How and when bridging and buffering strategies drive financial performance: Evidence from companies using key account management

Oluwaseun E. Olabode
Associate Professor (Senior Lecturer) of Marketing and International Business
Alliance Manchester Business School
University of Manchester
Booth Street West, Manchester M15 6PB
e-mail: seunolabode@outlook.com

Athanasia D. Nalmpanti
Lecturer of Strategy, Operations, and Supply Chain Management, Department of Management, CIIM Business School, University of Limassol, 92 Agias Fylaxeos, 3025, Limassol, Cyprus
e-mail: a.nalmpanti@uol.ac.cy

Dominic Essuman
Lecturer in Sustainable Management, Sheffield University Management School, University of Sheffield, Sheffield, UK.
e-mail: d.essuman@sheffield.ac.uk

Constantinos N. Leonidou *
Professor of Marketing and Business Administration, Faculty of Economics and Management, Open University of Cyprus, Archbishop Kyprianou Avenue 48, Nicosia, 2235, Cyprus; Adjunct Professor of Marketing, Leeds University Business School, University of Leeds, United Kingdom
e-mail: C.Leonidou@ouc.ac.cy

Magnus Hultman
Professor of Marketing, Brock IPBS Research Scholar
The Goodman School of Business, Brock University, 1812 Sir Isaac Brock Way, St. Catharines, ON L2S 3A1, Canada
e-mail: mhultman@brocku.ca

Nathaniel Boso
Professor of International Business and Entrepreneurship, Gordon Institute of Business Science, University of Pretoria, 26 Melville Rd, Illovo, Johannesburg, 2196, South Africa; KNUST School of Business, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
e-mail: boson@gibs.co.za

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***Corresponding Author**

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Dr. Oluwaseun E. Olabode (PhD, University of Leeds) is an Associate Professor (Senior Lecturer) in Marketing and International Business at Alliance Manchester Business School, University of Manchester. Her main research interests focus on disruption, innovation, organizational strategy, international business, international marketing, organizational capabilities, and marketing management. Her work has been published in leading international scholarly journals such as *Journal of International Business Studies*, *Technological Forecasting and Social Change*, *Journal of International Management*, *International Marketing Review, R&D Management*, and *Journal of Business Research*.

Dr. Athanasia D. Nalmpanti (PhD, University of Leeds) is Lecturer of Strategy, Operations, and Supply Chain Management, at the Department of Management, CIIM Business School of the University of Limassol. She holds a PhD in Management from the University of Leeds and an MBA from Cardiff University. Her main research interests focus on open innovation, knowledge processes, and supply chain integration. Her work has been presented in leading conferences in the management field and has been published in Journals such as *Industrial Marketing Management* and *Journal of Innovation & Knowledge*.

Dr. Dominic Essuman (PhD, Kwame Nkrumah University of Science and Technology) is a Lecturer in Sustainable Management at the University of Sheffield, United Kingdom. His research interests revolve around supply chain strategy, resilience, and sustainability. He has published his research work in the *Journal of International Business Studies* and in major supply chain journals including *Journal of Business Logistics, International Journal of Production Economics, Supply Chain Management: An International Journal*, and *Journal of Purchasing and Supply Management*.

Dr. Constantinos N. Leonidou (PhD, University of Leeds) is a Professor of Marketing and Business Administration at the Faculty of Economics and Management of Open University of Cyprus and Adjunct Professor of Marketing at Leeds University Business School of the University of Leeds. He was formerly Head of the Marketing Department at Leeds University Business School, University of Leeds. His research interests include sustainability, international marketing, business models and strategies, business relationships, and performance. His research has appeared in many journals of international repute, such as the *Journal of International Business Studies, Journal of the Academy of Marketing Science*, *Industrial Marketing Management*, *Journal of Business Ethics*, *Journal of Business Research*, *Journal of International Marketing*, and *Journal of World Business* among others.

Dr. Magnus Hultman (PhD, Luleå University of Technology) is a Professor of Marketing and Brock IPBS Research Scholar at the Goodman School of Business, Brock University. Dr. Hultman's current research interests revolve around international marketing strategy issues, branding, various aspects of marketing communications, and supply chain management. His research has been published in internationally renowned academic journals such as *Journal of International Business Studies, Journal of Product Innovation Management*, *International*

Business Review, *International Marketing Review*, *Journal of Business Research*, *Journal of International Marketing*, *Psychology and Marketing*, and *Tourism Management* among others.

Dr. Nathaniel Boso (PhD, Loughborough University) is a Professor of International Business and Entrepreneurship and Director of Research at University of Pretoria's Gordon Institute of Business Science (South Africa), and O.R. Tambo Africa Research Chair of Entrepreneurship and Employability at Kwame Nkrumah University of Science and Technology (Ghana). He was previously Dean at Kwame Nkrumah University of Science and Technology School of Business, and an Associate Professor at University of Leeds in the United Kingdom. Dr. Boso is a consulting editor at Journal of International Business Studies, a senior editor at International Business Review, and an associate editor at International Marketing Review and African Journal of Management. He also serves as the Chairman of the Governing Board of Ghana Enterprises Agency in Ghana. His research has published in *Journal of International Business Studies, Journal of World Business, Journal of Business Venturing, Journal of Product Innovation Management, Journal of International Marketing, and International Journal of Production Economics* among others.

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Abstract

The key account management (KAM) literature has increasingly adopted a supply chain perspective to understand how firms manage supplier and customer networks to drive business success. Within this context, bridging and buffering strategies have emerged as critical tools for managing interorganizational relationships and resource flows. Yet little is known about how these strategies generate performance gains and under what conditions they are most effective. This paper addresses these gaps by uncovering the supply chain responsiveness capability mechanism that links bridging and buffering strategies to performance outcomes under varying supply chain disruption conditions. Using primary data from 205 business-to-business firms that rely on KAM programs, we find that while buffering directly benefits financial performance, responsiveness capability positively mediates the effect of both bridging and buffering strategies on financial performance. Moreover, buffering and responsiveness capability have stronger effects in covariate than in idiosyncratic disruptions. Interestingly, the direct effect of bridging strategy on performance remains consistent, regardless of the type of supply chain disruption conditions. The findings help clarify the economic value of bridging and buffering strategies and provide~~s~~ actionable insights to guide companies using KAM programs on how and the supply chain conditions which each strategy could be deployed optimally.

Keywords: Key account management (KAM), supply chain disruptions, bridging strategies, buffering strategies, organizational information processing theory, complex adaptive systems

1. Introduction

Many business-to-business (B2B) organizations use key account management (KAM) programs to build strong relationships with valuable clients with the goal of sustaining or growing profits (Sandesh, Sreejesh, and Paul, 2023). While much of the focus of prior research has traditionally been on inter-firm and customer-facing practices and resources (Guesalaga et al., 2018), recent insights from the literature highlights the importance of a supply chain (SC) perspective. This perspective emphasizes that the ability to effectively manage both supplier and customer networks, as well as flows of materials, products, and information is essential for organizations using KAM programs to enhance marketplace success (Kumar et al., 2019; Sandesh et al., 2023). The ability to ensure availability of quality supplies in the right quantities, at the right time, and at the right price is a major determinant of an organization's capacity to create and deliver superior value to key account customers. Deficiencies or failures on either side of the firm's SC can significantly hinder effective implementation of a KAM program. To this end, the KAM literature encourages businesses to prioritize a bridging strategy by collaborating and integrating with suppliers and customers (Sandesh et al., 2023).

The SC literature also recognizes the importance of bridging strategy but also encourages firms to use this strategy in conjunction with buffering strategy to successfully navigate SC disruptions (Ataburo et al., 2024; Holgado and Niess, 2023; Manhart et al., 2020; Mishra et al., 2016). Firms employing a buffering strategic approach rely on multiple, alternative SC members (suppliers and customers), while those adopting bridging strategy emphasize collaboration and information sharing with their core SC members (Bode et al., 2011; Manhart et al., 2020). Despite the growing interest in potential complementarity between bridging and buffering strategies, both the KAM and SC streams of literature offer little insight into how and when the two strategies operate in alignment to drive performance outcomes (Manhart et al., 2020; Sandesh et al., 2023). Importantly, existing theoretical and empirical analyses overlook how firms can leverage both strategies to transform the way they create and deliver market value in varying SC situations (Manhart et al., 2020). This study, therefore, develops and tests a conceptual model of firms using KAM programs to address these deficiencies in the KAM and SC literatures.

The study's conceptual model specifically addresses two research questions: 1) How do KAM bridging and buffering strategies independently affect financial performance? and 2) Does SC disruption type moderate these effects? The study uses organizational information processing (OIP) theory to conceptualize KAM bridging and buffering strategies as mechanisms for reducing SC uncertainty to improve financial performance (Manhart et al., 2020). Because implementing these strategies comes with costs (Azadegan et al., 2021; Pettit et al., 2019), OIP theory's principle of "fit" suggests that firms are more effective when they align bridging and buffering strategies with the appropriate level of uncertainty in the SC environment (Srinivasan and Swink, 2018; Tushman and Nadler, 1978). This study proposes SC disruption as a major source of uncertainty (Bode and MacDonald, 2017; Essuman et al., 2023a) and suggests that bridging and buffering strategies may be more financially rewarding in covariate disruption situations than in idiosyncratic disruption situations (Azadegan et al., 2021; Pettit et al., 2019). Covariate disruptions tend to have wide-ranging industry effects, simultaneously disrupting multiple SCs (e.g., pandemics, geopolitical events, wars, and natural disasters). In contrast, idiosyncratic disruptions are peculiar to and occur within a specific SC (e.g., supplier bankruptcy, production plant failure, and vehicular breakdown) (Essuman et al., 2023b; Iyengar et al., 2021).

Beyond their uncertainty-reducing roles, the study draws on complex adaptive systems (CAS) logic to argue that bridging and buffering strategies enable firms to transform their operations and products to create and deliver superior value (Novak et al., 2021). SC disruptions, especially covariate disruptions, can undermine a firm's speed and flexibility in meeting customer requirements (Azadegan et al., 2021). However, they also allow firms to innovate to create new market value (Ali et al., 2024). For example, despite its costs, the COVID-19 pandemic encouraged some firms in many sectors (e.g., manufacturing and retail) to adapt their operations to introduce new products to gain marketplace advantages (Ivanov, 2021; Novak et al., 2021; Wieland and Durach, 2021). Thus, beyond the OIP arguments, this study further draws insights from the CAS logic to propose that buffering and bridging strategies can contribute to responsiveness capability (Novak et al., 2021) that provides a pathway to link the two strategies to financial performance (Richey et al., 2021). We contend that this responsiveness capability pathway is likely to be strengthened under covariate disruption conditions. Responsiveness capability refers to a firm's ability to adapt its market offerings while addressing changes in customer requirements (Moyano-Fuentes et al., 2016; Richey et al., 2021).

This paper contributes to important knowledge on the interface between KAM and SC disruption management in two important ways. First, the study expands the SC perspective on KAM, which focuses mainly on bridging strategy and with limited exposition on the roles of buffering strategy (Kumar et al., 2019; Sandesh et al., 2023). While recent research highlights the need to examine performance implications of both bridging and buffering strategies in new organizational contexts (Manhart et al., 2020), this study provides insights into the unique roles and boundary conditions of these strategies in firms using KAM programs. Second, unlike existing theoretical analyses that focus on the uncertainty-reducing roles of buffering and bridging strategies, this study draws on CAS literature to shed light on their dynamic, transformational roles and the conditions under which they impact financial performance. In doing so, the study identifies responsiveness capability as an important intervening force in the relationship between these strategies and financial performance, especially in covariate disruption contexts.

2. Theoretical Background and Hypothesis Development

2.1. Linking KAM to buffering and bridging strategies

This research uses firms that manage key accounts as a context to examine the mechanism and conditions under which bridging and buffering strategies contribute to financial performance. Although bridging and buffering strategies can be applied in many organizational contexts, insights about their efficacy can be gained by analyzing them in particular firm types (Manhart et al., 2020). Firms employing KAM programs have unique characteristics that allow examination of whether bridging and buffering strategies are universally beneficial, or if certain mechanisms and conditions enable these strategies to drive firm performance outcomes (Manhart et al., 2020). While such strategies may also be adopted by non-KAM firms, their effects may be weaker due to the transactional nature of relationships, making firms with a KAM program a context where these mechanisms are more prominent.

Key accounts consist of valuable customers (or clients) that are strategically important to a firm. These customers receive special attention, personnel and resources compared to the rest of a firm's customer base (Cheverton, 2015). KAM, therefore, involves developing and managing long-term relationships with customers critical to a firm's financial performance (Lautenschlager and Tzempelikos, 2024). Managing key accounts involve relational commitments (Homburg and Bornemann, 2012), and to ensure success, firms may allocate dedicated managers and teams or leverage existing marketing and sales personnel, as well as other resources (e.g., technology), to plan, develop value propositions, and implement initiatives to better serve these key accounts (Cheverton, 2015).

The KAM function within organizations works within an ecosystem that encompasses supply chain management, operations management, and purchasing as it is crucial to ensure that products and services are effectively and efficiently delivered to key account customers (or clients). Similarly, supply chain management which encompasses purchasing managers and operations managers have strategic oversight over various organizational areas such as supplier and customer collaboration, information technology, marketing, finance, sales, and product design (Mentzer et al., 2008). This is crucial as the role of purchasing and supply management as a function within organizations spans internal organizational boundaries, functions, and departments (Zheng et al., 2007). Hence, it is clear that there are integral interdependencies between the KAM function and supply chain management.

Recent reviews provide a comprehensive understanding of the literature on firms using KAM programs (Guesalaga et al., 2018; Kumar et al., 2019; Sandesh et al., 2023). This literature suggests that beyond KAM-specific factors (e.g., KAM resources and practices), other organizational and inter-organizational factors, such as corporate foresight, strategy, and SC collaboration and integration, also influence how effectively firms can implement KAM to enhance performance (Kumar et al., 2019; Sandesh et al., 2023; Lautenschlager and Tzempelikos, 2024). The current study focuses on the inter-firm network and relationships aspect of this literature that emphasizes the importance of managing both upstream and downstream SCs for an effective KAM program. For firms utilizing a KAM program, the literature underscores the significance of bridging strategy, such as collaborating and integrating with core SC members (Kumar et al., 2019; Sandesh et al., 2023). Drawing from SC literature, we argue that buffering strategy may also benefit this type of firms (Manhart et al., 2020; Mishra et al., 2016).

While both the SC and KAM literatures have separately highlighted the challenges firms face in dealing with SC disruptions (Manhart et al., 2020; Sandesh et al., 2023), knowledge is lacking on the mechanism and the conditions under which bridging and buffering strategies contribute to financial performance of firms using KAM programs. In the sections that follow, we integrate insights from both SC and KAM research to develop a conceptual model that explains how both strategies contribute to financial performance through responsiveness capability under varying conditions of SC disruption.

2.2. Conceptual model

As depicted in Figure 1, the study draws on OIP theory and CAS logic to develop a conceptual model that explains and clarifies the relationship between bridging and buffering strategies and financial performance. We use OIP theory to explain how buffering and bridging strategies contribute to financial performance, especially in covariate SC disruption situations. Next, we incorporate arguments from the CAS literature to reason that responsiveness capability provides a pathway to explain how these strategies drive financial performance, particularly during covariate SC disruption situations.

--- Insert Figure 1 here ---

2.2.1. Organizational information processing theory

OIP theory suggests that firms are likely to formulate and deploy strategies to deal with internal and external environmental uncertainties to achieve effectiveness and efficiency (Galbraith, 1974; Tushman and Nadler, 1978). Uncertainty, defined as the variance between the amount of information possessed and required to complete an activity (Galbraith, 1973), has numerous sources (Srinivasan and Swink, 2018). For instance, besides dealing with uncertainties resulting from changes in environmental conditions (e.g., industrial customer requirements, competitor actions, input prices, inflation rate, and exchange rates), firms need to cope with uncertainties associated with a lack of information regarding where and when SC disruptions will emerge from and the resulting impact on their business operations (Essuman et al., 2023a).

OIP theorists argue that firms can deal with uncertainties and associated costs by reducing information requirements or improving information processing (Tushman and Nadler, 1978). SC scholars suggest that firms can use buffering strategy to reduce task-related information requirements or bridging strategy to improve information access and processing to succeed (Bode et al., 2011; Manhart et al., 2020). A contention is that firms prioritize order, stability, and continuity in how they presently create and deliver value, and they utilize buffering and bridging strategies to drive and preserve such functional and static features of their SC operations to be effective and efficient (Bode et al., 2011).

Interestingly, OIP theory also suggests that a "fit" between uncertainty-reducing strategies and degree of uncertainty improves organizational effectiveness (Srinivasan and Swink, 2018; Tushman and Nadler, 1978). As uncertainty increases with SC disruptions (Essuman et al., 2023a), especially in covariate disruption situations (Azadegan et al., 2021; Iyengar et al., 2021), this study conceptualizes "fit" as the alignment of firms' emphasis on bridging and buffering strategies in covariate disruption contexts. We contend that this alignment amplifies the positive effects of both strategies on financial performance.

2.2.2. Complex adaptive systems Logic

As with OIP theory, CAS logic suggests that firms are open systems that deal with environmental exigencies (Choi et al., 2001). However, whereas OIP theory focuses on stability, efficiency, and effectiveness of the current structures and configurations of SC operations (Bode et al., 2011; Manhart et al., 2020), CAS logic emphasizes organizations' adaptive responses, allowing them to reposition their present SC structures and functionality to align with environmental changes (Burnes, 2004; Choi et al., 2001; Novak et al., 2021). In addition to their adaptive properties, firms generally constitute CAS as they may comprise multiple independent components (e.g., units and processes) and relationships. Importantly, they depend on and interact with external actors within and outside their SCs while learning through feedback and monitoring mechanisms (e.g., customer complaints forms and market research) and extracting critical resources (e.g., raw materials and information) from such actors to thrive (Burnes, 2004; Choi et al., 2001; Novak et al., 2021).

Moreover, firms can co-evolve with environmental changes. For instance, many firms across multiple sectors (e.g., beverage and alcoholic, retail and last-mile delivery, healthcare and pharmaceutical, and automotives) adjusted their operations, business models, and resource base while introducing new products as a response to changes brought by the Covid-19 pandemic (Ivanov, 2021; Novak et al., 2021; Wieland and Durach, 2021). These self-organizing and transformational features can help firms improve their financial performance by exploring and exploiting new ways of creating and delivering value, even in SC disruption situations (Ivanov, 2021; Novak et al., 2021). CAS's core concepts, such as adaptability, flexibility, agility, and improvisation (Novak et al., 2021; Tukamuhabwa et al., 2015), define firms' responsiveness capability (Richey et al., 2021). This capability indicates the ability of firms to rapidly modify existing products, introduce new ones, and address changing market requirements (Richey et al., 2021).

The CAS perspective further suggests that the level of firms' adaptive and transformational capabilities is predicated on their inherent attributes, especially strategies that determine the structure and configuration of their SC network and operations and ability to manage disruptions adaptively (Novak et al., 2021; Tukamuhabwa et al., 2015). From a CAS standpoint, firms rely on particular schemas, including bridging and buffering strategies, "*to modify their operations and adapt to their SC threats*" (Tukamuhabwa et al., 2015, p. 5613). In applying this logic, Novak et al. (2021) suggest firms can apply buffering and bridging strategies to enact adaptative and transformational responses to SC disruptions. We develop and test the argument that in addition to their stability and continuity roles as predicted by the OIP theory, buffering and bridging strategies can be directed at developing responsiveness capability to improve financial performance in disruptive SC situations.

2.3. Bridging and buffering strategies and financial performance

Bridging strategy reflects the extent to which firms engage in collaborative initiatives and share information with their SC members, including suppliers and customers (Bode et al., 2011). This strategy works by exchanging real-time, relevant business information such as demand forecasts, inventory levels, and production schedules and has been proposed as a viable strategy when firms are faced with disruptive market shifts (Olabode et al., 2023). By facilitating information sharing, bridging strategy helps firms better understand, map, and respond to threats in their SC environment. As a result, firms can remain up-to-date with their SC environments, reducing uncertainties and enabling more cost-effective operational decisions (Kalaitzi et al., 2019). For example, it can help minimize the costs associated with overstocking or understocking. Additionally, the increased visibility provided by bridging strategy helps firms navigate SC uncertainties more effectively (Manhart et al., 2020), promoting operational stability and continuity (Essuman et al., 2023a). It is especially useful in this regard, as it enables joint problem-solving efforts to address SC vulnerabilities (Manhart et al., 2020). By ensuring stability and continuity in SC operations at a lower cost, bridging strategy can support firms in achieving their financial improvement goals. Therefore, consistent with OIP theory, we propose that:

H1a: KAM firms' bridging strategy has a positive effect on financial performance.

Buffering strategy refers to the extent to which firms rely on multiple and alternative suppliers and customers (Bode et al., 2011). This strategy helps firms avoid overdependence on specific suppliers and service providers (e.g., transportation, warehousing, and distribution agencies), thereby shielding them from uncertainties in their SC environment (Manhart et al., 2020). Previous studies suggest that buffering strategy can help firms mitigate risks related to poor logistics performance, quality issues, and capacity fluctuations (Mishra et al., 2016), while improving SC resilience (Manhart et al., 2020) and resource efficiency (Kalaitzi et al., 2019). Drawing on OIP theory, we argue that because buffering strategy minimizes uncertainties around the acquisition, flow, and use of critical external resources, it ensures operational stability and continuity, which can enhance financial performance. In addition to reducing the costs of uncertainty (Ataburo et al., 2024), buffering strategy's ability to ensure SC stability allows firms to reliably meet customer demands. As a result, buffering strategy can improve key market outcomes (e.g., customer satisfaction, retention, and market share) and operational efficiency, ultimately boosting financial performance. Based on these arguments, we also propose that:

H1b: KAM firms' buffering strategy has a positive effect on financial performance.

2.4. The mediating role of responsiveness capability

We further argue that responsiveness capability is a major intervening mechanism through which KAM firms' bridging and buffering strategies contribute to improved performance. Greater responsiveness capability provides firms with the ability to rapidly modify existing products, introduce new products, and address changing market requirements (Moyano-Fuentes et al., 2016; Richey et al., 2021). Firms that pursue a bridging strategy are more effective at working closely with their SC partners to resolve challenges that interrupt and slow their operations while exploiting opportunities to improve responsiveness (Kim and Lee, 2010). For instance, through bridging strategy, manufacturers can engage in joint demand forecasting activities with upstream and downstream key accounts, and share information and other resources (e.g., expertise and technologies), thereby enhancing their ability to quickly deal with unexpected market changes (Kim and Lee, 2010; Williams et al., 2013). Bridging strategy improves visibility and situational awareness, enabling firms to quickly intercept and act on market information more rapidly (Williams et al., 2013). Moreover, by deepening collaboration and information sharing with SC partners, firms can quickly tap into valuable new ideas, information, and support from their suppliers and customers. These benefits of bridging strategy can enrich firms' ability to develop and launch new products and services rapidly to their key accounts. In support of these arguments, past studies indicate that bridging strategy is a significant driver of responsiveness capability (e.g., Kim and Lee, 2010; Nenavani and Jain, 2021).

Buffering strategy helps firms maintain critical resources along their SCs, which increases their ability to react to changes in the environment rapidly (Wagner et al., 2012; Novak et al., 2021). Consider a situation where a key account customer unexpectedly increases its regular order quantity, wants a shorter lead time, and desires greater variety on short notice. Firms implementing buffering strategy have more alternatives regarding material sourcing and production and how customer orders should be fulfilled (Wagner et al., 2012). Other things being equal, when buffering strategy is lacking, firms will have to wait for their few existing suppliers and service providers to adjust capacities to meet changes in the customer requirements, reducing the manufacturer's responsiveness capability. Furthermore, a core advantage of buffering strategy functioning as a shock absorber (Manhart et al., 2020) during environmental changes or SC disruptions is that it buys firms more time (Novak et al., 2021) to concentrate on strategic and more dynamic responses. Firms prioritize temporal reactions to uncertainties to protect the structure, configuration, and performance of their operations (Essuman et al., 2023b). Firms lacking buffering strategy can spend more time attempting to achieve this temporal, static resilience goal, missing opportunities for enacting strategic, long-term strategies that transform their current operations or introduce new products and services. In essence, buffering strategy can provide firms with more diverse critical resources for building and harnessing responsiveness capability (Wagner et al., 2012).

Meanwhile, CAS theory and the SC literature suggest that responsiveness capability enables firms to achieve an evolutionary fit with changes in their market environment to attain optimal performance (Novak et al., 2021; Richey et al., 2021; Tukamuhabwa et al., 2015). Highly responsive firms have the capability to respond to evolving customer requirements and competitor actions (Nenavani and Jain, 2021). Such a capability can help a firm to gain first-mover and differentiation advantages over rival firms. By assisting firms to align their processes and product offerings with changes in market requirements, a responsiveness capability affords firms more opportunities to excel in the market, boosting their financial performance

(Dobrzykowski et al., 2015; Nenavani and Jain, 202; Richey et al., 2021). These arguments are consistent with past studies showing that responsiveness capability enhances multiple performance outcomes, including operational performance (Nenavani and Jain, 2021; Yu et al., 2019), competitive advantage (Thatte et al., 2013), market performance (Kim and Lee, 2010), and overall firm performance (Qrunfleh and Tarafdar, 2013). Based on the CAS perspective, we argue that firms employing bridging and buffering strategies can be empowered to leverage these strategies to develop and strengthen their responsiveness capability (Novak et al., 2021), serving as a pathway to enhance their financial performance. Therefore, we test the following hypotheses:

H2: Responsiveness capability positively mediates the effect of (a)bridging strategy and (b) buffering strategy on financial performance.

2.5. SC disruption type as a boundary condition

SC disruptions are multifaceted and numerous (Azadegan et al., 2021; Bode and MacDonald, 2017). Examples include, but are not limited to, health-related emergencies, natural disasters, geopolitics, wars, terrorism, cyberattacks and technology failure, industrial strikes, macroeconomic meltdown and fluctuations, supply and demand market fluctuations, supplier and service provider failure, manufacturing plant downtime, and transportation failure (Bode and MacDonald, 2017; Essuman et al., 2023a; Wong et al., 2020). Given that the list of SC disruptions is non-exhaustive, past studies have employed different classification schemes to analyze such events (e.g., Azadegan et al., 2021; Schoenherr et al., 2023; Iyengar et al., 2021; Wong et al., 2020). Wong et al. (2020) categorize SC disruption into intensity of supply-side, infrastructure, and catastrophic disruptions, whereas Azadegan et al. (2021) classified the concept into exposure to minor and major SC surprises. Moreover, some studies focus on the intensity (Essuman et al., 2023a; Wong et al., 2020), or adverse impacts of such events (Ambulkar et al., 2015; Bode et al., 2011).

Broadly, while some disruptive events are peculiar to and occur within specific SCs (e.g., supplier bankruptcy, production plant failure, and product recall), others can have wide-ranging industry effects, disrupting multiple SCs (e.g., pandemics, geopolitical events, wars, and natural disasters). The literature refers to the former as idiosyncratic disruptions and the latter as covariate disruptions (e.g., Essuman et al., 2023b; Iyengar et al., 2021). This study follows this classification approach to analyze SC disruption type and argue that the effects of bridging strategy, buffering strategy, and responsiveness capability on financial performance would depend on the type of disruptions firms mainly experience.

SC disruptions generally pose threats to organizational stability and continuity (Bode et al., 2011; Kumar and Sharma, 2021), as they often lead to operational inefficiencies, missed or delayed deliveries, reputational damage, loss of key customers, and decreased sales revenue (Azadegan et al., 2021; Manhart et al., 2020). Additionally, SC disruptions introduce uncertainty, as firms may struggle to predict when, where, and how these disruptions will occur and spread throughout the SC. Firms also face difficulty in anticipating the full impact of such events (Bode and MacDonald, 2017; Essuman et al., 2023a). However, covariate and idiosyncratic disruptions differ in significant ways (Iyengar et al., 2021). As demonstrated by the Covid-19 pandemic and the Russia-Ukraine conflict, covariate disruptions tend to be more costly and have broader, longer-lasting negative consequences. Uncertainty is generally greater for covariate disruptions compared to idiosyncratic ones. This is because, unlike idiosyncratic disruptions, covariate disruptions have a larger scale and scope of impact, occur less frequently, and firms often have a limited understanding of their nature and effects (Azadegan et al., 2021; Iyengar et al., 2021).

Designing and implementing bridging and buffering strategies come with cost implications. For example, maintaining new or extra SC member linkages, as well as integrating and collaborating with existing SC members, requires time and financial investment. Scholars argue that investing in resilience-building strategies can be more profitable in high-vulnerability contexts than in low-vulnerability ones (Pettit et al., 2019; Wong et al., 2020). Firms must balance the information processing demands of the SC environment (e.g., uncertainty) with the level of these strategies to maximize benefits (Tushman and Nadler, 1978). OIP theorists, Tushman and Nadler (1978), posit that organizational "*effectiveness is a function of matching information processing capacities with information processing requirements*" (p. 662) and that "*too much capacity will be redundant and costly; too little capacity will not get the job done*" (p. 619).

Since covariate disruptions are less predictable and tend to be complex, unfamiliar, and high-impact events, firms require higher levels of bridging or buffering strategy to absorb and recover from their impacts than they would in idiosyncratic disruption scenarios (Azadegan et al., 2021). Increasing the level of bridging or buffering strategy for low-impact events, such as idiosyncratic disruptions, may lead to inefficiencies, thereby reducing their net financial benefits (Wong et al., 2020; Pettit et al., 2019). Therefore, this study expects that the net financial benefits of increasing either strategy will be greater in covariate disruption situations compared to idiosyncratic disruption situations. Therefore:

H3a: Bridging strategy has a stronger positive effect on financial performance in covariate disruption situations than in idiosyncratic disruption situations.

H3b: Buffering strategy has a stronger positive effect on financial performance in covariate disruption situations than in idiosyncratic disruption situations.

Like bridging and buffering strategies, building and managing responsiveness capability is costly. For example, altering existing production and delivery processes to meet diverse and changing customer requirements can involve additional expenses and reduce the benefits of standardization, such as economies of scale (Wagner et al., 2012; Williams et al., 2013). Given these cost concerns, the financial performance benefits of responsiveness capability are not guaranteed in all situations. For instance, Wagner et al. (2012) found that responsiveness capability enhances profitability more in supply and demand market environments characterized by high, rather than low, uncertainty. Extending this idea, we argue that SC disruption type moderates the effect of responsiveness capability on financial performance.

From a CAS perspective, we suggest that adaptive responses, enabled by responsiveness capability, are more desirable and cost-effective in covariate disruption scenarios than in idiosyncratic ones. Unlike covariate disruptions, idiosyncratic disruptions tend to be more familiar and predictable, allowing firms to manage them using existing routines and resources. Because idiosyncratic disruptions typically have a lower adverse impact on the structure and configuration of firms' SC and operations, there is less need and opportunity to change existing operations and products. Additionally, since building responsiveness capability is expensive, the net financial benefits of increasing it may be lower in idiosyncratic disruption scenarios.

The CAS literature highlights that greater responsiveness capability is not only essential for firms to thrive (Novak et al., 2021), but also that firms that adapt their business models and introduce new products and services during disruptions are more likely to gain market and economic advantages (Ivanov, 2021; Novak et al., 2021; Wieland and Durach, 2021). Since covariate disruptions tend to have broader and more lasting effects across industries, the benefits of responsiveness capability are often more sustained. Additionally, in covariate disruption situations, the investment benefits of responsiveness capability can outweigh the associated costs (Petit et al., 2019). Therefore, we anticipate that the positive indirect effects of bridging and buffering strategies on financial performance, mediated by responsiveness capability, will be stronger in covariate disruption situations than in idiosyncratic disruption situations:

H4a: The positive indirect effect of bridging strategy, through responsiveness capability, on financial performance is stronger in covariate than idiosyncratic disruption situations.

H4b: The positive indirect effect of buffering strategy, through responsiveness capability, on financial performance is stronger in covariate than idiosyncratic disruption situations.

3. Method

3.1. Data and procedure

Although SC disruptions and uncertainties are global challenges that firms are exposed to (Kumar and Sharma, 2021; Sheth, 2020), there are concerns about whether the strategies for managing these challenges are effective in all organizational contexts. There are therefore growing calls for more context-based studies in this area (Manhart et al., 2020). This study responds to such calls by collecting data from a previously unexplored context: B2B manufacturing firms in the United Kingdom that rely heavily on KAM programs (see Table 1 for profile information).

The data were collected using an online survey administered by Qualtrics. A purposive sampling method was used to select firms that met the study's inclusion criteria. Specifically, the firms included in the sample had to:1) be a manufacturing firm based in the UK (2007 UK SIC: 1011-3299), 2) employ at least 50 workers, 3) serve business customers, 4) use KAM programs to manage such customers, and 5) have been trading for at least three years.

We obtained 230 responses, of which 25 were excluded (e.g., due to short questionnaire completion times), leaving 205 valid responses. A sample of 205 compares well with those used in related prior studies (e.g., Kalaitzi et al., 2019; Mishra et al., 2016). It is also adequate for the purposes of testing measurement and structural models using confirmatory factor analysis and structural equation modeling (Bagozzi and Yi, 2012; Hair et al., 2019). For example, for a conservative 10:1 sample size-parameter ratio rule, the study's 17 indicators required 170 sample firms for testing the measurement model (Bagozzi and Yi, 2012). A Monte Carlo simulation analysis with 1,000 replications using Mplus 7.4 (Muthén and Muthén, 2002) indicates that a sample size of 205 is sufficient for validating the study's measurement model (see Table 3). By fixing the factor loadings at 0.80 and the associated residuals at 0.36 (Muthén and Muthén, 2002), the analysis yielded high statistical power values ranging from 0.910 to 0.965. We conducted a similar statistical power test for the path analysis model used to test the hypotheses (see Table 6). For small, medium, and large effect sizes (0.10, 0.30, and 0.50, respectively), the analysis produced statistical power values for the hypothesized and control paths ranging from 0.944 to 0.964, from 0.944 to 0.966, and from 0.940 to 0.968, respectively. These values are well above the 0.80 threshold for detecting significant effects.

The study's unit of analysis is, therefore, the firm using a KAM program rather than the KAM program per se. Given the SC perspective to operationalizing bridging and buffering strategies in this research and the strategic interdependency among supply chain, operations, purchasing management, and key account management, we obtained data from senior managers holding SC and operations-related positions in their respective firms (Bode et al., 2011; Mentzer et al., 2008; Zheng et al., 2007). The key informants included operations managers (49.8%), SC managers (27.3%), logistics managers (12.7%), and purchasing managers (10.2%). The informants had extensive experience and knowledge about the issues considered in the study based on their involvement with the KAM function within their organizations. We used a seven-point scale ranging from "strongly disagree (=1") to "strongly agree (=7)" to assess the informant's competence in several areas, including knowledge about issues captured in the questionnaire (mean = 6.04; standard deviation = 0.72), confidence in the answers provided (mean = 6.18; standard deviation = 0.76), confidence that answers provided reflect the organization's situation (mean = 6.21; standard deviation = 0.7), knowledge of SC disruptions the organization faces (mean = 6.22; standard deviation = 0.77), and knowledge of the organizations' SC relationships (mean = 6.19; standard deviation = 0.76). Furthermore, they had held their current positions for about 7.66 years (standard deviation = 5.22) and had industry experience of 16.19 years (standard deviation = 8.93).

--- Insert Table 1 here ---

3.2. Measure development

We followed a systematic procedure to generate indicators and develop questions to collect data. We relied on the constructs' operational definitions to identify relevant indicators from previous studies. Again, drawing from comments from researchers with expertise in the study's area, we revised the indicators and the questionnaire to ensure the face and content validity of the indicators. Moreover, we included several procedural measures to minimize common method bias (CMB). For example, ensuring that the indicators for the independent, mediator, and outcome variables were placed wide apart in the questionnaire to reduce artefactual correlations; promising informants confidentiality and anonymity to reduce socially desirable responses; ensuring measure clarity, and providing clear instructions for the informants to complete the questionnaire to minimize measurement errors (Podsakoff et al., 2003). Table 1 presents the indicators and their scales.

3.2.1 Substantive variables

Bridging and buffering strategies: We used three items each to measure bridging and buffering strategies. The items were adapted from Bode et al. (2011) and Mishra et al. (2016). The buffering strategy items measure the degree to which firms rely on multiple and alternative SC partners, including suppliers and customers. Bridging strategy items capture the extent to which firms collaborate and share information with their SC partners (Bode et al., 2011; Manhart et al., 2020).

Responsiveness capability: We adapted three items from Moyano-Fuentes et al. (2016) and Qrunfleh and Tarafdar (2013) to measure responsiveness capability. The items reflect the ability of B2B organizations that use KAM programs to adjust their product offerings while addressing changes in customer requirements (Moyano-Fuentes et al., 2016).

SC disruption type: Consistent with our theorization, we captured two SC disruption types: covariate disruptions and idiosyncratic disruptions (Essuman et al., 2023; Iyengar et al., 2021). The items used to measure covariate disruptions are external to the firms' SCs, and their occurrence typically affects multiple SCs and industries (e.g., natural disasters, regulatory turbulence, macroeconomic turbulence, geopolitical turmoil) (Essuman et al., 2023b). In the case of indicators of idiosyncratic disruptions, we used items that pertain to disruptive events that occur within specific SCs, and the extent of their unique impacts on those chains (e.g., supplier failure, plant/operations failure, technology, and communication breakdown). We captured the items by asking the informants to describe one SC disruption event that had significantly hindered or had sustained an adverse impact on their operations within the past three years. Two independent coders reviewed and categorized their responses into idiosyncratic and covariate disruptions. Events that exemplified idiosyncratic disruptions were coded as "0", whereas covariate disruption-related events were coded as "1". Table 2 details these disruptions.

Financial performance. We used six profitability indicators from prior studies (Katsikeas et al., 2006; Morgan et al., 2009) to measure financial performance. The informants used a seven-point scale ranging from “far below expectation” (=1)” to “far above expectation” (=7) to indicate the extent to which their firms met their financial performance improvement goals in the most recent financial year (Katsikeas et al., 2006).

3.2.2. Control variables

Besides SC disruptions, several firm-specific and external environmental factors may co-vary with SC disruption management strategies, responsiveness capability, and financial performance (Manhart et al., 2020). To address the issue of omitted variable bias, we included various control variables such as market unpredictability, international experience, firm age, internationalization intensity, firm size, scope of operations, and product type.

Market unpredictability is a significant characteristic of turbulent markets that restricts manufacturing firms from planning and operating deterministically. As a result, manufacturing firms may be motivated to develop responsiveness capability to thrive in unpredictable market conditions. To measure this construct, we utilized two indicators adapted from Guo et al. (2018) that reflect the difficulty in predicting market demand. Each indicator was rated on a seven-point scale, ranging from “strongly disagree (=1)” to “strongly agree (=7)”.

We included firm age and international experience as covariates, recognizing their significance as sources of experiential knowledge in navigating the business environment. We operationalized firm age as the natural logarithm transformation of the number of years of operations and international experience as the natural logarithm transformation of the number of years of doing business in foreign markets.

We further controlled for firm size and internationalization intensity. These factors can contribute to firms’ ability to build and leverage slack resources to implement buffering and bridging strategies and develop responsiveness capability. We operationalized firm size the natural logarithm transformation of overall annual sales revenue (Coote et al., 2003), and internationalization intensity was represented by the natural logarithm transformation of annual foreign market sales revenue (Buccieri et al., 2022).

SC vulnerability issues may differ based on the scope of operations. Firms serving both local and international markets are likely to face greater complexity and uncertainty than those solely serving international markets, with all other factors held constant. We assigned a value of 1 to firms operating in both local and international markets and 0 to firms serving international markets only (Liu et al., 2021).

Our sample comprises manufacturing firms that specialize in a diverse range of products. Different product offerings could require distinct manufacturing and SC designs and configurations to cater to specific markets. We recognize that vulnerability varies across such contexts. Based on the frequency distribution of the data, we created four dummy variables to control for potential sector effects: 1 = "industrial machinery and machine tools", 0 = "otherwise"; 1 = "engineering and construction materials", 0 = "otherwise"; 1 = "chemicals, plastics, and rubber", 0 = "otherwise"; 1 = "consumer goods", 0 = "otherwise".

--- Insert Tables 2 and 3 here ---

4. Analysis and Results

We assessed missing data, normality, and outlier issues (Kline, 2011; Hair et al., 2019). There was no missing data. The skewness values for the indicators range from -1.008 to 0.314, whereas the Kurtosis values range from -0.549 to 1.070, suggesting no normality concerns (Kline, 2011). We performed Mahalanobis distance analysis on all independent variables to check for multivariate outliers (Hair et al., 2019). Three cases were outliers. To ensure these cases do not distort the study's conclusions, we tested the conceptual model with and without them (Hair et al., 2019). The results remained the same, indicating that they were no major concerns. We accordingly use the full sample data.

4.1. Measurement model analysis

We used covariance-based confirmatory factor analysis (CB-CFA) to validate our measurement indicators. The analysis used a maximum likelihood estimator, as the data does not violate normality assumptions. We use this analytical technique as the study's constructs explain the variances in their indicators, causing them to covary (Sarstedt et al., 2024; Bagozzi and Yi, 2012). We used Mplus 7.4, a major CB-CFA software package (Sarstedt et al., 2024), to perform the analysis. We estimated a multi-factor CB-CFA model, allowing for a holistic evaluation of the psychometric properties of the indicators (Hair et al., 2019).

As shown in Table 3, the results reveal that the items exhibit unidimensionality, convergent validity, and discriminant validity. For instance, the multi-confirmatory factor analysis model fits the data: Chi-square (χ^2) = 190.88, degree of freedom (DF) = 109, normed χ^2 = 1.75, root mean square error of approximation (RMSEA) = 0.06, comparative fit index (CFI) = 0.94, non-normed fit index (NNFI) = 0.93, standardized root mean square residual (SRMR) = 0.05 (Bagozzi and Yi, 2012). Again, the composite reliability values (ranged from 0.72 to 0.88) are all greater than 0.70 (Bagozzi and Yi, 2012). These values and the satisfactory model fit results demonstrate the internal consistency and convergent validity of the indicators (Bagozzi and Yi, 2012; Hair et al., 2018).

The average variance extracted values (AVEs) for the items are greater than 0.50, except for the buffering strategy items, whose AVE was 0.46. We retained the buffering strategy items for both theoretical and statistical reasons. Although the items reflect different ways in which firms can implement a buffering strategy (Manhart et al., 2020), they are quite distinct. For example, the first item concerns the diversity of sourcing locations, whereas the last focuses on the extent to which the focal firm is not critically dependent on any specific supply chain partner (suppliers or customers). Thus, for this reason, the likelihood of the items having a high AVE is expected to be low. Also, the composite reliability of the buffering items exceeds 0.70 while the AVE is greater than all shared variances for the latent variables (Bagozzi and Yi, 2012; Fornell and Larcker, 1981). Accordingly, we retained the three items for buffering to preserve content validity.

We assessed discriminant validity by comparing the AVEs with the shared variances between indicators. This analysis enables researchers to determine whether the unique variances of the constructs' indicators, as estimated by the AVEs, exceed their shared variances. Discriminant validity is established when the AVEs are greater (Voorhees et al., 2016; Hair et al., 2019). The correlations between the latent constructs ranged from 0.26 to 0.46, with corresponding shared variances of 0.07 to 0.21, all of which are well below the AVEs. Thus, the study’s indicators demonstrate discriminant validity (Voorhees et al., 2016; Hair et al., 2019).

To statistically address the possibility of CMB in the data, we included negative affectivity as a marker variable in the study's questionnaire (Podsakoff et al., 2003) measured with three items derived from Menguc et al. (2014), namely (1) minor setbacks tend to irritate me too much; (2) often, I get irritated at little annoyances; and (3) there are days when I am "on-edge" all of the time. Each item was rated on a seven-point scale (strongly disagree =1, strongly agree =7). These items satisfy the two marker variable criteria (Lindell and Whitney, 2001): (1) the items are theoretically unrelated to the latent variables of interest, and (2) they exhibit strong internal consistency, given Cronbach's alpha = 0.89, mean = 3.88, standard deviation = 1.61. As shown in Table 4, the marker variable does not correlate with most of the study's latent variables. In particular, the direction, magnitude, and level of significance of the marker variable adjusted correlations are similar to those of the zero-order correlations.

Moreover, consistent with our conceptual model, we analyzed two regression models, with responsiveness capability and financial performance as the dependent variables. We estimated baseline models with only the substantive and control variables. Next, we estimated other models that add the marker variable as an independent variable to those in the baseline models (Menguc et al., 2014). The change in the R^2 of models of responsiveness capability ($\Delta R^2 = 0.009$, $\Delta F = 2.082$, $p = 0.151$) and ($\Delta R^2 = 0.000$, $\Delta F = 0.039$, $p = 0.844$) was statistically nonsignificant. Together, these results suggest that CMB is not a major concern in the study.

--- Insert Tables 4 and 5 here ---

4.2. Structural model analysis and hypotheses evaluation

Table 5 presents the correlations and the descriptive statistics for the variables in the analysis. Our conceptual model comprises direct, indirect, mediated, and moderated direct and indirect effects. Considering these complex relationships (including the several control paths), we used Mplus path analysis as a model estimation technique to avoid the risk of violating sample size-parameter ratio assumptions. We averaged the validated multi-reflect items to create single indicants for their respective constructs (Miocevic et al., 2023).

We coded SC disruption type as a dummy variable and used a multiplicative term instead of a split-sample technique to test the moderation-related hypotheses for two reasons. A multiplicative term technique allowed us to control for the potential direct effect of the moderating variable. It also preserved the sample size (Aguinis et al., 2017). Because the hypotheses include main and moderated effect paths, and to control for and correctly interpret these paths, we mean-centered the variables used to create the multiplicative term (Menguc et al., 2014).

To correctly interpret statistical results for the hypothesized relationships, we estimated a single empirical model that includes all the hypothesized and control paths (Aguinis et al., 2017). We followed Stride et al.'s (2015) Mplus Code to analyze different configurations of moderation, mediation, and conditional process models. This approach allowed us to use bootstrapping procedures to test the indirect and conditional relationships (Aguinis et al., 2017) and analyze the relationships of interest for each SC disruption type (Stride et al., 2015). We set the number of bootstrap samples for calculating the indirect and conditional indirect effects to 10,000 and used a 95% confidence interval (CI) to evaluate the associated hypotheses (Stride et al., 2015). Table 6 shows the path analysis results.

The conceptual model, including the control variables, significantly explains 39.2% variance in responsiveness capability ($F = 4.440$, $p < 0.001$) and 24.3% variance in financial performance ($F = 7.583$, $p < 0.01$). Three of the control variables, internationalization intensity ($\beta = -0.07$, $p = 0.05$), market unpredictability ($\beta = 0.26$, $p < 0.01$), and chemicals, plastics, and rubber manufacturers ($\beta = 0.34$, $p = 0.05$) affect responsiveness capability. However, only one control variable, firm size ($\beta = -0.08$, $p = 0.05$), affects financial performance.

Bridging strategy has a positive but non-significant effect on financial performance ($\beta = 0.11$, $p = 0.27$). Buffering strategy has a positive and significant effect on financial performance positively ($\beta = 0.14$, $p = 0.04$). These results support H1b but not H1a.

Both bridging strategy ($\beta = 0.39$, $p < 0.001$) and buffering strategy ($\beta = 0.28$, $p < 0.001$) have positive and significant effects on responsiveness capability, which in turn has positive and significant effect on financial performance ($\beta = 0.18$, $p = 0.03$). Moreover, bridging strategy ($\beta = 0.07$, 95% CI: 0.02, 0.16) and buffering strategy ($\beta = 0.05$, 95% CI: 0.02, 0.11) have positive and significant indirect effects, through responsiveness capability, on financial performance. These results support H2a and H2b. Of the 24.3% variance the conceptual model explains in financial performance, the mediating variable, responsiveness capability, uniquely accounts for 2.8%. Considering the results for H1a-b and H2a-b, the study finds that responsiveness capability partially mediates the effect of buffering strategy on financial performance and fully mediates the effect of bridging strategy on financial performance. However, the effect sizes associated with these two mediation paths are not statistically different (Δ indirect $\beta = 0.02$, $p > 0.05$).

The interaction between SC disruption type and bridging strategy does not significantly affect financial performance ($\beta = 0.05$, $p = 0.80$). Although a slope analysis suggests that bridging strategy has a stronger positive effect on financial performance in covariate disruption situations ($\beta = 0.13$, CI: -0.07, 0.36) than in idiosyncratic disruption situations ($\beta = 0.08$, CI: -0.15, 0.34), the effect is nonsignificant in both cases. These results do not support H3a. Similarly, the interaction between SC disruption type and buffering strategy does not significantly affect financial performance ($\beta = 0.05$, $p = 0.73$). However, slope analysis indicates that buffering strategy has a stronger positive effect on financial performance in covariate disruption situations ($\beta = 0.16$, 95% CI: 0.03, 0.31) than in idiosyncratic disruptions ($\beta = 0.11$, 95% CI: -0.10, 0.27), with the effect being significant only in the covariate disruption situations, partially supporting H3b.

The interaction between SC disruption type and responsiveness capability positively affects financial performance ($\beta = 0.39$, $p = 0.02$). Slope analysis reveals that responsiveness capability has a positive and stronger effect on financial performance in covariate disruption situations ($\beta = 0.35$, 95% CI: 0.18, 0.54]) than in idiosyncratic disruption situations ($\beta = 0.00$, 95% CI: -0.17, 0.19). Also, responsiveness capability positively mediates the relationships between bridging and buffering strategies and financial performance in covariate disruption situations ($\beta = 0.14$, 95% CI: 0.06, 0.26; $\beta = 0.10$, 95% CI: 0.05, 0.19) but not in idiosyncratic disruption situations ($\beta = 0.00$, 95% CI: -0.07, 0.09; $\beta = 0.00$, 95% CI: -0.05, 0.05). These results support H4a and H4b.

--- Insert Table 6 here ---

5. Discussion of Key findings

This study advances theoretical and contextual understanding of the financial performance outcomes of bridging and buffering strategies among KAM firms. In drawing insights from the OIP and CAS theories, the study developed a conceptual model to address two key questions: 1) How do bridging and buffering strategies independently affect financial performance among KAM firms? and 2) Does SC disruption type moderate these effects? For the first question, the study hypothesized that bridging and buffering strategies have direct positive effects on financial performance, with responsiveness capability mediating these effects. Regarding the second question, the study argued that the direct and indirect effects of bridging and buffering strategies on financial performance are stronger in covariate than in idiosyncratic disruption situations.

We focus on firms employing KAM programs so that we can isolate mechanisms that would not be strong enough for non-KAM firms. In non-KAM settings bridging and buffering strategies are likely to be weaker or less targeted, due to the transactional nature of customer relationships and lower prioritization of strategic customer accounts (Cheverton, 2015; Lautenschlager and Tzempelikos, 2024). Hence, financial benefits might be weakened, highlighting the relevance of the KAM setting as a boundary condition for this study. Importantly, although bridging and buffering strategies are often implemented outside formal KAM teams, they generate downstream benefits that directly support KAM operations; bridging provides information and relational insights that enable KAMs to customize offerings an improve customer value, while buffering ensures operational continuity that KAMs can leverage to sustain customer satisfaction and mitigate financial risks (Bode et al., 2011; Manhart et al., 2020). In the following sections, we discuss the findings, draw implications for both research and practice, and highlight the study's limitations.

There are four major findings from the study. First, the path analysis reveals that buffering strategy has a stronger significant positive association, while bridging strategy shows a nonsignificant positive effect on financial performance. The correlation results also align with the OIP perspective which posits that these strategies, functioning as uncertainty-reducing mechanisms, protect the stability and continuity of existing SC operations, thereby improving financial performance (Manhart et al., 2020; Tushman and Nadler, 1978). However, the weak association between bridging strategy and financial performance is somewhat surprising, given that one would have expected bridging strategy to help firms better understand the requirements of existing SC members and more effectively connect with them to offer superior products and services to key accounts at a lower cost (Flynn et al., 2010; Kalaitzi et al., 2019; Srinivasan and Swink, 2018). Although there is a lack of prior studies on the relative financial performance outcomes of bridging and buffering strategies to inform our discussion of this unexpected finding, there are good reasons to expect differences in the financial benefits of these strategies.

Both strategies involve financial commitments, but buffering strategy increases relational complexity and may lead to inefficiencies, as it requires firms to recruit and manage additional or alternative members (Ataburo et al., 2024; Azadegan et al., 2021). Despite this, buffering strategy offers firms greater operational flexibility and a cushion against uncertainties (Ataburo et al., 2024). In addition to its capacity to allow firms to protect and ensure the continuity of their existing value-creation processes, buffering strategy can also help firms mitigate financial losses resulting from interrupted operations or unmet customer orders. In contrast, bridging strategy, which focuses on leveraging ties with existing SC members, is less likely to create relational complexity or inefficiencies (Srinivasan and Swink, 2018). However, such a strategy may provide limited protection for firms' SC operations. For instance, if one of the SC members included in a firm's bridging strategy fails to fulfill its role on time, the firm is left with fewer alternatives, potentially jeopardizing its value-creation processes. In this study's context, where firms manage key accounts, such failure could have huge financial implications.

Second, slope analyses of the data reveal that bridging and buffering strategies have stronger positive effects on financial performance in firms facing covariate disruptions compared to those experiencing idiosyncratic disruptions. Notably, buffering strategy shows a significant effect in covariate disruption situations. These findings broadly align with our theorization, grounded in the OIP concept of 'fit', which suggests that uncertainty-reducing mechanisms are more effective in high-certainty contexts (Srinivasan and Swink, 2018; Tushman and Nadler, 1978). This study argues that uncertainties, and consequently inefficiencies, associated with SC disruptions vary by disruption type and are likely higher in covariate disruption contexts (Azadegan et al., 2021). Expanding on the discussion on the main effects of bridging and buffering strategies, buffering strategies may be more financially beneficial than bridging strategy, especially in situations of high uncertainty. Unlike bridging strategy, buffering strategy offers greater risk spread and operational flexibility, which can be especially valuable in situations where the scale and scope of disruption impact is greater i.e., covariate disruption contexts (Azadegan et al., 2021).

Third, a mediation analysis of the relationships indicates that responsiveness capability is an important conduit through which both bridging and buffering strategies are channeled towards financial benefits. This finding supports our argument, from the CAS perspective, that while bridging and buffering play stability and continuity roles by reducing uncertainty, they can also enable firms to develop adaptive capabilities (Novak et al., 2021) to align with changing conditions in their customer markets (Richey et al., 2021). Buffering strategy offers resource flexibility advantages (Azadegan et al., 2021), whereas bridging strategy provides informational and relational advantages (Flynn et al., 2010) that support firms ability to rapidly adjust their value-creation processes to better serve customers. These responsiveness-enabling roles of bridging and buffering strategies are particularly crucial for firms using KAM, which requires dynamic and innovative responses (Lautenschlager and Tzempelikos, 2024).

Fourth, the interaction and slope analyses show that while responsiveness capability improves financial performance more in covariate than in idiosyncratic disruption situations, its role as a mediator linking bridging and buffering strategies to financial performance is more effective in the former disruption context. The literature suggests that responsiveness capability reflects resilient, adaptive, and flexible SC operations (Richey et al., 2021). Although responsiveness capability helps firms create new value for customers, it can also lead to inefficiencies, and its payoff may vary depending on the context. The findings of this study align with those of Wagner et al. (2012), which indicate that responsiveness capability is more profitable in uncertain SC environments. Compared to idiosyncratic disruptions, covariate disruptions tend to introduce greater changes and uncertainties to SC operations (Azadegan et al., 2021; Iyengar et al., 2021). A firm's ability to innovate in its operations and products is crucial for economic success during covariate disruptions (Ali et al., 2024), where the benefits of responsiveness capability may outweigh its costs. In contrast, when disruptions have a limited scale and scope, emphasizing responsiveness capability may yield lower benefits. Therefore, the potential for responsiveness capability to help firms realize the financial benefits of bridging and buffering strategies is likely to be greater in covariate disruption situations than in idiosyncratic conditions.

Finally, beyond the effects of the study's substantive variables, the results reveal that three control variables—market unpredictability, internationalization intensity, and sector subgroup—uniquely explain significant variations in responsiveness capability. Additionally, one control variable, firm size, accounts for a significant variation in financial performance. A major implication of these findings is that the study's conceptual model is influenced by other factors, and the control variables with significant effects help mitigate potential omitted variable concerns.

6. Implications, Limitations, and Future Research Avenues

6.1. Theoretical Implications

While the KAM literature places emphasis on bridging, SC researchers argue that both bridging and buffering strategies are important contributors to organizational success. However, there is a lack of theoretical and empirical analysis of their unique roles, intervening mechanisms, and boundary conditions. Based on their meta-analysis of the effects of bridging and buffering strategies on SC risk management (i.e., resilience capabilities), Manhart et al. (2020) speculated that these strategies are essential for driving firm performance outcomes, recommending further research in this area, particularly in specific organizational contexts. Accordingly, we focus on firms employing KAM programs, where bridging and buffering strategies are more targeted and likely to generate measurable financial benefits. In contrast, in non-KAM settings, bridging and buffering strategies are typically less targeted and strategically prioritized. Non-KAM customers may experience more transactional relationships, which limits the degree of integration, information sharing and coordination of the supply chain (Flynn et al., 2010; Kalaitzi et al., 2019). Bridging activities in non-KAM firms often include standardized information flows and less opportunities for joint decision-making and planning, thus reducing responsiveness to market needs and innovation (Srinivasan and Swink, 2018). Similarly, effects attributed to buffering activities may be reduced, leaving non-KAM customers exposed to volatility and uncertainty (Ataburo et al., 2024; Azadegan et al., 2021). Consequently, the downstream effects of bridging and buffering strategies on performance are diminished for non-KAM customers, highlighting the importance of the KAM setting as a boundary condition for enhancing financial benefits.

This study's analysis based on data from firms using KAM provides important clarity regarding the performance implications of bridging and buffering. The results suggest that while both strategies may directly benefit financial performance, the magnitude of this effect may differ, and important contingencies may influence their performance outcomes. Additionally, the study identifies responsiveness as an intervening variable linking bridging and buffering strategies to financial performance, especially in covariate disruption conditions. This contribution is significant, as prior studies have relied on bivariate analyses to speculate about how these strategies indirectly benefit firms without specifying the boundaries of such benefits (Manhart et al., 2020; Mishra et al., 2016).

This research contributes to the literature on responsiveness capability by identifying SC disruption type as a key boundary condition. Prior conceptual analyses suggest that SC disruptions generally influence responsiveness capability but do not offer insights into how its performance effects vary based on the type of disruption (Richey et al., 2021). By analyzing SC disruptions as either covariate or idiosyncratic, this study provides theoretical insights into the extent which these disruption types alter the relationship between responsiveness capability and financial performance. A key takeaway from this research is that recognizing the differences between SC disruptions is crucial for better understanding their effects on organizational capabilities and outcomes (Azadegan et al., 2021). Furthermore, these findings suggest that such boundary conditions may be less significant for non-KAM settings, where the financial benefits of bridging and buffering strategies may be lessened.

Moreover, this study advances existing theoretical analyses on the value of bridging and buffering strategies. While past research has primarily focused on the uncertainty-reducing benefits of these strategies, emphasizing stability and continuity (Bode et al., 2010; Manhart et al., 2020; Mishra et al., 2016), our study adopts a CAS perspective to explain how these strategies help firms adapt their operations and products (Novak et al., 2021). In this context, the research highlights the dual roles of bridging and buffering strategies in enabling *stability* and *adaptability* to drive firm performance outcomes.

In summary, this study's shed empirical insights into whether and how the value of bridging and buffering strategies extends to unique organizational context (Manhart et al., 2020) while expanding the existing SC perspective in KAM literature (Kumar et al., 2019; Sandesh et al., 2023). It offers a novel theoretical contribution by using CAS literature to theorize and empirically demonstrate how responsiveness capability mediates the financial performance effects of these strategies, depending on the type of SC disruption firms face.

6.2 Practical implications

The empirical findings from this study provides a useful guide to key account managers regarding how to manage the costs and benefits associated with bridging and buffering strategies across disruption contexts. Importantly, our findings suggest that both bridging and buffering strategies enhance operational stability and continuity, which are vital for financial success. However, in the context of firms using KAM, the study's findings indicate that the direct contributions of these bridging and buffering strategies to financial performance may differ.

Overall, buffering strategy seems more beneficial and even more so in situations characterized by greater scale and scope of disruption impact.

Key account managers must also recognize that both strategies have distinct uses, and their success in driving financial performance depends on having the right mechanisms in place to harness their potential. For instance, this study suggests that firms need to develop responsiveness capabilities to fully capitalize on both bridging and buffering strategies to enhance financial performance. Responsiveness allows firms to transform these strategies into added value for their key accounts. Therefore, in addition to investing in bridging and buffering strategies, managers should focus on improving their responsiveness capabilities. Specifically, rather than solely using these strategies to reduce uncertainty, they can also channel them into boosting responsiveness. Bridging strategy can help firms tap into existing SC relationships to access the information and relational resources needed to launch new products and adapt operations quickly to better serve customers, while buffering strategy, on the other hand, can expand a firm's capacity by providing access to a broader range of resources, enabling them to initiate changes in operations and product offerings.

At the same time, managers need to recognize that expanding responsiveness comes at a cost. Any effort to improve responsiveness should be carefully evaluated based on how much the firm's operating environment demands such a capability. In the firms studied, the findings suggest that leveraging bridging and buffering strategies to strengthen responsiveness is particularly beneficial in SC disruptions with widespread impacts. In such cases, responsiveness helps firms adjust and reposition themselves in response to new conditions.

6.3 Limitations and future research avenues

The study results should be evaluated considering some theoretical and methodological limitations. First, the study presents a conceptual model with general implications beyond its empirical context. Although this study responds to calls for research that uses context-based data to explore the consequences of bridging and buffering strategies (Manhart et al., 2020), it does not incorporate relevant context-based concepts in its theorization and empirical analysis. Specifically, while the study focuses on firms using KAM, it does not capture KAM concepts to offer nuanced insights. Recent reviews provide extensive discussions on the state of empirical research on KAM and reveal specific KAM concepts (Sandesh et al., 2023) relevant to the discussions about the performance consequences of bridging and buffering strategies. From a KAM perspective, bridging and buffering strategies can be effective tools for implementing KAM programs, potentially serving as mechanisms to explain the financial performance outcomes of these strategies (Sandesh et al., 2023). Drawing insights from Sandesh et al. (2023), future research can analyze these mechanisms and their associated boundary conditions.

Another context-based approach to delineating the boundaries of this study's model involves testing it at different levels of KAM maturity and formalization. Future studies could explore these distinctions by examining (1) differences between KAM and non-KAM firms, (2) variations among firms at different stages of KAM maturity, and (3) the influence of different KAM structures and levels of formalization. The latter two align with critical questions proposed by Homburg et al. (2002) in designing KAM approaches, namely 'with whom in the organization is cooperation needed?' and 'how formalized should the KAM approach be?'—which are still relevant today. These research avenues would offer valuable contributions to both KAM literature and practice, providing strong justifications for adopting KAM approaches and highlighting the resource requirements essential for KAM success. Additionally, future research could explore how disruptive supply chains impact KAM relationships and strategies, while also considering differences between firms operating in emerging and developed economies (e.g., Sandesh et al. 2023). Investigating these dynamics would provide valuable insights into how firms adapt their KAM practices in varying economic and market conditions.

The study's findings on the varying effects of bridging and buffering strategies on performance call for further theoretical elaboration beyond what is discussed in this study. The context-based analysis and operationalization of these strategies, as outlined by Manhart et al. (2020), can serve as a useful starting point. However, we believe that future research could provide valuable insights by investigating factors that better explain the cost-benefit trade-offs associated with each strategy. For instance, Ataburo et al. (2024) argue that buffering strategy does not always lead to inefficiencies; the extent of inefficiency may depend on whether a firm prioritizes efficiency or how it goes about implementing this strategy. We anticipate that artificial intelligence could play a role in guiding decisions on where to emphasize bridging or buffering strategies within the SC to maximize economic benefits. Therefore, differences in firms' AI capabilities might help clarify the effects of these strategies.

This study identifies responsiveness capability as a mediating mechanism that explains the positive effects of bridging and buffering strategies. Responsiveness capability is supported by other capabilities such as resilience, adaptability, flexibility, and improvisation (Richey et al., 2021), which were not directly measured in this study. Future research can explore the unique or relative mediating roles of these factors. Additionally, while this study's analysis of two types of SC disruption situations offers some insights into where buffering strategy and responsiveness capability may be more financially rewarding, the literature offers other approaches to classifying and operationalizing SC disruptions. Following Azadegan et al. (2021), future research can analyze different aspects of SC disruption: major versus minor impact disruptions, familiar versus surprise disruptions, and various combinations of these disruption types. Such operationalizations of the SC disruption concept may have distinct implications for theorizing the boundary conditions of bridging and buffering strategies.

This study focused on analyzing its variables within a specific organizational context rather than aiming for broader empirical generalization. While the results are limited to the firms examined, the relatively small sample size may account for the non-significant effects, which nonetheless align with the study's theoretical predictions. We encourage replication studies to verify these findings. Furthermore, while the study used single-sourced cross-sectional survey data, which demonstrated reliability and validity and is consistent with data used prior research (e.g., Mishra et al., 2016; Wong et al., 2020), future research could employ more robust methodologies, such as multi-sourced data or longitudinal surveys.

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Table 1. Sample and informant characteristics.

Variable	Category	2007 UK SIC code	Frequency	Percent (%)
Firm's primary product	Industrial machinery, machine tools	2811-2899	26	12.7
	Electronics, optics, medical devices	2611-2620; 2670-2680	19	9.3
	Automotive	3011-3020	13	6.3
	Chemicals, plastics, rubber	2011-2060; 2211-2229	22	10.7
	Metals, metal working	2410-2454	18	8.8
	Pharmaceuticals, health care	2110-2120	7	3.4
	Paper and packaging	1711-1729	10	4.9
	Engineering, construction	2311-2370	32	15.6
	Textiles and clothing	1310-1520	1	0.5
	Food, beverages, and other consumer goods	1011-1107; 3101-3109	23	11.2
	Aerospace, defense	3030-3040	10	4.9
	Telecommunications	2630	4	2.0
	Other manufacturing	2511-2599; 3211-3299	20	9.8
Firm's scope of operation	International operations only		48	23.4
	Domestic and international		157	76.6
Informant's position	Supply Chain Manager		56	27.3
	Logistics Manager		26	12.7
	Purchasing Manager		21	10.2
	Operations Manager		102	49.8

Variable	Mean	Standard deviation
Firm size (annual sales revenue, £)	344,124,393.81	1,342,786,506.07
Firm age (in years)	44.24	46.94
Firm's international experience (in years)	26.53	24.93
Internationalization intensity (five-year annual foreign sales, £)	1,375,766,618.18	11,299,091,500.03
Informant's position experience (in years)	7.66	5.22
Informant's industry experience (in years)	16.19	8.93

Table 2. SC disruption type.

Disruption types	Indicative responses	Frequency	%
Idiosyncratic disruption	Disputes with suppliers, material shortages, shipment delays, custom delays, transportation failure, poor quality supplies, IT/communication failure, and machine breakdowns.	97	47.3
Covariate disruption	Brexit, trade wars, US-China trade war, international trade barriers, insurgency/terrorism, government policies, natural disasters, regulatory changes, industrial strikes, and pandemics	108	52.7

Table 3. Measurement reliability and validity.

Construct/items	Loading	t-value
Bridging strategy (CR = 0.76; AVE = 0.51)		
We share information with supply chain partners (i.e., suppliers and customers)	0.63	8.69
We have integration among different departments of our firm	0.75	10.75
We have collaborative relations with our supply chain partners	0.77	11.12
Buffering strategy (CR = 0.72; AVE = 0.46)		
We select suppliers from diversified regions (alternative suppliers) to avoid the risk of supply in specific areas	0.63	8.69
We use multiple supply chain partners to minimize our supply risks	0.79	11.14
We are not critically dependent on a specific supply chain partner	0.61	8.42
Responsiveness capability (CR = 0.83; AVE = 0.62)		
We can quickly modify products to meet our major customer's requirements	0.68	10.18
We can quickly introduce new products into the market	0.84	13.60
We can quickly respond to changes in market demand	0.83	8.42
Financial performance (CR = 0.88; AVE = 0.56)		
Profit	0.73	11.69
Return on sales	0.61	9.23
Growth in ROI	0.73	11.64
Return on investment (ROI)	0.79	12.90
Growth in return on sales	0.74	11.78
Growth in profit	0.87	15.19
Market unpredictability (CA = 0.71; CR = 0.72; AVE = 0.56)		
It is difficult to predict market and customer preference changes	0.83	7.91
It is very difficult to forecast where customer demand in our industry will be in five years	0.66	7.05

Notes: CR = composite reliability; AVE = average variance extracted.

Table 4. Common method bias assessment.

	Variable	1	2	3	4	5	6
1	Financial performance		0.29^{**}	0.29^{**}	0.25^{**}	0.08	0.08
2	Responsiveness capability	0.30^{**}		0.45^{**}	0.43^{**}	0.39^{**}	0.00
3	Buffering strategy	0.30^{**}	0.46^{**}		0.41^{**}	0.21^{**}	-0.10
4	Bridging strategy	0.26^{**}	0.45^{**}	0.42^{**}		0.20^{**}	-0.15^{*}
5	Market unpredictability	0.09	0.41^{**}	0.23^{**}	0.22^{**}		0.15^{*}
6	Marker variable	0.10	0.02^{a}	-0.08	-0.12	0.17^{*}	1

Notes: Zero-order correlations are below the principal diagonal, whereas marker variable adjusted correlations are above the principal diagonal; [a] Marker variable proxy; $^{*}p < 0.05$(2-tailed); $^{**}p < 0.01$ (2-tailed).

Table 5. Correlations and descriptive statistics.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Financial performance															
2. Responsiveness capability (RC)	0.30														
3. Buffering strategy	0.30	0.46													
4. Bridging strategy	0.26	0.45	0.42												
5. SC disruption type (covariate =1) (SCD)[a]	0.10	0.08	-0.02	-0.03											
6. International experience (log)	-0.11	-0.11	-0.06	-0.06	-0.03										
7. Internationalization intensity (log)	-0.04	-0.09	0.04	0.09	-0.05	0.25									
8. Firm size	-0.13	-0.07	0.06	0.05	-0.03	0.28	0.73								
9. Firm age	-0.04	-0.11	-0.04	-0.02	0.04	0.70	0.12	0.14							
10. National and international operations [a]	-0.10	-0.10	-0.06	0.01	-0.02	0.11	0.17	0.18	0.12						
11. Market unpredictability	0.10	0.41	0.23	0.22	0.02	-0.03	-0.02	-0.12	-0.07	-0.10					
12. Industrial machinery and machine tools [a]	0.04	-0.02	0.04	-0.03	0.01	0.00	-0.09	-0.01	0.13	-0.03	-0.10				
13. Engineering and construction materials [a]	-0.01	0.07	0.21	0.05	-0.13	-0.09	0.09	0.05	-0.09	0.05	0.11	-0.16			
14. Chemicals, plastics and rubber [a]	-0.02	0.04	-0.04	-0.12	0.14	0.09	0.03	-0.02	0.07	0.08	0.01	-0.13	-0.15		
15. Consumer goods [a]	0.06	0.04	0.05	0.03	0.16	-0.22	-0.11	-0.02	-0.12	-0.16	0.07	-0.13	-0.15	-0.12	
Minimum	2.00	1.33	1.67	3.67	0.00	0.00	12.90	11.51	0.70	0.00	1.50	0.00	0.00	0.00	0.00
Maximum	6.50	7.00	7.00	7.00	1.00	5.19	25.57	23.21	2.70	1.00	7.00	1.00	1.00	1.00	1.00
Mean	4.54	5.16	4.99	5.45	0.53	2.95	16.80	17.12	1.51	0.77	4.98	0.13	0.16	0.11	0.10
Standard deviation	0.93	1.13	1.12	0.83	0.50	0.83	2.34	2.20	0.33	0.42	1.20	0.33	0.36	0.31	0.30

Notes: [a] dummy variable; $r \geq |0.14|$ are significant at 5% (2-tailed).

Table 6. Structural model results.

Main and moderating effect paths			β	SE	p	R^2
Bridging strategy	→	Responsiveness capability	0.39	0.09	<0.001	39.2%
Buffering strategy	→	Responsiveness capability	0.28	0.08	<0.001	
International experience	→	Responsiveness capability	-0.04	0.12	0.77	
Internationalization intensity	→	Responsiveness capability	-0.07	0.04	0.05	
Firm size	→	Responsiveness capability	0.04	0.04	0.37	
Firm age	→	Responsiveness capability	-0.18	0.29	0.53	
National and international operations	→	Responsiveness capability	-0.13	0.13	0.32	
Market unpredictability	→	Responsiveness capability	0.26	0.08	<0.001	
Industrial machinery and machine tools	→	Responsiveness capability	0.01	0.18	0.95	
Engineering and construction materials	→	Responsiveness capability	-0.06	0.19	0.77	
Chemicals, plastics and rubber	→	Responsiveness capability	0.34	0.17	0.05	
Consumer goods	→	Responsiveness capability	-0.11	0.18	0.53	
Responsiveness capability (RC)	→	Financial performance	0.18	0.08	0.03	24.3%
Bridging strategy (BDS)	→	Financial performance	0.11	0.10	0.27	
Buffering strategy (BFS)	→	Financial performance	0.14	0.07	0.04	
Covariate SC (CSC)	→	Financial performance	0.16	0.12	0.20	
RC × CSC	→	Financial performance	0.36	0.15	0.02	
BDS × CSC	→	Financial performance	0.05	0.20	0.80	
BFS × CSC	→	Financial performance	0.05	0.15	0.73	
International experience	→	Financial performance	-0.09	0.12	0.42	
Internationalization intensity	→	Financial performance	0.06	0.04	0.08	
Firm size	→	Financial performance	-0.08	0.04	0.05	
Firm age	→	Financial performance	0.15	0.29	0.60	
National and international operations	→	Financial performance	-0.05	0.16	0.78	
Market unpredictability	→	Financial performance	-0.03	0.06	0.67	
Industrial machinery and machine tools	→	Financial performance	0.07	0.15	0.67	
Engineering and construction materials	→	Financial performance	-0.06	0.19	0.77	
Chemicals, plastics and rubber	→	Financial performance	-0.02	0.19	0.91	
Consumer goods	→	Financial performance	0.12	0.23	0.62	

Indirect effects	β	95% BCI
Bridging strategy → Responsiveness capability → Financial performance	0.07	[0.02, 0.16]
Buffering strategy → Responsiveness capability → Financial performance	0.05	[0.02, 0.11]

Conditional indirect effects		β	95% BCI
Idiosyncratic disruption condition	Bridging strategy → Financial performance	0.08	[-0.15, 0.34]
	Buffering strategy → Financial performance	0.11	[-0.10, 0.27]
	Responsiveness capability → Financial performance	0.00	[-0.17, 0.19]
	Bridging strategy → Responsiveness capability → Financial performance	0.00	[-0.07, 0.09]
	Buffering strategy → Responsiveness capability → Financial performance	0.00	[-0.05, 0.05]
Covariate disruption condition	Bridging strategy → Financial performance	0.13	[-0.07, 0.36]
	Buffering strategy → Financial performance	0.16	[0.03, 0.31]
	Responsiveness capability → Financial performance	0.35	[0.18, 0.54]
	Bridging strategy → Responsiveness capability → Financial performance	0.14	[0.06, 0.26]
	Buffering strategy → Responsiveness capability → Financial performance	0.10	[0.05, 0.19]

Notes: β = unstandardized coefficient; BCI = bootstrap confidence interval; Number of bootstrap samples = 10,000; Path analysis procedures in Mplus are used to estimate all structural paths simultaneously.

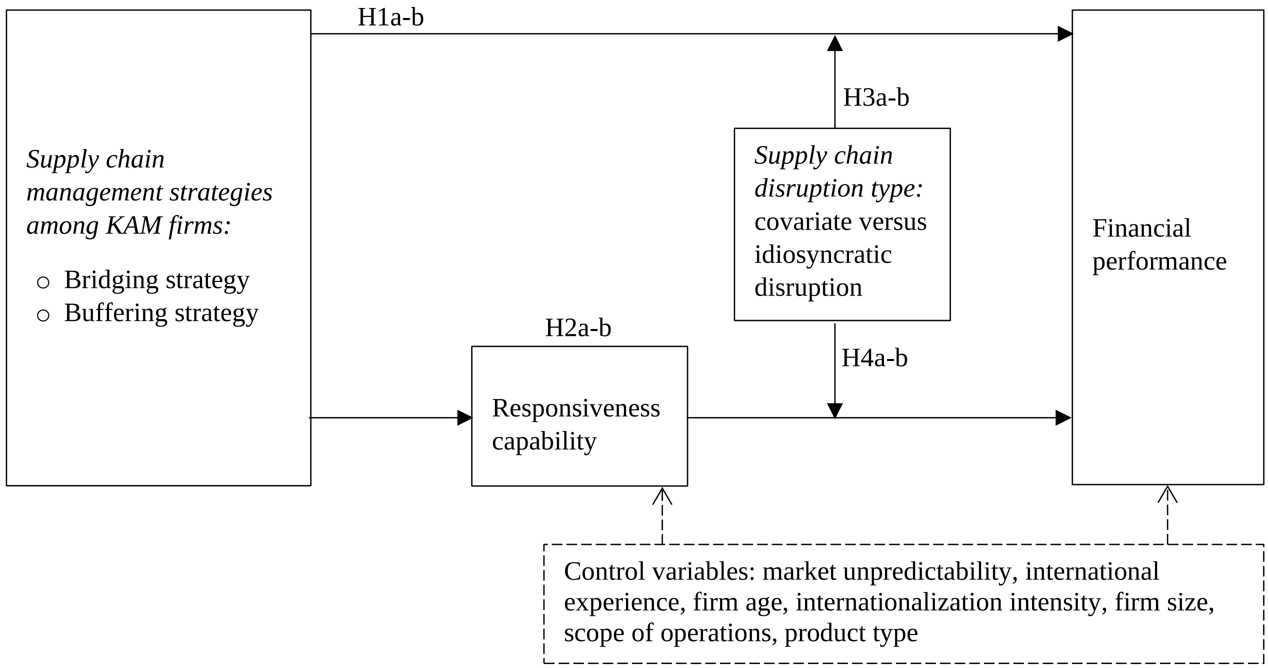

Figure 1. Conceptual model