the future [5,148]. Yet whether these diverse coping mechanisms are sustainable and effective remains unclear. The reviewed studies note generic barriers to SMEs' coping strategies when faced with pandemic risk impacts. Still, none explicitly evaluate their sustainability and longevity or suitability for local contexts, even though research recognises the need for context-specific solutions [150].

According to our analysis, three factors may limit the effectiveness of current coping strategies for SMEs' resilience. Documented coping strategies emphasise only the business's most obvious and direct pandemic risk impacts, such as digital disruptions, rather than equally emphasising indirect and abstract effects, such as disruptions to organisational culture [151]. The second observation is that SMEs prefer hard-engineered coping measures in response to pandemic risks, as other studies report [56,61,81], despite their well-documented shortcomings [56,152]. Thirdly, SMEs' resilience depends on strong social networks and local knowledge, which are fundamental for coping with social change. Past experiences can indeed be valuable to SMEs, both in driving transformative actions and managing pandemic shocks, as reported by Mariani et al. [151] and others [141,152].

In summary, the review study finds that most documented coping strategies among SMEs are reactive, similar to Klewitz and colleagues' observations [153]. Therefore, we share concerns about the long-term effectiveness of pandemic coping strategies among SMEs and support the call for longer-term monitoring and evaluation of SMEs' coping strategies [148,154]. As other studies have suggested [52,155], there are also enabling factors, including participatory approaches that integrate local knowledge, that may enhance the resilience of SMEs.

## 6. Conclusion and future research

### 6.1. Conclusion

SMEs remain the backbone of any economy and significantly contribute to employment and economic growth. However, they remain highly vulnerable among the different enterprise-size classes. The COVID-19 pandemic proved this. Like other institutions, SMEs were caught unprepared, exposing all sorts of vulnerabilities. The 76 papers examined in this study used a multi-stage screening tool with data from several sources.

The findings of this study confirmed three overarching themes – pandemic risk factors that affect SMEs, strategies they devised (coping strategies) to contain pandemic risks, and coping interventions to build resilience against pandemic risks. The most salient pandemic risks that SMEs suffered were logistical challenges - the commercial activity of coordinating the transportation of goods to customers. Technology adoption and digital transformation topped the list for coping strategies, demonstrating the strong need for SMEs to begin thinking of digital technologies' inevitable role in modern business survival and continuity. This is especially true if SMEs are to cope with any future global shocks, as the COVID-19 pandemic has shown. Particularly, SMEs must explore technology opportunities by digitally transforming their operations. Also, as broad and encompassing as these factors are and organised under the two themes, they will serve as the starting point for an exploratory trajectory that advances the understanding of SMEs in pandemics. A notable takeaway from the findings of this study is for SMEs, law/policymakers, and business think tanks to begin the discussion about coping strategies and business continuity in the wake of pandemics and or disasters.

SMEs are integral to a broader economic system, and a return to pre-crisis normalcy will require more than simple remedial strategies. SMEs' ability to adjust and respond to crises depends primarily on their flexibility and adaptability. According to the study's findings, SMEs' ability to leverage network resources and knowledge is key to strengthening their resilience during times of crisis. Creating opportunities allows SMEs to innovate and grow in a challenging and uncertain environment. Our review concludes that survival, adaptation, and innovation are all coexisting strategies that can build SMEs' resilience, leaving them less dependent and vulnerable.

### 6.2. Limitations and future research

The analysis of limitations of prior research led us to identify possible areas for future research in the field of international small businesses. It is expected that SMEs will continue to suffer the repercussions of COVID-19 in the coming years. As a result, this section offers academics a valuable starting point. The following are three possible research avenues for scholars to explore.

The heterogeneity of the systematic reviews and the relatively small proportion of studies reporting meta-analysis findings prevented us from conducting a meta-meta-analysis of the results across reviews. It will be necessary to demonstrate a causal link between pandemic risks and SME resilience through additional research, as well as to explore other factors that interact with the relationship described here. Similarly, as more evidence on the impact of COVID-19 evolves, we contend that an increase in longitudinal qualitative



studies will drive the generation of emerging themes that will propel a better understanding of the true impact of this pandemic to support targeted policy formulation intervention in the future.

Furthermore, although SMEs are extensively studied, a more tested and generalisable model of pro-SME pandemic resilience must be pursued to move the current discussion beyond its conceptual state. As a result, the study recommends research on extensive, multi-case and cross-sectional studies, even when further conceptual studies are still needed, especially for understudied research contexts. For example, comparing the resilience orientation of SMEs in different regions, examining the impact of COVID-19 on SMEs in different locations, or comparing coping strategies among SMEs in other areas could be interesting routes to the ongoing debate on SMEs and pandemics. By conducting such rigorous empirical studies, the new findings will ignite new debates and discussions on the topic that can guide future studies in this direction.

During the pandemic, SMEs were at risk of bankruptcy due to difficulties finding customers and rising costs of production and labour. In times of pandemic, the government can support SMEs in different ways to mitigate bankruptcy risks. A government could, for instance, increase their institutional capacity and support SMEs through its entrepreneurial ecosystem by providing early warning systems. There are, however, very few studies that examine the difference in response rate among sectoral SMEs towards bankruptcy risks. Research could be conducted on an intra-sectoral level to determine which SMEs are most likely to end up bankrupt during and after a pandemic. Qualitative information about managers' characteristics, as well as changes in governance or management style, could also be considered.

As revealed in this review, the field remains centred on theoretical perspectives traditionally associated with the analysis of SMEs, COVID-19 impacts, and coping strategies, such as expectancy theory and institutional theory, yet assessing the emotional reactions of top managers that ultimately shape an SME's coping strategy needs to engage concepts and theories derived from social science disciplines such as social psychology (e.g., Cognitive appraisal theory). Moreover, in light of the literature showing that small businesses can respond differently to the same crisis [156], cognitive appraisal theory may provide an innovative way of assessing the cognitive-emotional perceptions of events and how they impact coping behaviours. As a result, advancing the field will require the application of multidisciplinary and multi-theoretical perspectives that cross the borders of any single school of thought.

According to our previous discussion, single-country studies from developed nations focus on within-sample limitations, which provides a chance for research into organisations from developing nations. This study strongly encourages researchers to study this topic since successful coping strategies by SMEs in developed countries may not apply to SMEs in developing countries. In addition, future studies should consider developing standard scores that account for cross-country variations and enhance comparative analysis within/between developed and developing countries. Additionally, considering the prevalence of SMEs in these countries and their ability to effectively influence the UN Sustainable Development Goals (SDG) agenda, future research must focus on how such a vulnerable sector can be prepared for pandemics. Therefore, future research should focus on SMEs in developing countries or compare SMEs in developing and developed countries to enrich the small business literature further.

In addition, COVID-19 was not yet fully under control at the time of our study. Policymakers and governments continue experimenting with targeted policies and various support measures considering COVID-19's continued evolution and metamorphosis. However, their long-term impacts still need to be tested. Therefore, as economies adjust to COVID-19 and evaluate the long-term effect of these measures on commerce, new themes are expected to emerge over time.

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### **Data availability statement**

No data was used for the research described in the article.

### **Declaration of competing interest**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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