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CONCEPTUALISING BUSINESS RESILIENCE IN THE CONTEXT OF RESOURCE SCARCITY

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ABSTRACT

Firms increasingly operate in environments characterised by various interacting crises in which shocks place simultaneous and competing demands on organisational resources. However, existing management research almost exclusively studies business resilience in contexts of singular shocks, commonly promoting proactivity as the ideal resilience strategy. Little is known to which extent proactive approaches to resilience remain feasible in contexts of accumulating crises and intensifying resource constraints. Here, we conduct a systematic literature review of peer-reviewed studies on firm-level approaches to resilience in Global South contexts often marred by overlapping economic, political, health-related and environmental shocks. Analysing the resulting 86 studies, we find that proactivity functions more as a conceptual ideal than a practical mode of action and rarely materialises in organisational practice. Instead, organisational resilience responses in our sample are shaped by resource scarcity, exposing limitations of the widespread linear, three-stage framework of reactive, adaptive and proactive resilience. Specifically, we identify four resource-related mechanisms that influence resilience strategies of firms in the Global South firms. These mechanisms are hierarchically organised, with strong networks forming the foundational resource that enables all other mechanisms.

Keywords: Resilience strategies, resources, Global South, resource mechanisms

1. Introduction

In today's complex business environment, firms increasingly operate in settings characterised by overlapping and interacting crises, including rapid technological change, global market volatility, and unforeseen disruptions such as pandemics, political instability, and natural disasters (Marcazzan et al., 2022). In these contexts, resilience has emerged as a key feature of organisational success (Gunasekaran et al., 2011; Gečienė, 2020; Hosfaikoni et al., 2020). Furthermore, resilience plays a critical role in organisational performance in general and is specifically relevant in the context of business sustainability as it provides a foundation in which companies can pursue long-term goals despite the presence of shocks (Gasparini et al., 2014) .

Despite its critical and growing importance for organisational performance, the conceptualisation of business resilience has been somewhat fragmented (Conz & Magnani, 2020; Hepfer & Lawrence, 2022). Specifically, two related gaps regarding the generalizability of extant business resilience conceptualisations are salient. First, empirical and theoretical studies on resilience do not explain the differences, similarities or make concrete generalisations regarding business resilience towards diverse shocks in different global regions (Linnenluecke, 2017). Specifically, they do not adequately address the context-specific and complex shock profiles organisations in the Global South are exposed to (Dahles & Susilowati, 2015; Duchek, 2020), which is critical as the Global South has historically been characterised by sudden external shocks that are disruptive (Jindal, 2024). In such contexts, infrastructure-related shocks such as power cuts and physical supply chain disruptions often overlap with macroeconomic shocks, including rapid inflation or recessions as well as political shocks, and environmental shocks, including floods, droughts or hurricanes (IPCC, 2023).

Second, and relatedly, existing literature offers limited clarity on specific resources that businesses in complex shock environments require to support their operations across the three stages of resilience. Although scholarly work underscores the importance of resources in building resilience, as seen in (Hamel & Valikangas, 2003; Saad Muhammedamin et al., 2021) the studies do not link resources to resilience stages. Duchek et al., (2020) offers a more nuanced contribution by highlighting the role of resources and capabilities in resilience; however, the mechanisms by which resources facilitate transitions across and within these stages remain insufficiently understood, particularly in the Global South.

To compensate for these shortfalls, we conduct a systematic literature review of 86 peer-reviewed studies on business resilience in the Global South characterised by complex shock environments. In doing so, we make two key contributions to the literature on business resilience: First, we introduce the notion of context-specific shock environment, emphasising the simultaneous occurrence of multiple interacting shocks that shape business operations. Second, we identify four interrelated resource mechanisms that influence resilience stages and strategies, showing that resource scarcity constrains the practical implementation of proactive strategies and shapes the way firms respond to multi-faceted crises in the Global South. Our findings reveal the presence of multi-faceted shocks in many countries of the Global South, implying a considerably more complex shock environment than the single-shock instances commonly studied in empirical resilience research, which overwhelmingly addresses Global North cases (Ungar, 2017; Raghavan & Sandanapitchai, 2019). Second, we describe how the availability of four key resource mechanisms drive different degrees of resilience (Linnenluecke, 2017) and show how these resources are interrelated.

2. Background

2.1 Business resilience in the Global South

Resilience, a multidisciplinary perspective, has gained popularity with governments, development practitioners, communities, and those in the academic sphere over the past two decades. The term has mainly gained recognition in disaster risk management (DRM) (Folke, 2016; Graveline & Germain, 2022). The word resilience originates from a Latin word *resilio* which means to "*bounce back"* (Meerow & Stults, 2016; Stanciu, 2021). The multidisciplinary nature of resilience complicates efforts made towards the achievement of a common definition (Windle, 2011; Den Hartigh et al., 2024). Accordingly, there is no universal definition for resilience, for instance, in Mathematics and Physics resilience is defined as the ability of a material or system to bend without breaking and to bounce back without displacement. Conversely, resilience also involves adaptive capacities enabling communities to bounce back, in psychology resilience is a trait in individuals and communities (Haider et al., 2021). The different conceptualisations of resilience, by different disciplines shows that it is a concept subject to considerable debate, to enhance clarity, this study adopts the following definition, *resilience is as an organization's ability to anticipate potential threats, to cope effectively with adverse events, and to adapt to changing conditions* (Duchek, 2020) . Extant literature on business resilience predominantly focuses on single eventful shocks within the Global North, drawing extensively on cases such as climate-related events, major economic disruptions, conflict-driven upheavals, and public health emergencies, most notably the COVID-19 pandemic (Linnenluecke, 2017). Similarly, the theoretical underpinnings and the discourse surrounding resilience within scholarly literature predominantly document experiences within the Global North (Ungar, 2017; Raghavan & Sandanapitchai, 2019).

Past studies have examined organization resilience primarily through performance outcomes after the occurrence of shock, zeroing in on the outcome of shock (Horne & Orr, 1998; Mancini & Bonanno, 2009; Tognazzo et al., 2016; Van Breda, 2018; van den Berg et al., 2022; Yuan et al., 2022). This resilience-as-an-outcome perspective is limited; firstly, it overlooks the concrete practices and underlying mechanisms that enable organisations to cultivate resilience (Boin & van Eeten, 2013; Duit, 2016; Halekotte et al., 2025). Secondly, outcomes are not universal; they can be positive or negative even when systems are exposed to similar disruptions (Van Breda, 2018). To overcome these issues, resilience scholars have adopted the resilience as a process view (Mcmanus et al., 2008; Ortiz-de-Mandojana & Bansal, 2016; Duchek, 2020; Vakilzadeh & Haase, 2021), suggesting that it involves a continuum of processes displayed in three stages: anticipation, coping and adaptation (Duchek et al., 2020). The process-based perspective closely aligns with strategic responses firms employ when confronted with shocks. As such, business resilience strategies suggest that firms respond to shocks through proactive, reactive and adaptive strategies. Proactive resilience, aligned with the anticipation stage encompass actions undertaken to counter business disruptions before they occur (Somers, 2009). Reactive resilience which reflects coping stage refers to *"the capability to adjust quickly to unexpected market changes in a competitive environment characterized by uncertainty"* (Wieland & Wallenburg, 2013; Durach et al., 2015). Adaptive resilience associated with the adaptive stage occurs after shock or disruptions and involves learning and change that places a system in a position to recover from disruption or adapt to new conditions (Cutter, 2016).

Two key interlinked factors exist which question to which extent the conceptualisation of resilience is generalizable beyond its empirical foundation of almost exclusively cases from the Global North: Firstly, Global South countries are often characterised by multiple simultaneous and

interdependent shocks that can be equally or even more disruptive than singular large shocks (InsuResilience Global Partnership, 2024). This simultaneous onset of shocks prompts an inquiry into how contextual factors shape the formulation and implementation of business resilience strategies. Additionally, Global South countries find themselves at the crossroads of overlapping global economic, environmental, and political disruptions that collectively deepen their vulnerability (Miklian & Hoelscher, 2022; UNCTAD, 2025). As a result, several African organizations struggle with performance, largely due to the complex interplay of systemic, structural, and contextual barriers in their operating environment (Kyalangalilwa, 2024). Academic discourses on resilience have primarily focused on industrialised economies in the Global North (Linnenluecke, 2017; Duchek, 2020; Stanciu, 2021). Compared to the Global South, the Global North is characterised by higher levels of economic development, technological innovation, financial resources and political influence on the global stage (Fiveable., 2024). These advantages enable businesses and governments to implement structured risk management systems, innovate, and maintain stability in the face of disruptions (Williams, 2017). Secondly, the number of strategic choices available to a firm is long known to be constrained by its resource endowment (Wernerfelt, 1995; Barney, 2001) .This resource limitation highlights the critical role of resilience, which constitutes a dynamic capability through which firms develop, deploy, and reconfigure their resources to adapt effectively and maintain operational continuity before, during, and after periods of adversity (Williams, 2017; Conz & Magnani, 2020). We discuss the nexus between resilience and resources in depth in the subsequent section.

2.2 Business resilience and resources

Resources are widely recognised as playing a critical role in building organisational resilience (Sydnor et al., 2017; Supardi & Hadi, 2020). However, particularly for small businesses, resources

are scarce and easily depleted during disruptions, making effective access to and mobilisation of resources essential for post-crisis recovery and continuity (Pham et al., 2021). As such, we examine what happens in instances where resources are not readily available. Extant literature suggests that firms employ financial resources (Tognazzo et al., 2016; He Huang et al., 2022), social resources (Dutta, 2017), human resources (Hepfer & Lawrence, 2022) and technological resources as building blocks to implement resilience strategies (Vakilzadeh & Haase, 2021). Yet the prevailing theoretical foundations of the processual view of resilience in the literature are shaped primarily in contexts where resources are comparatively abundant (Välikangas & Georges Romme, 2013; Duchek, 2020; Susilawati, 2024). There is a key open question to which extent the persisting conceptualisation of business resilience applies when the assumption of a relative abundance of resources no longer holds, implying that some advanced and expensive resilience strategies could become infeasible. This is likely to be exacerbated in contexts where different crises occur simultaneously, as companies' responses to several crises compete for scarce resources (Zaki, 2025). Limited access to capital markets, weak governance structures, and fragile supply chains are known to worsen these challenges, leaving firms and governments with reduced capacity to absorb shocks or invest in long-term resilience (George et al., 2012; Linnenluecke, 2017). The complex interplay of crisis dynamics and resource scarcity underscores the need for context-sensitive resilience strategies that leverage local knowledge, social networks, and adaptive innovation.

Internal and external resources can be used to prepare for and manage shocks (Vakilzadeh & Haase, 2021). For instance, technological resources help to channel information in organisations before the occurrence of shock. The Resource Based View (RBV) of the firm (Wernerfelt, 1995; Barney, 2001) posits that with unique, valuable and non-immutable resources, firms attain competitive

advantage (Barney, 2001; Madhani, 2010). These resources together with capabilities, are pivotal in enabling firms to innovate and effectively navigate challenges through adaptation (Teixeira & Werther, 2013). A wider understanding of how different types of resources mediate business resilience strategies is thus required to be able to explain which companies are more and less likely to adopt resilient business strategies (Linnenluecke, 2017; Hillmann & Guenther, 2021).

Flexible and slack resources constitute foundational conditions for organisational resilience, enabling firms to respond, adapt, and recover under conditions of uncertainty (Vogus & Sutcliffe, 2007; Linnenluecke, 2017). Flexible resources facilitate rapid adaptation during disruptions, as illustrated by agile manufacturing systems and platform-based business models that proved critical during the COVID-19 pandemic (Pereira & Da Silva, 2015; Esper, 2021). Slack resources, which are characterised by their availability for alternative uses and capacity to address unforeseen demands or growth opportunities (Conz et al., 2023), have been identified as one of the factors that precede organisational resilience through enhancing organisation capacity for problem solving and adaptive response (Acquaah et al., 2011). Unutilized resources provide flexibility and a sense of security, allowing organisations to explore and leverage new opportunities (Garrett et al., 2020). In turn, the flexibility of organisational operations enhances organisational resilience (Naser et al., 2023). Despite the importance of slack resources and organisational flexibility, the COVID-19 crisis exposed significant limitations in firms' resource configurations, revealing widespread deficiencies in flexibility, diversity, and slack across businesses and supply chains (Zhu & Sun, 2020). While organizations often focus on resources under direct managerial control, such as cash flow and insurance, effective resilience increasingly requires mobilizing a broader set of resources, including those embedded within external networks and communities (Naser et al., 2023).

3. Methods and Data

3.1 Empirical setting and sample

Given the dearth of research on the nexus between business resilience and resource availability, we conduct a systematic literature review study. We focus our review on cases of business resilience in the Global South for three reasons. First, contexts in the Global South are more likely to feature resource scarcity, allowing us to study the feasibility of different resilience strategies depending on available resources. Second, countries operating especially in low-income countries in the Global South can face multiple different shocks, providing a rich empirical setting to contribute to the emerging field of resilience in shock environments, and how these exacerbate resource-related constraints (Phiri, 2024). Third, resilience research on resource-constrained environments and particularly the Global South in general remains undeveloped, despite majority of people on the planet living there. Accordingly, we focus on the Global South in a bid to suggest insights and solutions tailored to local issues in the Global South. These contexts often feature unique circumstances, such as infrastructure limitations, post-election violence and governance-related shocks, which cannot be effectively addressed through Western-centric models (Sachs, 2015).

We examine businesses that face a wide array of disruptions that arise at global, national, and sub-national levels. These businesses are mainly reactive and adaptive in their response to disruption. Global-level disruptions include COVID-19 pandemic, inflation-driven economic instability, and climate change-induced events such as floods and droughts. At national levels, disruptions include electricity instability, xenophobic attacks, currency devaluation, political and economic challenges. Locally, sub-national disruptions like desert locust infestations, business evictions, and

cattle rustling contribute to business instability. We find four origins of shocks (Table 1) namely, (1) environmental which include floods, drought, dessert locusts and earthquakes (2) social origins which are infrastructure and health system failures (3) political origins which comprise wars, post-election violence, corrupt dealings, and loopholes in the local governance (4) economy related shocks which encompass currency devaluation, fuel shortage, cattle rustling and inflation and (5) legal shocks emanating from a change in government regulation and business operation. Although some of the shocks have been featured in Global North literature, the focus is sometimes different; for example, although energy supply disruptions have been considered in Global North research following the Ukraine war, the focus has largely been on rising energy prices (Ingram et al., 2023), overlooking the operational impacts of energy scarcity or instability. This gap limits insights into how firms in the Global South navigate such shocks.

Table 1: Summary of business disruptions from sample papers

Type of disruption	**Exemplary shocks by impact level**		
	Global	**National**	**Sub-national**
Environmental	• Climate change (floods, drought) • Sea-level rise	• Dessert locusts • Droughts	• Floods • Wildfires • Earthquakes
Social	• Global health crisis (Covid 19)	• Electricity instability • Xenophobic attacks towards foreign traders. • Organized crime	• Armed conflict • Theft and vandalism • Evictions
Political	• Ukraine war (Supply chain in disruptions)	• Post-election violence • corruption	• Harassment by local authorities

Economic	• Global supply chain disruption, inflation	• Currency devaluation • Fuel shortage	• Cattle rustling
Legal	_____	• Abrupt change in government regulation on business operation	_____

We searched for relevant papers on Scopus using the search string; “TITLE-ABS-KEY ((“Resilience*”)) OR ("Resiliency") AND TITLE-ABS-KEY (("Business") OR ("Start-up*") OR ("SME*") OR ("Firm") OR ("Compan*") OR ("Organization*") OR ("Entrepreneur*")) AND TITLE-ABS-KEY (((((individual Global South countries*)”. (See the whole search string below).

TITLE-ABS-KEY (("Resilience*")) OR ("Resiliency") AND TITLE-ABS-KEY (("Business") OR ("Start-up*") OR ("SME*") OR ("Firm") OR ("Compan*") OR ("Organization*") OR ("Entrepreneur*")) AND TITLE-ABS-KEY (((((angola*) OR (benin*) OR (botswana*) OR ("Burkina Faso*") OR (burundi*) OR ("Cabo Verde*") OR (cameroon*) OR ("Central African Republic") OR (chad*) OR (comoros*) OR (congo*) OR ("Democratic Republic of Congo") OR ("Cote D'Ivoire*") OR ("Equatorial Guinea*") OR (eritrea*) OR (eswatini*) OR (ethiopia*) OR (gabon*) OR (gambia*) OR (ghana*) OR (guinea*) OR ("Guinea Bissau*") OR (kenya*) OR (lesotho*) OR (liberia*) OR (madagascar*) OR (malawi*) OR (mali*) OR (mauritania*) OR (mauritius*) OR (mozambique*) OR (namibia*) OR (niger*) OR (nigeria*) OR (rwanda*) OR ("Sao Tome And Principe*") OR (senegal*) OR (seychelles*) OR ("Sierra leone") OR (somali*) OR ("South Africa*") OR ("south sudan*") OR (sudan*) OR (tanzania*) OR (togo*) OR (uganda*) OR (zambia*) OR (zimbabwe*) OR (africa*) OR (Afganistan*) OR (Bangladesh*) OR (India*) OR ("Indonesia*") OR (Kyrgyzstan*) OR ("Lao PDR*") OR (Micronesia*) OR ("Mongolia") OR (Myanmar*) OR (Nepal*) OR (Pakistan*) OR ("Philippines") OR ("Samoa*") OR ("Solomon Islands*") OR (Tajikistan*) OR (Timor leste*) OR (Tonga*) OR (Uzbekistan*) OR (vanuatu rep*) OR (vietnam*) OR (Iraq*) OR ("Lebanon*") OR (Yemen*) OR (Bolivia*) OR (Guadeloupe*) OR (Guatemala*) OR (Guyana*) OR (Haiti*) OR (Honduras*) OR (Nicaragua*) OR (venezuela*))))))))))).

The “individual Global South countries” in the search string included a list of all middle- and lower-income countries of the Global South. From the Scopus search, a total of 1077 papers were extracted. We then embarked on screening the abstracts, after which the number of papers was narrowed down to 362. Following the inclusion and exclusion criteria we developed (Figure 1) we removed duplicates, non-English papers and other non-related papers leaving us with a total of 121 papers. We then embarked on a process of reading these papers and by the end of the reading process, the remaining relevant papers were 86. Our research objectives guide us in refining and identifying the scope of the study which zeros in on the study objective: to examine how businesses in the Global South respond to crisis across distinct stages of resilience despite resource constraints and overlapping crisis. The study included only English-language publications from peer-reviewed scientific journals that examined profit-oriented business entities. The selection of papers veered away from literature on psychological factors influencing individual resilience of employees, as the focus was on business resilience in terms of how the entire business unit navigated shocks.

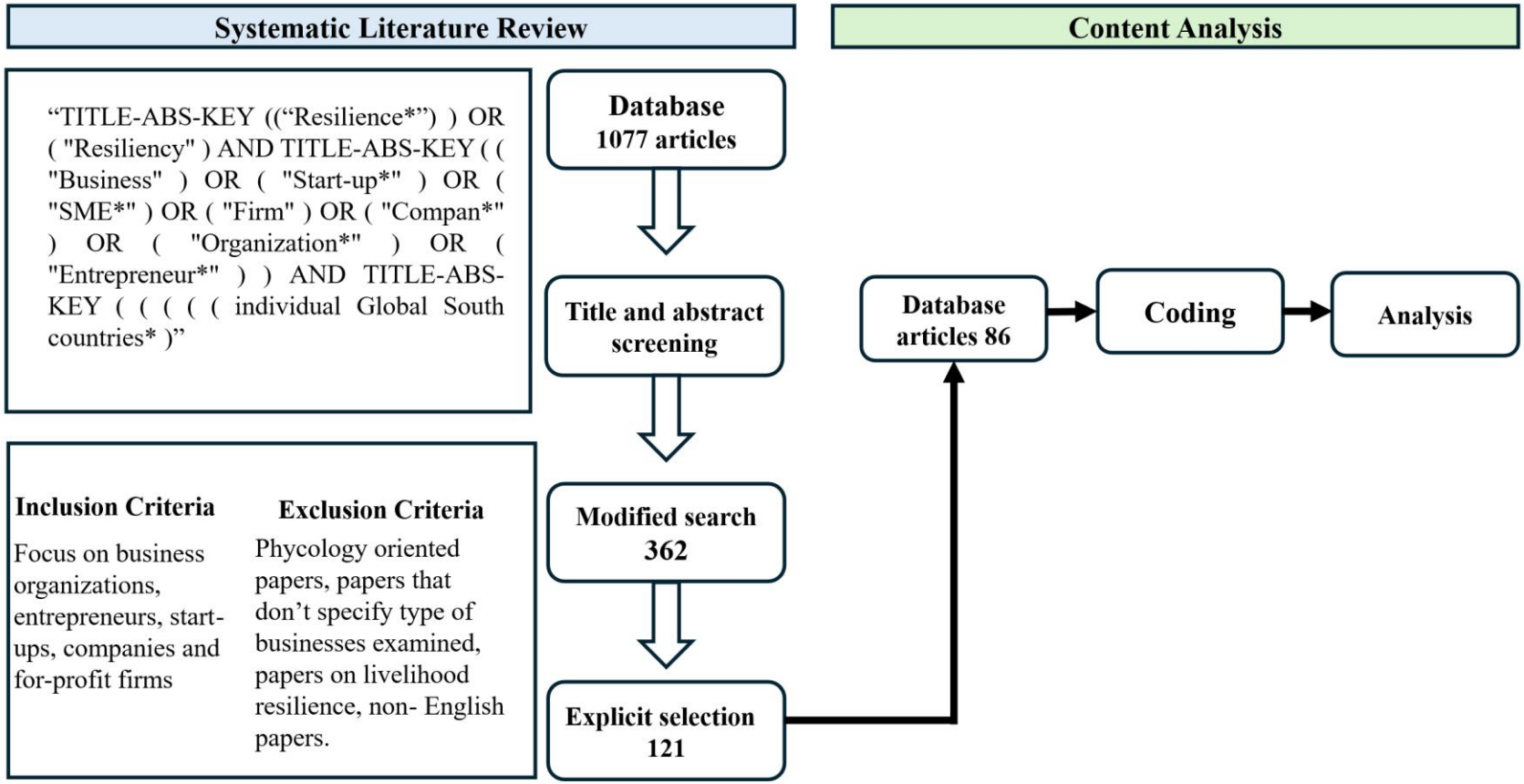

Figure 1: Systematic Literature Review Process

3.2 Data Analysis

3.2.1 Data reduction

After screening the abstracts and downloading the relevant papers, we read and coded of those selected papers whose abstracts appeared to be promising and relevant for the study. Guided by conceptualization of resilience, the researchers began the coding process, which was carried out in two cycles: first and second cycle coding. We categorized businesses response to shock as: proactive, reactive or adaptive, while shocks were analysed based on their impact; global, national and sub-national, concurrency and interdependence to capture the dynamics of crisis environments. To further understand organizational responses to shocks we draw from (Porter, 2001) value chain model to analyse how resilience is embedded across organization processes during the proactive, adaptive and reactive stage. An emergent analysis approach was employed, where codes were not pre-determined by a codebook but were progressively refined to incorporate new insights that emerged throughout the course of the study. Rather than applying a predefined set of codes, the researchers read through the data multiple times and noted significant themes, patterns, and concepts that arose organically. Atlas ti 24, a qualitative data analysis software was employed to ensure the codes were systematically assigned. In the initial first cycle of coding, different excerpts of sample papers connected to the study objectives were assigned descriptive codes (Elliott, 2018).

To further reduce the data, we used our second-cycle codes as illustrated by (Tracy Sarah, 2020) where we described the distinct resilience strategies employed by businesses in the Global South, this involved writing short narratives and timelines regarding the resilience strategies; proactive, adaptive or reactive. In the same vein, we assigned short narratives to resources linked to resilience strategies and observed that resilience resources were mainly linked to adaptive resilience strategies.

3.2.2 Data display and conclusion verification

To understand the relationship between resilience strategies and resources, we displayed the data using multiple formats, bringing together our coding of resilience strategies and resources, and identifying patterns, similarities and differences in the convergence points of the two concepts. During this stage, we discovered that distinct resources are employed to build business resilience especially through adaptation. From examining the relationship between resources and resilience strategies, we identify sub-mechanisms and four main mechanisms which are a result of the first and second cycle coding; (1) networks, facilitate access to knowledge, technology and finance (2) Knowledge promotes the conception of actionable plans to deal with shocks, (3) technologies allows for tech-enabled pivot to new business opportunities (4) finances facilitate dampening the intensity of shock. We used these mechanisms as the foundation for the process of drawing conclusions where we analysed similar and contrasting examples to verify relationship between resilience strategies and resources. We concentrated on identifying significant patterns within the codes assigned to distinct excerpts of the sample papers, recognising that our study focus cannot fully capture all the nuances of why distinct resources are required for different resilience strategies. The results of the analysis are illustrated in section 4.

4. Results

4.1 Link between resources and different resilience strategies

Our findings suggest that within our sample, businesses in Global South primarily respond to shocks by reacting or adapting as opposed to anticipating the shocks and making prior preparations before shocks occur. A total 36 of the 86 reviewed papers discussed concrete resilience strategies of companies in the Global South in detail. Of these 36, 13 papers described reactive responses, 5 found a mixture between reaction and adaption, 22 papers discussed adaptive responses, and only 1 paper documented a proactive strategy

We establish that businesses do not employ resources in all stages of resilience (Figure 2). Mainly resources are employed in the adaptive and proactive stages as opposed to the reactive stage. In the reactive stage, businesses employ quick-fix solutions as an immediate reaction to shocks. The quick fix solutions that are supported by the flexible nature of these businesses in the Global South include, downsizing, reduction of duration of operation, employing local means of transport and even change in marketing strategies. On the other hand, businesses employ available resources during the adaptation stage and the proactive stage. The resources employed in the adaptive stage are limited, while in the proactive stage there exists adequate resources (Figure 2).

Our findings show that during, the reactive, adaptive and proactive stages of resilience businesses modify their value chains. We structure our results across four value chain elements that were affected by the different resilience strategies, namely sales, logistics, production and procurement. For each resilience stage, we identify the papers that indicate modification of the different elements of their value chain (For more details on these papers indicated in Figure 2 in numbers, see Appendix A). We find that a substantial amount of modification of the value chain elements takes place in the adaptive stage, we attribute this to the availability of resources at this stage and the initiative taken by businesses at this stage to respond to shocks.

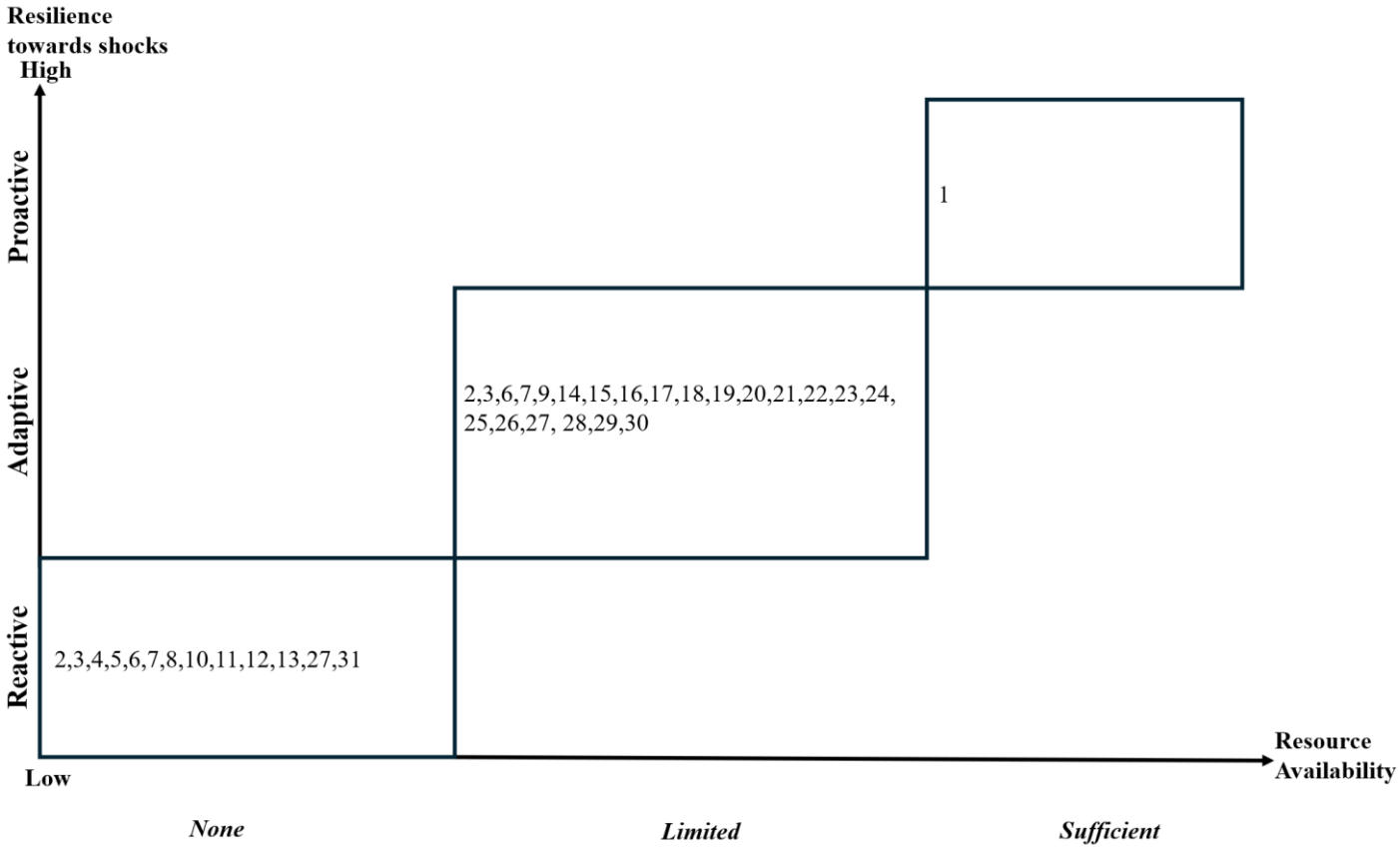

Figure 2: Business resilience strategy of Global South companies in the sample, depending on the availability of firm resources

Note: The numbers in the squares represent a reference in the database (papers retrieved for the literature review, details provided in Appendix A)

4.1.1 Reactive resilience strategy "without resources"

The study's findings reveal that businesses typically react to disruptions by making adjustments to their value chain in cases where they are either unwilling or unable to employ key resources to resilience. Some of the activities that marked changes in business operations include a reduction in working hours, change to suboptimal transportation routes for supply chains, laying off employees and reduction in duration of operation. Béné et al., (2024) reports on changes made to supply chains during armed conflict, *"Yet we know that armed conflicts do not just destroy harvest and wreck agricultural or community assets. Conflicts also disrupt food supply chains and local food markets, force transporters to change routes and retailers or vendors to shift to less perishable merchandise or to relocate to safer places".* Other organisations substitute tasks during disruption, for instance, a business in the retail sector in Tanzania, which faces a shortage of electricity supply, stops production and undertakes delivery of goods during electricity shortage as explained by (Eledi Kuusaana et al., 2023) *"Our business involves internet and electricity. So, it really affects us. So, most of our operations are put on hold when the power cuts. But we sort packages for delivery and dispatch. That one is offline, so it doesn't matter if electricity is off "*.

Beyond operational adjustments, businesses also employ measures such as price reductions through discounts and offers, alongside expenditure cuts achieved by deferring planned investments or development activities scheduled before disruption (Table 2). While this might allow companies to get by during a shock, reactive resilience strategies often imply that their revenues tend to take significant hits, with a highly limited ability to counteract shocks.

In summary, our findings reveal that a lack of resource availability and/or resource deployment corresponds closely to the reactive resilience strategies. Where firms choose to wait until the disruption occurs and react without engaging resources as opposed to being proactive or adaptive.

Activities undertaken in the reactive stage (Table 2) are initial immediate and often passive responses to shocks. The activities involve changes to value chain elements (sales, logistics, production and procurement) aimed at cost reduction to manage times with limited resources. In some cases, however, reactive responses can be sufficient to sustain revenue flows prior to shocks. Kirumirah & Munishi, (2022) analyse how informal businesses react to disruption, by illustrating how businesses resorted to vending their products at night to avoid the local authorities who arrested them and confiscated their goods. *"It has been established that, after eviction, a reasonable number of street vendors have resorted to selling their products at night. At this particular moment, they assume that there are no police nor paramilitary troops that can arrest them."* highlights (Kirumirah & Munishi, 2022).

Table 2: Reactive resilience strategy "without resources"

Exemplary Quote	Resources used*	Country context/source
Diversified domestic supply chains helped firms to mitigate the impact of the COVID-19 crisis and recover more strongly	None	(Chacha et al., 2024)
Eighty-four percent of firms reported changing their production volume as a result of the pandemic; of these, about 13% reported stopping production and about 82% reported decreasing production. Approximately 54% had changed product prices as a result of the pandemic.	None	(Nordhagen et al., 2021)
Many actors in Bangladesh, including dried fish processors, hatcheries, patilwala, and feed retailers reported offering discounts or selling products at reduced rates to clear stock or generate sales.Fourth, aquatic food value chain actors reacted to these challenges in multiple ways. These included reducing production costs, using alternative inputs, leveraging social capital through informal networks, borrowing, seeking alternative employment, and reducing food consumption.	None	(Belton et al., 2021)
I was forced to sell my (un-purchased) fabric items to the local marketing agents in our neighborhood at the lowest price ever. My husband told me to wait for a few more months, but we simply could not wait anymore. People fail to understand that we don't have a well equipped shed to preserve these fabric items. I have tried to safeguard the handloom fabrics from rain, storms, and rodents for months but ultimately lost four extremely valuable items. (Sighing) I had no choice; I had to sell those unsold fabric items at whatever price I still got. Given our present economic status, I am not sure if I can stay in this business for too long.	None	(Basu, 2023)
When necessary and possible, critical tasks are moved to the head office building next door, which uses a backup generator until grid electricity is restored.	None	(Eledi Kuusaana et al., 2023)
The majority of enterprises (around 70%) have reduced the number of workers' hours while 59.4% have also changed the price of their commodities and 55.7% have applied the wage assistance schemes provided by the government	None	(Ragoobur et al., 2023)

Conflicts also disrupt food supply chains and local food markets, force transporters to change routes and retailers or vendors to shift to less perishable merchandises or to relocate to safer places.	None	(Béné et al., 2024)
It has been established that, after eviction, a reasonable number of street vendors have resorted to selling their products at night. At this particular moment, they assume that there are no police nor paramilitary troops that can arrest them. To them, from 18:00 onwards, there are a reasonable number of customers who buy their merchandise. One of them said, "We display our business in the evening or at night where no security force is at work."	None	(Kirumirah & Munishi, 2022)
So, most of our operations are put on hold when the power cuts. But we sort packages for delivery and dispatch. That one is offline so it doesn't matter if electricity is off."	None	(Eledi Kuusaana et al., 2023)
SMEs in four non-oil exporting MENA are found to resort to wage and work hour reductions more often than layoffs in the wake of the pandemic. Many of them had to close (temporarily) following restrictions dictated by the health authorities	None	(El-Sahli & Alsamara, 2023)
Reduce staff working hours, Reduce salaries of self and/or employees, Rotate staff , Setting up a teleworking system, Putting some workers on short-time working, Delaying the payment of employees' salaries, Supplier Cancel supplier orders, Investor Postponing investments in the company, Borrowing/drawing on savings.	None	(Fomba Kamga & Nda'Chi Deffo, 2022)
I use every last penny I get to promote and to try something else out, you know send four on consignment to Garissa and maybe you never hear from them you never get your money back and so you count that one off and damn it that was a loss, try again. So that is basically what I have been doing with probably 80 or 90 percent of the profits that come off that company is just to try out new areas … I have always been trying to modify these … everything has to change when you have got customer feedback and stuff'.	None	(Littlewood & Holt, 2018)
When the lockdown was enforced, an almost instant reaction was to scale back the expansion and conserve cash to ensure continuity of the business.	None	(Burhan et al., 2021)
However, AO continues to implement marketing strategies by providing free vouchers and discounts to attract loyal consumers. By contrast, TA uses its website as a marketing and sales medium.	None	(Anggadwita et al., 2023)
Yet, the majority of smaller companies indicate to have reduced the size of their FFV production area, by 50% –75%, because of the crisis. Also, smallholder FFV farmers producing for the domestic market, drastically decreased their FFV pro duction area.	None	(Van Hoyweghen et al., 2021)

4.1.2 Adaptive resilience strategy

An examination of the stages of resilience businesses in the Global South navigate reveals that, during the adaptation, firms modify value chains, in response to unexpected shocks. Businesses pursue resilience by modifying their production, sales, logistics, procurement and human resources. In order to do so, our results suggest that they deploy context-specific mixes of resources to implement these adaptive resilience strategies. Mobile money, a widely adopted payment mechanism in developing countries, plays an important role in enhancing resilience and is frequently employed in sales transactions. "*When faced with a crisis, SMEs possess the survival instincts needed to withstand demand shock and sales loss. The use of mobile money can facilitate the actualisation of this potential by enhancing the rapidity, scale and flexibility attributes of SMEs' resilience in the midst of the Covid-19 pandemic."* observes (Nan & Park, 2022) .

We find that resources are pivotal for the adaptation stage. By employing resources, firms are able to change their method of production, introduce new technology where a business already has existing technology, fabricate existing technology or adopt technology for the first time. Additionally, resources create room for capacity building of employees through training and learning activities which in turn enabled them to adapt their value chain. Specifically, Technology played a key role in the adaptive stage and enabled online shopping through social media. Newly introduced technologies are generally simple, context-specific and not financially intensive. Table 3 provides exemplary evidence on adaptation.

Business diversification emerged as a widely adopted strategy during the adaptation stage. Specifically, firms pursued diversification through market expansion and supplier diversification by engaging with multiple or alternative sources, as well as by establishing additional or alternative

revenue streams through changes in the services or products offered. Consistent with this finding, (Eledi Kuusaana et al., 2023) observe, "*For those who adopted one or more adaptation technologies, 67.5% diversified their income sources, indicating that diversification of income sources was the major technology or innovation employed by cocoa farmers in the study area to help build resilience to the devastating effects of climate change"*. Our findings indicate that firms diversified their business by entering new and less disrupted markets, engaging new suppliers as well as diversifying their products by changing their value proposition.

Table 3: Adaptive resilience strategy "with resources"

Exemplary Quote	Resources used*	Country context/source
All three retailers responded by introducing an on-demand mobile application for online shopping that promises same-day turnaround times to deliver customer orders.	Technology Knowledge	(Njomane & Telukdarie, 2022)
Considering the former category, main actions included adapting the supply chain (47.6%) and increases in communication: with clients and customers (48.0%), via social media (33.8%), and internally (33.1%). As examples, one Lao PDR food processor, retailer, and caterer reported creating a new service of set-menu meal deliveries for self-isolating families and businesses, and an Indonesian vegetable producer that usually sold to hotels and restaurants had started catering and targeting sales to religious holiday celebrations.	Finances Technology Knowledge Networks	(Nordhagen et al., 2021)
For those who adopted one or more adaptation technologies, 67.5% diversified their income sources, indicating that diversification of income sources was the major technology or innovation employed by cocoa farmers in the study area to help build resilience to the devastating effects of climate change	Technology Finances Knowledge Networks	(Wongnaa & Babu, 2020)
Diversification of markets along with the adoption of e-commerce has also proved to be effective in boosting exports levels with respective coefficients of 1.2 and 2.8.	Technology Finances Knowledge	(Ragoobur et al., 2023)
In Bolivia the agroecological food system was re-introducing diversified cropping systems such as the traditional Milpa systems, i.e. mixed cropping of corn, pumpkin and beans, as well as traditional, locally adapted corn varieties as a response to risks and shocks.	Finances Knowledge	(Mukhovi et al., 2020a)
Diversified domestic supply chains helped firms to mitigate the impact of the COVID-19 crisis and recover more strongly.	Finances Knowledge	(Chacha et al., 2024b)
Consequently, this research reveals foreign market scanning as a key mechanism that mediates the foreign diversification – firm resilience relationship. The empirical results support the study's argument that foreign diversification can enhance foreign market scanning and accordingly, firm resilience.	Technology Finances Knowledge	(Essuman et al., 2023)

Tourism-product diversification Mahenye ecotourism products and services are diverse; ranging from sport hunting, wildlife viewing, scenic views, fishing, canoeing, accommodation provision, traditional dances and selling curios.	Finances Knowledge Technology Networks	(Mudzengi et al., 2021)
'We've been liaising with city of Cape Town and with Western province government evidence is that we hosted the hospital of hope so, you know, we build the hospital of hope, over the time period, with the support of the Western Cape government's health department.' Since venues sell space, they have responded to COVID-19 by diversifying their operations during the pandemic, particularly during a period in which business travel could not occur.	Finances Knowledge Networks	(Lekgau & Tichaawa, 2021)
Diversifying income generating projects in the household and working overtime when power returned were some of the other measures incorporated by households that depend on informal businesses as their sources of income. Electricity cuts disturbed customer relationships resulting in a lot of disgruntled customers.	Finances Technology Knowledge Networks	(Reid & Simatele, 2021)
Simultaneously, using backup generators in place of grid electricity is perceived as the ultimate adaptive capacity. Once a business or household could afford a generator, all other practices could remain and function as usual. Backup generators therefore sustain everyday practices as electricity would and restores urban functions and practices without the need to alter them.	Finances Technology Knowledge	(Eledi Kuusaana et al., 2023)
Among the resilience measures, there is evidence that the reskilling of workers and a reduction in the workforce have helped enterprises to recover in terms of their export performance. The marginal effects are positive and statistically significant at 1% and 5%, respectively.	Finances Knowledge	(Ragoobur et al., 2023
Interviewees confirmed that digital technologies influenced their leadership styles during the Covid-19 pandemic. Digitally informed leadership styles sustained impactful communal interventions during the pandemic. Digital technologies aided resilient (proximate, dynamic, and continuous) outcomes.4.1.1 Proximate resilient outcomes for SE leadership. During the crisis, digital technologies allowed SE leadership to have an immediate resilient impact through (a) Improved Communication, (b) Deeper Empathy and (c), Reduced Anxiety.	Finances Technology Knowledge Networks	(Ashiru et al., 2023)
Digitally mature SME retailers were also more aware of and attuned to environmental scanning to internally prepare for external shocks. Their strategies involved using digital	Technology Finances	Robertson et al., 2022

tools, e.g. observing the market sentiment via digital platforms and adjusting their responses based on market intelligence, and extended to new products, operational capacities, and staff-related functioning.	Knowledge	
Our organization frequently adopts new marketing techniques'; and 'Our firm frequently introduce new products/services'. On the other hand, eight items were used to describe agility. The items include: 'we quickly switch suppliers to take advantage of lower costs, better quality or improved delivery items'; 'our firm quickly adopts new technologies to deliver better, faster and cheaper services'	Technology Finances Knowledge	(Akpan et al., 2022)
When faced with a crisis, SMEs possess the survival instincts needed to withstand demand shock and sales loss. The use of MM can facilitate the actualization of this potential by enhancing the rapidity, scale and flexibility attributes of SMEs' resilience in the midst of the Covid-19 pandemic.	Technology Knowledge	(Nan & Park, 2022)
Indeed, our findings showed that membership of FBOs positively influenced the use of organic fertilizer and irrigation as a climate variability adaptation strategy.	Networks	(Anum et al., 2022)
Apart from adopting new technologies, 29 per cent of the surveyed firms confirmed adapting and fabricating their technology to suit local conditions. This was a very important survival technique given the shortage of foreign currency for the importation of machinery and spare parts. Thus, those firms that could keep their production systems running enjoyed an advantage over their counterparts that could not do so.	Technology Finances	(Chiripanhura, 2010)
Their strategies involved using digital tools, e.g. observing the market sentiment via digital platforms and adjusting their responses based on market intelligence, and extended to new products, operational capacities, and staff-related function	None Technology Knowledge	(Robertson et al., 2022)
In the face of restrictions, SMEs shifted toward more localized procurement and sales, shorter supply chains (often by-passing intermediaries and increasing use of contracts), use of smaller vehicles, and toward the adoption of information and communication technology (ICT) to search for and engage with business partners.	Technology Knowledge	(Nazirii et al., 2023)
Pivoting' by private food businesses and intermediaries typically leveraged digital platforms and/or new types of logistics business models that were already beginning to emerge before COVID-19. Such innovations in business operations, especially the use of e-commerce, e-logistics, e-payment, and e-procurement platforms to link to suppliers and buyers, proved effective in adjusting to the major supply and demand shocks provoked by the pandemic, and they are likely to endure. While adoption of these innovations may be challenging in some contexts, they provide important new	Technology Knowledge Finances	(Lekgau & Tichaawa, 2021)

opportunities, particularly for the many small and medium enterprises (SMEs) in developing-country food supply chains.		
Generally, only 28.7% of the sampled cocoa farmers had access to credit. What this means is that even if farmers are taught climate change adaptation technologies, due to the capital intensive nature of these technologies, they will struggle to practice them because of inadequate funds.	Technology Finances Knowledge	(Wongnaa & Babu, 2020)
Since 2018, Pick n Pay has collaborated with a technology house to utilise Bottles mobile application to deliver alcoholic beverages.	Technology Networks Finances Knowledge	(Njomane & Telukdarie, 2022)
Firms in the livestock farming supply chain were expressly the exemplars for sensing threats and opportunities from the Russian-Ukrainian crisis using digital technologies, as they all implemented several digital sensing capabilities such as: (1) Information gathering and interpretation, (2) Information sharing, (3) Data-driven learning and adaptive algorithms, (4) Traceability systems.	Technology Knowledge Networks Finances	(Belhadi et al., 2024)
In an attempt to maximize sale opportunities, some participants revealed they sell their goods in more than one market. These women move between geographic locations based on peak marketing seasons. As one of them explained.	Finances Networks	(Sowatey et al., 2018)
Many business owners, therefore, kept limited stock and restocked only when it was all sold as a way of mitigating this risk. Others like a wire craftsman in Victoria Mxenge indicated that his art pieces used to rust because of leaks in his home where he worked from and he ultimately had to close his shop but later reopened it in partnership with his fellow craftsmen.	Networks Finances	(Shale, 2014)

4.1.3 Proactive resilience strategy

The study identified only one instance where a business was proactive in preparation towards shock. Slack resources were employed to build resilience as seen in (Lopes et al., 2022) who points out that "*company D revealed not to have felt many barriers because they had a large stock of fuel for 1 year, already foreseeing possible delays in the supply of materials, pointing to the breakdown of machines, lack of parts in the domestic market and the delay in receiving raw materials as the main obstacles"*. Table 4 shows how proactive resilience takes place and highlights the resources employed.

Table 4: Proactive resilience strategy "with resources"

Exemplary Quote	**Resources used***	**Country context/source**
However, the company D revealed not to have felt many barriers because they had a large stock of fuel for 1 year, already foreseeing possible delays in the supply of materials, pointing to the breakdown of machines, lack of parts in the domestic market and the delay in receiving raw materials as the main obstacles.	Finances Knowledge Networks	(Lopes et al., 2022)

4.2 Resources for resilience

Our results and coding exercise reveal the salience of four key resources that underpin different business resilience strategies: networks, knowledge, technology and finances. These resources are hierarchically interconnected; the contributions of these resources are structured and interdependent rather than equal or isolated. Table 5 provides an overview of these four resources, as well as lists the main and associated sub-mechanisms by which these resources enable resilience strategies. Below, we address each of these main mechanisms in turn.

Table 5: Overview of mechanisms and sub-mechanisms of resources influencing resilience strategies

Resilience element/resources	Main mechanisms influencing resilience strategies (Second Cycle codes)	Associated sub-mechanisms influencing resilience strategies (First cycle codes)
Networks	Facilitate access to knowledge, technology and finance	• Regular, up-to-date information exchange between business partners • Facilitates access to new markets • Enables collaboration • Community-level micro-credit networks
Knowledge	Conceive an actionable plan to deal with shock	• Analytical knowledge to identify alternative business opportunities • Transformative knowledge to adapt to shocks
Technology	Technology-enabled pivot to new business opportunities	• Change means of production • Target alternative markets • Shift marketing approaches
Finances	Facilitate dampening the intensity of shock	• Facilitates adoption of technology • Build financial and product buffer capacity • Hedge against potential losses • Enables acquisition of new knowledge for adaptation

4.2.1 Networks

Our findings underscore the role of network membership in building resilience (Lundy et al., 2017; Mudzengi et al., 2021). Networks **facilitate access to knowledge, technology and finance**. Specifically, we find four associated sub-mechanisms through which networks foster resilience:

(1) Regular, up-to-date information exchange between business partners, (2) Facilitates access to new markets, (3) Enables collaboration (4) Community-level micro-credit networks. We provide illustrative examples of these four sub-mechanisms in Table 6.

First, regular information exchange enhances the adaptation of resilience strategies (Wongnaa & Babu, 2020) , boosts business referrals that expand customer bases (Ngoasong & Kimbu, 2016) and guides firms toward reliable sources of high-quality raw materials and products. For instance, (Ngoasong & Kimbu, 2016) points, *"We have this WhatsApp group called 'marisha biashara' [boost business]. From there we would chat on where to get good quality items for our businesses so sometimes you find many members saying don't go to that supplier, they have bad prices and poor-quality things. So, I only go where most members have had good experience"*. As such we learn that peer networks not only act as a source of information but a guidance tool for their members, helping them make better, lower risk decisions.

Second, networks facilitate access to informal markets. This is closely related to the first sub-mechanism, which entails regular information update. Information shared in networks enables businesses to enter informal markets that they would have otherwise not been aware of. As (Sowatey et al., 2018) notes, "*entry into the informal working spaces is contingent on women's ability to forge and nourish ties with acquaintances, kinsmen and middlemen"*. This highlights the critical role of networks in facilitating market entry, particularly in developing-country contexts where the informal sector remains a significant component of economic activity.

Third, through networks, collaborative alliances that enable entrepreneurs to adapt to shocks are formed, through these alliances, suppliers and retailers collaborate in the provision of goods and services as explained by (Njomane & Telukdarie, 2022) who notes *"Since 2018, Pick n Pay has collaborated with a technology house to utilise Bottles mobile application to deliver alcoholic*

beverages". The mere act of just collaborating is however, not sufficient, as sample studies highlight two key aspects of networks relevant to business resilience: strength and origin. Firms with strong and well-established network ties are more likely to withstand and recover from disruptions than those with weaker or less developed connections (Moraga et al., 2024). This implies that the depth and quality of network relationships play a crucial role in shaping firms' capacity to adapt and build resilience during crises.

Fourth, networks facilitate access to financial resources via platforms like micro-credit schemes, which firms learn about through training and information exchange, as illustrated by (Anum et al., 2022) who observes, *"When farmers join groups and contact each other, they exchange information and get access to resources such as credit, market information, innovations that they might not have had access to individually*". Access to micro-credit schemes benefits firms, particularly those that are unable to obtain financing from conventional lenders such as banks. Additionally, micro-credit platforms promote financial inclusion and provide a safety net for firms when faced with shocks

Table 6: The impact of networks on resilience: Exemplary evidence for the "Facilitate access to support, information and other resources" mechanism.

Sub-mechanism	Exemplary Quote	Country context/source
Regular, up-to-date information exchange between businesses	Belonging to a farmer association has a positive relationship with the likelihood of adoption of a climate change adaptation technology and this is significant at the 5% level. The marginal effect suggests that belonging to a farmer association will lead to a 10.1% increase in the probability of adoption. This is expected because belonging to a farmer group exposes farmers to recommended climate change adaptation technologies whose adoption has the potential to help them build resilience to the shocks climate change brings.	(Wongnaa & Babu, 2020)
Regular, up-to-date information exchange between businesses	External relationships are also significant for resilience. Again, illustrated by Z1 it has adopted a networking strategy to upgrade its products receiving support for workshop events and technical advice from experts funded by international agencies in order to respond growing competition and technological sophistication in global craft producer markets. Meanwhile the highly diversified social enterprise K1 networks extensively with academics, development agencies, government and the private sector, to maintain and enhance its programmes, and to launch new activities.	(Littlewood & Holt, 2018)
Regular, up-to-date information exchange between businesses	The participants stated that their strategic orientation changed after the first pandemic crisis. Mrs. Keditsu adds: "I strengthened relations with present suppliers and fished more suppliers to ensure pickle manufacture without hindrance." Lessons from the first lockdown were implemented to leverage social capital.	(Aier et al., 2022)
Regular, up-to-date information exchange between businesses	We have this WhatsApp group called 'marisha biashara' [boost business]. From there we would chat on where to get good quality items for our businesses … so sometimes you find many members saying don't go to that supplier they have bad prices	(Ngoasong & Kimbu, 2016)

	and poor-quality things. So I only go where most members have had good experience".	
Facilitates access to new markets	The findings reveal that entry into the informal working spaces is contingent on women's ability to forge and nourish ties with acquaintances, kinsmen and middlemen.	(Sowatey et al., 2018)
Facilitates access to new markets	These socio-economic networks were by far the most mentioned incentive to doing business in Guinea-Bissau across most foreign merchant groups.	(Lundy et al., 2017)
Enables collaboration	Regarding the collaboration and partnerships during the crisis or as a preventive measure, the DMAs and tourism organizations of Assam key departments, including the tourism organizations actively involved in maintaining the liaison for protecting and planning resources at Assam's tourist destinations and also established a mechanism to call foreign Rebuilding tourist destinations from crisis 447 and Indian nationals as per the state disaster management plan 2010 under the disaster management act 2005 and 2010 and the Assam disaster management manual 2015.	(Gani et al., 2021)
Enables collaboration	Since 2018, Pick n Pay has collaborated with a technology house to utilise Bottles mobile application to deliver alcoholic beverages	(Njomane & Telukdarie, 2022)
Enables collaboration	Resilience in SMEs depends on the network ties of the business. It was found that weakly networked businesses found it harder to survive, while businesses with stronger ties were found to survive more. Weaker businesses are then forced to adapt and find other opportunities to survive or would be forced to shut down. During the COVID-19 pandemic, SMEs were forced to adapt to change in uncertain conditions that business owners had no control over. This forced the businesses to either adapt to the rapid change or to close. It was proposed that network connections were what preserved the business.	(Gani et al., 2021)

Enables collaboration	Our findings show that EDCT enabled SMEs to be resilient amidst SC disruptions via four drivers—facilitating connections and bonding with staff, clients, and suppliers; enabling collaborations; allowing process diversification; and, permitting SC flexibility.	(Ashiru et al., 2023)
Community-level micro-credit networks	In adopting these response strategies, a combination of livelihood capital is mostly required. These livelihood capitals span physical assets such as fishing vessels (canoes) and gear (physical capital); relations such as family and friends (social capital); access to capital and credit and savings (financial capital); skills, access to extension and expertise (human capital) to political in fluence (political capital) among others (Freduah et al., 2018, 2019). For instance, in Ghana's fishing communities, families work together as units in the industry to increase their gains by supporting each other (Adusah-Karikari, 2015)	(Amadu et al., 2021)
Community-level micro-credit networks	When farmers join groups and contact each other, they exchange information and get access to resources such as credit, market information, innovations that they might not have had access to individually (Guodaar, 2015; Salifu, 2015; Stefanovic et al., 2017). Farmer groups enable farmers access resources that they may not have had access to individually (Enimu & Onome, 2018).	(Anum et al., 2022)
Community-level micro-credit networks	Resilience through relationships and networks across our case studies we find evidence of social enterprises developing resilience through their strong supportive relationships with internal and external stakeholders, utilising these relationships for support during time of crisis and to adapt to ongoing challenges and change.	(Moraga et al., 2024)

4.2.2 Knowledge

Our analysis indicates that knowledge as a resource "**conceives an actionable plan to deal with shock"**. We identify two associated sub-mechanisms through which knowledge promotes resilience (Table 7). The sub-mechanisms represent the types of knowledge employed to build resilience: (1) Analytical knowledge to identify alternative business opportunities, (2) Transformative knowledge to adapt to shocks. We provide example evidence for these two sub-mechanisms in Table 7.

Through training and other learning activities employees can develop critical thinking, ability to explain and interpret issues during disruption. For instance, during Covid 19, firms were learning and cascading important information to clients through social media as illustrated by (El-Sahli & Alsamara, 2023). Additionally, analytical knowledge played a key role when firms were examining market trends in times of disruption, as explained by (Akpan et al., 2022): *"Likewise, management of the manufacturing firms should strategically position the firms to be among the first to identify and acquire external knowledge about their market trends, technology and industry. This will help the firm to adapt quickly to disturbances from the environment and be more resilient. It was suggested that similar studies be conducted in other sectors of the economy."* On the other hand, transformative knowledge involves positive change towards resilience determinants. By learning, entrepreneurs adapt their activities which ensure continuity of their businesses, this is mostly done through learning and co-learning.

Though knowledge has been identified as a resilience enabler (Idrissou et al., 2020; Anum et al., 2022) it is important to note that there should be agency on the side of the businesses to access this knowledge and from institutions to create awareness (El-Sahli & Alsamara, 2023).

Table 7: The impact of knowledge on resilience: exemplary evidence for the "conceives an actionable plan to deal with shock" mechanism

Sub-mechanism	Exemplary Quote	Country context/source
Analytical knowledge to identify alternative business opportunities	For those who did not participate in any government assistance programs, when asked for the reasons for not participating, the most frequent answer is "no such programs" (44% of all firms chose this option), although one of the options given is "not aware of any such programs." This probably highlights the lack of trust in governments in these countries. The share of firms that chose this option is very high (67%) in Morocco in wave 1. Other popular reasons given are not being aware of any such programs, bureaucracy and avoidance of interaction, and the uncertainty in getting the assistance if applied for. By just looking at these statistics, governments need to communicate their assistance programs more effectively and reach out to SMEs to inform them of their options and assure them of their intentions.	(El-Sahli & Alsamara, 2023)
Analytical knowledge to identify alternative business opportunities	Finally, respondents identify increased learning as a factor in collaborating for resilience. R39 and R1 state thus: Learning was essential during COVID-19. We used social media to cascade important information to clients. I promise you they enjoyed it a lot. Remember, everyone was affected by COVID-19, so constant engagement with clients was our way of collaboration and innovation (R39). Knowledge sharing was key during this (COVID-19) period. Any free time we had was used to update our knowledge. Interestingly, our network widened through social media and virtual presentations (R1).	(Ashiru et al., 2023)
Analytical knowledge to identify alternative business opportunities	Likewise, management of the manufacturing firms should strategically position the firms to be among the first to identify and acquire external knowledge about their market trends, technology and industry. This will help the firm to adapt quickly to disturbances from the environment and	(Akpan et al., 2022)

	be more resilient. It was suggested that similar studies be conducted in other sectors of the economy.	
Transformative knowledge to adapt to shocks	The level of education (schooling) negatively influences the adoption of transhumance as an adaptation strategy. The educated farmers are often managers of the farmers associations and are mostly invited to attend training sessions with the development partners, which makes them less available for transhumance. Otherwise, education is likely to improve the ability of the farmer to receive, interpret and understand relevant information to make innovative decisions (Getachew et al., 2014).	(Idrissou et al., 2020)
Transformative knowledge to adapt to shocks	This indicates that holding all other variables constant, an increase in the level of education of smallholder farmers significantly increased the use of crop rotation and row planting as adaptation strategies to climate variability by 0.104 respectively. As farmers attain a higher level of education, the rate at which they adapt to the effects of climate variability by using some adaptation strategies such as crop rotation and row planting is much higher compared to when they do not attain a higher level of education. This implies that higher level of education is necessary for smallholder farmers to adapt to the effects of climate variability. Education affords individuals the knowledge and the ability to continuously search for appropriate adaptation strategies given an analytical mind.	(Anum et al., 2022)
Transformative knowledge to adapt to shocks	The company managers reported a high degree of satisfaction with respect to the contribution of the co-learning experiences towards the overall resilience of their enterprise to the crisis. In all four dimensions, a clear majority of participants reported that they felt their participation in the collective learning project contributed to the positive change in the different resilience determinants, including the flexibilization of their organization's structure in response to the restrictions imposed by the pandemic containment measures.	(Habiyaremye, 2021)

4.2.3 Technological resources

Our findings highlight technology as a key resilience resource that promotes resilience by allowing **"Technology-enabled pivot to new business opportunities".** This is mainly achieved by three main sub-mechanisms: (1) Change means of production, (2) Shift marketing approaches, (3) Target alternative markets. We provide example evidence for these three sub-mechanisms in Table 8. Through the adoption of technology, firms can shift to the production of alternative products or shift their means of production if their business is disrupted. This shift happens when firms adopt technology for the first time, fabricate existing technologies or substitute the technology they have for another technology, as demonstrated by (Chiripanhura, 2010; Reid & Simatele, 2021; Nazirii et al., 2023). Additionally, firms leveraged digital platforms to optimise their production and supply chain processes by adopting electronic payment systems, digital procurement solutions, and technology-enabled logistics operations.

Technology has enabled firms to shift their marketing approaches via online platforms, including online TikTok, Facebook, YouTube, WhatsApp, and Instagram as illustrated by (Anggadwita et al., 2021) *"we market through social media ... branding with media reels, TikTok, and they use social media and digital marketing to promote their businesses".* A shift toward online marketing expanded customer reach and supported business continuity during periods of disruption by enabling the delivery of goods at the customer's convenience.

Beyond changing means of production and shifting marketing approaches, study findings show evidence of businesses using technology to target new customers *"During the process, P8 also launched courses that provided counselling to children in younger age groups. Through digital transformation, she reached international markets, including the USA and Canada"*(Khurana et al., 2020) explains.

Table 8: The impact of technology on resilience: Exemplary evidence for the "Technology-enabled pivot to new business opportunities" mechanism

Sub-mechanism	Exemplary Quote	Country context/source
Change means of production	Apart from adopting new technologies, 29 percent of the surveyed firms confirmed adapting and fabricating their technology to suit local conditions. This was a very important survival technique given the shortage of foreign currency for the importation of machinery and spare parts. Thus, those firms that could keep their production systems running enjoyed an advantage over their counterparts that could not do so. Further, adaptation and fabrication was necessitated by the fact that most firms used relatively old technology for which parts were increasingly rare on the world market.	(Chiripanhura, 2010)
Change means of production	Moreover, it has been argued that, compared with larger firms, small-scale firms have the advantage of strategic flexibility to technological changes, including digital transformation, thus attenuating the negative impact of the COVID-19 on their performance (Guan et al., 2022)	(Nazirii et al., 2023)
Change means of production	During load shedding, the businesses that substituted for electricity mainly opted for generators. However, the choice of substitute also had a significant association with the residential area, (chi square (10) = 33.842, p = 0.00; likelihood ratio (10) = 36.199, p = 0.00; Cramer's V = 0.336). The businesses operating in LDRAs and MDRAs opted for generators compared to those in HDRAs which opted for firewood/charcoal as shown in Figure 7, suggesting a cheaper alternative was chosen by households with a low-income status.	(Reid & Simatele, 2021)

Shift marketing approaches	To adapt to the new reality, traders, and to a limited extend also smallholder farmers, increasingly use online platforms for the marketing of their products (Figure 12), and urban consumers increasingly rely on online shopping.	(Van Hoyweghen et al., 2021)
Shift marketing approaches	Pivoting' by private food businesses and intermediaries typically leveraged digital platforms and/or new types of logistics business models that were already beginning to emerge before COVID-19. Such innovations in business operations, especially the use of e-commerce, e-logistics, e-payment, and e-procurement platforms to link to suppliers and buyers, proved effective in adjusting to the major supply and demand shocks provoked by the pandemic, and they are likely to endure.	(Reardon et al., 2024)
Shift marketing approaches	P8 runs a counseling service in Delhi. During Covid-19, P8 was not able to offer her services in person. She set up a digital task force and started a YouTube channel. Through the YouTube channel, she reached out to a broader audience. Because of the increase in demand, she transformed digitally and improved her online presence through the website. She custom-curated counseling services for different groups of people. During the process, P8 also launched courses that provided counseling to children in younger age groups. Through digital transformation, she reached international markets, including the USA and Canada.	(Khurana et al., 2020)
Shift marketing approaches	Digital transformation is a must for entrepreneurs to change their business format to online to meet environmental demands due to the COVID-19 pandemic. Wedding organizers face several obstacles when transforming their business model into digital services because the services are closely related to social interaction and organizing events that require people to gather in one place. The findings show that entrepreneurial wedding organizers use various methods to maintain their businesses and begin utilizing digital media for their businesses, such as social media marketing. R1 revealed that "... we market through social	(Anggadwita et al., 2023)

	media ... branding with media reels, TikTok ...” Similarly, R7 and R8 revealed that they use social media and digital marketing to promote their businesses	
Target alternative markets	During the process, P8 also launched courses that provided counseling to children in younger age groups. Through digital transformation, she reached international markets, including the USA and Canada.	(Khurana et al., 2020)

4.2.4 Financial resources

We find 4 financial resource sub-mechanisms which **facilitate dampening the intensity of shock**. The financial resource sub-mechanisms are as follows: (1) Facilitates adoption of technology, (2) Build financial and product buffer capacity (3) Hedge against potential losses, (4) Enables acquisition of new knowledge for adaptation. We provide example evidence for these four sub-mechanisms in Table 9.

Financial resources play a critical role in fostering business resilience by enabling firms to adopt technology that enhances adaptation. This can be done using finances secured through credit as indicated by (Borda-Rodriguez & Vicari, 2014; Wongnaa & Babu, 2020; Saah et al., 2024) . As such, finances have a significantly positive effect on technology adoption, as highlighted by (Wongnaa & Babu, 2020) who points out that "*Access to credit had a positive effect on probability of adoption of at least one climate change adaptation technology and was statistically significant at the 10% level. The marginal effect reveals that having access to credit will result in a 1.8% increase in the chances of a cocoa farmer adopting a climate change adaptation technology."*

The study findings show that finance availability influences the impact of shock on firms as highlighted by (Nordhagen et al., 2021). We therefore establish that sample papers examine accessibility of funds by firms via credit facilities. We find that financial resources whether acquired through credit or not, provide both financial and product buffer capacity for firms (Borda-Rodriguez & Vicari, 2014; Amadu et al., 2021; Ragoobur et al., 2023). For instance, (Borda-Rodriguez & Vicari, 2014) highlights the impacts of shock in relation to availability of finances and notes that "*The probability of being severely impacted was significantly higher for firms with*

<50,000 USD in annual turnover; a larger decrease in consumer mobility for grocery/pharmacy shopping also increased the probability of a severe impact."

Financial resources play a central role in enabling adaptation for resilience. This is done through strategic renewal and the creation of buffer capacity (Amadu et al., 2021). Conversely, lack of financial resources undermines firms' ability to build resilience and threatens the sustainability of some businesses when hit by shock, for instance, (Crick et al., 2018) highlights the creation of staff redundancies and sale of business assets as unsustainable adaptive business resilience strategies. This is echoed in this statement; *"We find that financial barriers are a key reason why firms resort to unsustainable adaptation, the most striking result is the degree to which financial barriers result in business contraction"* observes (Anum et al., 2022).

Additionally, we find that financial resources facilitate the acquisition of new knowledge for adaptation (Crick et al., 2018; Aidoo et al., 2021; Eledi Kuusaana et al., 2023) with the knowledge being acquired through employee training initiatives. We found that training initiatives are enabled by supportive government policies which create enabling business environments as explained by (Aidoo et al., 2021) who observes, "*With the available financial, human and technology slack resources, an enabling environment created by the government through policies and provision of stimulus packages, and training from business research institutions, SMEs can engage in strategic renewal as a result of their resilience, thereby increasing performance."*

Table 9: The impact of finances on resilience: Exemplary evidence for the "Facilitate dampening the intensity of shock" mechanism.

Sub-mechanism	Exemplary Quote	Country context/source
Facilitates adoption of technology	Generally, only 28.7% of the sampled cocoa farmers had access to credit. What this means is that even if farmers are taught climate change adaptation technologies, due to the capital-intensive nature of these technologies, they will struggle to practice them because of inadequate funds. Access to credit had a positive effect on probability of adoption of at least one climate change adaptation technology and was statistically significant at the 10% level.	(Wongnaa & Babu, 2020)
Facilitates adoption of technology	At a second level, innovation in the context of co-operatives is concerned with credit and the extent which co-operatives are able to acquire loans in order to upgrade their technology. For instance, agricultural co-operatives that work with external actors tend to innovate their agricultural processes and means of production; this is in part due to knowledge derived from external actors and the Union's ability to access bank loans.	(Borda-Rodriguez & Vicari, 2014)
Facilitates adoption of technology	Many SMEs struggle to execute adaptive methods because of technology limitations brought on by tight budgets or a lack of technological infrastructure.	(Saah et al., 2024)
Build financial and product buffer capacity	The probability of being severely impacted was significantly higher for firms with <50,000 USD in annual turnover; a larger decrease in consumer mobility for grocery/pharmacy shopping also increased the probability of a severe impact.	(Borda-Rodriguez & Vicari, 2014)
Build financial and product buffer capacity	The pandemic has in fact hit micro and small-sized enterprises most as the latter generally have a smaller financial cushion and operate mainly in the service sectors, which have been highly	(Ragoobur et al., 2023)

	impacted by social distancing policies and other measures at curtailing the spread of the virus.	
Build financial and product buffer capacity	Access to catalytic capital will be useful in building their buffer capacity.	(Amadu et al., 2021)
Lack of building financial and product buffer capacity	Lack of access to finance and supplier credits escalated disruption in the SC. Under these SC disruption conditions, emerging technologies enabled SMEs to reshape their business models and payment methods.	(Ashiru et al., 2023)
Lack of building financial and product buffer capacity	At the same time, the lack of credit, for example, may cause Chinese merchants to consolidate or fold, while Mauritanians, Senegalese, or Conakry Guineans may be able to mobilize extensive transnational networks to maintain their stocks even during times of bust. Understanding these variable business models is an important next step in the research on small-state foreign entrepreneurs to parse successful practices from harmful ones, even within the same business.	(Lundy et al., 2017)
Hedge against potential losses	Farmers did not insure their farms against certain disasters and hazards like fires and floods because it was costly. It was also observed that the planting of trees by smallholder farmers was low.	(Anum et al., 2022)
Enables acquisition of new knowledge for adaptation	Third, income (resource availability) plays a significant role in determining how a person or business builds adaptive capacity.	(Eledi Kuusaana et al., 2023)
Enables acquisition of new knowledge for adaptation	With the available financial, human and technology slack resources, an enabling environment created by the government through policies and provision of stimulus packages, and training from business research institutions, SMEs can engage in strategic renewal as a result of their resilience, thereby increasing performance.	(Aidoo et al., 2021)

Enables acquisition of new knowledge for adaptation	We find that financial barriers are a key reason why firms resort to unsustainable adaptation, the most striking result is the degree to which financial barriers result in business contraction strategies (i.e. staff redundancies or the sale of assets).	(Crick et al., 2018)

Networks, knowledge, technology and finances interact and are, in some cases, interdependent and play a crucial role in business resilience. Through financial resources, businesses can invest in improved technology that strengthens their resilience capacity. On the other hand, networks enhance financial access by enabling firms to obtain funding through established relationships with other firms and investors. "*This significant finding is not surprising as institutions (formal and informal) and social networks play important roles in the small-scale fisheries sector of Ghana. They could serve as conduits for the transfer of livelihood capitals such as soft loans, knowledge and skills as a form of "agency" between fisherfolk, which contributes positively to their capacity to learn and by extension, livelihood resilience building"*observes (Amadu et al., 2021). Additionally, networks also create avenues for knowledge building and technology access, knowledge and technology have been identified to be important resources playing a key role in resilience, as highlighted by (Sahi et al., 2023) who notes "*Encourage networking engagements with channel partners and other stakeholders to secure access to valuable resources and develop resilience to guard itself against potential future disruptions."*

5. Discussion

Three key implications emerge from the findings of this study, indicating how businesses attempt to remain resilient in times of shock. First, we identify how resources influence business resilience in different contexts of the Global South. This addresses a key gap in the literature, which has suggested a link between resilience and resources (Vogus & Sutcliffe, 2007; Pereira & Da Silva, 2015; Linnenluecke, 2017; Duchek, 2020) but has not identified the mechanisms how different types of resources lead to increased resilience in the Global South, we find that four key resources, networks, knowledge, technology and finance play a pivotal role in fostering business resilience (as illustrated in Figure 3).

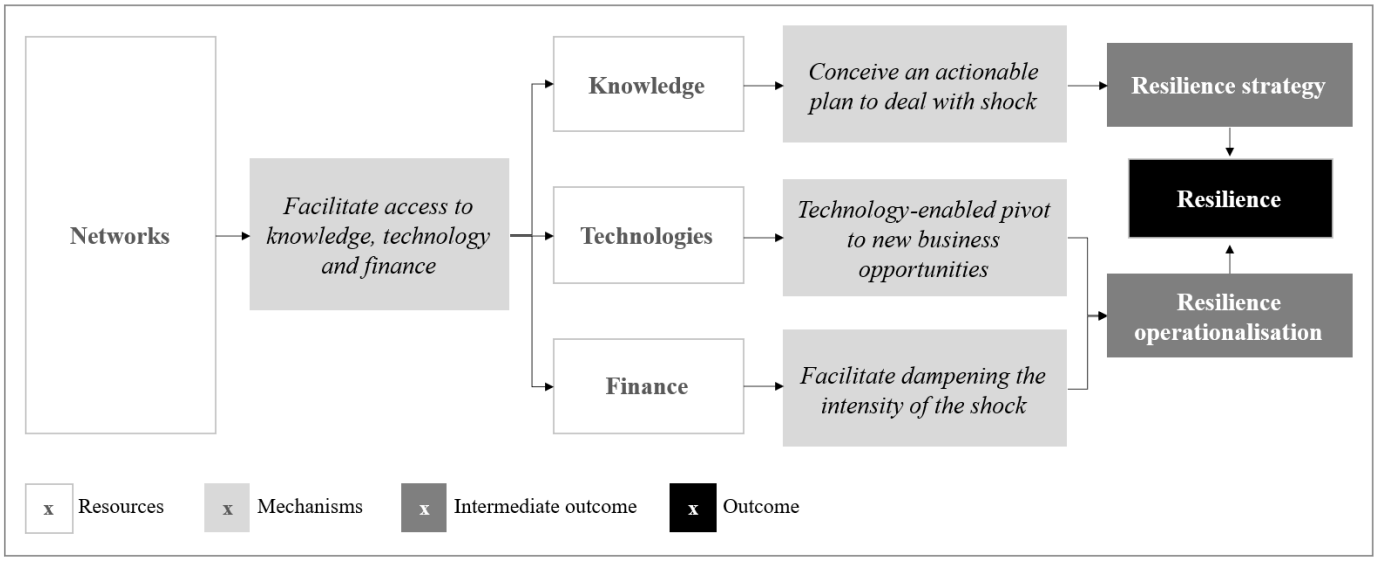

Figure. 3: Relationship between different resources and how the resources drive resilience

Figure 3 shows that networks serve as the foundational element that enables access to critical resources (knowledge, technologies and finance) necessary for building resilience. By connecting firms to information, financial capital, and relevant technologies, networks act as a connective infrastructure, thus creating a platform that allows access and integration of these resources and amplifies their effectiveness. Knowledge plays a pivotal role in crafting an effective resilience strategy, allowing informed planning amid uncertainties by enabling the conception of an actionable plan to deal with shock ultimately developing a resilience strategy. Meanwhile, technology and finance are essential to operationalise resilience strategy conceptualised by the help of knowledge, turning plans into actionable outcomes through enabling pivot to new business resources and facilitating dampening the intensity of the shock respectively. Ultimately, together, networks, knowledge, technology, and finances form an interconnected system that empowers firms to build resilience.

We find that, resource availability during periods of disruption influences how businesses respond to shock which corroborates with (Hillmann & Guenther, 2021). We show the ways in which resource availability shape how businesses modify their value chains in response to disruption, by linking resource availability to resilience strategies (Section 4.1). We establish that firms adapt by employing limited available resources or, alternatively, react through short-term, improvised, quick-fix solutions that do not require resources. However, due to their substantial demand for resources, proactive responses remain rare, as they demand adequate resources. This stresses the need to build resource capacities before shocks occur, as discussed by (Williams, 2017).

Second, we suggest that feasible resilience options are significantly limited where contexts feature many shocks and limited resources. While the literature frequently discusses proactive resilience strategies in Global North contexts (Sullivan-Taylor & Branicki, 2011; Adekola & Clelland, 2020; Conz & Magnani, 2020; Supardi & Hadi, 2020), organisations in our sample primarily employ reactive and adaptive rather than proactive strategies. In most cases, businesses are only able to react to shocks as they occur rather than anticipating and preparing for them, consequently skipping the proactive stage, which is resource-intensive (Orhan, 2016; Adekola & Clelland, 2020). As such, a lack of resources creates a major barrier to resilience (Lopes et al., 2022). Extant management literature often conceptualises resilience as a linear, three stage process; proactive, reactive and adaptive (Duchek, 2020; Supardi & Hadi, 2020). However, this framework does not adequately capture the lived experiences of businesses in the Global South, where resilience is frequently improvised and oriented toward survival rather that strategic foresight. Structural challenges such as socio-economic development gaps and inadequate institutional support further inhibit the implementation of proactive measures in anticipation. These challenges are likely to be intensified in poly-crisis environments, where firms face multiple, overlapping shocks and where

responses to different disruptions compete for the same scarce resources (Klyver & McMullen, 2025). Given the prevalence of such poly-crisis conditions in the Global South, this context offers a particularly valuable setting for advancing understanding of how businesses prioritise, sequence, and enact resilience strategies under compounded constraints, highlighting the need for further empirical research in this area for disruption (Williams & Vorley, 2015).

Third, this paper is a first step towards a context-specific understanding of resilience. We show that shock environment and resources play significant roles in determining the feasibility of different resilience strategies. Extant literature does not currently address context specific and complex shock profiles firms in the Global South are exposed to (Dahles & Susilowati, 2015; Duchek, 2020). There is still need for more research to build a more comprehensive understanding of resilience with at least two areas of focus; (1) research on the Global South needs to engage with theoretical concepts of resilience more to develop those further. Resilience stages are often not clearly defined by researchers of the Global South as adaptation is the only resilience strategy frequently cited by a few authors, as illustrated in (Idrissou et al., 2020; Mukhovi et al., 2020; Belton et al., 2021). What is more, there is a key need to explicitly study simultaneous shocks and their impact on resilience strategies. In our sample, only 10 papers had an explicit focus on simultaneous shocks, majority of the papers discuss one shock out of the many that occur, hence the need to respond to calls on decolonising poly-crises as put across by (Ruwanpura et al., 2025) to encompass studies beyond American and European countries. As such, this study has an implication on Global North firms, since resource adequacy is not guaranteed, they learn how despite multiple shocks limited resources, firms located in the Global South build resilience. (2) There is a need to carry-out more research on how different types of shocks (short-term vs long-term, structural vs non-structural) affect different types of businesses.

6. Conclusion

Countries in the Global South are generally characterized as developing and non-industrialized economies (Buseth, 2021) and are increasingly affected by overlapping crises that intensify structural vulnerabilities and strain limited resource (Jindal, 2024; Zaki, 2025). Constraints such as restricted access to financial markets, weak institutional frameworks, and unstable supply chains further reduce the ability of firms and governments to absorb shocks or invest in long term resilience (George et al., 2012; Linnenluecke, 2017). Through our inductive study across Global South countries, we develop four mechanisms through which Global South firms navigating shocks can leverage limited resources at their disposal to build resilience. We identify four key resources that play a significant role in resilience: networks, knowledge, technologies and finance. Beyond identifying these key resources, we link the resources to resilience stages and adopt a process view of resilience. Adopting a process perspective, we find little evidence of shock preparation; instead, firms primarily react or adapt. Resources are mainly deployed during adaptation to modify procurement, production, logistics, and sales, while reaction relies on short-term, resource-light adjustments to value chain elements.

This study has two limitations. First, despite reviewing 86 peer-reviewed articles, limited empirical evidence constrained deeper insights into the implementation of resilience strategies and associated resources. Second, reliance on a single database (Scopus) may have excluded relevant studies; future research should incorporate multiple databases to improve representativeness.

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Appendix

Appendix A: Sample papers talking about resilience strategies in shock environments

No	Resilience stage	Source
1	Proactive	(Lopes et al., 2022)
2	Reactive	(Chacha et al., 2024)
3	Reactive	(Nordhagen et al., 2021)
4	Reactive	(Belton et al., 2021)
5	Reactive	(Basu, 2023)
6	Reactive	(Eledi Kuusaana et al., 2023)
7	Reactive	(Ragoobur et al., 2023)
8	Reactive	(Béné et al., 2024)
9	Reactive	(Chiripanhura, 2010)
10	Reactive	(El-Sahli & Alsamara, 2023)
11	Reactive	(Fomba Kamga & Nda'Chi Deffo, 2022)
12	Reactive	(Littlewood & Holt, 2018)
13	Reactive	(Burhan et al., 2021)
27	Reactive	(Anggadwita et al., 2023b)
31	Reactive	(Van Hoyweghen et al., 2021b)
14	Adaptive	(Njomane & Telukdarie, 2022)
3	Adaptive	(Nordhagen et al., 2021)
15	Adaptive	(Wongnaa & Babu, 2020)
7	Adaptive	(Ragoobur et al., 2023)
16	Adaptive	(Mukhovi et al., 2020)
2	Adaptive	(Chacha et al., 2024)
17	Adaptive	(Essuman et al., 2023)
18	Adaptive	(Mudzengi et al., 2021)
19	Adaptive	(Lekgau & Tichaawa, 2021)
20	Adaptive	(Reid & Simatele, 2021)
6	Adaptive	(Eledi Kuusaana et al., 2023)
21	Adaptive	(Ashiru et al., 2023)
22	Adaptive	(Robertson et al., 2022)
23	Adaptive	(Akpan et al., 2022)
24	Adaptive	(Nan & Park, 2022)
25	Adaptive	(Anum et al., 2022)
9	Adaptive	(Chiripanhura, 2010)
22	Adaptive	(Robertson et al., 2022)
26	Adaptive	(Nazirii et al., 2023)
19	Adaptive	(Lekgau & Tichaawa, 2021)
28	Adaptive	(Belhadi et al., 2024)
29	Adaptive	(Sowatey et al., 2018b)
30	Adaptive	(Shale, 2014)

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