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SMEs navigating COVID-19: The influence of social capital and dynamic capabilities on organizational resilience

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ABSTRACT

Building the resilience capacity of businesses is important for economic, social and community recovery during the COVID-19 pandemic, yet organizational resilience is under-examined in the marketing literature. Crises and disasters can significantly impact small and medium enterprises (SMEs), affecting their ability to mitigate, respond and recover. Social capital (SC) is a key resource that can be mobilized by SMEs to tap the resources embedded in internal and external relationships to respond to disruptions, yet the mechanism through which SC facilitates organizational resilience is not clear. Using middle-range theorizing, we propose dynamic capabilities (DC) as the key sensing, seizing and reconfiguration resources that transform SC into organizational resilience. The results from a sample of SMEs ($n = 419$) in Australia and New Zealand demonstrate that internal SC has a positive effect on external SC (customer-focused). Only internal SC has a direct effect on organizational resilience. DC partially and fully mediates the relationship between internal and external SC and organizational resilience respectively. Implications for theory and practice are offered.

1. Introduction

Like many small businesses around the world, Sydney-based Stagekings, who design and fabricate structures for events, faced a dramatic threat to their business as the COVID-19 pandemic took hold in 2020. When the Australian government shut down the entire live entertainment industry, all of Stagekings' orders for the next year were cancelled. Surviving the global crisis depended on their ability to capitalize on a rapidly-changing marketplace. They quickly identified a gap in the market and diversified into designing an easy-to-assemble desk to meet the sudden demand from Australians working from home (SmartCompany, 2020). While the sudden pivot utilized the company's skills, materials, and infrastructure, the company had to develop new sales and delivery channels, along with a promotional and communication strategy to connect with a new market segment. As the global supply chain collapsed for the retail furniture industry, Stagekings was able to successfully deliver innovative products to customers across Australia. Two years on, the company has now diversified their product offerings to a wider range of easy-to-assemble furniture for both consumer and corporate customers (Stagekings, 2021). The company credits much of its success to the internal team who quickly sensed the demand shift in the marketplace and realigned their internal operational skills and resources to meet that demand, while also developing new capabilities to market their products to new customers. Most of all, however, the company credits its ability to connect and engage with existing customers to build a new customer base in a challenging and highly competitive industry (SmartCompany, 2020).

Small and medium-sized organizations (SMEs) such as Stagekings have been particularly challenged by the uncertainty created by the COVID-19 pandemic and the resultant lockdowns and social-distancing policies (ForresterResearch, 2020). SMEs have attempted to creatively navigate these challenges using internal and external resources (Ai & Peng, 2021) and dynamic capabilities (DC) (Dyduch, Chudziński, Cyfert, & Zastempowski, 2021) to respond, adapt, and recover from the disruption. This ability to develop preventive capacity to face unexpected disruptions, but also to take the necessary and quick actions to respond and recover to ensure business continuity has been described as organizational resilience (Hillmann & Guenther, 2021; Jia, Chowdhury, Prayag, & Chowdhury, 2020; Linnenluecke, Griffiths, & Winn, 2012).

Marketing during turbulent times requires resilience (Gölgeci & Kuivalainen, 2020). Yet, organizational resilience is under-examined in the marketing literature (Pedersen, Ritter, & Di Benedetto, 2020) despite recent interest in the topic that includes a special issue in this journal on how firms manage through crises. In marketing, resilience has

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been broadly explored in contexts such as entrepreneurial marketing (Morrish & Jones, 2020), supply chains (Gölgeci & Kuivalainen, 2020), sales forces (Sharma, Rangarajan, & Paesbrugghe, 2020), B2B marketing strategies (Crick & Crick, 2020; Pedersen et al., 2020) and network mobilization processes during crises (Hermes & Mainela, 2014). However, research is specifically needed to help marketers address how "business networks help organizations be resilient" (Pedersen et al., 2020, p. 319). Our research attempts to contribute to and extend this marketing conversation.

Organizational resilience and its antecedents are also underexamined in the SME context (Bhamra, Dani, & Burnard, 2011; Polyviou, Croxton, & Knemeyer, 2020; Verreynne, Ho, & Linnenluecke, 2018), with more empirical results needed (Linnenluecke, 2017). For instance, a recent editorial by Verreynne et al. (2018) argues that there is limited research focusing on the response of SMEs to external adversity and how resulting impacts relate to organizational recovery, responses and resilience. These authors also point to the plethora of conceptual development and theory building through qualitative research, which is also evident in their special issue, but also in the larger body of literature on organizational resilience (Verreynne et al., 2018). Bhamra et al. (2011) in a review of resilience literature, suggest there is a need to explore how SMEs can develop resilient characteristics through network collaboration. Polyviou et al. (2020) study mid-size manufacturing firms and argue that more research is needed to determine whether SMEs exhibit different resilience-enhancing resources or capabilities from mid-size firms. This gap is important to address because SMEs may be more susceptible to disruptions, due to resource constraints not normally faced by larger firms such as liquidity, access to financial capital, and a more challenging policy environment (Hendricks & Singhal, 2003; Polyviou et al., 2020). Due to their size, SMEs may also have difficulty anticipating and planning for disruptive events (Sullivan-Taylor & Branicki, 2011; Weick & Sutcliffe, 2015). As a result, their susceptibility to disruptions can be higher, challenging their mitigation, response, and recovery strategies (Pettit, Fiksel, & Croxton, 2010; Sullivan-Taylor & Branicki, 2011).

Nonetheless, small size, lean organizational structure, and a niche business focus suggest that SMEs have a capacity for timeliness and agility that may make them more responsive than larger firms to sudden environmental changes (Burnard & Bhamra, 2011; Sullivan-Taylor & Branicki, 2011). Evidence also suggests that SMEs can moderate the effect of disruptions by generating various forms of SC, as the resources embedded in relationships can enable them to respond to disruptions (Martinelli, Tagliazucchi, & Marchi, 2018; Prasad, Su, Altay, & Tata, 2015). Because the mechanisms through which SC facilitates organizational resilience are not clear (Gölgeci & Kuivalainen, 2020), we employ middle-range theorizing to argue that DC provide the mechanism by which SMEs can mobilize their relational resources to adjust to disruptions. In the face of pandemic-like disruptions, DC maybe more important than standard operating capabilities for which routines can be developed (Manfield & Newey, 2018). DC enable responses to unfamiliar, complex threats by enabling the reconfiguration of a firm's existing resources and capabilities to sense and seize market opportunities (Teece, 2007; Teece, Pisano, & Shuen, 1997). Yet, DC have not yet been fully explored in the context of SMEs' response and recovery to disrupted environments (Battisti & Deakins, 2017).

Such a response is exemplified by StageKings' radical shift to enable survival during the pandemic, and ultimate bounce forward into new business opportunities. Of particular note is the way the company managers relied on the expertise and creativity of employees to develop new solutions, essentially extracting the resilience benefits of SC. This type of internal SC is considered a key asset for SMEs, through which they can identify opportunities and mobilize resources (Adler & Kwon, 2002; Lee & Jones, 2015; Madhavaram & Hunt, 2017; Sanchez-Famoso, Mejia-Morelos, & Cisneros, 2020; Zhou et al., 2021). Stagekings also addressed the challenges of COVID-19 by explicitly engaging with customers, exploiting external SC to adjust and reconstruct their business model during the crisis. Recent evidence suggests that business customers are a key external partner for SMEs during COVID-19 as they can provide the resources required for developing relevant innovations in a timely manner (Markovic et al., 2021). While the link between SC and organizational resilience has been established (Chowdhury, Prayag, Orchiston, & Spector, 2019; Jia et al., 2020), there is limited insight into *how* SC facilitates resilience for organizations. We use middle-range theorization to explore the black box or causal mechanisms by which SC translates to organizational resilience for SMEs facing the unique disruption presented by the COVID-19 pandemic. Thus, this research is the first to empirically test DC as the link or mechanism by which SC contributes to organizational resilience in SMEs. Thus, we ask the following research question: *What role do SMEs' DC play in the relationship between SC and organizational resilience?*

By contributing to the nascent literature in marketing on organizational resilience (Crick & Crick, 2020; Golgeci & Kuivalainen, 2020; Morrish & Jones, 2020; Pedersen et al., 2020; Sharma et al., 2020), we make three unique contributions. First, our inclusion of both internal and external SC extends previous research that only addresses the role of external SC in building organizational resilience (Chowdhury et al., 2019; Jia et al., 2020). SC emanating from the knowledge and talents of employees may be a critical resource that has been undervalued in previous research efforts linking SC and organizational resilience. Second, our inclusion of SC that emanates from business customers extends previous research that only examines the role of suppliers in building organizational resilience. Third, and quite critically, we contribute to theoretical development of organizational resilience by showing the mediating effect of DC on the relationship between SC and organizational resilience in SMEs.

2. Conceptual framework and hypotheses development

Social Capital Theory (SCT) is a useful theoretical lens in disaster research, practice and policy making to understand how networks and relationships can enable resilience (Aldrich, 2012; Chowdhury et al., 2019). SC is widely recognized as a fundamental resource for firms (Inkpen & Tsang, 2005; Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998). Whether viewed as a community-level resource (Aldrich, 2012), or a resource accruing to *individuals* as a result of their membership in a social network (Ziersch, 2005), those with stronger SC or access to a social infrastructure demonstrate stronger resilience to disasters (Tierney, 2014). SCT provides the foundation for explaining the domain of networks and relationships in both business-as-usual and disaster contexts. Networks provide access to knowledge, resources, information, markets or technologies (Inkpen & Tsang, 2005) and are particularly useful for SMEs (Ahuja, 2000; Inkpen & Tsang, 2005) and firms facing crises (Johnson, Elliott, & Drake, 2013; Stevenson et al., 2014; Williams, Gruber, Sutcliffe, Shepherd, & Zhao, 2017). In a crisis, SC allows organizations to tap into network ties, configurations and stability (structural capital), shared goals and shared culture (cognitive capital), and trust (relational capital) to respond to disruptions (Chowdhury et al., 2019; Inkpen & Tsang, 2005).

SCT is fundamentally a general theory of structure and agency that outlines how network resources are authorized and allocated by virtue of membership in different social structures (Lin, 2001). Yet general theories, due to their very nature, often leave many questions unanswered (Stank, Pellathy, In, Mollenkopf, & Bell, 2017). In contrast, middle-range theorization occurs below the level of general theories to focus on a subset of phenomena relevant to a particular empirical context, illustrating the causal mechanisms at play (Hedström & Ylikoski, 2010; Stank et al., 2017). Therefore, because there is limited insight into *how* SC facilitates resilience for organizations (Gölgeci & Kuivalainen, 2020), including SMEs, we employ a middle-range theorizing approach (Pawson & Tilley, 1997; Pinder & Moore, 1979) to explore the mechanisms by which SC translates to organizational resilience for SMEs facing the unique disruption presented by the COVID-19 pandemic. The pandemic presents a unique context – as an abrupt event,

it requires new and untested behavior under time constraints, thus the ability of organizations to assemble the necessary resources immediately is critical (Cortez & Johnston, 2020). Thus, we explore the DC of market sensing, seizing and reconfiguration as the mechanisms by which SMEs mobilize their SC to enhance resilience. We argue that DC capitalize on key resources embedded in the SME's relationships, enabling effective deployment of such resources. This approach allows us to advance knowledge by providing a fine-grained account of the link between SC and organizational resilience in the context of COVID-19.

As a prelude to our theorization efforts, we first conducted a gap analysis across relevant literature streams. Appendix A summarizes the literature, demonstrating two parallel streams of research. One stream examines the relationship between SC and organizational resilience. The other examines the relationship between DC and organizational resilience. In both streams, the research efforts are primarily conceptual or qualitative. Also, SC has been primarily operationalized by examining the role of external forms of SC, with only one study finding evidence of the role of SC that resides inside the firm (Polyviou et al., 2020). Additionally, while both SC and DC have been studied with respect to their relationship with organizational resilience, there has been only one effort to date (Martinelli et al., 2018) that considers their combined role in creating resilient organizations. To address these gaps, our middle-range theorizing approach empirically examines the combined role of SC and DC, positing DC as the mechanism by which internal and external SC resources are mobilized to create organizational resilience.

2.1. Social capital (SC)

SC is conceptualized as a tri-dimensional concept (Nahapiet & Ghoshal, 1998). Structural SC represents the type and configuration of social ties among actors in a network (Nahapiet & Ghoshal, 1998; Preston, Chen, Swink, & Meade, 2017), resting on the existence of connections and how they are configured within a social structure (Villena, Revilla, & Choi, 2011). Connections, or social ties, in the network create the potential for actors to gain access to valuable tangible and intangible resources (Coleman, 1990). Relational SC refers to mutual trust, norms of reciprocity, and identification among actors within a social system (Nahapiet & Ghoshal, 1998; Preston et al., 2017). In essence, it captures relationship quality between individuals in the social network that are developed through repeated interactions (Håkansson & Johanson, 1992). High relational SC encourages "open communication, behavior transparency, mutual support and sharing of sensitive and important resources between partners," which can aid SMEs in creative problem solving following a crisis (Li, Zhang, & Zheng, 2016, p. 796). Cognitive SC is the degree to which actors in a social network share similar perspectives, narratives, ambitions, visions, and cultural values (Nahapiet & Ghoshal, 1998; Preston et al., 2017). In essence, it refers to language-based resources that provide "shared representations, interpretations, and systems of meaning between actors in the social network" (Nahapiet & Ghoshal, 1998, p. 244). Shared narratives and meanings provide a common understanding, helping groups make sense of information, develop mutual goals, and work collectively (Preston et al., 2017) to achieve greater efficiency on cooperative tasks (Li et al., 2016). Cognitive SC also provides relationship value through access to competencies, innovativeness, flexibility, and adaptability (Westerlund & Svahn, 2008).

Distinction can also be made between internal and external SC. Internal SC is the collection of actual and potential resources "embedded within, available through, and derived from the internal network of relationships within the firm" (Nahapiet & Ghoshal, 1998, p. 243). It has been described as the web of cooperative relationships between employees within a firm (Brehm & Rahn, 1997), which can facilitate intra-organizational trust, collaboration and teamwork (Kim & Cannella, 2008), which may be useful to SMEs responding to disruptions (Hwang & Lichtenthal, 2000). In contrast, external SC represents linkages to other firms, recognizing that employees work with external collaborators (e.g., suppliers, customers and other stakeholders). Its primary function is that of bridging, or linking the firm to the external environment (Barroso-Castro, Villegas-Periñan, & Casillas-Bueno, 2016). As such, external SC provides access to up-to-date and valuable information from outside the firm (Kim & Cannella, 2008). Hwang and Lichenthal (2000) pointed out that during abrupt crises like COVID-19 organizations require both increased internal collaborative ties and the establishment of integrative mechanisms between organizations, pointing to the importance of both internal and external SC.

Scholars have mainly researched either external (Inkpen & Tsang, 2005; Koka & Prescott, 2002) or internal SC (Kalra, Agnihotri, & Briggs, 2021; Madhavaram & Hunt, 2017; Stolze, Murfield, & Esper, 2015; Tsai & Ghoshal, 1998). Limited research addresses the role and influence of both internal and external SC (Sanchez-Famoso et al., 2020; Zhou et al., 2021) on organizational outcomes. An exception is Chowdhury, Prayag, Patwardhan, and Kumar (2020), who examined the role of internal SC on external SC specifically in the SME context, but not during disruptions. Revealed in our gap analysis, one conceptual study suggests that resilience is contingent on trust and sharing inside the firm (Koronis & Ponis, 2018), and recent evidence suggests the importance of internal SC during supply chain disruptions (Polyviou et al., 2020).

We argue that to strengthen the relationship with key customers, SMEs should maintain certain resources and capabilities internally to meet customer expectations. For example – a higher level of internal SC has the ability to handle task and relationship conflicts (De Clercq, Thongpapanl, & Dimov, 2009), facilitate cross-functional collaboration (De Clercq, Thongpapanl, & Dimov, 2011), and enhance knowledge sharing (De Clercq, Dimov, & Thongpapanl, 2013). These attributes are critically important in disruptive environments not only to avoid/solve unexpected conflicts but also to promote positive behaviors with customers. SMEs generally have tight knit intra-organizational relationships (Sullivan-Taylor & Branicki, 2011). These strong internal social ties (structural) can be replicated to build external relationships with suppliers (Chowdhury et al., 2020; Wang, 2016) as well as customers. For example, small organizations can draw from such internal ties to pivot during disasters to meet the demands of new customers and retain existing ones (Morrish & Jones, 2020). Internal communications and relationships are critical to meeting customer requirements (Campbell, 2003). For collaboration and effective customization to take place, firms need a set of social resources, such as trust and reciprocity, which are embedded in internal relations (Campbell, 2003; Koronis & Ponis, 2018; Madhavaram & Hunt, 2017). Relational SC allows for information exchange, requiring employees with different knowledge and skills to come together (Madhavaram & Hunt, 2017) in disruptive times to serve customers (Morrish & Jones, 2020). Internal cognitive SC, when employees share the same vision and values, helps to build a market orientation that can strengthen customer relationships (Martín-Santana, Cabrera-Suárez, & de la Cruz Déniz-Déniz, 2020), thereby strengthening the relationship between internal and external SC (Chowdhury et al., 2020). Thus, as exhibited in Fig. 1, we propose:

H1. Internal SC has a positive effect on customer-focused external SC.

2.2. Organizational resilience in SMEs

As a grand theory, SC would point to the critical importance of being embedded in networks to build resilience (Aldrich, 2012). However, while identifying the importance of different dimensions of SC in an organizational context, the theory is not granular enough to suggest the relative importance of internal or external SC in building organizational resilience, especially in an SME context. Therefore, it is not surprising that the extant literature offers limited understanding of this issue.

Organizational resilience is a multidisciplinary and multifaceted concept with embedded notions of capability and ability to return to a pre-disturbance state after a disruption (Bhamra et al., 2011), with emphasis on non-linear dynamics, uncertainty, thresholds and surprise

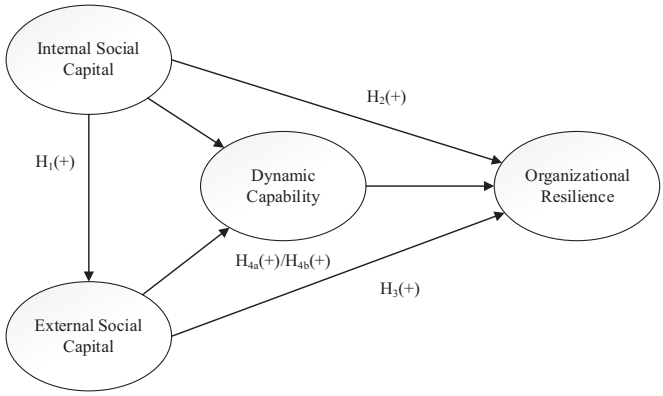

Fig. 1. Conceptual framework.

(Folke, 2006). Organizational resilience is a developable and generic characteristic (Hillmann, 2021) that has been described as fuzzy and difficult to operationalize given its theorization as a capability, capacity, characteristic, outcome, process behavior, strategy, or as a combination of these (Hillmann & Guenther, 2021). We define organizational resilience as an "organization's ability not only to develop preventive capacity to face any unexpected disruptions but also to take the necessary and quick actions to respond and recover from that disruption to ensure business continuity" (Jia et al., 2020, p. 10164). This capability can enable organizations to adapt, learn and transform (Wieland & Durach, 2021).

Organizational resilience is conceptualized in various ways (see Appendix A). Resilience activities occur based on different phases of a disaster life cycle, i.e. readiness, response and recovery. Pre-disruption activities are generally referred to as readiness aspects and relate to assessing the external environment (situation awareness), and understanding both the probability and impact of potential disruptions in order to develop contingency plans and prevention capability (Bode & Macdonald, 2017). These aspects have been shown to have a positive influence on both response and recovery aspects post-disaster (Jia et al., 2020). Response and recovery aspects are exemplified by the ability to gather and leverage information and knowledge (Lee, Vargo, & Seville, 2013), the rapid development of actions to minimize disruptions, and the ability to quickly organize a response team to deal with the emergent situation (Bode & Macdonald, 2017; Jia et al., 2020). Yet, organizational resilience based on readiness, response and recovery has been assessed primarily on large firms (Bode & Macdonald, 2017; Jia et al., 2020; Lee et al., 2013).

Organizational resilience research coalesces around examining internal and/or external factors in building resilient capacity. Working at the middle range context of SMEs facing the pandemic, we first examine how internal SC may strengthen organizational resilience. Internal factors include flexibility and redundancy, which allows a firm to gain time and use excess resources to buffer disruptions (Pettit, Croxton, & Fiksel, 2013; Sheffi & Rice, 2005). SC relationships with employees (Linnenluecke, 2017) and staff engagement (Lee et al., 2013) are also critical to building resilience. For SMEs, internal SC built through small network size, geographic proximity among decision makers, low hierarchy, employee relationships, and long employee tenure, positively affects organizational resilience (Polyviou et al., 2020). Koronis and Ponis (2018) argue that in disruptive times the only resource available to build resilience is internal SC, but this has not been tested in the SME context.

We argue that the different dimensions of internal SC (e.g., structural, relational, and cognitive) support the development of organizational resilience in three ways. *First*, social interactions and frequent communication (structural) facilitates the exchange of information, knowledge and best practices within SMEs (Lengnick-Hall, Beck, & Lengnick-Hall, 2011; Polyviou et al., 2020). Such internal exchange practices allow SMEs to quickly assess the impact and develop contingency plans to combat the disruption. *Second*, relationships based on trust (relational) generate a commitment among employees (Polyviou et al., 2020) that allow SMEs to respond through efficient business operations. It also facilitates working cross-functionally (Polyviou et al., 2020), helping to alleviate risk and facilitating the recovery process. *Third, a* congruence of goals and vision (cognitive) allows employees to use a common language and generate a common belief about their success (Cappiello, Giordani, & Visentin, 2020). This facilitates employees ability to identify potential resources or ideas, while also motivating them to exchange those resources (Tsai & Ghoshal, 1998). Thus, during disruptions, we argue that such alignment of goals/vision helps SMEs to identify useful information and knowledge to respond quickly and accelerate recovery trajectories. Thus, we propose:

H2. Internal SC has a positive impact on organizational resilience.

We now turn to look at the role of external SC on organizational resilience. Extant literature focuses on relationships with key suppliers (Chowdhury et al., 2019) or supply chain partners (Jia et al., 2020). There has been little emphasis to-date on relationships with customers. Yet, customer relationships are critical to SMEs facing dramatic demand shifts during a crisis. For instance, recent empirical evidence suggests that business customers are the key external partner for SMEs during disruptions, as they can provide the resources required for relevant customer-centred innovation (Markovic et al., 2021). External SC acts as a conduit to facilitate the exchange of critical information and knowledge (Inkpen & Tsang, 2016; Kwon & Adler, 2014). In disruptive times, the exchange of such critical resources helps SMEs build resilience in three ways. *First*, structural SC, in terms of interacting with key business customers, allows SMEs to collect customer related information (e.g., product and service information) (Khodakarami & Chan, 2014). We argue that customer-related information and knowledge helps SMEs understand the changing customer demand patterns to then formulate effective response and recovery strategies. *Second,* relational SC allows SMEs to gain access to critical information enabling them to develop valuable customer offerings, which is beneficial in disruptive environments. We argue that this customer-centric approach allows SMEs to become more resilient. Additionally, SMEs work closely with their customers to review existing lead times, cost and credit issues that are critical to navigate disruptions (Prasad et al., 2015). *Third*, cognitive SC enables SMEs to identify and exchange critical information and knowledge with their business customers (Son, Kocabasoglu-Hillmer, & Roden, 2016), as part of their shared goals and values. This congruence generates a positive and constructive business orientation offering a sense of direction during disruptions (Prasad et al., 2015), enabling SMEs to take steps to develop appropriate response and recovery strategies. Thus, we propose:

H3. External customer-focused SC has a positive impact on organizational resilience.

2.3. Dynamic capabilities and organizational resilience

DC refer to the ability of an organization to integrate, build and reconfigure resources and competencies in real time to achieve congruence with a changing business environment. (Teece, 2007; Teece, 2012). DC are understood along the three elements of sensing, seizing and reconfiguring/transforming (Teece, 2012). Sensing relates to how an organization identifies and assesses an opportunity (Teece, 2012) by gathering market intelligence, exploring options, or innovating and anticipating discontinuities (Mikalef & Pateli, 2017; Pinho, 2011; Su & Linderman, 2016). Despite an organization''s best effort to sense the environment, the capacity to respond is more important in coping with disruptions (Su & Linderman, 2016). Thus, seizing is about the mobilization of resources to capitalize on an opportunity and create value (Teece, 2012) but also to minimize disruptions. This involves finding

solutions for customers and adopting best industry practices to deliver value. Reconfiguring is about continued renewal (Teece, 2012), which enables ongoing changes to products and processes as firms adapt to changing customer expectations (Su & Linderman, 2016), and respond to external threats and shifting business priorities (Mikalef & Pateli, 2017).

We have thus far argued that internal and external SC can enable SMEs to build resilience to effectively respond to crises. However, SC may be necessary but insufficient in developing organizational resilience. SMEs need to *mobilize* their SC resources to achieve organizational resilience (Kwon & Adler, 2014). This line of reasoning suggests that the flow of ideas, knowledge, and information through network relationships accumulate into critical knowledge-related resources at SMEs' disposal, but SMEs still need specific capabilities and processes to acquire and utilize these resources. We argue that this is the role played by DC: DC act as the mechanism through which SMEs *mobilize* resilience-related critical resources. To support the logic of DC mediating the relationship between SC and organizational resilience, we develop the following two arguments.

First, we explore the relationship between SC and DC. In the SME context, Martinelli et al. (2018) suggest that the entrepreneur must mobilize and reorganize resources and capabilities to respond to an adverse event. Scholars also suggest that a firm's internal social environment is a vital enabler of the adaptability and coordination that drive DC (Fainshmidt & Frazier, 2017). SC facilitates the development of DC by promoting a constant flow of information from various internal sources (Blyler & Coff, 2003). For example, employees interacting and communicating with each other may not only sense heterogeneous external information and knowledge, but can use it to reconfigure their existing business practice (Zhou et al., 2021). A climate of trust among employees can facilitate the development of DC, further increasing a firm's ability to sense opportunities and threats (Fainshmidt & Frazier, 2017) so as to seize opportunities in a timely manner (Helfat & Peteraf, 2015; Zollo & Winter, 2002). Furthermore, seizing external environmental opportunities requires a shared memory internally that is developed through cognitive capital (Schenkel & Teigland, 2017).

Organizations can also activate external resources to build DC. For SMEs, structural capital can enhance market sensing capabilities (Sirmon & Hitt, 2003; Zaefarian, Eng, & Tasavori, 2016). A dense network with external partners promotes learning among actors, allowing them to share tacit knowledge related to market exploration and exploitation opportunities (Rodrigo-Alarcón, García-Villaverde, Ruiz-Ortega, & Parra-Requena, 2018), thus alluding to positive effects of structural capital on market sensing and seizing opportunities. Structural capital can also play a critical role in strategic adjustments to a changing external environment, which can be seen as reconfiguration capabilities (Wang, 2016). In SMEs, external relational capital can facilitate the reconfiguration of intangible resources (Pinho, 2011), suggesting a positive influence on seizing and sensing capabilities (Atuahene-Gima & Murray, 2007). Cognitive capital in SMEs can also allow firms to absorb changes in the external environment quickly to ensure business continuity (Wang, 2016).

Second, we explore the relationship between DC and organizational resilience. Extant literature clearly suggests that readiness, response and recovery elements of organizational resilience are enhanced by sensing, seizing and reconfiguring capabilities during unexpected events. Given that DC are rooted in both internal organizational practices and relationships with external stakeholders (Burnard & Bhamra, 2011), they can be used to enhance organizational readiness, response and recovery. In turbulent environments, market sensing activities by SMEs can help create internal awareness of disruptions, motivate employees to act, while improving contingency planning and disruption-prevention capabilities (North & Varvakis, 2016). SMEs that can quickly combine new information with existing knowledge (Martinelli et al., 2018) and share that knowledge can seize opportunities in anticipation of customer needs as they respond to and recover from disruptions (Kurtz & Varvakis, 2016). Through acquiring, assimilating, transforming and exploiting knowledge, organizations find new solutions for customers and integrate customer feedback into improving organizational processes (Wilden, Gudergan, Nielsen, & Lings, 2013). This reconfiguration capability enables firms to adapt existing resources, shift priorities and create new value for the business (Mikalef & Pateli, 2017).

Combining the two sets of arguments presented above, we propose the mediating role of DC. While evidence exists for direct effects of SC on organizational resilience (Chowdhury et al., 2019; Jia et al., 2020) even in the SME context (Iyengar, Nilakantan, & Rao, 2021; McGuinness & Johnson, 2014; Polyviou et al., 2020), the indirect effects remain murky. Limited empirical evidence suggests the indirect effect of external SC on organizational resilience via DC (Martinelli et al., 2018; Ortiz, Donate, & Guadamillas, 2018) but quantitative testing of the mediating role of DC between internal and external SC and organizational resilience is needed, particularly in the context of the COVID-19 crisis. Thus, we focus on the indirect relationships between SC and organizational resilience through DC:

H4a. DC mediate the relationship between internal SC and organizational resilience.

H4b. DC mediate the relationship between customer-focused external SC and organizational resilience.

3. Method

3.1. Study context

Small businesses dominate the business landscape in Australia and New Zealand (ANZ). In both countries, SMEs make up more than 96% of all businesses (defined in New Zealand as 1–49 employees and in Australia as 1–199 employees (ASBFEO, 2020; MBIE, 2014). In addition, the COVID-19 lockdowns in both countries were extremely stringent (Jones, 2020; Smith, 2020), negatively impacting SMEs (ForresterResearch, 2020), making ANZ an ideal site to explore how SMEs navigated the crisis.

3.2. Measures

Because of our focus on SMEs, we conducted a cross-sectional survey using a single informant at responding organizations. All constructs were measured using multi-item reflective indicators using 7-point Likert scales, ranging from '1 = strongly disagree' to '7 = strongly agree' as reported in Table 1 and Appendix B. In measuring external SC, we asked respondents to consider their relationship with key business customers**.** Several control variables were included to alleviate potential confounding effects of individual-, firm- and industry-level characteristics on DC and organizational resilience. At the individual level,

Table 1
Overview of construct measures.

Construct	# Items	Sources
External Social Capital – *with key business customers*	5 – Structural 5 – Relational 5 – Cognitive	Carey, Lawson, and Krause (2011); Chowdhury et al. (2020); Villena et al. (2011)
Internal Social Capital – *relationships among employees*	4 – Structural 3 – Relational 3 – Cognitive	Chowdhury et al. (2020)
Dynamic Capabilities – *in the context of the pandemic*	6 – Sensing 4 – Seizing 5 – Reconfiguring	Mikalef and Pateli (2017); Pavlou and El Sawy (2011); Wilden et al. (2013)
Organizational resilience – *in the context of the pandemic*	4 – Readiness 4 – Response 4 – Recovery	Bode and Macdonald (2016); Jia et al. (2020); Pettit et al. (2013)

respondent's education and work experience were used as indicators of industry-specific knowledge. At the firm level, firm size and firm age indicated learning capabilities and the ability to develop strategic resources through diverse networks. Considering the cross-sectional nature of this study, we also used different industry sectors (e.g. manufacturing, service and primary industry) as control variables.

3.3. Sampling procedure and data collection

To test our proposed model, we utilized the market research company Dynata to collect data. Dynata provides access to a large pool of actively managed respondents who are vetted and prescreened, helping ensure data quality (Arndt, Ford, Babin, & Luong, 2021). Dynata contacted firms by email, subsequently providing a link to the online survey, with an email reminder to encourage participation. Dynata approached an initial pool of 1346 SMEs within ANZ (firm size being a first screening criterion). Seven hundred ninety-one (791) responses were removed since they failed to meet the second screening criterion of being a key decision maker. A further 86 partial responses were then removed, and another 50 respondents were removed who had demonstrably straight-lined their responses. In total, 419 completed responses were received (Australia, $n = 313$; New Zealand, $n = 106$) across four key industries, for an effective response rate of 31.12%. Table 2 presents demographic details of the final sample.

Dynata conducted a pilot survey to ensure the quality of the instrument before administering the main survey. Minor modifications were subsequently made to the original instrument. Once data had been collected, we established the homogeneity of the data across ANZ by conducting a measurement invariance of composite model (MICOM) test (Hair, Hult, Ringle, & Sarstedt, 2017). Results confirm the homogeneity of data (See Appendix C), supporting the decision to treat the responses as a single sample for analysis.

3.4. Common method bias

To mitigate the threat of common method bias (CMB), we followed established protocol for procedural design and post-hoc analysis (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Three design procedures shaped our approach. First, we developed the survey instrument in consultation with senior academics specializing in SC and resilience, and pilot tested the instrument as described above. Second, we collected data from individuals within SMEs who possessed the relevant knowledge in the subject area (e.g., company owner/founder or other senior managers with full knowledge of the SME's activities). Third, we maintained anonymity of the responses and placed the independent and dependent variables in different sections of the instrument.

With respect to CMB, we first conducted Harman's one-factor test using all 52 items in the model (Podsakoff et al., 2003). No single factor accounted for more than 45.25% of the observed variance. Second, we followed the unmeasured method factor approach for PLS-SEM to check for CMB (Liang, Saraf, Hu, & Xue, 2007). Average substantively explained variance of all indicators is 0.650 and average method-based variance is 0.006, yielding a ratio of 101.43:1 (Table 3). This confirms that CMB is unlikely to be a significant issue in this study. Third, we assessed collinearity using variance inflation factors (VIFs) (Kock, 2015). All inner VIF values are less than the threshold value of 3.3 (ranging from 1.000 to 3.120), further suggesting CMB is not a concern in this study (see Table 3).

Table 2
Profile of respondents.

Industry Sector	Freq.	%	Gender	Freq.	%
Service	218	52.0%	Male	267	63.7%
Manufacturing	75	17.9%	Female	151	36.0%
Primary	70	16.7%	Other	1	0.2%
Wholesale and Retail	54	12.9%			
Not identified	2	0.5%			
Occupation	Freq.	%	Age	Freq.	%
Chairman/Board members	56	13.4%	18 to 25 years	7	1.7%
Chief officer	33	7.9%	26 to 34 years	68	16.2%
Company owner/ Founder	143	34.1%	35 to 44 years	133	31.7%
Partner	26	6.2%	45 to 54 years	102	24.3%
Senior Executive	38	9.1%	55 to 64 years	91	21.7%
Senior Manager	123	29.4%	65 and above	18	4.3%
Level of education	Freq.	%		Mean	Std. Dev
No education	10	2.5%	Years work experience	10.3	9.9
Primary school	18	4.3%	Firm size-employees	40.9	55.1
High school	54	12.9%	Firm Age (years)	15.5	15.3
Diploma/Certificate	105	25.1%			
University undergraduate	124	29.6%			
University post-graduate	74	17.7%			
Professional qualification	32	7.6%			
Others	2	0.5%			

3.5. Analytical approach

We used partial least square-based structural equation modelling (PLS-SEM) to test our proposed model using SmartPLS 3.3.3. PLS-SEM is an appropriate data analysis technique because it does not require satisfying the normality assumption. In assessing the multivariate normality of all indicators by calculating the *Z*-scores for skewness and kurtosis (Hair, Black, Babin, & Anderson, 2019), we found the skewness value of each indicator to be below the threshold of −1.96 and the kurtosis value of some of the indicators to be beyond the threshold of ±1.96 (see Table 4).

4. Results

4.1. Evaluation of measurement model

Assessment of the reliability and validity of items and latent constructs followed guidelines from Hair et al. (2017). All items have high factor loading to their respective constructs (at $p < 0.001$). Reliability of the latent constructs was assessed using composite reliability (CR), Rho_A (r_A), and Cronbach's alpha (α) with a threshold at 0.70. All three reliability indicators are well-above 0.70 for all latent constructs. Convergent validity assessment, using average variance extracted (AVE) reveals all latent constructs exceed the threshold of 0.50 (see Table 4). Descriptive statistics and correlation analysis of all latent constructs including control variables are presented in Table 5.

To establish discriminant validity, we adopted two approaches. All correlations were less than the square root of AVE (Fornell & Larcker, 1981). Table 6 also shows results of the Heterotrait-Monotrait (HTMT) ratio of correlations method. The HTMT ratio is significantly smaller than the conservative level of 0.85, demonstrating discriminant validity (Henseler, Hubona, & Ray, 2016).

All constructs used to test proposed hypotheses were modelled as higher order reflective – reflective constructs using a two stage approach (Sarstedt, Hair, Cheah, Becker, & Ringle, 2019). After ensuring reliability and validity of all first order constructs, we generated latent variable scores for each first order construct to be used as indicators for the higher-order constructs (Sarstedt et al., 2019; see Table 6). All reflective – reflective higher order scales achieved the required internal consistency and convergent validity, following the suggestions of Sarstedt et al. (2019). Discriminant validity of the higher order scales is presented in Table 7 and Table 8.

Table 3
Common method factor analysis for CMB.

Latent constructs	Indicators	Substantive factor loading (R_a)	R_a^2	Method factor loading (R_b)	R_b^2
StCapExt	StCapExt1	0.942***	0.887	−0.188**	0.035
	StCapExt2	0.732***	0.536	0.100 NS	0.010
	StCapExt3	0.719***	0.517	0.065 NS	0.004
	StCapExt4	0.928***	0.861	−0.132**	0.017
	StCapExt5	0.670***	0.449	0.140**	0.020
RelCapExt	RelCapExt1	0.872***	0.760	−0.121 NS	0.015
	RelCapExt2	0.668***	0.446	0.120*	0.014
	RelCapExt3	0.705***	0.497	0.057 NS	0.003
	RelCapExt4	0.810***	0.656	−0.103 NS	0.011
	RelCapExt5	0.768***	0.590	0.027 NS	0.001
CogCapExt	CogCapExt1	0.837***	0.701	−0.026NS	0.001
	CogCapExt2	0.781***	0.610	0.009 NS	0.000
	CogCapExt3	0.790***	0.624	−0.002 NS	0.000
	CogCapExt4	0.872***	0.760	−0.064 NS	0.004
	CogCapExt5	0.696***	0.484	0.086 NS	0.007
StCapInt	StCapInt1	0.922***	0.850	−0.108*	0.012
	StCapInt2	0.864***	0.746	−0.015 NS	0.000
	StCapInt3	0.703***	0.494	0.148**	0.022
	StCapInt4	0.866***	0.750	−0.034 NS	0.001
RelCapInt	RelCapInt1	0.834***	0.696	−0.015 NS	0.000
	RelCapInt2	0.823***	0.677	−0.002 NS	0.000
	RelCapInt3	0.822***	0.676	0.017 NS	0.000
CogCapInt	CogCapInt1	0.904***	0.817	−0.057 NS	0.003
	CogCapInt2	0.823***	0.677	0.01 NS	0.000
	CogCapInt3	0.824***	0.679	0.046 NS	0.002
SenCap	SenCap1	0.962***	0.925	−0.168*	0.028
	SenCap2	0.698***	0.487	0.058 NS	0.003
	SenCap3	0.642***	0.412	0.160*	0.026
	SenCap4	0.839***	0.704	−0.026 NS	0.001
	SenCap5	0.823***	0.677	−0.064 NS	0.004
	SenCap6	0.830***	0.689	−0.047 NS	0.002
SeizCap	SeizCap1	0.721***	0.520	0.042 NS	0.002
	SeizCap2	0.827***	0.684	0.013 NS	0.000
	SeizCap3	0.619***	0.383	0.142 NS	0.020
	SeizCap4	0.924***	0.854	−0.100*	0.010
ReconfCap	ReconfCap1	0.663***	0.440	0.085 NS	0.007
	ReconfCap2	0.824***	0.679	−0.013 NS	0.000
	ReconfCap3	0.743***	0.552	0.021 NS	0.000
	ReconfCap4	0.825***	0.681	−0.054 NS	0.003
	ReconfCap5	0.817***	0.667	−0.035 NS	0.001
Red	Red1	0.816***	0.666	−0.002 NS	0.000
	Red2	0.942***	0.887	−0.114*	0.013
	Red3	0.715***	0.511	0.120*	0.014
	Red4	0.811***	0.658	−0.002 NS	0.000
Res	Res1	0.801***	0.642	−0.009 NS	0.000
	Res2	0.673***	0.453	0.085 NS	0.007
	Res3	0.827***	0.684	−0.021 NS	0.000
	Res4	0.889***	0.790	−0.046 NS	0.002
Recov	Recov1	0.894***	0.799	−0.052 NS	0.003
	Recov2	0.815***	0.664	0.005 NS	0.000
	Recov3	0.755***	0.570	0.041 NS	0.002
	Recov4	0.835***	0.697	0.009 NS	0.000

a. StCapExt = Structural Capital (External); RelCapExt = Relational Capital (External); CogCapExt = Cognitive Capital (External); StCapInt = Structural Capital (Internal); RelCapInt = Relational Capital (Internal); CogCapInt = Cognitive Capital (Internal); SenCap = Sensing capability; SeizCap = Seizing capability; ReconfCap = Reconfiguring capability; Red = Readiness; Res = Response; and Recov = Recovery.
b. ***$p < 0.001$; ** $p < 0.01$; * $p < 0.05$, NS = insignificant.

4.2. Evaluation of structural model

Hair et al. (2017) guided evaluation of the structural model. First, we assessed multi-collinearity concerns by examining the inner VIF value of the model, which revealed that all inner VIF values are less than the threshold 5, thereby eliminating concerns related to multi-collinearity (Hair et al., 2017). Second, we assessed all hypothesized relationships using path coefficient (β) and bias corrected and accelerated (BCa) confidence intervals. Hypotheses 1–2 are supported (See Table 9). Internal SC has a positive impact on external SC ($\beta = 0.784$, $t = 29.568$,

Table 4
Scale validity and reliability of first order constructs.

Latent constructs	Standard loading	*t* value	VIF value	Skewness	Kurtosis
Structural Capital (External) (CR = 0.896, r_A = 0.859, α = 0.855, AVE = 0.633)					
StCapExt1	0.784	30.877	1.961	−4.021	−2.900
StCapExt2	0.814	39.927	1.888	−6.020	−1.312
StCapExt3	0.773	28.975	1.734	−7.192	0.382
StCapExt4	0.816	37.214	2.146	−5.226	−1.479
StCapExt5	0.790	37.942	1.748	−6.830	0.618
Relational Capital (External) (CR = 0.873, r_A = 0.824, α = 0.819, AVE = 0.579)					
RelCapExt1	0.757	27.507	1.88	−7.304	0.612
RelCapExt2	0.782	32.068	1.786	−8.817	3.320
RelCapExt3	0.762	28.600	1.693	−8.596	3.836
RelCapExt4	0.709	19.637	1.667	−6.543	0.065
RelCapExt5	0.791	32.998	1.769	−5.849	0.281
Cognitive Capital (External) (CR = 0.896, r_A = 0.855, α = 0.855, AVE = 0.634)					
CogCapExt1	0.814	37.356	2.014	−6.684	1.774
CogCapExt2	0.791	31.165	1.788	−6.394	1.759
CogCapExt3	0.787	33.023	1.784	−4.350	−0.865
CogCapExt4	0.816	39.095	2.052	−7.852	3.266
CogCapExt5	0.771	29.658	1.687	−5.832	1.430
Structural Capital (Internal) (CR = 0.903, r_A = 0.861, α = 0.858, AVE = 0.701)					
StCapInt1	0.831	37.910	2.048	−5.811	−0.088
StCapInt2	0.851	41.748	2.115	−6.123	0.982
StCapInt3	0.830	46.974	1.797	−7.091	2.052
StCapInt4	0.836	41.463	2.023	−7.176	1.865
Relational Capital (Internal) (CR = 0.866, r_A = 0.768, α = 0.768, AVE = 0.683)					
RelCapInt1	0.822	34.996	1.546	−9.016	4.626
RelCapInt2	0.822	32.871	1.546	−9.791	6.454
RelCapInt3	0.835	40.282	1.603	−7.103	2.616
Cognitive Capital (Internal) (CR = 0.886, r_A = 0.809, α = 0.808, AVE = 0.723)					
CogCapInt1	0.855	45.469	1.835	−8.413	3.778
CogCapInt2	0.831	38.415	1.647	−8.352	4.025
CogCapInt3	0.864	53.738	1.828	−7.917	4.187
Sensing Capability (CR = 0.896, r_A = 0.861, α = 0.860, AVE = 0.590)					
SenCap1	0.794	39.872	2.058	−5.706	0.104
SenCap2	0.753	25.624	1.714	−6.029	1.352
SenCap3	0.795	37.566	1.930	−8.508	3.101
SenCap4	0.821	43.625	2.137	−6.061	0.696
SenCap5	0.753	23.771	1.792	−6.264	1.292
SenCap6	0.686	21.428	1.496	−9.292	5.249
Seizing Capability (CR = 0.876, r_A = 0.811, α = 0.811, AVE = 0.639)					
SeizCap1	0.773	32.570	1.701	−5.973	0.358
SeizCap2	0.771	29.442	1.653	−7.872	2.787
SeizCap3	0.800	32.176	1.751	−6.689	2.790
SeizCap4	0.850	47.713	2.083	−7.841	2.809
Reconfiguring Capability (CR = 0.883, r_A = 0.835, α = 0.834, AVE = 0.601)					
ReconfCap1	0.743	23.071	1.528	−7.596	2.452
ReconfCap2	0.814	33.966	1.888	−7.138	1.147
ReconfCap3	0.759	26.938	1.658	−5.853	1.201
ReconfCap4	0.777	32.218	1.711	−5.770	1.041
ReconfCap5	0.782	30.218	1.769	−6.224	1.424
Readiness (CR = 0.892, r_A = 0.839, α = 0.839, AVE = 0.675)					
Red1	0.814	33.330	1.781	−6.175	0.833
Red2	0.840	42.365	1.977	−6.465	2.007
Red3	0.822	38.017	1.814	−6.495	1.673
Red4	0.808	32.653	1.755	−5.933	0.323
Response (CR = 0.877, r_A = 0.814, α = 0.812, AVE = 0.640)					
Res1	0.794	31.150	1.645	−7.890	2.630
Res2	0.748	22.912	1.470	−5.801	0.593
Res3	0.809	37.034	1.739	−6.951	1.906

(*continued on next page*)

Table 4 (*continued*)

Latent constructs	Standard loading	*t* value	VIF value	Skewness	Kurtosis
Res4	0.846	43.775	1.986	−7.316	2.056
Recovery (CR = 0.895, r_A = 0.845, α = 0.844, AVE = 0.682)					
Recov1	0.848	55.155	2.084	−7.289	1.907
Recov2	0.818	34.601	1.819	−8.091	4.444
Recov3	0.791	31.437	1.671	−7.400	2.478
Recov4	0.845	43.906	2.029	−7.645	1.878

BCa CI: 0.728, 0.831), supporting H1. Internal SC ($\beta = 0.161$, $t = 2.983$, BCa CI: 0.054, 0.265) has a positive impact on organizational resilience but external SC ($\beta = 0.053$, $t = 1.001$, BCa CI: −0.042, 0.164) has no effect on organizational resilience, providing support for H2 but not for H3. Third, we assessed the model's predictive power. Our proposed model has a significant amount of explanatory power, as R^2 value ranges from 61.5% to 78.0% (Fig. 2). Fourth, we examined the effect size (f^2) to assess the influence of independent variables on dependent variables (Hair et al., 2017). Table 9 provides f^2 values of supported hypotheses H1 and H2 with one large and one small respectively. Finally, the predictive relevance of the model using Stone-Geisser's Q^2 value (Hair et al., 2017) suggests that all Q^2 values of dependent variables range from 0.519 to 0.686 (See Table 7) are significantly greater than zero.

4.3. Mediating effects

We followed a two-step procedure for testing mediation effects in PLS-SEM (Nitzl, Roldan, & Cepeda, 2016). We first assessed the significance of the indirect effect. The indirect effect of internal SC on organizational resilience through DC is significant ($\beta = 0.285$, $t = 5.904$, BCa CI: 0.196, 0.384), as is the indirect effect of external SC on organizational resilience through DC ($\beta = 0.255$, $t = 5.575$, BCa CI: 0.174, 0.350). Next, we assessed the direct effect to identify the type of mediation. The direct effect of internal SC on organizational resilience is significant ($\beta = 0.161$, $t = 2.983$, BCa CI: 0.054, 0.265), confirming the partial mediation role of DC between internal SC and organizational resilience (partial support for H4a). We did not find any significant direct effect of external SC on organizational resilience ($\beta = 0.053$, $t = 1.001$, BCa CI: - 0.042, 0.164). DC fully mediates the relationship between external SC and organizational resilience, supporting H4b. The strength of mediation effect using variance-accounted-for (VAF) value, which measures the ratio of indirect effect to total effect (Nitzl et al., 2016), reveals VAF values for DC are 63.9% (for H4a) and 82.8% (for H4b) which demonstrate partial mediation and full mediation respectively.

We next assessed the effect of different control variables in the model. Most of the control variables had no effect on dependent variables, with the exception of firm size and respondent's length of work experience. Firm size had a positive impact on DC ($\beta = 0.089$, $t = 2.931$, BCa CI: 0.033, 0.151) suggesting that larger SMEs have had a better ability to develop DC during the pandemic. The negative impact of respondent's length of work experience ($\beta = -0.093$, $t = 2.794$, BCa CI: –0.157, − 0.027) on DC suggests respondents' industry experience (i.e., pre-pandemic period) is not helping SMEs to build pandemic-oriented DC.

4.4. Robustness checks

We checked the robustness of our structural model by conducting two supplementary analyses: potential non-linearity effect and endogeneity (Hult et al., 2018; Sarstedt et al., 2020). Assessing the potential nonlinearities in the model involved conducting two tests. Results of Ramsey's (1969) RESET test in RStudio, using latent variable scores extracted from the original model's PLS-SEM algorithm, shows that

Table 5
Descriptive statistics and correlation analysis.

Latent constructs	Mean	STD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Firm size (1)	40.90	55.08	1														
Firm age (2)	15.51	15.34	0.04	1													
Length of work experience (3)	10.31	9.92	−0.09**	0.59***	1												
StCapExt (4)	4.98	1.28	0.26***	−0.14**	−0.27***	1											
RelCapExt (5)	5.23	1.09	0.22***	−0.12*	−0.22***	0.75***	1										
CogCapExt (6)	5.16	1.09	0.24***	−0.16**	−0.22***	0.74***	0.62***	1									
StCapInt (7)	5.08	1.22	0.22***	−0.11*	−0.19**	0.67***	0.67***	0.63***	1								
RelCapInt (8)	5.48	1.06	0.08	−0.14**	−0.23***	0.55***	0.69***	0.64***	0.72***	1							
CogCapInt (9)	5.29	1.12	0.15***	−0.16***	−0.22***	0.58***	0.70***	0.70***	0.67***	0.76***	1						
SenCap (10)	5.14	1.11	0.28***	−0.16***	−0.28***	0.62***	0.66***	0.65***	0.60***	0.62***	0.65***	1					
SeizCap (11)	5.39	1.08	0.21***	−0.13*	−0.23***	0.58***	0.65***	0.64***	0.58***	0.66***	0.65***	0.72***	1				
ReconfCap (12)	5.19	1.05	0.28***	−0.15**	−0.28***	0.61***	0.68***	0.70***	0.60***	0.64***	0.66***	0.71***	0.77***	1			
Red (13)	5.15	1.15	0.27***	−0.08	−0.18**	0.59***	0.64***	0.66***	0.58***	0.63***	0.68***	0.74***	0.77***	0.76***	1		
Res (14)	5.19	1.13	0.26***	−0.16**	−0.26***	0.56***	0.63***	0.63***	0.57***	0.64***	0.64***	0.76***	0.76***	0.75***	0.79***	1	
Recov (15)	5.24	1.15	0.24***	−0.14**	−0.25***	0.56***	0.63***	0.64***	0.60***	0.64***	0.62***	0.73***	0.74***	0.76***	0.82***	0.76***	1

a. STD = Standard Deviation; StCapExt = Structural Capital (External); RelCapExt = Relational Capital (External); CogCapExt = Cognitive Capital (External); StCapInt = Structural Capital (Internal); RelCapInt = Relational Capital (Internal); CogCapInt = Cognitive Capital (Internal); SenCap = Sensing capability; SeizCap = Seizing capability; ReconfCap = Reconfiguring capability; Red = Readiness; Res = Response; and Recov = Recovery.
b. ***p < 0.001, **p < 0.01, *p < 0.05.

Table 6
Discriminant validity of first order latent constructs.

Latent constructs	1	2	3	4	5	6	7	8	9	10	11	12
StCapExt (1)	***0.796***	0.825	0.843	0.781	0.675	0.689	0.715	0.686	0.712	0.693	0.669	0.659
RelCapExt (2)	0.750	***0.761***	0.777	0.804	0.843	0.833	0.781	0.784	0.808	0.771	0.771	0.750
CogCapExt (3)	0.740	0.619	***0.796***	0.737	0.787	0.846	0.754	0.772	0.832	0.780	0.756	0.756
StCapInt (4)	0.671	0.673	0.634	***0.837***	0.837	0.802	0.693	0.695	0.703	0.681	0.681	0.695
RelCapInt (5)	0.554	0.691	0.638	0.715	***0.826***	0.760	0.766	0.829	0.795	0.786	0.813	0.790
CogCapInt (6)	0.581	0.701	0.704	0.671	0.756	***0.850***	0.774	0.797	0.803	0.820	0.796	0.753
SenCap (7)	0.618	0.660	0.647	0.599	0.623	0.647	***0.768***	0.835	0.824	0.829	0.810	0.838
SeizCap (8)	0.577	0.649	0.643	0.583	0.657	0.647	0.715	***0.799***	0.836	0.825	0.831	0.828
ReconfCap (9)	0.607	0.675	0.703	0.600	0.637	0.658	0.707	0.768	***0.776***	0.807	0.768	0.835
Red (10)	0.592	0.644	0.661	0.582	0.631	0.675	0.740	0.772	0.760	***0.821***	0.756	0.766
Res (11)	0.560	0.634	0.629	0.571	0.642	0.644	0.760	0.756	0.747	0.793	***0.800***	0.838
Recov (12)	0.564	0.626	0.641	0.596	0.637	0.622	0.732	0.737	0.755	0.815	0.755	***0.826***

a. StCapExt = Structural Capital (External); RelCapExt = Relational Capital (External); CogCapExt = Cognitive Capital (External); StCapInt = Structural Capital (Internal); RelCapInt = Relational Capital (Internal); CogCapInt = Cognitive Capital (Internal); SenCap = Sensing capability; SeizCap = Seizing capability; ReconfCap = Reconfiguring capability; Red = Readiness; Res = Response; and Recov = Recovery.
b. Diagonal numbers (in bold and italic) are square root of AVE; Lower half of the diagonal is Fornell - Larcker criterion and upper half of diagonal is $HTMT_{0.85}$ ratio.

Table 7
Scale validity and reliability of higher order constructs.

Latent constructs	Standard loading	*t* value	VIF value
External social capital (CR = 0.945, r_A = 0.916, α = 0.912, AVE = 0.852, Q^2 = 0.519)			
StCapExt	0.900	67.462	2.696
RelCapExt	0.939	124.252	2.711
CogCapExt	0.928	113.057	3.042
Internal social capital (CR = 0.927, r_A = 0.883, α = 0.882, AVE = 0.810)			
StCapInt	0.880	65.094	2.228
RelCapInt	0.916	82.047	2.858
CogCapInt	0.903	80.964	2.544
Dynamic capability (CR = 0.952, r_A = 0.925, α = 0.924, AVE = 0.868, Q^2 = 0.554)			
SenCap	0.938	121.853	3.096
SeizCap	0.929	103.044	2.962
ReconfCap	0.929	100.668	3.143
Organizational resilience (CR = 0.960, r_A = 0.938, α = 0.938, AVE = 0.890, Q^2 = 0.686)			
Red	0.937	124.900	2.949
Res	0.950	167.710	2.684
Recov	0.942	108.143	2.855

Note: StCapExt = Structural Capital (External); RelCapExt = Relational Capital (External); CogCapExt = Cognitive Capital (External); StCapInt = Structural Capital (Internal); RelCapInt = Relational Capital (Internal); CogCapInt = Cognitive Capital (Internal); SenCap = Sensing capability; SeizCap = Seizing capability; ReconfCap = Reconfiguring capability; Red = Readiness; Res = Response; and Recov = Recovery.

Table 8
Discriminant validity of higher order constructs.

Higher order constructs	1	2	3	4
External social capital (1)	***0.923***	0.832	0.813	0.766
Internal social capital (2)	0.784	***0.900***	0.830	0.806
Dynamic capability (3)	0.748	0.750	***0.925***	0.835
Organizational resilience (4)	0.710	0.734	0.871	***0.943***

Note: Diagonal numbers (in bold and italic) are square root of AVE; Lower half of the diagonal is Fornell - Larcker criterion and upper half of diagonal is $HTMT_{0.85}$ ratio.

none of the three partial regression analyses were significant (See Table 10). Therefore, no evidence exists of non-linearity in the model. Second, we assessed the quadratic effect of DynCap, ExtSocCap, and IntSocCap on OrgRes, ExtSocCap, and IntSocCap on DynCap, and IntSocCap on ExtSocCap. None of the quadratic effects are significant, suggesting our linear effects are robust.

We assessed the potential endogeneity in the model (Hult et al., 2018) by applying Park and Gupta's (2012) Gaussian copula method in RStudio, using latent variable scores extracted from the original model estimation as input. As a required condition, we ensured that all independent latent variables (i.e. DynCap, ExtSocCap, and IntSocCap) follow non-normal distribution by following the Kolmogorov-Smirnov test with Lilliefors correction. We next established seven regression models in Rstudio, using all possible combinations of Gaussian copulas. Results show that none of the Gaussian copulas are significant, which suggests that endogeneity is not a problem in this model (See Table 11).

5. Discussion

5.1. Theoretical implications

Communities and organizations are increasingly confronted with disasters that bring severe and chronic challenges. Marketing researchers use the concept of resilience to understand how individuals, families, communities, and markets respond following disruptions (Baker, 2009; Ozanne & Ozanne, 2016; Pettigrew et al., 2014). A nascent body of research in marketing also explores how organizations develop resilience in order to respond to crises, yet many questions remain unanswered (Pedersen et al., 2020). We contribute to this emerging marketing discussion employing a middle-range theorizing approach to explore DC as the mechanism by which SC translates to organizational resilience for SMEs facing the disruption presented by the COVID-19 pandemic. In this way, we contribute to the literature in three important ways.

First, our gap analysis indicates that SC has been primarily operationalized without distinguishing between internal and external forms of SC. Thus, we extend the SCT and organizational resilience literature by demonstrating the role of both internal and external SC in building organizational resilience in SMEs during the pandemic. Building on previous literature that has addressed either internal or external SC (Koka & Prescott, 2002; Madhavaram & Hunt, 2017) as determinants of organizational outcomes, we focused on understanding the combined role of these two forms of SC by adopting a multi-dimensional view of SC within the SME context. Our results demonstrate that when SMEs possess strong internal social ties, shared vision and values, and relationships built on trust and mutual obligations, they enhance their ability to build external relationships with key business customers. This was exemplified by Stagekings' ability to deploy employees' talents in utilizing the company's skills, materials, and infrastructure to meet the needs of a new market. Managers' reliance on the expertise and creativity of employees to develop new solutions demonstrate the significant internal SC the firm leveraged as the market shifted in real-time. This confirms the central role of cooperative relationships and internal

Table 9
Hypothesis testing.

Paths	β	t- stats	p-values	BCa Confidence intervals 2.5%	97.5%	f^2	Hypothesis
Control variables							
Industry (Service) → Dynamic capabilities	0.078	1.394	0.163	−0.032	0.188	0.002	
Industry (Primary) → Dynamic capabilities	−0.007	0.130	0.896	−0.107	0.090	0.000	
Industry (Manufacturing) → Dynamic capabilities	0.038	0.877	0.380	−0.047	0.121	0.002	
Firm Age → Dynamic capabilities	0.021	0.818	0.413	−0.030	0.072	0.001	
Firm size → Dynamic capabilities	0.089	2.931	0.003	0.033	0.151	0.020	
Education → Dynamic capabilities	0.025	0.723	0.470	−0.039	0.096	0.001	
Length of work experience → Dynamic capabilities	−0.093	2.794	0.005	−0.157	−0.027	0.015	
Industry (Service) → Organizational resilience	0.030	0.754	0.451	−0.053	0.106	0.002	
Industry (Primary) → Organizational resilience	−0.035	0.930	0.352	−0.115	0.036	0.003	
Industry (Manufacturing) → Organizational resilience	0.012	0.374	0.708	−0.055	0.073	0.000	
Firm Age → Organizational resilience	−0.002	0.073	0.941	−0.068	0.054	0.000	
Firm size → Organizational resilience	0.044	1.821	0.069	−0.001	0.094	0.007	
Education → Organizational resilience	−0.042	1.550	0.121	−0.095	0.011	0.006	
Length of work experience → Organizational resilience	0.022	0.695	0.487	−0.04	0.081	0.001	
Direct effect							
Internal social capital → External social capital	0.784	29.568	0.000	0.728	0.831	1.596	H_1 supported
Internal social capital → Organizational Resilience	0.161	2.983	0.003	0.054	0.265	0.037	H_2 supported
External social capital → Organizational Resilience	0.053	1.001	0.317	−0.042	0.164	0.004	H_3 not supported
Mediation analysis							
Step 1 (Indirect effect): Internal social capital → Dynamic Capabilities → Organizational resilience	0.285	5.904	0.000	0.196	0.384		Partial mediation - H_{4a} partially supported
Step 2 (Direct effect): Internal social capital → Organizational resilience	0.161	2.983	0.003	0.054	0.265		
Step 1 (Indirect effect): External social capital → Dynamic Capabilities → Organizational resilience	0.255	5.575	0.000	0.174	0.350		Full mediation - H_{4b} supported
Step 2 (Direct effect): External social capital → Organizational resilience	0.053	1.001	0.317	– 0.042	0.164		

marketing in activating relationship-building with customers. But Stagekings was also reliant on the strength of its existing customer relationships to successfully launch their offerings to new customer groups. Stagekings demonstrates for SMEs the important roles of both internal SC and external SC.

Second, we also extend the literature by demonstrating the importance of customer-focused SC for SMEs navigating a crisis, whereas previous research has focused on supplier-based SC (Chowdhury et al., 2019; Jia et al., 2020). Our research supports recent qualitative research, which points to the importance of collaborating with business customers during the pandemic, as they provide the resources required for developing innovations that are relevant to the end market (Markovic et al., 2021). Business customers provide information and knowledge that can be used as a source of ideas for new product development, as illustrated by Stagekings. In disruptive times, customers can also highlight opportunities for existing products being used in novel ways but also quickly highlight issues with products and services (e.g., inflexible procedures and processes, unresponsive customer service, and long lead times). This feedback from customers enabled Stagekings to successfully position their new home-office offerings within an industry fraught with stockouts and long delivery times. Through their changing consumption practices during COVID-19, customers can also pinpoint existing segments that are underserved but also new markets that can be developed based on the existing capabilities of the organization. Our results complement previous research that finds that SMEs use an entrepreneurial approach that involves opportunity-seeking and risk-accepting behaviors to create multiple stakeholder value to respond to disruptions (Morrish & Jones, 2020).

Finally, as revealed by our gap analysis, the extant literature focuses on either SC or DC, but rarely their joint influence on organizational resilience. Our results show that DC play a key mediating role in SMEs' ability to mobilize SC resources to enhance their organizational resilience during the pandemic. The middle-range theorizing approach in this study elucidates the transformative process that social resources undergo in achieving organizational outcomes. Thus, our results show the instrumental role DC play in explaining how SMEs can use SC to build their resilience. SC is a vital but insufficient resource and DC are necessary to direct it toward strategic ends so SMEs can fulfil their potential in achieving organizational resilience. The valuable resources embedded in inter- and intra-organizational relationships will stay dormant if they are not enabled by DC. Essentially, failure to employ DC could make SMEs susceptible to failure during crises.

In particular, while relationships with both employees and customers are important in disaster contexts, the pandemic requires DC as the enabling mechanism that transforms SC into organizational resilience. Thus, the knowledge residing internally needs to be partially transformed through market sensing, seizing and reconfiguration capabilities to achieve resilient outcomes. Conversely, information and knowledge emanating from customers require full transformation by DC to have any effect on organizational resilience. Our results show firms need three kinds of abilities to be able to take advantage of the resilience benefits of SC – the ability to sense (i.e. the ability to observe changes from the disruption), the ability to seize (i.e. the ability to develop solutions to the changes), and the ability to reconfigure (i.e. the ability to continually renew to respond to changes). Thus, our middle-range theorizing illustrates these different pathways for SMEs to use SC to become more resilient.

Specifically, our results show that internal SC has a direct influence on organizational resilience. Thus, the network of relationships within the firm, the feelings of trust, reciprocity and obligations among employees enables them to effectively communicate, share knowledge and best practices to collaborative and work together that directly impacts the readiness, response and recovery of SMEs (Li et al., 2016). In addition, strong internal networks can reduce the occurrence of conflicts while also enhancing the effective handling of conflicts allowing for timely response to external threats (De Clercq et al., 2009). Having shared values and goals among employees allows them to differentiate between strategic and operational activities, thus prioritizing

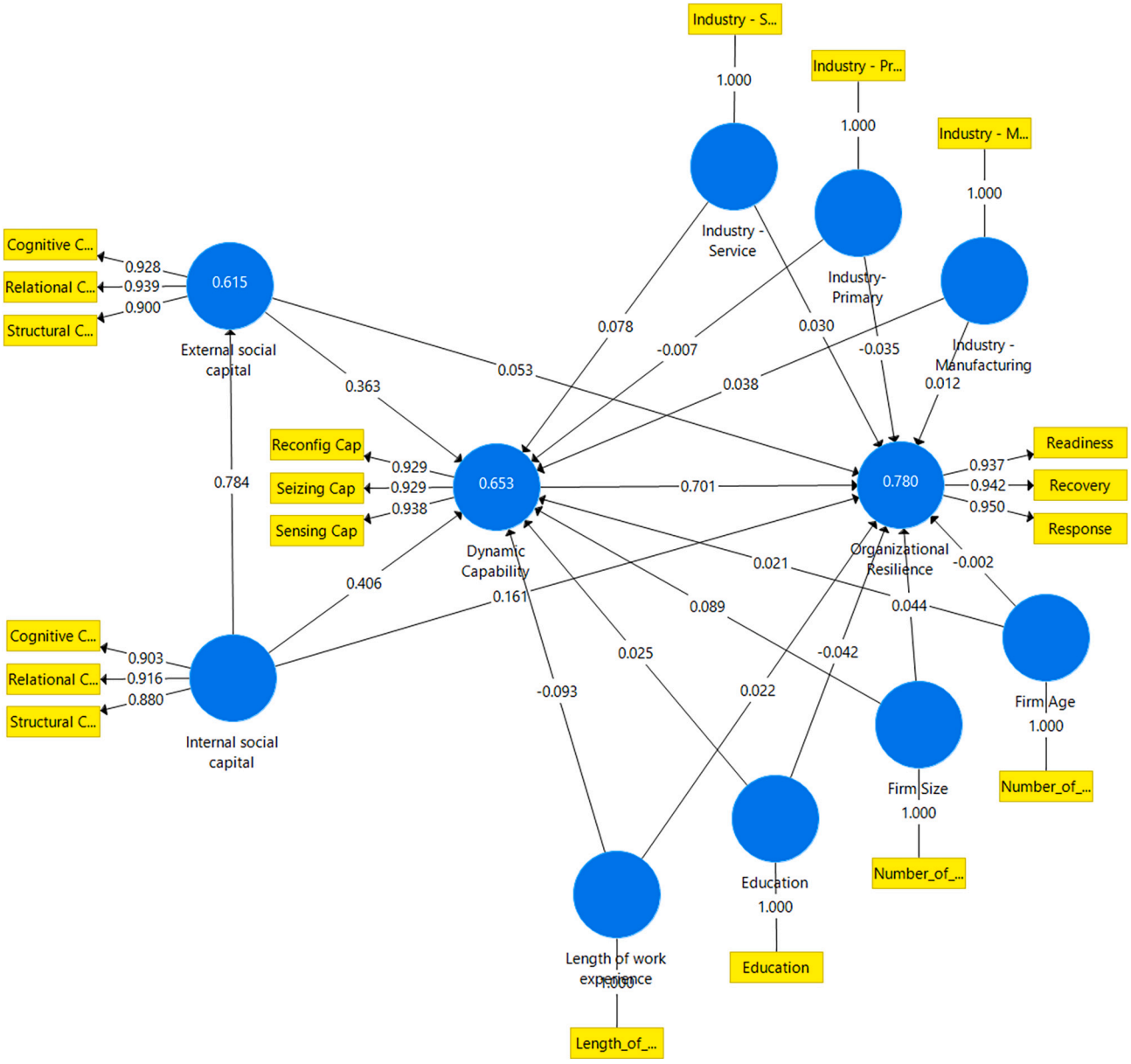

Fig. 2. Structural model (R^2 values are within the circles).

Table 10
Assessment of nonlinearity effects.

Non-linear relationship	Co-efficient	P value	f^2	Ramsey's RESET
DynCap*DynCap ➔ OrgRes	−0.018	0.595	0.001	F (2, 413) = 2.021, p = 0.134
ExtSocCap*ExtSocCap ➔ OrgRes	0.016	0.597	0.001	
IntSocCap*IntSocCap ➔ OrgRes	−0.026	0.362	0.003	
ExtSocCap*ExtSocCap ➔ DynCap	0.069	0.069	0.012	F (2, 414) = 2.101, p = 0.124
IntSocCap*IntSocCap ➔ DynCap	−0.082	0.054	0.016	
IntSocCap*IntSocCap ➔ ExtSocCap	−0.011	0.641	0.001	F (2, 414) = 2.101, p = 0.124

Note: DynCap = Dynamic Capability; ExtSocCap = External social capital; IntSocCap = Internal social capital; and OrgRes = Organizational resilience.

preparedness and response activities in a coordinated manner (Preston et al., 2017). Thus, our results point to the critical but less recognized role of the direct role of internal social resources in fostering resilient outcomes in SMEs. We can only speculate that as SMEs grow in size and maturity, it may become more difficult to build internal relationships or implement HR practices (e.g., collaborative cross-functional teams) necessary to foster internal SC (Thongpapanl, Kaciak, & Welsh, 2018).

However, we also find an indirect effect of internal SC through DC on organizational resilience. Despite the strength of internal ties, employees do not always have the capabilities to utilize internal resources to respond to threats. DC of sensing and seizing create the mechanisms for employees to capture information and absorb knowledge through iterative business practices (Cohen & Levinthal, 1990) to capitalize on market opportunities in response to threats. DC allow SMEs to reassemble internal resources embedded in their networks and relationships, into strengthening existing value propositions. In addition, DC through reconfiguration capabilities facilitate the transformation of internal SC into new value propositions (Pavlou & El Sawy, 2011; Teece, 2007) indirectly enhancing organizational resilience.

Table 11
Assessment of endogeneity.

Test	Construct	Co-efficient	P value
Gaussian Copula Model 1 (Endogenous variable: DynCap)	DynCap	0.802	0.000
	ExtSocCap	0.050	0.218
	IntSocCap	0.154	0.000
	^{C}DynCap	−0.085	0.307
Gaussian Copula Model 2 (Endogenous variable: ExtSocCap)	DynCap	0.714	0.000
	ExtSocCap	0.139	0.134
	IntSocCap	0.155	0.000
	^{C}ExtSocCap	−0.087	0.302
Gaussian Copula Model 3 (Endogenous variable: IntSocCap)	DynCap	0.710	0.000
	ExtSocCap	0.052	0.200
	IntSocCap	0.274	0.002
	^{C}IntSocCap	−0.116	0.131
Gaussian Copula Model 4 (Endogenous variables: DynCap and ExtSocCap)	DynCap	0.781	0.000
	ExtSocCap	0.117	0.232
	IntSocCap	0.153	0.000
	^{C}DynCap	−0.065	0.463
	^{C}ExtSocCap	−0.067	0.454
Gaussian Copula Model 5 (Endogenous variables: DynCap and IntSocCap)	DynCap	0.752	0.000
	ExtSocCap	0.051	0.211
	IntSocCap	0.257	0.007
	^{C}DynCap	−0.040	0.661
	^{C}IntSocCap	−0.101	0.232
Gaussian Copula Model 6 (Endogenous variables: ExtSocCap and IntSocCap)	DynCap	0.711	0.000
	ExtSocCap	0.095	0.341
	IntSocCap	0.256	0.007
	^{C}ExtSocCap	−0.043	0.638
	^{C}IntSocCap	−0.100	0.231
Gaussian Copula Model 7 (Endogenous variables: DynCap, ExtSocCap, and IntSocCap)	DynCap	0.746	0.000
	ExtSocCap	0.088	0.387
	IntSocCap	0.245	0.014
	^{C}DynCap	−0.033	0.719
	^{C}ExtSocCap	−0.037	0.690
	^{C}IntSocCap	−0.90	0.312

Our findings provide evidence that DC fully mediate the relationship between external SC and organizational resilience. In other words, our results show no direct effect of external SC on organizational resilience. This implies that SC emanating from relationships with customers alone are insufficient to build organizational resilience. This is because the information and knowledge emanating from business customers have to be integrated in organizational decision-making processes for their benefits to be extracted. Also, customers do not always have understanding of operational and strategic requirements that are necessary to reconfigure and transform information and knowledge into value propositions that allow firms to bounce back. Knowledge emanating from customers does not allow organizations to pivot to new products and markets unless they are matched with organizational DC. The findings suggest that this is possible through DC, conferring resilience benefits to the organization.

5.2. Managerial implications

Our findings demonstrate the critical importance of SMEs building internal and external networks before crises occur, so SC can be mobilized as part of response and recovery efforts (Ozanne & Ozanne, 2021). In addition, SC is the resource least likely to be damaged in a disaster, making it paramount for business recovery (Walker et al., 2006). SC provides a robust resource that can be rapidly deployed to counteract a wide variety of disruptions, (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008), essentially providing access to a wide variety of information, knowledge, markets or technologies (Inkpen & Tsang, 2005). Thus, it would behove SMEs to foster stronger internal networks among employees built on cognitive, relational, and structural SC. As Hughes and colleagues explain, fostering *collaboration* provides a breeding ground for experimentation and the potential for novel ideas and strategies to arise in uncertain contexts (Hughes, Morgan, Hodgkinson, Kouropalatis, & Lindgreen, 2020).

Cognitive capital can be built by SMEs through internal activities that encourage shared vision and values, and an organizational culture that values communication and teamwork. Structural capital can be fostered through organizational structures and policies that promote high levels of connectivity among employees. For instance, cross-functional integration is a key marketing tool that builds internal SC (Thongpapanl et al., 2018; Wren, Souder, & Berkowitz, 2000). Relational SC can be built through regular communication and working collectively, allowing employees to build trust and reciprocity. Internal marketing and employee reward systems should be geared toward promoting and rewarding behaviors that are collaborative and contribute to strengthening internal social networks. SMEs should then leverage the nature and structure of internal relationships to establish and maintain relationships with key business customers. SMEs need to engage customers through regular interactions, frequent communications, and working on shared tasks, such as product/service co-design projects in order to build external SC before disruptions. Policy makers can also play a critical role in helping SMEs build SC in pursuit of resilience. Initiatives such as the Chamber of Commerce Foundation (see uschamberfoundation.org) can help SMEs build networks to reinforce and develop SC that can facilitate the exchange of ideas and resources.

In a disruption having these practiced routines, both internally and externally, allow SMEs to anticipate existing customers' rapidly changing needs and expectations and have the internal processes to deliver appropriate market solutions, such as modifying products and services, offering relevant technologies, reducing leads times, or extending payment cycles to meet customer needs. Existing collaborative relationships with customers can be used to activate customer advocacy for supporting "buy local" initiatives, which can be the lifeline for SMEs during disruptions such as COVID-19. Through entrepreneurial marketing, ideation on new products, segments and channels can emerge from these trusting relationships as SMEs and their customers share common goals (Morrish & Jones, 2020).

However, our results also indicate that SMEs need to invest in developing DC given the critical linking role they play between SC and organizational resilience. Our results demonstrate the importance of investments in developing DC to enhance the ability of SMEs to respond and recover from the COVID-19 pandemic by leveraging network resources to enhance their resilience. This can help compensate for their small size, resource constraints, and harsher policy environment that they may face (Hendricks & Singhal, 2003; Polyviou et al., 2020; Spence & Schmidpeter, 2003). It is clear that SMEs have difficulty anticipating and planning for disruptive events (Sullivan-Taylor & Branicki, 2011; Weick & Sutcliffe, 2015), but those able to do so in our sample through networked-based knowledge and information were able to transform market sensing, seizing and reconfiguring capabilities into their resilient capacity to navigate turbulent times. In the face of disruptions, such strategic capabilities are more important for SMEs than standard operating capabilities (Manfield & Newey, 2018), enabling them to explore and exploit opportunities. Thus, SMEs may succeed in periods of disruption such as COVID-19, particularly if they are capable of accessing valuable resources through social network relationships and leveraging their DC to build organizational resilience.

5.3. Limitations and future research

Our study has several limitations that provide opportunities for further research. First, our primary focus on organizational resilience in the pandemic context limited our ability to consider performance implications of organizational resilience that can enhance the

competitiveness of SMEs. In the first year of this pandemic, survival was of paramount concern for many SMEs (as exemplified by the Stagekings example). As the pandemic continues to evolve, future research can address the competitiveness of resilience-building practices during pandemic times, particularly with a lens toward understanding SME competitiveness in the post-pandemic period. Second, building resilience is a dynamic process that involves learning from past experience. Future research could build upon our results by investigating the role of organizational learning in building SMEs' resilience capability. Third, to test our proposed model, we employed a cross-sectional approach. This enabled the discovery of the strength and magnitude of relationships between operationalized variables at this point in the pandemic. These relationships may evolve over time, suggesting the need to adopt a longitudinal view to understanding the impact of SC and DC on organizational resilience as the pandemic continues and becomes a chronic rather than an abrupt disruption (Hwang & Lichtenthal, 2000). For example, a difference-in-difference methodology could be employed to examine whether resilience is stronger or weaker during and post pandemic due to SC and DC (Lechner, 2011). Fourth, we framed the measurement of internal and external SC in the context of pre COVID-19. Future research can consider SC that emanates specifically from the pandemic and how this might be leveraged to facilitate SMEs building mitigation, response, and recovery strategies. Finally, the contextual specificity of our middle-range approach limits generalizability of the results to other types of organizations and disruptions. Future research could explore larger firms, different types of disruptions, and relationships with final consumers.

Appendix A. Appendix

A.1. Literature linking social capital and organizational resilience

Source	Organization type	Method	Theory/approach	Disaster type	Findings
External Social Capital					
Chowdhury et al. (2019) *Journal of Travel Research*	Tourist organizations, 96% <100 employees	Quantitative	Social capital theory; organizational resilience	Earthquake	• Structural capital positively related to both cognitive and relational capital. Only relational capital has an influence on adaptive resilience. Adaptive resilience has a significant influence on business performance.
Doerfel, Chewning, and Lai (2013) *Communication Monographs*	64 firms, 91% < 100 employees	Qualitative and Network Analysis	Social capital theory; evolutionary theory	Hurricane	• Resilient organizations' networks were more dense, indicating advantages associated with bonding social capital. Low-resilience organizations were more diverse, indicating less efficacy of bridging social capital.
Jia et al. (2020) *International Journal of Disaster Risk Reduction*	Large Chinese organizations	Quantitative	Organizational resilience	Earthquake	• Not all forms of inter-firm social capital build proactive and reactive resilience. Structural capital influences proactive resilience, relational capital influences reactive resilience; cognitive capital influences neither.
Johnson and Elliott (2011) *Policy & Society*	Public-Private Partnership	Qualitative, case study	Social capital theory; organizational resilience	NA	• Development of structural, cognitive and relational elements of social capital provides a context for the emergence of organizational resilience.
Martinelli et al. (2018) *International Journal of Entrepreneurial Behavior & Research*	SMEs	Qualitative	Dynamic capabilities; social capital theory	Earthquake	• Dynamic capabilities and social capital are key to enhancing organizational resilience before, during and after a natural disaster.
Mzid, Khachlouf, and Soparnot (2019) *Journal of International Entrepreneurship*	Family firms	Qualitative	Sustainable family business theory	Political upheaval	• Social capital contributes to firms' ability to absorb shocks, reallocate existing resources, and internalize practices, to help them to cope with future disturbances.
Prasad et al. (2015) *Disasters*	NA	Conceptual	Social capital theory; organizational resilience	NA	• Micro enterprises can moderate the effect of disruption by creating resilience through cognitive preparation, continuous learning, and generation of various forms of social capital (cognitive, relational, and structural). • Resilience capability will positively moderate the negative relationship between the likelihood of its survival and the impact of a disaster.
Internal Social Capital					
Koronis and Ponis (2018) *Journal of Business Strategy*	NA	Conceptual	Organizational resilience	NA	• Propose a framework for organizational resilience which integrates four strategic drivers of resilience (preparedness, responsiveness, adaptability and learning). Resilience drivers cannot exist outside a set of social conditions related to the human and social capital of the organization (including trust, error-free cultures and sharing).
Polyviou et al. (2020) *International Journal of Operations & Production Management*	Medium sized firms	Qualitative	Social capital theory; organizational resilience	Supply chain disruption	• Internal SC emerged as a resilience-enhancing resource, comprising: structural capital grounded in small network size, geographical proximity among decision makers and low hierarchy; relational capital grounded in close relationships,

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Source	Organization type	Method	Theory/approach	Disaster type	Findings
					commitment and respect; and cognitive capital grounded in long employee tenure.
Other					
Bhaskara and Filimonau (2021) *Journal of Hospitality and Tourism Management*	Tourist organizations	Qualitative	Organizational learning theory; organizational resilience	Consecutive including bombing, natural, COVID-19	• Limited human and social capital restricts organizational learning, exposing vulnerability of the tourism industry to future events.
Herbane (2018) *Entrepreneurship and Regional Development*	SMEs	Quantitative	Social capital theory; organizational resilience	Business interruption	• SMEs vary in the formalisation of activities intended to enhance resilience against acute operational interruptions. Firms characterised as the most resilient are less reliant on personal networks to recover.

A.2. Literature linking dynamic capabilities and organizational resilience

Source	Organization type	Method	Theory/approach	Disaster type	Findings
Akpan, Johnny, and Sylva (2021) *Vision: The Journal of Business Perspective*	Nigerian manufacturing firms	Quantitative	Dynamic capabilities	Not specified	• Dynamic capabilities (sensing and reconfiguration) related to organizational resilience (adaptability and agility).
Ambulkar, Blackhurst, and Grawe (2015) *Journal of Operations Management*	Multiple industries, 96% of firms had sales > $10 M USD	Quantitative (Survey)	Resource reconfiguration; supply chain disruption	Recent disruption	• Supply chain disruption-oriented firms require the ability to reconfigure resources or have a risk management resource infrastructure to develop resilience. • In a high impact disruption context, resource reconfiguration fully mediates the relationship between supply chain disruption orientation and firm resilience.
Ates and Bititci (2011) *International Journal of Production Research*	SMEs	Qualitative, Case Study	Organizational resilience; change management	Self-reported change	• Organizational resilience in SMEs requires change management capabilities.
Battisti and Deakins (2017) *International Small Business Journal*	SMEs	Quantitative	Dynamic capabilities	Earthquakes	• A firm's dynamic capabilities influence the extent to which it experiences negative or positive effects on its resource base and on performance. Resource integration from external sources is an essential element of a firm's strategy to survive and recover from a disaster situation in which internal resources might not be readily available.
Craighead, Blackhurst, Rungtusanatham, and Handfield (2007) *Decision Sciences*	Large firms	Qualitative, Case Study	Supply chain structure	Self-reported supply chain disruption	• Supply chain mitigation capabilities of recovery and warning can moderate the impact that supply chain density, complexity, and node criticality have on supply chain disruption severity.
Cunha and Cunha (2006) *Management Decision*	NA	Conceptual	Complexity theory	NA	• Dynamic capability (strategic improvisation) may be valuable in terms of firm capacity to adapt and become resilient.
Duchek, Raetze, and Scheuch (2020) *Business Research*	NA	Conceptual	Organizational resilience	NA	• Organizational resilience is conceptualized as a meta-capability consisting of a set of organizational capabilities/routines (anticipation, coping, and adaptation). Also, proposes drivers of resilience (resource availability, social resources, and power/responsibility).
Duchek et al. (2020) *Business Research*	NA	Conceptual	Organizational resilience	NA	• Explores the role of diversity in building resilience capabilities.
Hillmann and Guenther (2021) *International Journal of Management Reviews*	NA	Literature Review and Conceptual	NA	NA	• Organizational resilience is the ability of an organization to maintain functions and recover from adversity by mobilizing and accessing required resources. An organization''s behavior, resources and capabilities enable and determine organizational resilience.
Ismail, Poolton, and Sharifi (2011) *International Journal of Production Research*	SMEs	Qualitative, Action Research with 2 case companies	Operational Agility	Business turbulence	• The multi-strategy research approach enabled the companies to understand how the effects of turbulence could be used to create growth in markets, whilst reducing the potential for risk.

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Source	Organization type	Method	Theory/approach	Disaster type	Findings
					• The building-up of skills and capabilities for exploring new options in the marketplace was important in assisting SMEs to achieve growth.
Jiang, Ritchie, and Verreynne (2019) *International Journal of Tourism Research*	NA	Conceptual	Resource-based view; dynamic capabilities	NA	• Provide a theoretical framework to show how an organization's existing operational routines transform into new ones that are resilient to disruptive events, enabled by dynamic capabilities and slack resources.
Jiang, Ritchie, and Verreynne (2021) *Tourism Management*	SMEs and Large Organizations	Qualitative Interviews	Dynamic capabilities	Cyclone	• Dynamic resilience framework developed, based on three dynamic capabilities (sensing, seizing, transforming) to explain how organizations develop resilience at each disaster management stage.
Kähkönen, Evangelista, Hallikas, Immonen, and Lintukangas (2021) *International Journal of Production Research*	Firms in the medical industry	Quantitative	Dynamic capabilities	COVID-19	• Examined the impact of COVID-19 on firms' dynamic capabilities (sensing, seizing, and reconfiguring) and then the influence of those on supply chain resilience. Impacts on up-stream firms did not influence sensing or reconfiguring capability, but did influence firms' ability to seize opportunities or neutralise threats. Impacts on firms' customer firms, influence reconfiguring capabilities.
Limnios, Mazzarol, Ghadouani, and Schilizzi (2014) *European Management Journal*	NA	Conceptual	Socio-ecological systems theory	NA	• Develop the Resilience Architecture Framework to differentiate between two opposing manifestations of resilience: offensive (adaptation) or defensive (resistance) to internal or external disturbance. Resilience can be desirable or undesirable depending on the system state.
Manfield and Newey (2018) *International Journal of Entrepreneurial Behavior & Research*	Entrepreneurs	Conceptual	Organizational resilience; dynamic capabilities	NA	• Organizational resilience results from a portfolio of resilience capabilities. Building resilience across a range of adverse situations requires a mix of routinized responses for returning to stability but also more flexible, heuristics-based responses for strategic reconfiguration.
Martinelli et al. (2018) *International Journal of Entrepreneurial Behavior & Research*	SMEs	Qualitative	Dynamic capabilities; social capital theory	Earthquake	• Dynamic capabilities and social capital are key to enhancing organizational resilience before, during and after a natural disaster.
Parker and Ameen (2018) *Journal of Business Research*	SMEs	Quantitative	Organizational resilience; resource-based view; dynamic capabilities	Power supply disruption	• Ability of a firm to reconfigure its resources enables the firm to become more resilient.
Saad, Hagelaar, van der Velde, and Omta (2021) *Cogent Business and Management*	SMEs	Literature Review of SME resilience	NA	NA	• Most studies are theoretical and case based. Conclude that the concept of resilience is multidimensional and embraces a portfolio of capabilities that SMEs need to develop to overcome complex disruptions.
Sabahi and Parast (2020) *International Journal of Logistics Research and Applications*	NA	Conceptual	Resource-based view; dynamic capabilities	NA	• Dynamic capabilities (knowledge sharing, agility, and flexibility) play a mediating role between innovation and resilience.
Schepers, Vandekerkhof, and Dillen (2021) *Sustainability*	SMEs	Quantitative	Dynamic capabilities	COVID-19	• Threats related to operations and sales impacted SMEs during COVID-19. Initially, firms relied on operational capabilities before moving to responses related to long-term growth and opportunity identification as the crisis continued.
Sullivan-Taylor and Branicki (2011) *International Journal of Production Research*	11 SMEs, Senior Managers	Qualitative	Organizational resilience	Undefined extreme event	• Resourcefulness was a key barrier to SME resilience which related to identifying problems, establishing priorities and mobilizing resources. • SMEs have positive potential for timeliness and agility (i.e., rapidity).

Appendix B. Scales

External Social Capital – Source: Carey et al. (2011); Chowdhury et al. (2020); Villena et al. (2011)
Please indicate to what extent you agree or disagree with each of the following statements about your business with respect to relationships with your key business customers.

Structural capital (external)
StCapExt1: We spend time together in social occasions with our key business customers
StCapExt2: We maintain a close social relationship with our key business customers
StCapExt3: We know our key business customers personally.
StCapExt4: We communicate frequently with our key business customers outside of our working business relationship.
StCapExt5: We promote interactions between our staff and our key business customers.

Relational capital (external)
RelCapExt1: Our relationship with our key business customers is characterised by close personal interactions.
RelCapExt2: Our relationship with our key business customers is characterised by mutual respect.
RelCapExt3: Our relationship with our key business customers is characterised by mutual trust between the parties.
RelCapExt4: Our relationship with our key business customers is characterised by personal friendship.
RelCapExt5: Our relationship with our key business customers is characterised by high levels of reciprocity

Cognitive capital (external)
CogCapExt1: Our organization shares similar ambitions and vision as our key business customers.
CogCapExt2: People in our organization and those of our key business customers are enthusiastic about pursuing similar business goals.
CogCapExt3: Both this organization and our key business customers share similar ways of managing employees.
CogCapExt4: Both this organization and our key business customers share similar business values and culture.
CogCapExt5: Both this organization and our key business customers agree on what is in the best interest of the relationship that exists between our businesses.

Internal Social Capital – Source: Chowdhury et al. (2020)
Please indicate to what extent you agree or disagree with each statement that applies to the employees of your organization.

Structural capital (internal)
StCapInt1: In this organization, employees spend time together in social occasions with each other.
StCapInt2: In this organization, employees maintain a close social relationship with each other.
StCapInt3: In this organization, employees know each other at the personal level.
StCapInt4: In this organization, employees communicate frequently with each other outside of their working relationship.

Relational capital (internal)
RelCapInt1: In this organization, employees know people from this organization will always try to help each other out if they get into difficulties.
RelCapInt2: In this organization, employees can always trust people from this organization to lend them a hand if they need it.
RelCapInt3: In this organization, employees can always rely on people from this organization to make their job easier.

Cognitive capital (internal)
CogCapInt1: In this organization, employees always agree on what is important at work.
CogCapInt2: In this organization, employees always share similar ambitions and vision at work.
CogCapInt3: In this organization, employees are always enthusiastic about pursing the collective goals and vision of this organization.

Dynamic Capability – Source: Mikalef and Pateli (2017); Pavlou and El Sawy (2011); Wilden et al. (2013)
Please indicate to what extent your business has been engaged in the following activities during COVID-19.

Sensing Capability
SenCap1: We are scanning the external business environment to identify new business opportunities during the pandemic.
SenCap2: We are constantly reviewing the likely effect of changes in our external business environment on our business practices during the pandemic.
SenCap3: We are constantly reviewing our products/services to ensure they are in line with what customers want during the pandemic.
SenCap4: We are putting a lot of time implementing new ideas for products/services, and improving our existing products/services to respond to customer needs during this pandemic.
SenCap5: We are gathering information on economic indicators that affect our operations and the sector that we operate in during this pandemic.
SenCap6: We are still observing best practice in our industry irrespective of the pandemic.

Seizing Capability
SeizCap1: We are investing in finding solutions for existing business issues that have cropped up due to the pandemic.
SeizCap2: We are maintaining the best practice standards in our sector irrespective of the pandemic.
SeizCap3: We are more attuned to responding to issues pointed out by our employees due to the pandemic.
SeizCap4: We are particularly conscious about our business practices when customer feedback indicates we have to change because of the pandemic.

(*continued on next page*)

(*continued*)

Dynamic Capability – Source: Mikalef and Pateli (2017); Pavlou and El Sawy (2011); Wilden et al. (2013) Please indicate to what extent your business has been engaged in the following activities during COVID-19.
Reconfiguring Capability
ReconfCap1: We are easily responding and adjusting to the unexpected changes related to the pandemic.
ReconfCap2: We can adjust our business response to shift our business priorities due to the pandemic.
ReconfCap3: We are reconfiguring our business processes to capitalise on opportunities that will create economic value or new assets for the organization during the pandemic.
ReconfCap4: We can reconfigure our existing businesses processes to respond to market changes as the pandemic evolves.
ReconfCap5: We are engaging in better aligning our business strengths with our product-market areas to be more competitive during the pandemic.
Organizational Resilience – Source: Bode and Macdonald (2016); Jia et al. (2020); Pettit et al. (2013) Thinking about COVID-19 and its impact on your business, please indicate to what extent you agree or disagree with each of the following statements.
Readiness
Red1: This organization has worked on creating awareness of the pandemic and the consequences of the pandemic on the business.
Red2: This organization analyses and assesses the impact of the pandemic on the business.
Red3: Since the beginning of the pandemic, this organization is trying to improve its disruption prevention capabilities.
Red4: This organization is currently engaged in contingency planning to prepare for potential future disruptions due to the pandemic.
Response
Res1: This organization was able to quickly recognize that there is a threatening situation due to the pandemic.
Res2: This organization is able to gather and interpret information cues to gauge the magnitude, location, and cause of the pandemic.
Res3: This organization is able to quickly identify, formulate, and evaluate a set of possible responses to the pandemic.
Res4: This organization is able to quickly implement responses and restore business standards to minimize business impact of the pandemic.
Recovery
Recov1: This organization can quickly organize a formal response team of key personnel to find solutions to business issues caused by the pandemic.
Recov2: This organization has an effective communication strategy internally and externally for managing the impacts of the pandemic.
Recov3: This organization is very successful at dealing with crises, including addressing public relations issues that can arise from this pandemic.
Recov4: This organization has taken immediate action to mitigate the effects of the pandemic despite the short-term costs.

Appendix C. Measurement invariance of composite model (MICOM) test

Step 1
Configurational Variance established? Yes

Step 2

Composite	Correlation C	5% quantile of the empirical distribution of C_u	P value	Compositional invariance established?
Structural capital (external)	0.998	0.996	0.231	Yes
Relational capital (external)	0.998	0.995	0.347	Yes
Cognitive capital (external)	0.999	0.998	0.126	Yes
Structural capital (internal)	0.999	0.998	0.062	Yes
Relational capital (internal)	0.997	0.997	0.051	Yes
Cognitive capital (internal)	0.999	0.998	0.353	Yes
Sensing capability	0.999	0.998	0.413	Yes
Seizing capability	1.000	0.998	0.728	Yes
Reconfiguring capability	0.999	0.998	0.533	Yes
Readiness	0.999	0.999	0.123	Yes
Response	0.999	0.998	0.229	Yes
Recovery	1.000	0.999	0.875	Yes

Step 3								
Composite	Difference of the composite's mean value (= 0)	95% confidence interval	P value	Equal mean value?	Logarithm of the composite's variance ratio (=0)	95% confidence interval	P value	Equal variance?
Structural capital (external)	0.127	[−0.220;0.216]	0.238	Yes	−0.133	[−0.290;0.306]	0.383	Yes
Relational capital (external)	−0.022	[−0.217;0.221]	0.835	Yes	−0.011	[−0.354;0.379]	0.948	Yes
Cognitive capital (external)	0.018	[−0.211;0.221]	0.885	Yes	0.147	[−0.319;0.382]	0.407	Yes
Structural capital (internal)	−0.001	[−0.212;0.219]	0.992	Yes	−0.074	[−0.295;0.379]	0.647	Yes
Relational capital (internal)	−0.103	[−0.227;0.235]	0.340	Yes	−0.168	[−0.401;0.472]	0.456	Yes
Cognitive capital (internal)	−0.051	[−0.217;0.226]	0.654	Yes	0.068	[−0.376;0.451]	0.750	Yes
Sensing capability	0.068	[−0.212;0.228]	0.533	Yes	−0.026	[−0.319;0.346]	0.890	Yes
Seizing capability	0.172	[−0.211;0.221]	0.138	Yes	−0.127	[−0.354;0.362]	0.511	Yes
Reconfiguring capability	0.070	[−0.227;0.215]	0.496	Yes	0.039	[−0.341;0.364]	0.845	Yes
Readiness	0.126	[−0.219;0.229]	0.255	Yes	−0.014	[−0.302;0.373]	0.944	Yes
Response	0.217	[−0.220;0.240]	0.054	Yes	0.003	[−0.336;0.413]	0.985	Yes
Recovery	0.167	[−0.213;0.229]	0.148	Yes	−0.227	[−0.355;0.400]	0.248	Yes

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