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Linking resource slack to operational resilience: Integration of resource-based and attention-based perspectives

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A B S T R A C T

With limited empirical evidence, prior research suggests resource slack as a fundamental feature of resilient operations and supply chains. This study draws insights from the resource-based theory to empirically examine the relationship between resource slack and operational resilience. The attention-based view of the firm is then used to argue that while resource slack may be an essential feature of operational resilience, its effect is mediated by organizational attention under varying conditions of strategic mission rigidity. These arguments are tested on primary data from 259 firms in a sub-Saharan African market, Ghana. Contrary to conventional wisdom, findings show that resource slack is not directly related to operational resilience. Rather, the study finds that the contribution of resource slack in driving operational resilience is channeled through organizational attention. Results further show that this indirect path is strengthened under conditions of low strategic mission rigidity. In expanding and clarifying extant literature on the resilience implications of resource slack, therefore, this study explains how operations and supply chain managers can combine organizational attention with low strategic mission rigidity conditions to convert resource slack into enhanced operational resilience outcomes.

1. Introduction

Within the last several decades, the global supply chain landscape has been rocked by numerous major disruptive events that have exposed the fragility of firms' operations systems (Chen et al., 2022; Simchi-Levi and Haren 2022). Some of these major disruptive events include the 2022 Russia-Ukraine war, the 2021 Suez Canal blockage, the Covid-19 pandemic, JBS USA's cyber-attack, the US-China trade dispute, the 2019/2020 wildfires in Australia, the 2013 to 2016 Ebola epidemic in Western Africa, and the 2011 floods in Thailand. Such major supply chain disruption triggers tend to immediately halt firms' production and service delivery systems, causing significant inefficiencies, low profit margins, and increased chances of business failure (Bartik et al., 2020; Haren and Simchi-Levi 2020; Hendricks and Singhal 2005).

For example, the Russia-Ukraine war has led major automobile companies (e.g., Volkswagen and BMW) in Germany to close down their assembly plants due to shortages of key components (Simchi-Levi and Haren 2022). Additionally, the 2021 Suez Canal blockage cost global trade approximately between $6 to $10 billion a week, reduced annual trade growth by up to 0.4% (Russon 2021), and increased the cost of renting vessels and ship cargoes to and from Asia and the Middle East by 47% (Faucon et al., 2021). Furthermore, the 2011 floods in Thailand reduced the production outputs of automobile firms in the affected areas by 20%. Specifically, Toyota lost 240,000 cars and USD2.5 billion in net profit, Honda lost 150,000 cars and USD2.7 billion in net profit, and Nissan lost 33,000 cars and USD3.6 billion in net profit (Haraguchi and Lall 2015).

Despite the increased losses and costs associated with such disruptive events, firms with stronger operational resilience tend to benefit (The Business Continuity Institute 2020). Operational resilience refers to the ability of a firm's operations system to absorb and recover from unexpected disruptions (Meyer 1982). Scholars contend that firms' desire to

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ensure operations stability and continuity (Bode et al., 2011) necessitates that they build and leverage resource slack to enhance operational resilience (Brandon-Jones et al., 2015; Hendricks et al., 2009). Resource slack refers to the extent to which uncommitted resources are immediately available in the short run to support organizational initiatives (Atuahene-Gima et al., 2005). It is contended that greater resource slack can improve operational resilience as it enables firms to create redundancies within supply chains to absorb and recover quickly from disruptions (Tognazzo et al., 2016; Hughes et al., 2015). However, in the advent of the Covid-19 pandemic, evidence shows that even highly resourced firms can be overwhelmed, to the extent that, as of February 2020, the operations of about 94% of the Fortune 1000 firms were already severely disrupted by the pandemic (Sherman 2020). Although the pandemic is unique in many ways, there are remarkable limitations in previous research that raise burning questions about whether and how resource slack constitutes a fundamental feature of resilient operations and supply chains (Agusti et al., 2020).

First, empirical research on the resilience implications of resource slack is scarce and available empirical findings remain inconsistent and equivocal (Table 1). While some studies find a positive relationship between resource slack and firm performance during/after disruptions (Li 2021; Tognazzo et al., 2016), others find a negative (Agusti et al., 2020) or non-significant (Iborra et al., 2020; Tognazzo et al., 2016) relationship. Second, the proxies used to measure resilience in previous research are either overall firm performance (e.g., financial ratios) (Agusti et al., 2020; Zheng et al., 2021) or intermediate and long term performance indicators (e.g., growth, firm survival) (Iborra et al., 2020; Tognazzo et al., 2016). Such resilience proxies, as they are influenced by a more complex set of internal and external environmental factors, can undermine empirical efforts to isolate the resilience effects of resource slack (Tognazzo et al., 2016). Third, there is a contention that, while resource slack is an essential feature of resilience, what is more important is the extent of its deployment (Agusti et al., 2020; Sutcliffe & Vogus 2007). Accordingly, it can be argued that there may be significant heterogeneity in firms' capability to deploy resource slack (Agusti et al., 2020), to the extent that a failure to account for this heterogeneity in

Table 1
Related previous studies on the slack resources-resilience relationships.

Authors (year)	Slack resource variables	Resilience-related variables	Context and data	Key findings
Agusti et al. (2020)	Slack resources	o ROA during and post-crisis o Sales performance during and post-crisis	Longitudinal data from Spanish industrial firms during the 2008 financial crisis	o Firms with greater slack resources outperformed low slack resources firms on ROA o Sales performance was greater for low slack resources firms during and post-crisis than for high slack resources firms
Li (2021)	Organizational slack: o Low discretion slack (general and administrative expenses) o High discretion slack (working capital)	Financial performance during the Covid-19 pandemic	Covid-19 pandemic; Secondary data from manufacturing firm in the US	Low and high discretionary slacks have weak and strong positive effects on performance, especially under high-impact disruption situations, respectively.
Zheng et al. (2021)	Organizational slack: o Absorbed slack (ratio of general experiences to total sales) o Unabsorbed slack (ratio of cash reserves to total assets)	Financial and market performance amid political risk: o ROA o ROE o Tobin's Q o Altman zscore	Longitudinal data from American tourism and leisure firms with available political risk information	o Absorbed and unabsorbed slack resources do not have significant effects on ROA, ROE, Tobin's Q, and Altman zscore. o Absorbed and unabsorbed slack resources have stronger positive effects on ROA, Tobin's Q, and Altman zscore under increasing conditions of political risks.
Azadegan et al. (2021)	o Operational slack o Supply redundancy	Customer satisfaction	Survey data from manufacturing firms in Italy	o Operations slack and supply redundancy do not directly affect customer satisfaction o Under increasing conditions of exposure to major surprise disruptions, operations slack and supply redundancy have stronger negative and positive impacts on customer satisfaction
Iborra et al. (2020)	o Previous financial performance o Financial slack during crises	o Firm survival o Sales recovery	Longitudinal data from Spanish firms during the 2008 financial crisis	o Previous financial performance positively affects firm survival but no sales recovery o Resource slack during crises positively affects sales recovery but not firm survival
Tognazzo et al. (2016)	Slack resources: o Pre-crisis profitability growth o Pre-crisis potential financial slack	o Post-2008 financial crisis performance o Post-2008 financial crisis growth	Longitudinal data from small and medium scale manufacturers in Italy	o Pre-crisis profitability growth and pre-crisis potential financial slack enhance post-crisis performance. o Pre-crisis profitability growth and pre-crisis potential slack enhance and lower post-crisis growth, respectively.
Brandon-Jones et al. (2015)	o Production capacity o Safety stock at suppliers o Safety stock at plant	Plant performance	Survey data from United Kingdom manufacturing firms	o Under high conditions of disruptions, extra production capacity and safety stock at suppliers but safety stock at plant are positively related plant performance.
Hendricks et al. (2009)	Operational slack	Stock market reaction to supply chain disruption announcement	Longitudinal data from published listed firms	o Negative stock market reaction is less associated with firms with more operational slack.
Meyer (1982)	Organizational slack: o Financial reserves o Human resource o Technological resource o Control resource	o Revenue loss during jolts o Operational resilience (recoverability)	Data from hospitals in San Francisco that simultaneously experienced an unprecedented strike action from physicians.	o Financial slack is positively related to revenue lost and tends to be negatively related to operational resilience o Human resource slack tends to be positively and negatively related to revenue lost and operational resilience, respectively o Technological resource slack tends to be negatively related to revenue lost and unrelated to operational resilience o Control slack tends to be positively related to revenue lost but unrelated to operational resilience

empirical studies can induce confounding findings. Meanwhile, the theoretical and empirical analyses of specific resource slack deployment mechanisms which are critical for resolving conflicting findings (Carnes et al., 2019; Guo et al., 2020) have been overlooked in prior studies on the resource slack-resilience relationship (Table 1). These limitations may have undermined knowledge about the operations and supply chain-specific resilience implications of resource slack.

Meyer's (1982) seminal work on organizational responses to environmental jolts suggests that attention to issues, compared to resource slack, might be a better driver of firms' ability to recover operations from disruptions. However, while an assessment of the resilience value of attention focus variables is beginning to receive scholarly interest (Lorentz et al., 2021), knowledge is lacking on how resource slack combines with attention focus to explain resilience at any level of analysis. The attention-based view of the firm (ABV) (Ocasio 1997) suggests that greater attention focus "… allows for enhanced accuracy, speed, and maintenance of information-processing activities, facilitating perception and action for those activities attended to" (Ocasio 1997, p. 204). Accordingly, this study proposes organizational attention as a major contributor to operational resilience. Organizational attention is defined as the extent to which firms search for and discuss information on likely disruptive events and the response mechanisms required to counteract threats from identified disruptive events (Lorentz et al., 2021; Bouquet et al., 2009). We argue from the ABV perspective, therefore, that resource slack is a major attention structure that can legitimize and stimulate organizational attention (Ocasio 1997) and subsequently enhance operational resilience (Lorentz et al., 2021).

Although organizational attention may be an important determinant of operational resilience, its beneficial effects may be contingent on a variety of firm-specific conditions, indicating the need for an elaboration of its boundary conditions (Lorentz et al., 2021; Bouquet et al., 2009). Given that organizational attention involves a high degree of information processing that can produce information complexity and overload (Bouquet et al., 2009), a limited cognitive ability for processing and responding to disruption-related information can weaken its benefits (Srinivasan and Swink 2018; Bouquet et al., 2009). In particular, narrow-mindedness and maintenance of status-quo behaviors which restrict change, learning, and adaptation can suppress the efficacy and speed with which firms analyze, interpret, and use disruption information generated from organizational attention (Srinivasan and Swink 2018; Atuahene-Gima et al., 2005). Accordingly, in drawing lessons from the ABV (Ocasio 1997) and strategic orientation literature streams (e.g., Sarkar and Osiyevskyy 2018; Mone et al., 1998), we argue that the operational resilience benefits of resource slack through organizational attention may be weakened under conditions of high strategic mission rigidity (Atuahene-Gima et al., 2005). Strategic mission rigidity captures the degree to which a firm's "mission is defined narrowly, is inflexible, discourages activities outside its scope, and is difficult to change" (Atuahene-Gima et al., 2005, p. 468).

Accordingly, this study seeks to address three related research questions: 1) how does resource slack relate to operational resilience? 2) does organizational attention constitute an important mechanism through which resource slack contributes to operational resilience? and 3) how does strategic mission rigidity facilitate or weaken the indirect relationship between resource slack and operational resilience through organizational attention? We address the first baseline research question by drawing insights from the resource-based theory (RBT) to conceptualize resource slack as a valuable firm-specific resource that may contribute to heterogeneity in operational resilience. We then draw insights from the core tenets of ABV to argue that resource slack represents a relevant attention structure that engenders organizational attention to improve operational resilience under conditions of low strategic mission rigidity.

The remainder of this article is structured as follows: we elaborate on the existing scholarly discussion on resource slack and resilience, followed by a formal theorization of the relationships in the three research questions. Subsequently, we present the research design and data that were used to empirically examine the research questions. The empirical findings are then discussed by focusing on how they help advance existing resilience literature and practice.

2. Theoretical background and hypothesis development

2.1. Operational resilience

Disruptions can emerge and propagate within and outside supply chain nodes (e.g., firms' operations systems) (Chen et al., 2022), and increasing resilience at the node level contributes to the overall network-level resilience (Essuman et al., 2020). For example, Cisco's resilience-building effort improved the resilience of its supply chain networks (Sáenz and Revilla 2014). However, there is no consensus about the conceptual meaning of resilience and how it manifests. With a few exceptions (e.g., Meyer 1982), past studies on the resource slack-resilience link operationalize resilience in terms of survival rate (Iborra et al., 2020; Buyl et al., 2019), the degree to which a firm's financial and market performance indicators remain unchanged following a disruption (Agusti et al., 2020; Buyl et al., 2019; Hendricks et al., 2009), or the speed at which such performance indicators rebound to pre-disruption levels (Iborra et al., 2020) or experience growth post-disruption (Tognazzo et al., 2016). As shown in Table 1, time-to-survive (or minimal performance shortfall) and time-to-recover (or recovery rate) are frequently used in resilience research as indicators for disruption absorption and recoverability dimensions of resilience, respectively.

Following Meyer (1982), we analyze the resilience effect of resource slack at the operations level of the firm by focusing on the disruption absorption and recoverability dimensions of resilience. As Essuman et al. (2020) argue, the two resilience dimensions are reflective of the contention that a system's resilience can be determined when exposed to disruptions. This perspective of conceptualizing and operationalizing resilience differs from other studies that use formative resilience factors such as resource slack, agility, flexibility, and collaboration (e.g., Chowdhury et al., 2019; Wieczorek-Kosmala 2022). We follow the former perspective and other operations/supply chain-level analyses of resilience (e.g., Yu et al., 2019; Brandon-Jones et al., 2014; Meyer 1982) to analyze operational resilience in terms of disruption absorption and recoverability (Essuman et al., 2020). We define disruption absorption as the ability of the firm to maintain the structure and normal functioning of operations in the face of disruptions (Wieland and Wallenburg 2012) and recoverability as the ability of the firm to quickly restore operations to previous normal levels after being disrupted (Brandon-Jones et al., 2014).

2.2. Resource slack

Organizational slack is a collection of firm resources in excess of the minimum required to produce a given level of output (Nohria and Gulati 1996). Such resources may be absorbed (i.e., those already committed to factors of production) or unabsorbed (i.e., those available for discretionary use). Again, slack resources can be categorized based on liquidity level: available slack (e.g., excess cash-in-hand), potential slack (e.g., capacity to access external funds), and recoverable slack (e.g., excess inventory) (Zheng et al., 2021; Tan and Peng 2003). Moreover, firms can build slacks around different resource forms such as financial, human, materials, and technology (Brandon-Jones et al., 2015; Hendricks et al., 2009; Meyer 1982). This study defines resource slack as the extent of a firm's overall discretionary resources that can be used to support organizational activities (Atuahene-Gima et al., 2005). This definition is predicated on two arguments. First, due to its discretionary nature, unabsorbed slack resources can easily be mobilized and deployed to support a variety of strategic and operational activities, including organizational attention (Atuahene-Gima et al., 2005).

Second, firms with greater unabsorbed slack resources can easily create absorbed slack resources in the form of redundancies to cushion operations against disruptions.

A review of prior research suggests that evidence on the overall resilience value of slack resources appears inconclusive (Table 1). For example, Li (2021) finds that high discretionary slack (working capital) has a positive effect on financial performance during disruptions; Iborra et al. (2020) report that previous financial performance positively affects firm survival but not sales recovery, while resource slack positively affects sales recovery but not firm survival. Besides concerns of under-representation of operations and supply chain-level analysis of resilience in this body of research, existing theoretical and empirical analyses focus on the direct association between resource slack and resilience.

Furthermore, prior research has not explicitly accounted for the differential use of resource slack and the variability in specific mechanisms and associated conditions that may cause resource slack to enhance or reduce resilience. Through a meta-analysis study, Carnes et al. (2019) show that, while resource slack generally benefits firm performance, accounting for the mechanisms through which it operates may help resolve conflicting results. Sutcliffe and Vogus (2007, p. 3421) assert that "it is not merely the stocks of resources that determine resilience, but also the deployment of the resources that exist". In taking note of the shortcomings in prior research and in drawing insights from studies calling for an analysis of the mechanisms and boundary conditions of the resource slack-resilience relationship, this study moves beyond the direct link between resource slack and operational resilience to also investigate how organizational attention, particularly under varying conditions of strategic mission rigidity, connects resource slack to operational resilience (Fig. 1).

2.3. How resource slack contributes to operational resilience

Although prior research has not clearly established the direction and strength of the association between resource slack and resilience, the RBT offers a useful logic to explain how resource slack may contribute to operational resilience. Importantly, the RBT attributes performance heterogeneity to variation in firm-specific resources (Lado et al., 1992; Barney 1991), which may be bundles of tangible and intangible assets (Barney, 1991). The RBT assumes that firms may be heterogeneous in terms of the resources they possess and control (Barney 1991). Resources that are difficult and costly to acquire and duplicate generate competitive advantage and superior performance on the basis of their valuable and idiosyncratic characteristics (Barney, 1991). From this theoretical perspective, resource slack may constitute a major input-based unabsorbed resource that can be leveraged to build and enrich other resources and capabilities to explain changes in organizational outcomes (Lado et al., 1992), including the ability of a firm's operations system to function normally during unexpected disruptions (Tognazzo et al., 2016).

In conceptualizing operational resilience as the extent to which a system functions normally or achieves its normal operating objectives during disruptions (Bruneau et al., 2003), it can be argued that resource slack may explain the extent to which a firm's operations system performs in disruptive conditions (Gao et al., 2019; Brandon-Jones et al., 2014). As Bruneau et al. (2003) argue, "resources are … needed to restore a system's performance to its normal levels" (p.736). Resource slack matters in both pre-disruption and during-disruption phases of the disruption management process. In the pre-disruption phase, resource slack enables firms to build buffers internally (e.g., excess stock, spare capacity) and externally (e.g., keeping redundant suppliers). Such buffers act as shock absorbers for operations systems in times of disruption. However, in the absence of buffers, the probability for firms to encounter operations failure and rippling effects is likely to be high, increasing the time taken to recover (Brandon-Jones et al., 2015; Hendricks et al., 2009). In the during-disruption phase, resource slack can generate speedy and more dynamic responses as it increases firms' response options (Wieczorek-Kosmala 2022). For example, in times of disruptions, firms with greater resource slack can quickly implement temporal solutions (e.g., acquiring a part-time workforce, exploring and exploiting new sources of supply) to reduce and/or recover from disruption impacts (Brandon-Jones et al., 2015). Thus, we propose that greater resource slack may contribute to stronger operational resilience.

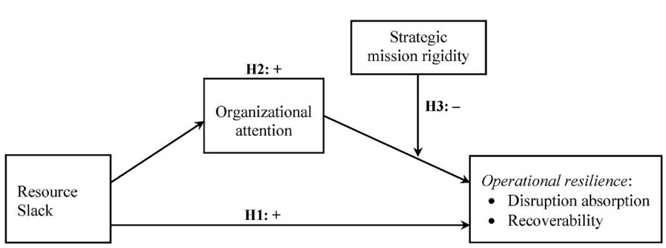


Fig. 1. Conceptual model.

H1. Resource slack is positively related to operational resilience.

2.4. Organizational attention as a transformative mechanism

While resource slack constitutes an input-based unabsorbed resource that may contribute to the resilience of an operations system, it can be argued that possession of resource slack per se may not directly induce a system's resilience. An enabling transformative mechanism may be required to deploy and connect input-based unabsorbed resources to strengthen a system's resilience. The ABV offers a useful theoretical platform to explain the transformative mechanisms that explain how resource slack contributes to operational resilience. The ABV provides a theoretical explanation of how attention in organizations shapes strategic decisions about and responses to environmental exigencies (Ocasio 1997). A contention is that the focus of organizational leaders' attention on noticing, encoding, interpreting, and focusing time and effort on a set of issues and available solutions may explain organizational decisions and responses to environmental pressures (Ocasio 1997). We argue that, as disruptions threaten firm stability and survival and increase information needs (Bode et al., 2011), they constitute important issues that may attract the attention of organizational leaders (Lorentz et al., 2021; El Baz and Ruel, 2021). To satisfy their stability and survival goals, firms are likely to emphasize organizational attention (Bode et al., 2011) by focusing strategic resources (such as financial resources, and top management time and energy) on gathering and processing information about disruption events, and on developing relevant disruption response actions (Lorentz et al., 2021; Bouquet et al., 2009).

Attention focus helps firms to be cognizant of changing and emerging issues in their environment and the mechanisms for addressing them (Durand 2003). Durand (2003) finds that greater attention to market issues reduces forecast error. Attentional information and knowledge help in the evaluation of scenarios about issues and improve the quality of firms' responses to identified issues (Parker and Ameen 2018; Durand 2003). Consistent with information gathering and processing logic, Gu et al. (2021) show that supplier and customer deployment of information technology for exploration activities enhance supplier and customer resilience, respectively. Additionally, Lorentz et al. (2021) find that supply resilience is greater for firms whose managers focus more attention on supply risk sources and network recoverability. Furthermore, greater attention focus on disruption-related information search and processing enhances firms' visibility in the operating environment (Choi et al., 2020). Visibility helps in quicker detection of potentially disruptive events (Brandon-Jones et al., 2014), allowing firms to marshal appropriate resources to absorb and recover from disruption impacts. Evidence from Brandon-Jones et al. (2014) is that visibility increases supply chain robustness (disruption absorption) and resilience (recoverability). Against this background, we reason that, if firms leverage resource slack through organizational attention, they are likely to attain greater levels of operational resilience.

In recognition of firms as problem-solving entities with limited resources (Ocasio 1997), the ABV suggests that organizational decision-makers are selective in the issues and answers they attend to, or focus on a limited number of issues and answers at a time (Ocasio 1997, 2011). The issues and answers that organizational decision-makers focus attention on are often contingent upon the particular contexts in which they find themselves. Organizational attention, as it calls for resource allocation decisions, is likely to be governed by the nature of contextual factors, internal or external to the firm (Ocasio 1997). Such factors, labeled attention structures, regulate the evaluation, legitimization, and prioritization of issues and answers (Ocasio 1997). Firm resources may constitute important attention structures that may affect the degree to which firms allocate attention to particular issues and answers (Ocasio 1997), to the extent that greater resource slack may engender stronger managerial discretion and the propensity to pursue multiple courses of action.

In line with the above reasoning, Duan et al. (2020) suggest that greater resource slack may reduce uncertainties often associated with investment decisions. Particularly, firms in possession of high resource slack are likely to prioritize, initiate, and sustain attentional activities geared towards strengthening the stability and continuity of their operations. Additionally, because organizational attention boosts situational awareness and visibility and facilitates quicker detection of disruptions (Meyer 1982), it can afford firms enough time to devise and deploy relevant responses to weather and recover from the impacts of disruptive events on operational activities. Therefore, as the level of resource slack increases, firms may increase attention to improving their operational resilience level. In contrast, low levels of resource slack may encourage firms to engage in resource conservation, reducing investment in resource-draining activities (e.g., organizational attention) that do not directly generate revenue. Thus, a low level of resource slack is likely to result in a limited emphasis on organizational attention and consequently low operational resilience. We hypothesize, therefore, that:

H2. Resource slack has a positive indirect relationship, through organizational attention, with operational resilience.

2.5. The boundary conditioning role of strategic mission rigidity

The ABV literature highlights the contingency roles of organizational factors in determining when attention focus is more or less beneficial (Bouquet et al., 2009; Lorentz et al., 2021). Information processing is a defining characteristic of attention focus (Ocasio 1997), and recent research suggests that an imbalance between top-down and bottom-up attentional processing activities reduces the ability of attention focus to drive supply resilience (Lorentz et al., 2021). In extending the ABV to strategic posture literature, we identify strategic mission rigidity as a key institutionalized strategic orientation of the firm that limits the effectiveness and benefits of information search and processing activities (Atuahene-Gima et al., 2005; Mone et al., 1998).

Strategic mission refers to a "firm's choices regarding actions designed primarily to increase sales revenue and build market share, generate cash flow and short-term profits, or some combination of the two" (Covin et al., 1994, p. 482). Strategic missions tend to be institutionalized and some firms set and pursue missions that are framed narrowly and rigidly, to the extent that deviations from such strategic missions threaten legitimacy and cast doubts on whether firms can continue to access external support (Sarkar and Osiyevskyy 2018; Mone et al., 1998). From the ABV standpoint, strategic missions can be viewed as rules of the game in that they provide assumptions, norms, values, and incentives that guide managers in interpreting organizational reality and what constitutes appropriate behavior and how to succeed (Ocasio 1997). However, highly institutionalized strategic missions can make organizational leaders inwardly focused and also limit their mindsets and how well they interpret and respond to issues outside their present domain of operations (Sarkar and Osiyevskyy 2018; Li et al., 2008). Moreover, given that a strategic mission provides a long-term strategic direction for a firm, increasing levels of strategic mission rigidity could reduce firms' propensity to modify their way of doing things to take advantage of new opportunities or avoid potential threats (Mone et al., 1998; Atuahene-Gima et al., 2005).

Strategic missions can be viewed as firms' placement on a continuum ranging from rigid and narrow to flexible and broad strategic missions (Mone et al., 1998). A firm with a rigid strategic mission has a well-defined yet narrowly focused mission statement and competitive strategy, and any activity outside its current domain of operations is discouraged (Atuahene-Gima et al., 2005). In essence, exploration, learning, experimentation, and adaptive behaviors are low in such firms (Sarkar and Osiyevskyy 2018; Atuahene-Gima et al., 2005; Mone et al., 1998). The lack of such behaviors in rigid strategic mission firms undermines the development of cognitive capacities for effectively carrying out attentional activities such as issue analysis, interpretation, and framing and enacting timely and appropriate responses (Li et al., 2008). Accordingly, prior research (Li et al., 2008; Atuahene-Gima et al., 2005) reveals that increasing information search and processing activities under heightened conditions of strategic mission rigidity is counterproductive and less beneficial. On the other hand, other studies show that strong organizational flexibility tends to amplify the value of information processing capabilities (Srinivasan and Swink 2018).

Generally, due to bounded rationality, there is a limit to the volume of information firms can process. However, the volume and complexity of disruption-related information increase with increases in organizational attention, and, if not matched by high-quality interpretative systems, organizational attention can become inefficacious (Bouquet et al., 2009; Bode et al., 2011). Additionally, high organizational attention firms are more proactive in gathering and processing disruption-related information (Lorentz et al., 2021). However, this rational decision-making approach to managing disruptions when operating in strategic mission rigid firms can generate structured pre-disruption responses. Yet, the dynamism and complexity at which disruptions emerge and propagate in firms today suggest that firms should be agile in adapting pre-developed disruption response protocols to meet new challenges (Hosseini et al., 2019). Doing this, however, requires adaptive behaviors, which are deficient in firms that emphasize strategic mission rigidity.

On the other hand, under conditions of low strategic mission rigidity, firms learn, innovate, and experiment more (Sarkar and Osiyevskyy 2018; Atuahene-Gima et al., 2005), which improves their knowledge capacity for engaging in effective attentional processing. Again, in such contexts, managers' mental schemas and perceptions are enriched and this enrichment can improve the interpretation of disruption situations, enabling quicker and more effective responses (Bode et al., 2011). Again, firms with low strategic mission rigidity are likely to possess a wider range of possibilities in responding to changes in their operating context (Mone et al., 1998). Their tendency to consider novel information and alternative causes of action (Mone et al., 1998; Li et al., 2008) can foster organizational attention in developing robust, flexible responses to disruptions. In summary, we argue that, under increasing conditions of strategic mission rigidity, the operational resilience consequence of resource slack, through organizational attention, is weakened.

H3. The positive indirect relationship between resource slack and operational resilience, through organizational attention, is weakened under conditions of high strategic mission rigidity.

3. Methodology

3.1. Measure development

The study's measurement process started with a review of extant literature to identify indicators that tap the operational definitions of the constructs. Because there were no existing indicators that directly capture our attention focus construct, we draw insights from field interviews with senior executives to understand the kind of disruption-related attentional activities that their firms engage in. The interview responses were supplemented with insights from past studies that have applied and measured attention focus in different contexts (e.g., Bouquet et al., 2009; Durand 2003). For example, Bouquet et al. (2009) captured international attention in terms of the frequency with which top executives collect, analyze, and discuss strategic information about international markets. Our interviews with senior executives reveal that the firms often collect and discuss information about disruptions and use the same process to discuss relevant disruption responses. Thus, our indicators tap the extent to which firms focus time and energy to collect and discuss information about disruptive events and the response mechanisms necessary to counteract threats from the identified disruptive events (Lorentz et al., 2021; Bouquet et al., 2009).

All initial indicators and evaluation scales generated were subjected to a two-stage review process. In the first stage, we asked three supply chain and strategy researchers to assess the face and content validity of the indicators by comparing each indicator set with their operational definitions. They were also asked to comment on the extent to which the indicators are appropriate for the empirical setting. Among other things, this process resulted in dropping items that were deemed to be problematic. In the second stage, we piloted the data collection instrument with a sample of thirty executive MBA students who were either senior operations/supply chain managers or CEOs. An inspection of the data collected in the pilot phase did not reveal any major measurement concerns (e.g., missing values). A descriptive analysis of the data showed adequate internal consistency and variability in the indicators. Detailed information on the indicators is reported in Table 4.

3.1.1. Substantive constructs

We adapted six and five items from prior research (Wieland and Wallenburg 2012; Brandon-Jones et al., 2014) to measure the disruption absorption and recoverability dimensions of operational resilience, respectively. Strategic mission rigidity was measured with four items adapted from Atuahene-Gima et al. (2005). Resource slack was measured with five items adapted from Atuahene-Gima et al. (2005). Based on the measure development process outlined above, we generated four items for organizational attention. The items represent disruption management-focused attentional activities. The indicators for the substantive constructs were anchored on a seven-point scale ranging from "strongly disagree = 1" to "strongly agree = 7".

3.1.2. Control variables

Extant literature indicates that internal and external environmental factors can affect resilience variables and their determinants (Pettit et al., 2019; Manhart et al., 2020). Our analyses controlled for the potential confounding effects of environmental dynamism, firm size, firm age, and industry type on organizational attention and operational resilience (Manhart et al., 2020; Yu et al., 2019; Wong et al., 2020). Environmental dynamism reflects the extent of occurrence of irregular changes in a firm's task environments (Dess and Beard 1984). Combining insight from existing literature (Dess and Beard 1984) with interviews with senior executives of the firms studied, we identified six items to measure environmental dynamism on a seven-point scale ranging from "not at all (=1)" to "to an extreme extent (=7)". Firm size and firm age were operationalized as a natural log of number of full-time employees and a natural log of number of years a firm has been in business, respectively. Industry is operationalized as a dummy variable: service firms = 1, manufacturing firms = 0. In addition, we controlled for the potential influence of strategic mission rigidity on our mediator variable, organizational attention.

3.2. Sample and data collection

Globally, disruptions and resilience issues are important to scholars and practitioners (Pettit et al., 2019). However, there is limited empirical knowledge of resilience in supply chains and firms in developing markets (Hosseini et al., 2019; Parker and Ameen 2018). This study uses data from Ghana, a major sub-Saharan African economy and one of the world's fastest-growing economies (African Development Bank Group, 2020). As in many parts of sub-Saharan Africa, businesses in Ghana experience diverse forms of exogenous disruptions resulting from transport network failures, technology and communication failures, energy shortages, power fluctuations, skills losses (Business Continuity Institute 2019), severe currency volatility, credit market crises, etc. (African Development Bank Group 2018).

In keeping with past studies (e.g., Yu et al., 2019; Gu et al., 2021), we tested our conceptual model using survey data. We used a multi-sampling technique to collect data for the study. We focused on autonomous firms employing between 5 and 500 full-time employees with at least three years of business operations. Given the logistical challenge of reaching businesses in remote rural communities in Ghana, we focus on firms located in major commercial towns and cities. In drawing insight from a survey by Ghana Statistical Service (2016), stratified and quota sampling techniques are used to obtain a representative sample of firms. The actual selection of the firms was done using a purposive sampling technique as it is important to consider the firms' location, and the availability of competent and literate informants in each firm to provide required data (cf. Chowdhury et al., 2019). Ghana Yellow database was subsequently used to generate location and contact information about the firms. A team of well-trained field agents working under the supervision of the researchers were engaged to collect the data in person. In total, seven hundred and fifty questionnaires were administered to qualified firms. Two hundred and eighty-four completed questionnaires were returned. Twenty-five questionnaires were excluded due to substantial missing data or lack of informant competence, leaving 259 valid responses, which represents a 34.5% effective response rate. This response rate compares well with those reported in recent resilience studies that utilize a similar research design (e.g., Chowdhury et al., 2019). Table 2 profiles the study sample. On average, the firms in the sample had forty-two full-time employees (approx.) and had been in operation for sixteen years (approx.). Seventy-three percent of the data was provided by service firms while the remaining was provided by manufacturing firms. This profile information of the sample generally reflects those of the study's target population (cf. Ghana Statistical Service, 2016). We examined whether the characteristics of the firms (e.g., age, size, industry) and their scores on the variables of interest differed between early and late responses. We found no statistical difference between the early and late responding firms, indicating that non-response bias is not a major issue in the study.

To minimize measurement error, we administered the questionnaires to individuals who hold senior management positions, are educated, and have relevant managerial experience (Yu et al., 2019; Gu et al., 2021). More than 70% of the respondents had a bachelor's degree as a minimum qualification. Moreover, on average, the respondents had held their positions for seven years. In addition to these descriptive profiles of the respondents, we used a seven-point Likert scale (strongly disagree = 1; strongly agree = 7) to formally evaluate the respondents' knowledge of the issues captured in the questionnaire (mean = 5.79, SD = 1.03), general confidence in their responses (mean = 5.81, SD = 0.96), and the accuracy of the responses provided in relation to their firms' situations (mean = 5.99, SD = 0.84). These results show that the respondents were competent enough to provide data for the study (Gu et al., 2021).

Missing value issues were checked before entering the data. All

Table 2
Response profile.

Variable	Count	Percent (%)
Firm industry:		
Manufacturing	70	27
Service	189	73
Firm size (number of full-time employees)		
5 – 30	165	63.7
31 – 99	70	27.0
100 – 500	24	9.3
Firm age (number of years of operation)		
3 – 10	95	36.7
10.01 – 20	104	40.2
20.01 – 60	60	23.2
Respondent position:		
CEO	32	12.4
Managing Director	31	12
General Manager	55	21.2
Operations Manager	62	23.9
Other Middle-level Managerial Positions	79	30.5
Variable	**Mean**	**SD**
Respondent's years in current position	7.13	5.58
Respondent competence[1]:		
knowledge about items in the questionnaire	5.79	1.03
confidence in responses to items in the questionnaire	5.81	0.96
confidence in the extent to which answers reflect the firm's situation	5.99	0.84

Note: [1]Scale: 1 = strongly disagree; 7 = strongly agree.

questionnaires with substantial missing values (about 10% of the total items) were dropped. We further assessed the extent of missing data in the dataset using the Missing Value Analysis module in IBM SPSS (Hair et al., 2019). Firm size and firm age had the largest missing value of 3.1% and 2.5%, respectively. All categorical items had no missing value while all other scaled items had less than 1% missing value. Accordingly, we used maximum likelihood model-based estimator to replace the missing values (Hair et al., 2019).

3.3. Measure purification and reliability and validity analyses

Before validating the study indicators, we performed relevant checks on the data. We assessed univariate and multivariate normality assumptions by inspecting univariate distributions of the indicators (Kline 2011). As shown in Table 3, the highest skewness and kurtosis indices were |1.058| and |1.507|, respectively, indicating that non-normality is not a major concern in the study (Kline 2011). Moreover, we checked whether outliers characterize the data by regressing the averaged indicators of organizational attention and also the averaged indicators of each component of operational resilience on their respective predictor variables. The maximum Mahalanobis distance, Cook's distance, and leverage values for the model of organizational attention, disruption absorption, and recoverability were 20.621, 0.046, and 0.080; 20.665, 0.088, and 0.080; and 20.665, 0.039, and 0.080, respectively, suggesting no cause for concern (Field 2009).

Given that most of the indicators in the study were adapted from extant literature and through interviews with key informants, we first used exploratory factor analysis (EFA) to understand the underlying structure and unidimensionality of the data (Hair et al., 2019). We performed EFA on all multi-item indicators using principal component and Varimax as factor extraction and rotation methods, respectively (Hair et al., 2019). Bartlett's test of sphericity reached a statistically significant level (χ^2 = 6869.34, df = 435, p < 0.01) while Kaiser–Meyer–Olkin (KMO) index was 0.88, suggesting that factorability and sample size are not concerns in the study (Hair et al., 2019). As shown in Table 3, the EFA extracted six factors that correspond to the number of latent constructs in the study. The Eigenvalues ranged from 1.79 to 8.41 while the percentage of variance explained values ranged from 5.98% to 28.03%. Importantly, the indicators load high (above 0.60) only on their theoretical constructs, with the highest cross-loading being 0.32. These results offer initial evidence of unidimensionality, convergence, and discriminant validity. Additionally, reliability assessment using Cronbach's alpha (α) reveals that each set of indicators has strong internal consistency, given that each α value is above 0.70 (Hair et al., 2019). Accordingly, we proceeded to validate the indicators using confirmatory factor analysis (CFA) (Yu et al., 2019).

We utilized covariance-based CFA with maximum likelihood estimator in MPLUS 7.4 to validate the study measures. Our six-factor CFA model fits the data well: χ^2 = 720.62, DF = 390, normed χ^2 = 1.85, RMSEA = 0.06, NNFI = 0.95, CFI = 0.96, SRMR = 0.04 (Bagozzi and Yi 2012; Hair et al., 2019). Each item loads high (above 0.60) and significantly on its hypothesized construct. The composite reliability and average variances extracted values of all constructs exceed the minimum thresholds of 0.60 and 0.50, respectively (Bagozzi and Yi 2012). Moreover, the average variances extracted values were greater than the shared correlations between the constructs, demonstrating discriminant validity (Hair et al., 2019).

3.4. Common method bias assessment

Cross-sectional design and a single source of data are potential sources of common method bias (CMB) (Podsakoff et al., 2012). Accordingly, we implemented relevant and applicable ex-ante procedural measures to minimize bias in the data: including several other items in the questionnaire, placing the predictor, mediator, and the outcome variables apart in the questionnaire, using a wider scale length, guaranteeing response anonymity, minimizing item ambiguity, relying on competent informants, and allowing informants enough time to respond to the survey at their own convenience.

Next, we followed recommended statistical remedies to investigate CMB. Craighead et al. (2011) argue that CFA is a robust approach to investigating CMB as it allows for model comparison between a common latent-factor model and a theoretically specified multi-factor model via a chi-square difference test. We estimated a common latent-factor model (Model 1) by specifying all indicators in the study to load onto a single factor. Results indicate that Model 1 does not fit the data (χ^2 = 5161.98, df = 405, normed χ^2 = 12.75, RMSEA = 0.21, NNFI = 0.25, CFI = 0.30, SRMR = 0.21) and is significantly worse than the measurement model (Model 2) specified in the study (χ^2 = 720.62, DF = 390, normed χ^2 = 1.85, RMSEA = 0.06, NNFI = 0.95, CFI = 0.96, SRMR = 0.04): χ^2 = 4441.36, df = 15, p < 0.01. Additionally, we examined if Model 2 will deteriorate after accounting for the effects of an unmeasured common latent factor (Podsakoff et al., 2003). To do this, we estimated a third model (Model 3) by adding a common-latent factor to Model 2 and allowing it load equally on all indicators and but set to be unrelated to all other theoretical factors (Podsakoff et al., 2003). Although Model 3 fits the data (χ^2 = 720.62, DF = 389, normed χ^2 = 1.85, RMSEA = 0.06, NNFI = 0.95, CFI = 0.95, SRMR = 0.04), it is not statistically different from Model 2, given χ^2 = 0.00; df = 1, p > 0.05.

Following Craighead et al.'s (2011) recommendation, we further investigated CMB using Lindell and Whitney's (2001) marker variable (MV) technique. This technique can be implemented using an MV, which should be theoretically unrelated to the constructs of interest, such that the correlation (r_M) between the MV and the theoretically unrelated variable is treated as an indicator for CMB (Malhotra et al., 2006; Lindell and Whitney 2001). Alternatively, this technique can be implemented without identifying MV a priori (Malhotra et al., 2006). Lindell and Whitney (2001) contend that the smallest positive r_M among the manifest variables provides a reasonable proxy for CMB. We considered and compared the two approaches to identify the second-smallest positive r_M, which is a more conservative index for calculating adjusted MV correlations (Malhotra et al., 2006). Our instrument included two social desirability items (marker variable 1: I always admit my mistakes openly; marker variable 2: I sometimes only help because I expect

Table 3
Item statistics and reliability and exploratory factor analysis results.

Construct/Item code	Item statistics				Exploratory factor analysis								Reliability analysis		
	Mean	SD	Skewness	Kurtosis	Component and loadings						Eigen-value	% of variance explained	Cronbach's alpha (α)	α if item deleted	Item-total correlations
					1	2	3	4	5	6					
Slack resource															
SLK1	4.39	1.73	−0.23	−0.78	0.06	**0.89**	0.04	0.08	0.00	0.13	4.43	14.78	0.95	0.95	0.85
SLK2	4.47	1.56	−0.32	−0.73	0.08	**0.90**	0.06	0.12	0.04	0.11				0.94	0.88
SLK3	4.42	1.58	−0.29	−0.73	0.06	**0.91**	0.07	0.12	−0.02	0.06				0.94	0.88
SLK4	4.47	1.48	−0.42	−0.47	0.05	**0.92**	0.06	0.08	0.03	0.13				0.94	0.89
SLK5	4.54	1.53	−0.33	−0.59	0.06	**0.91**	0.01	0.09	0.00	0.09				0.94	0.87
Organizational attention															
OA1	4.97	1.84	−0.70	−0.55	0.13	0.14	0.14	0.24	−0.16	**0.81**	1.79	5.98	0.93	0.92	0.81
OA2	5.06	1.63	−0.72	−0.23	0.15	0.13	0.12	0.15	−0.06	**0.90**				0.89	0.89
OA3	5.15	1.59	−0.92	0.15	0.13	0.08	0.08	0.12	−0.04	**0.89**				0.91	0.83
OA4	5.14	1.67	−0.91	0.05	0.17	0.20	0.05	0.21	−0.15	**0.81**				0.91	0.81
Strategic mission rigidity															
SMR1	3.86	1.81	0.09	−1.05	−0.08	0.01	0.02	−0.02	**0.91**	−0.10	2.11	7.03	0.94	0.92	0.85
SMR2	3.90	1.76	0.05	−1.13	0.00	0.02	−0.01	−0.01	**0.92**	−0.10				0.91	0.87
SMR3	3.91	1.90	0.04	−1.17	−0.01	−0.03	−0.06	0.01	**0.88**	−0.05				0.94	0.80
SMR4	3.83	1.81	0.13	−1.09	0.03	0.04	0.00	−0.02	**0.94**	−0.09				0.90	0.89
Disruption absorption															
DA1	5.36	1.43	−1.00	0.85	**0.78**	0.05	0.32	0.04	−0.06	0.08	8.41	28.03	0.92	0.91	0.78
DA2	5.40	1.32	−0.92	0.61	**0.77**	0.06	0.12	−0.02	0.04	0.10				0.92	0.69
DA3	5.37	1.22	−1.06	1.51	**0.82**	0.03	0.25	0.04	−0.07	0.09				0.90	0.80
DA4	5.32	1.24	−0.84	0.87	**0.82**	0.09	0.25	0.12	−0.01	0.12				0.90	0.82
DA5	5.25	1.27	−0.96	1.12	**0.82**	0.07	0.24	0.10	0.00	0.13				0.90	0.81
DA6	5.10	1.24	−0.90	1.38	**0.81**	0.02	0.19	0.03	0.00	0.09				0.91	0.75
Recoverability															
R1	4.83	1.72	−0.69	−0.41	0.25	0.08	**0.88**	0.11	−0.02	0.04	3.65	12.15	0.96	0.95	0.87
R2	5.07	1.50	−0.76	0.02	0.23	0.08	**0.87**	0.07	−0.02	0.12				0.95	0.86
R3	4.90	1.53	−0.77	−0.07	0.31	0.04	**0.86**	0.12	−0.01	0.09				0.94	0.89
R4	4.81	1.50	−0.72	0.04	0.29	0.02	**0.88**	0.06	0.01	0.06				0.94	0.89
R5	4.85	1.51	−0.83	0.29	0.29	0.04	**0.87**	0.04	−0.02	0.09				0.94	0.89
Environmental dynamism															
DYM1	4.88	1.91	−0.80	−0.41	0.02	0.06	0.04	**0.83**	0.09	−0.01	3.04	10.14	0.88	0.85	0.71
DYM2	4.60	1.92	−0.67	−0.73	0.01	0.13	0.07	**0.80**	−0.02	0.09				0.85	0.72
DYM3	4.84	1.64	−0.91	0.11	0.05	0.01	0.01	**0.84**	−0.06	0.10				0.85	0.75
DYM4	4.95	1.69	−0.86	−0.05	0.08	0.11	0.09	**0.80**	0.03	0.12				0.85	0.74
DYM5	4.93	1.80	−0.84	−0.20	0.05	0.14	0.08	**0.71**	0.02	0.14				0.87	0.62
DYM6	5.23	1.71	−0.95	0.12	0.06	0.02	0.06	**0.66**	−0.13	0.26				0.87	0.59

KMO = 0.88; $\chi^2 = 6869.34$; df = 435; $p < 0.01$.

Table 4
Confirmatory factor analysis results.

Construct/Items/Composite reliability (CR), Average variance extracted (AVE)	Standardized loadings
Slack resource (Adapted from Atuahene-Gima et al. (2005)) *(CR = 0.96, AVE = 0.81)*	
SLK1: Our company often has uncommitted resources that can quickly be used to fund new strategic initiatives	0.87(Fixed)
SLK2: Our company usually has adequate resources available in the short run to fund its initiatives	0.90(21.16)
SLK3: We are often able to obtain resources at short notice to support new strategic initiatives	0.91(21.42)
SLK4: We often have substantial resources at the discretion of management for funding strategic initiatives	0.93(22.02)
SLK5: Our company usually has a reasonable amount of resources in reserve	0.89(20.58)
Organizational attention (Newley developed items based on Bouquet et al. (2009), Durand (2003), and interviews with senior managers) *(CR = 0.93, AVE = 0.77). Over the past 3 years,*	
OA1: our company has been holding frequent board meetings to discuss and find answers to issues that threaten its operations	0.85(Fixed)
OA2: individuals in managerial positions in this company have been spending a lot of time and effort on studying and coming up with responses to threats in our industry	0.94(20.94)
OA3: our company has been utilizing employees (either individuals, teams, or units) specifically in charge of monitoring the business environment for disruptive events	0.87(18.32)
OA4: our company has been engaging industry experts and business partners to discuss and find answers to threatening issues emerging in the business environment	0.84(17.35)
Strategic mission rigidity (Adapted from Atuahene-Gima et al. (2005)) *(CR = 0.94, AVE = 0.79)*	
SMR1: Our company's overall mission is defined quite narrowly	0.89(Fixed)
SMR2: Our company's overall mission allows little flexibility to modify the domain of operations	0.90(21.89)
SMR3: Any activity outside our overall mission is actively discouraged	0.83(18.08)
SMR4: We hardly change our strategic mission to meet new challenges	0.93(23.73)
Disruption absorption (Adapted from Wieland and Wallenburg (2012) and Brandon-Jones et al. (2014)) *(CR = 0.92, AVE = 0.66). For the past 3 years, whenever disruptive events occur,*	
DA1: our company is able to carry out its regular functions	0.83(Fixed)
DA2: our company grants us much time to consider a reasonable response	0.71(12.77)
DA3: our company is able to carry out its functions despite some damage done to it	0.83(16.02)
DA4: without much deviation, we are able to meet normal operational and market needs	0.87(16.98)
DA5: without adaptations being necessary, our company performs well over a wide variety of possible scenarios	0.85(16.41)
DA6: our company's operations retain the same stable situation as it had before disruptions occur for a long time	0.79(14.65)
Recoverability (Adapted from Wieland and Wallenburg (2012) and Brandon-Jones et al. (2014)) *(CR = 0.96, AVE = 0.81). Over the past 3 years, whenever our operations breakdown due to a disruption event,*	
R1: it does not take long for us to restore normal operation	0.89(Fixed)
R2: our company reliably recovers to its normal operating state	0.88(21.05)
R3: our company easily recovers to its normal operating state	0.91(22.79)
R4: our company effectively restores operations back to normal quickly	0.92(22.73)
R5: we are able to resume operations within the shortest possible time	0.92(22.63)
Environmental dynamism (Developed based on Dess and Beard (1984) and interviews with senior managers) *(CR = 0.88, AVE = 0.56). Over the past 3 years, there have been irregular changes in …*	
DYM1: the needs and preferences in our demand/customer market	0.76(Fixed)
DYM2: the actions of our competitors, in terms of their promotions, innovations, etc.	0.78(13.06)
DYM3: terms, conditions, and structures in our supply markets	0.81(12.94)
DYM4: government policies and programs for our industry	0.78(11.72)
DYM5: laws and regulations governing our industry	0.69(10.12)
DYM6: technological needs and advancement in our industry	0.64(10.08)

something in return) which were anchored on "true (=1), false (= 0)". Except in one instance, the results in Table 4 show that both MVs are uncorrelated with the substantive variables. The results again show that the second-smallest positive r_M between the two techniques is 0.02. Therefore, using r_M of 0.02, we computed adjusted correlations between all variables in the study (Malhotra et al., 2006) and found the adjusted correlations and the zero-order correlations to be largely indifferent in terms of direction and level of significance. Per these results, and in line with the fact that our model includes a moderating term, the results of the hypotheses tests are less likely to be artifacts of CMB (Podsakoff et al., 2012).

4. Structural model analysis and results

4.1. Hypothesis testing

The correlations, descriptive statistics, and collinearity results are provided in Table 5. The highest variance inflation factor is 1.78, suggesting that multicollinearity does not describe the data (Hair et al., 2019). A mean-centering approach was used to mitigate potential multicollinearity in the models with the product terms. We used PROCESS for IMB SPSS (2.16) to test the hypotheses. This analytical approach aided our assessment of the statistical significance of the hypothesized relationships using bootstrapping procedures while making it possible to probe and visualize moderation and moderated mediation relationships (Hayes 2018). We tested H1 and H2, and H3 using Model 4 and Model 14 options in PROCESS, respectively. Alternatively, each dimension of operational resilience was included in the analysis as an outcome variable (Buyl et al., 2019). In Model 4, we included strategic mission rigidity, environmental dynamism, firm size, firm age, and firm industry as covariates in the models of organizational attention, disruption absorption, and recoverability. In Model 14, environmental dynamism, firm size, firm age, and firm industry were included as covariates in the models of organizational attention, disruption absorption, and recoverability. The results are available in Table 6.

The results show that resource slack is not significantly associated with disruption absorption ($\beta = 0.0356$; 95% CI: -0.0589, 0.1300) or recoverability ($\beta = 0.0364$; 95% CI: -0.0888, 0.1661); thus, H1 is rejected. Results further indicate that resource slack has significant positive indirect associations, through organizational attention, with disruption absorption (indirect $\beta = 0.0317$; 95% CI: 0.0317, 0.0741) and recoverability (indirect $\beta = 0.0257$; 95% CI: 0.0008, 0.0706), in support of H2. Furthermore, the results show that strategic mission rigidity has a significant negative moderating effect on the two indirect effect relationships, given that the indices of moderated mediation were negative and significant: -0.0211 (95% CI: -0.0422, -0.0070) and -0.0231 (95% CI: -0.0477, -0.0073), respectively (Hayes 2018). As illustrated in Fig. 2, the results reveal that the indirect effects decrease with increases in strategic mission rigidity. Overall, the results indicate that the indirect associations between resource slack, through organizational attention, and operational resilience become more positive and significant below the 50th percentile of the strategic mission rigidity scale (Table 6), providing support for H3.

4.2. Robustness checks

Extant literature suggests that the effects of resource slack may be nonlinear (Duan et al., 2020; Tan and Peng 2003). Accordingly, we re-estimated our conceptual model by adding the squared term of the mean-centered resource slack variable (RS^2) to the substantive and control variables. We found that the effects of RS^2 on organizational attention and operational resilience are statistically non-significant: RS^2 → organizational attention: $\beta = 0.071$, $t = 1.818$; RS^2 → disruption absorption: $\beta = -0.004$, $t = -0.114$; RS^2 → recoverability: $\beta = -0.035$, $t = -0.851$.

The validity of our measurement items and the inclusion of relevant

Table 5
Correlations, descriptive statistics, and multicollinearity test results.

	Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	Disruption absorption		0.56**	−0.07	0.31**	0.14*	0.13*	0.21**	0.07	−0.03	0.01	0.00
(2)	Recoverability	0.57**		−0.06	0.24**	0.13*	0.17**	0.26**	0.12*	−0.08	−0.02	0.00
(3)	Strategic mission rigidity	−0.05	−0.04		−0.23**	−0.01	−0.05	0.01	−0.03	−0.10	−0.02	−0.08
(4)	Organizational attention	0.32**	0.26**	−0.21**		0.28**	0.36**	0.33**	0.10	−0.09	−0.01	0.12
(5)	Resource slack	0.16*	0.15*	0.01	0.29**		0.21**	0.23**	−0.02	−0.10	0.02	0.02
(6)	Environmental dynamism	0.15*	0.19**	−0.03	0.37**	0.23**		0.23**	−0.01	−0.11	0.10	−0.09
(7)	Firm size (log)	0.23**	0.27**	0.03	0.34**	0.25**	0.25**		0.54**	−0.13	−0.04	−0.01
(8)	Firm age (log)	0.09	0.14*	−0.01	0.12	0.00	0.01	0.55**		−0.08	−0.09	0.06
(9)	Industry (service = 1)	−0.01	−0.06	−0.08	−0.07	−0.08	−0.09	−0.11	−0.06		0.10	−0.06
(10)	Marker variable 1	0.03	0.00	0.00	0.01	0.04	0.12	−0.02	−0.07	0.12*		−0.06
(11)	Marker variable 2	0.02	0.02	−0.06	0.14*	0.04	−0.07	0.01	0.08	−0.04	−0.04	
Mean		5.30	4.89	3.88	5.08	4.46	4.91	3.09	2.55	0.73	0.40	0.37
Standard deviation		1.09	1.43	1.67	1.53	1.45	1.41	1.01	0.64	0.45	0.49	0.48
Tolerance[a]				0.94	0.73	0.86	0.82	0.56	0.66	0.98		
Variance inflation factor[a]		n/a	n/a	1.07	1.37	1.17	1.22	1.78	1.51	1.03	n/a	n/a

Notes.
1. Values below and above the principal diagonal are zero-order correlations and marker variable adjusted correlations respectively.
2. [a] Disruption absorption is regressed on strategic mission rigidity, organizational attention, resource slack, environmental dynamism, firm size (log), firm age (log), and industry (service = 1).
3. $^{*}p < 0.05$ (2-tailed test). $^{**}p < 0.01$ (2-tailed test).

Table 6
Main results: PROCESS.

			Effect	95% CI	Hypothesis test
Direct relationships	Resource slack → disruption absorption[a]		0.0356	−0.0589, 0.1300	H1: Rejected
	Resource slack → recoverability[a]		0.0364	−0.0888, 0.1616	
Indirect relationships			Effect	95% bootstrap CI[e]	
	Resource slack → organizational attention → disruption absorption[b]		0.0317	0.0071, 0.0741	H2: Supported
	Resource slack → organizational attention → recoverability[b]		0.0257	0.0008, 0.0706	
Conditional indirect relationships		Conditions of strategic mission rigidity[d]	Effect	95% bootstrap CI[e]	H3: Supported
	Resource slack → organizational attention → disruption absorption[c]	1.75	0.0716	0.0238, 0.1400	
		2.50	0.0557	0.0180, 0.0115	
		3.75	0.0293	0.0071, 0.0726	
		5.25	−0.0023	−0.0307, 0.0256	
		6.00	−0.0182	−0.0617, 0.0082	
	Index of moderated mediation		−0.0211	−0.0422, −0.0070	
		Conditions of strategic mission rigidity[d]	Effect	95% bootstrap CI[e]	
	Resource slack → organizational attention → recoverability[c]	1.75	0.0691	0.0217, 0.1426	
		2.50	0.0518	0.0146, 0.1117	
		3.75	0.0230	0.0016, 0.0685	
		5.25	−0.0115	−0.0494, 0.0159	
		6.00	−0.0288	−0.0848, 0.0015	
	Index of moderated mediation		−0.0231	−0.0477, −0.0073	

Notes.
[a] Covariates in the models of outcome include organizational attention, strategic mission rigidity, environmental dynamism, firm size, firm age, and firm industry.
[b] Covariates in the models of mediator and outcome include strategic mission rigidity, environmental dynamism, firm size, firm age, and firm industry.
[c] Covariates in the models of mediator and outcome include environmental dynamism, firm size, firm age, and firm industry.
[d] Values for strategic mission rigidity are 10th, 25th, 50th, 75th, and 90th percentiles.
[e] Number of bootstrap samples for bias-corrected bootstrap confidence intervals (CI): 5000.

control variables may help mitigate endogeneity concerns (Lu et al., 2018); yet, an argument is that, since resource slack and organizational attention might drive resilience (as argued in this study), then, resilient firms might be motivated to increase investment in these factors to reinforce their resilience (Gittell et al., 2006). Consistent with previous resilience research (Yu et al., 2019), therefore, we explored the possibility of endogeneity confounding our results for the main effects of resource slack and organizational attention using a two-stage least squares (2SLS) regression estimator with instrumental variables (IVs). Based on theoretical and empirical considerations (Lu et al., 2018), and following Gligor (2018), we identified potential IVs by conducting OLS regression analysis to select variables in the study that meet the instrumental exclusion condition (i.e. variables that are empirically unrelated to disruption absorption and or recoverability) but which are theoretically and empirically related to resource slack or organizational attention (i.e. variables that meet the instrumental relevance condition). Based on the results in Table 7a, environmental dynamism and firm age were considered as IVs for the model of resource slack while environmental dynamism, strategic mission rigidity, and resource slack were used as IVs for the model of organizational attention. Environmental

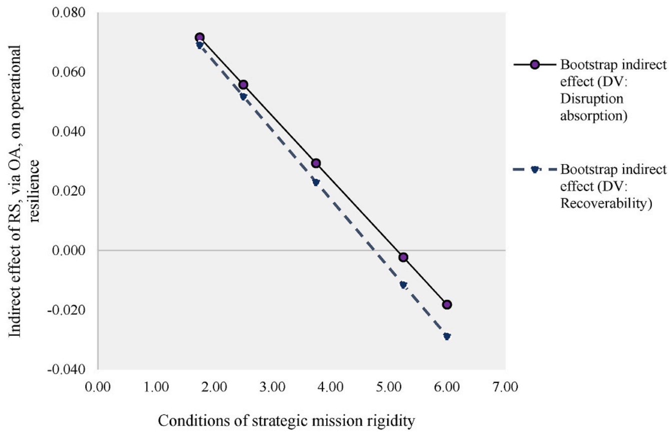


Fig. 2. Indirect effects of resource slack (RS), through organizational attention (OA) on operational resilience at varying levels of strategic mission rigidity.

dynamism increases uncertainties and the stability motive of firms and can, therefore, promote uncertainty-reducing practices such as resource slack-building and organizational attention (Brandon-Jones et al., 2015; Bode et al., 2011). Though it is expected that older firms will have more resource slack, there is evidence to the contrary (Duan et al., 2020). Younger firms are inexperienced and tend to be less efficient in resource slack deployment (Duan et al., 2020); however, their liability of newness can make them feel more vulnerable and therefore increase slack to minimize uncertainties (George 2005). We expect strategic mission rigidity to lower organizational attention as it restricts investment in exploratory strategic behaviors (Atuahene-Gima et al., 2005). Lastly, as argued in this study, resource slack is expected to drive organizational attention.

We used the delta *F* test to evaluate the strength of the IVs by regressing the assumed endogenous predictors on their IVs and the remaining control variables (Gligor 2018). Table 7a indicates that models with the IVs (Model 1 b and Model 2 b) show significant improvements in R^2 over the models with only the controls (Model 1a and Model 2a), suggesting that the selected IVs can be considered adequate for 2SLS analysis (Gligor 2018). Accordingly, we computed the predicted values of the assumed endogenous resource slack ($RS_{\_PV}$) and organizational attention ($OA_{\_PV}$) variables based on Model 1 b and Model 2 b, respectively. The $RS_{\_PV}$ and $OA_{\_PV}$ variables were then used as predictors in the second-stage regression analyses (Yu et al., 2019). Results in Table 7b show that the effects of $RS_{\_PV}$ and $OA_{\_PV}$ are consistent with the PROCESS (Table 6) and OLS regression results (Table 7a: Model 3 and Model 4).

In addition, we conducted Durbin–Wu–Hausman post-estimation test of endogeneity by regressing the outcome variables on resource slack, organizational attention, the residual values of resource slack ($RS_{\_RV}$) and organizational attention ($OA_{\_RV}$) from the first-stage regression, and the remaining control variables (Gligor 2018). The results show that the coefficients for the links from $RS_{\_RV}$ to disruption absorption ($\beta = -0.093$, $t = -0.437$, $p = 0.662$) and recoverability ($\beta = -0.198$, $t = -0.698$, $p = 0.486$), and from $OA_{\_RV}$ to disruption absorption ($\beta = -0.069$, $t = -0.057$, $p = 0.067$) and recoverability ($\beta = -0.211$, $t = -0.192$, $p = 0.187$) are statistically non-significant. Given these non-significant effects of $RS_{\_RV}$ and $OA_{\_RV}$, we conclude that the parameter estimates for the relationship between resource slack and operational resilience and for the relationship between organizational attention and operational resilience do not appear to be unduly explained by endogeneity.

Furthermore, we used the Johnson-Neyman (JN) and percentile techniques in PROCESS macro for IBM SPSS to gain additional insight into whether and how the magnitude and direction of the relationship between organizational attention and operational resilience vary at specific levels of strategic mission rigidity (Hayes 2018). Using Model 1 in PROCESS, we regressed disruption absorption (and recoverability) on OA, strategic mission rigidity (SMR), OA × SMR, resource slack, environmental dynamism, firm size, firm age, and firm industry. The results from the JN analysis and the percentile analysis are given in Table 8, Fig. 3a, and Fig. 3b, respectively. The results indicate that OA has positive and negative associations with operational resilience under low and high conditions of strategic mission rigidity, respectively. Specifically, the JN analysis reveals that when the level of strategic mission rigidity is 6.7 or above, and 4.3 or below, AO has significant negative and positive associations with recoverability, respectively. Similarly, when the level of strategic mission rigidity is 6.4 or above, and 3.7 or below, AO has significant negative and positive associations with

Table 7a
2SLS model testing for endogeneity: first-stage regression results.

Independent variables:	Dependent variables					
	Model 1a: Resource slack (OLS)	Model 1 b: Resource slack (OLS)	Model 2a: Organizational attention (OLS)	Model 2 b: Organizational attention (OLS)	Model 3 Disruption absorption (OLS)	Model 4: Recoverability (OLS)
Environmental dynamism[a,b]		0.158(2.470)		0.277(4.453)	0.013(0.260)	0.086(1.281)
Firm size (log)	0.352(4.056)	0.431(4.053)	0.592(5.561)	0.380(3.597)	0.157(1.855)	0.235(2.090)
Firm age (log) [a]		−0.379(-2.325)	−0243(-1.447)	−0.067(-0.423)	−0.039(-0.318)	0.061(0.371)
Industry (service = 1)	−0.168(-0.848)	−0.138(-0.710)	−0.106(-0.524)	−0.079(-0.425)	0.059(0.405)	−0.085(-0.436)
Strategic mission rigidity [b]				−0.189(-0.3815)	−0.002(-0.043)	−0.013(-0.243)
Resource slack[b]				0.177(2.946)	0.036(0.742)	0.036(0.572)
Organizational attention					0.179(3.628)	0.145(2.212)
R^2	0.066	0.114	0.124	0.268	0.122	0.112
ΔR^2		0.048		0.145		
F of R^2	9.054***	8.163***	11.996***		4.962***	4.511***
F of ΔR^2		6.858**	15.410***	16.619***		

Notes.
1. *Model 1a* and *Model 2a* are controls-only models while *Model 1b* and *Model 2b* include control and assumed instrumental variables.
2. Unstandardized coefficients and t-values (in parenthesis) are presented in the table.
3. [a] Variables used as instruments for the assumed endogenous variable: resource slack.
4. [b] Variables used as instruments for the assumed endogenous variable: organizational attention.
5. *** Model is significant at $p < 0.001$.
6. All paths are evaluated at t-value ≥ 1.96 (5%, 1-tailed).

Table 7b
2SLS model testing for endogeneity: second-stage regression results.

Independent variables:	Dependent variables:			
	Disruption absorption		Recoverability	
	Model 1a† (2SLS)	Model 1 b†† (2SLS)	Model 2a† (2SLS)	Model 2 b†† (2SLS)
Environmental dynamism[a,b]				
Firm size (log)	0.114 (1.195)	0.140 (1.365)	0.210 (1.648)	0.169 (1.257)
Firm age (log) [a]		−0.044 (-0.344)		0.062 (0.376)
Industry (service = 1)	0.072 (0.483)	0.059 (0.394)	−0.067 (-0.339)	−0.081 (-0.416)
Strategic mission rigidity [b]	0.00(0.009)		−0.013 (-0.237)	
Resource slack [b]	0.121 (0.577)		0.225 (0.806)	
Organizational attention	0.185 (3.877)	0.248 (2.194)	0.162 (2.560)	0.356 (2.411)
R^2	0.120	0.074	0.106	0.093
F of R^2	6.875***	5.099***	6.030***	6.503***

Notes.
1. Model 1a and Model 2a include the predicted values of resource slack while Model 1 b and Model 2 b include the predicted values of organizational attention.
2. †Includes the predicted values of resource slack.
3. ††Includes the predicted values of organizational attention.
4. Unstandardized coefficients and t-values (in parenthesis) are presented in the table.
5. a Variables used as instruments for the assumed endogenous variable: resource slack.
6. b Variables used as instruments for the assumed endogenous variable: organizational attention.
7. *** Model is significant at $p < 0.001$.
8. All paths are evaluated at t-value ≥ 1.96 (5%, 1-tailed).

recoverability, respectively.

5. Discussion

5.1. Theoretical implications and contributions

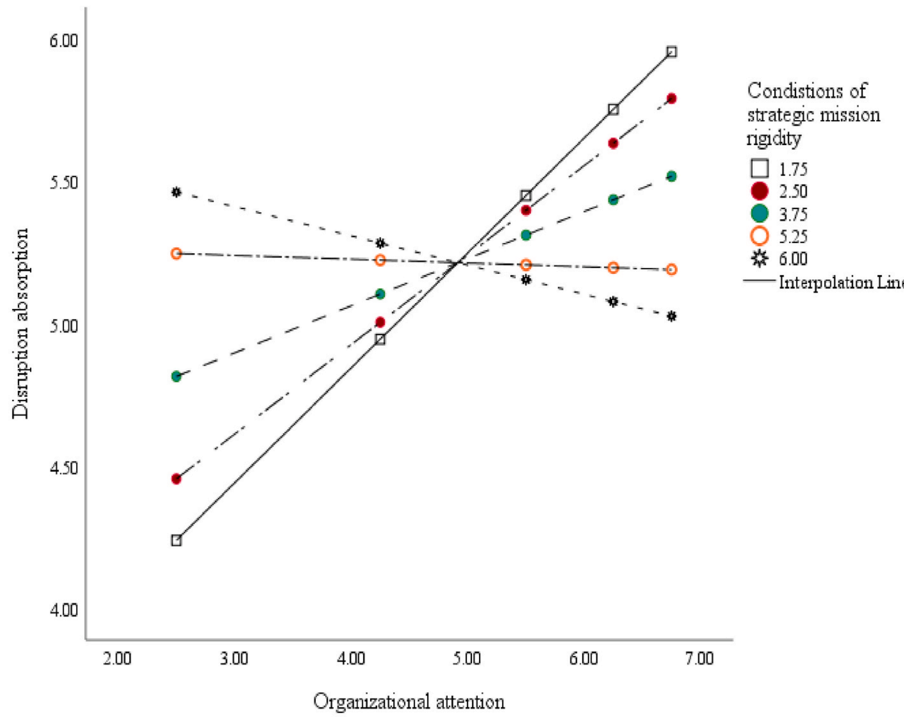
This research integrates the resource-based theory (RBT) and the attention-based view (ABV) and uses empirical evidence from firms in a developing economy setting to enhance scholarly understanding of the nuances associated with the relationship between resource slack and operational resilience. Specifically, the research integrates tenets of the RBT and ABV perspectives to develop and test a conceptual model that directly links resource slack to operational resilience and examines how organizational attention serves as a transformation process to connect resource slack to operational resilience under varying conditions of strategic mission rigidity. Examining the association between resource slack and resilience at the operations level of the firm broadens the scope of resilience analysis. It specifically raises questions about whether the effect of resource slack on resilience is a function of the level of analysis of resilience. To this end, this research contributes to addressing concerns about the limited empirical knowledge of the relationship between resource slack and resilience in the operations and supply chain management field.

Contrary to the RBT prediction, evidence from the study shows that resource slack does not have a significant direct association with operational resilience. Without considering the unit of analysis, this finding generally corroborates some previous research findings (e.g., Zheng et al., 2021; Iborra et al., 2020) and yet is inconsistent with other findings (e.g., Agusti et al., 2020; Li 2021). In consideration of the developing economy context of the data used in this study, it is interesting that resource slack alone does not enhance operational resilience in such a low resource setting. This finding calls for a closer look at existing applications of RBT to analyze the resource slack-resilience relationship (Tognazzo et al., 2016). Problems of underdeveloped financial and capital markets, difficulties in accessing external finance, high interest rates, and limited human capital that characterize supply chains in developing economies (Wang 2016) suggest that resource slack can be a difficult-to-acquire and costly-to-build resource. Conventional

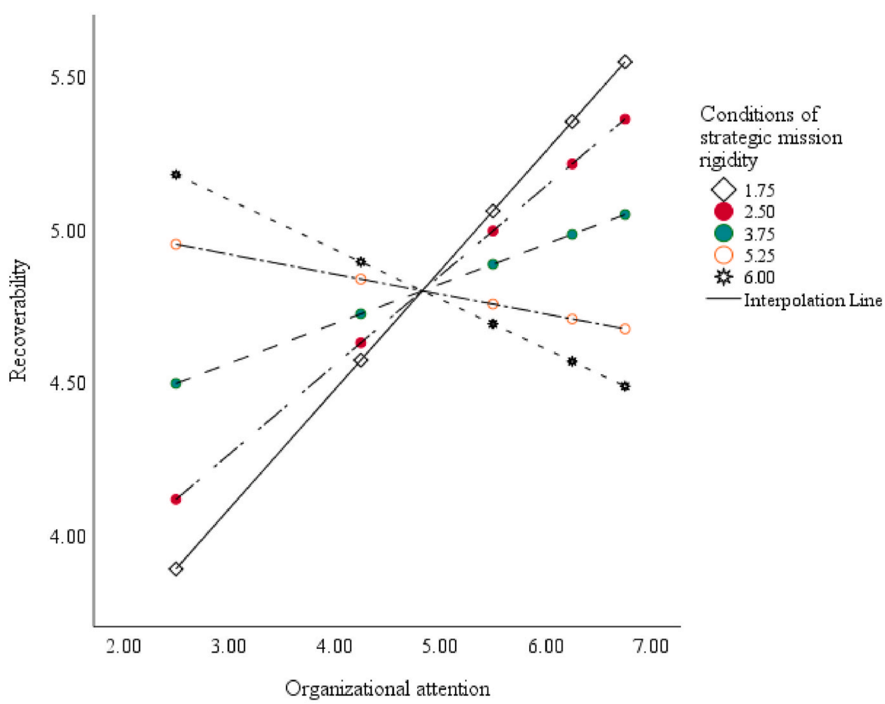
Table 8
Strength and direction of the organizational attention-operational resilience link at varying values of strategic mission rigidity.

Organizational attention → Disruption absorption link				Organizational attention → Recoverability link			
Levels of SMR	Effect	LLCI	ULCI	Levels of SMR	Effect	LLCI	ULCI
1.00	*0.493*	*0.340*	*0.647*	*1.00*	*0.488*	*0.281*	*0.694*
1.30	*0.457*	*0.315*	*0.600*	*1.30*	*0.449*	*0.256*	*0.641*
1.60	*0.422*	*0.289*	*0.554*	*1.60*	*0.410*	*0.231*	*0.588*
1.90	*0.386*	*0.263*	*0.509*	*1.90*	*0.371*	*0.205*	*0.536*
2.20	*0.350*	*0.236*	*0.464*	*2.20*	*0.332*	*0.178*	*0.485*
2.50	*0.314*	*0.208*	*0.421*	*2.50*	*0.293*	*0.149*	*0.436*
2.80	*0.279*	*0.178*	*0.379*	*2.80*	*0.254*	*0.118*	*0.389*
3.10	*0.243*	*0.147*	*0.339*	*3.10*	*0.214*	*0.085*	*0.344*
3.40	*0.207*	*0.114*	*0.301*	*3.40*	*0.175*	*0.050*	*0.301*
3.70	*0.171*	*0.079*	*0.264*	*3.70*	*0.136*	*0.012*	*0.261*
4.00	*0.136*	*0.042*	*0.230*	3.79	0.125	0.000	0.250
4.30	*0.100*	*0.002*	*0.198*	4.00	0.097	−0.030	0.224
4.32	0.098	0.000	0.196	4.30	0.058	−0.073	0.190
4.60	0.064	−0.039	0.167	4.60	0.019	−0.119	0.158
4.90	0.028	−0.081	0.138	4.90	−0.020	−0.167	0.128
5.20	−0.007	−0.125	0.110	5.20	−0.059	−0.217	0.100
5.50	−0.043	−0.170	0.084	5.50	−0.098	−0.268	0.073
5.80	−0.079	−0.215	0.058	5.80	−0.137	−0.321	0.047
6.10	−0.115	−0.262	0.033	6.10	−0.176	−0.374	0.023
6.40	−0.150	−0.308	0.008	6.38	−0.212	−0.424	0.000
6.50	−0.162	−0.324	0.000	*6.40*	*−0.215*	*−0.428*	*−0.002*
6.70	*−0.186*	*−0.356*	*−0.016*	*6.70*	*−0.254*	*−0.482*	*−0.025*
7.00	*−0.222*	*−0.403*	*−0.040*	*7.00*	*−0.293*	*−0.537*	*−0.048*

Note.
1. Control variables in the models of disruption absorption and recoverability are environmental dynamism, firm size, firm age, and firm industry.
2. Italicized values are significant at a 95% confidence interval.



a



b

Fig. 3. **a**. Moderating effect of strategic mission rigidity on the organizational attention-disruption absorption link. b. Moderating effect of strategic mission rigidity on the organizational attention-recoverability link.

wisdom would, therefore, be that firms in possession of high resource slack should be in a position to generate stronger operational resilience. Yet, existing theoretical predictions incorrectly assume that, in such low resource contexts, all firms in possession of greater resource slack should be effective in building stronger operational resilience.

In moving beyond existing conventional wisdom in the resilience literature, our finding corroborates the alternative argument that possession of resources is necessary but might be insufficient to achieve resilience (Agusti et al., 2020; Tognazzo et al., 2016). Tognazzo et al. (2016) contend that "when an environmental shock occurs, a firm, regardless of its size, may need to design and adopt new leveraging strategies in order to exploit its ongoing resources" (p. 769). Moreover, firms may deploy resource slack in different ways (e.g., entering into new markets, new product development, building spare capacity) (Duan et al., 2020), some of which may not directly benefit, or may even have competing effects on, operational resilience. By implication, findings from this study suggest that treating the resource slack-resilience relationship as a 'black box' makes it difficult to comprehend firm-specific mechanisms that link resource slack to operational resilience.

This study makes an important contribution to the resilience literature by uncovering the organizational attention mechanism that converts resource slack into an enhanced operational resilience outcome. Although researchers have shown interest in empirically analyzing the resource slack-resilience relationship, and while the literature acknowledges the potential limitation of resource slack in contributing to resilience, knowledge has been lacking on the mediating mechanism that underlies the relationship (Agusti et al., 2020; Tognazzo et al., 2016). By theoretically specifying and empirically testing a mediating mechanism, this study clarifies how resource slack is related to operational resilience. This attempt to account for the underlying mechanism helps to minimize competing theoretical explanations and conflicting findings in prior research (Guo et al., 2020; Carnes et al., 2019). Importantly, our findings lend credence to the scholarly arguments and previous research findings that incorporating theoretically relevant mediating mechanisms helps improve understanding of the performance implications of resource slack (Carnes et al., 2019). In effect, our mediation analysis simultaneously responds to the questions of 'whether resource slack matters for resilience' and 'how resource slack matters for resilience' (Agusti et al., 2020; Sutcliffe and Vogus 2007). We answer these questions by showing that resource slack matters in enhancing operational resilience when it is channeled through organizational attention.

Our finding that organizational attention is a significant driver of operational resilience is consistent with the ABV's line of reasoning that attention focus enhances the perception of issues and efficacy of relevant response actions (Ocasio 1997). Particularly, this finding reinforces Lorentz et al.'s (2021) evidence that managerial attention to supply risk management issues enhances supply chain resilience. Our findings further extend Lorentz et al.'s (2021) work by accounting for the role of resource slack in driving attention focus to enhance resilience. Given that attention focus is a function of organizational contexts (Ocasio 1997), it can be argued that our mediation results highlight how resource slack serves as an attention structure to explain variations in organizational attention.

The finding that strategic mission rigidity negatively moderates the association between organizational attention and operational resilience strengthens prior evidence that attention focus might not have a universal resilience value (Lorentz et al., 2021). This finding further expands the limited knowledge on the organizational contingencies that characterize the resilience consequence of attention focus (Lorentz et al., 2021). It further responds to the call for more empirical evidence on how strategic mission rigidity affects organizational responses in disruptive situations (Sarkar and Osiyevskyy 2018). We demonstrate that differing levels of strategic mission rigidity can serve as a boundary condition to explain the extent to which organizational attention contributes to operational resilience. Unlike previous research (e.g., Lorentz et al., 2021), we generate deeper insights into how organizational attention may become a double-edged sword depending on the degree of rigidity of a firm's strategic mission. We show that organizational attention can enhance and at the same time reduce operational resilience given differences in firms' strategic mission rigidity level. The results of our conditional indirect effect analysis further suggest that similar effects are likely to occur when resource slack is channeled through organizational attention in low and high strategic mission rigidity circumstances. Overall, these findings contribute to clarifying the boundary conditions of the roles of organizational attention variables in resilience theorization.

Additionally, our application of the strategic mission rigidity concept sheds important light on how institutionalized organizational variables, particularly, firms' strategic orientations, can improve understanding of when certain firm strategies and practices may more or less benefit resilience. Our findings specifically corroborate some previous studies (e.g., Li et al., 2008; Atuahene-Gima et al., 2005) that show that strategic mission rigidity is incongruent with, and undermines the benefits of, a firm's information search and processing behaviors. In this regard, given that information search and processing activities are central to explaining resilience (Bode et al., 2011; Wong et al., 2020), the strategic mission rigidity concept becomes useful for future research to develop and test more robust resilience models involving information search and processing factors as predictors.

Finally, this research demonstrates the ABV as a useful theoretical lens for developing models of resilience (Lorentz et al., 2021). Importantly, rather than viewing RBT and ABV as alternative theoretical lenses for explaining resilience, this research demonstrates how these two theoretical perspectives can be integrated to explain interrelations between resource slack, organizational attention and operational resilience. While the ABV recognizes the importance of organizational contingencies in explaining variations in operational resilience (Ocasio 1997), the RBT explains heterogeneity in operational resilience as a function of differences in stock of resources. Integrating these two theoretical perspectives, we present resource slack as an attention structure within the firm (organizational contingency) that determines organizational attention and, accordingly, operational resilience.

5.2. Managerial implications

Managers can draw several lessons from the study's findings at a time of increasing interest in the role of managers in driving firms' operational resilience (The Business Continuity Institute 2020). First, in increasingly uncertain, precarious, and highly disruptive situations, there is a natural propensity for firms to build some level of resource slack to support their operations. However, managers should note that resource slack can become wasteful if not effectively deployed into value creation activities. Findings from this study suggest that resource slack is necessary but inadequate in its contribution to operational resilience. Thus, operations and supply chain managers need to be mindful of and reconsider the long-held assumption about resource slack as a major feature of resilience. Such an assumption could result in complacency and overconfidence, and accordingly bias an assessment of the vulnerability of a firm's operations to disruptions as managers may miss out on important opportunities that help enhance the firm's ability to absorb and recover from such disruptions.

An additional managerial insight from this study is that firms' ability to channel resource slack into organizational attention (i.e., disruption-specific information search and processing activities) is an important process for enhancing operational resilience. Such resource slack deployment enables firms to be abreast of the salient disturbances occurring in their business environment, have visibility within their supply chains, quickly detect looming disruptive events, and put in place more effective response protocols. This, however, behooves top managers to increase resource slack in their firms as low levels of resource slack can trigger resource conservation, and consequently under-prioritization and use of organizational attention. Additionally, managers should recognize that the pursuit of rigid and inflexible strategic missions can render organizational attention less beneficial. We find that firms are likely to attain greater levels of operational resilience if their emphasis on organizational attention occurs under a more flexible strategic mission condition. Such an organizational context needs to be nurtured and sustained by top executives. It matters for fostering organizational attention to attain superior operational resilience in that it promotes and supports exploration, experimentation, and innovation behaviors. These behaviors develop and enrich managerial cognition and firms' interpretative systems necessary for effective and rapid processing of disruption-related information that organizational attention produces.

5.3. Limitations and future research directions

This study has both theoretical and methodological limitations that may be considered as avenues for future research. First, it could be argued that our conceptualization and measurement of resource slack may be limited. While we argue in this study that resource slack is an aspect of unabsorbed resources, it could be contended that absorbed slack resources should have been controlled for in the study. It could also be argued that unabsorbed slack resources exist in various forms (e.g., human resources, finance), each of which has a unique value. Thus, while the ABV logic used for linking our generic measure of resource slack to operational resilience through organizational attention seems compelling, useful insights may be gained in studies that analyze specific forms of unabsorbed slack resources. In addition, notwithstanding the validity of the subjective items used to operationalize resource slack, in contexts where secondary/objective datasets exist, it would be useful to follow precedence (e.g., Tognazzo et al., 2016) to operationalize the construct more objectively.

Second, output-based resilience elements (e.g., disruption absorption, recoverability) can be applied to different systems or units of analysis. For example, Tognazzo et al. (2016) and Buyl et al. (2019) measure these forms of resilience at the firm performance level. Though operations outputs underlie firm-level performance indicators, the latter tend to be less short term in nature. Therefore, future studies should validate our findings by considering firm-level, long term resilient indicators.

Third, this study shows that conditional process models might enhance casual clarity of the link between resource slack and resilience. Therefore, we recommend that future studies advance our conceptual model by introducing other mediators and associated moderators. While the concept of strategic mission rigidity can limit levels of strategic, tactical, and operational flexibility variables (Brozovic 2018), future research can explore how such variables help validate our findings. Additionally, the moderating influences of other strategic orientations (e.g., entrepreneurial orientation), as well as organizational structure and culture variables (e.g., decentralization structure), and external environment contingencies (e.g., complexity), can be investigated (Manhart et al., 2020).

Fourth, in line with prior survey research (Lorentz et al., 2021; Bouquet et al., 2009), this study uses subjective measures of organizational attention. Ocasio (2011) finds that varied approaches have been utilized to measure attention variables. Nevertheless, prior strategy-related studies that employ multivariate techniques have relied on textual analysis of letters or minutes to capture attention (Ocasio 2011). It is often argued in these studies that attention to an issue is reflected in the frequency with which that issue is mentioned or discussed (Ocasio 2011). Accordingly, we encourage future studies to explore different approaches through which organizational attention can be measured.

Fifth, a cross-sectional survey design, which was adopted in this study, is a widely utilized approach to study resilience models in the operations and supply chain management fields (Manhart et al., 2020). While we controlled for the effects of several relevant factors on both our mediator and outcomes variables to mitigate potential problems of endogeneity, we recognize that the use of cross-sectional data does not permit causal inferences to be drawn from our findings (Manhart et al., 2020). Research designs such as natural experiments (as applied in other resilience research [e.g., Buyl et al., 2019]) and longitudinal surveys (Manhart et al., 2020) could help address this limitation.

Finally, while our efforts to test the study's conceptual model on primary data from a developing market help bring a new contextual perspective to the resilience literature (Parker and Ameen 2018), testing our model using data from other exotic and resource-abundant and constrained contexts can help cross-validate our findings.

Credit author statement

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