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RESEARCH ARTICLE

Upgrading to Escape the Low Value-Added Trap in Global Value Chains: The Mediating Role of Strategic Learning Capability

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Abstract

Combining both internalizing and externalizing logics in governance has been argued to enhance the efficiency of global value chain (GVCs); however, its implication for suppliers' upgrading remains contested. The fragmentation of value chain activities has increased interdependencies between multinational enterprises (MNEs) and suppliers in developing economy that can be managed through effective governance strategies. While previous studies often claim that MNEs' governance strategies determine suppliers' upgrading potential in GVCs, the findings have been inconclusive, prompting calls for more research on this relationship. In this study, we draw from resource dependence and relational exchange theories to explore how buyer–supplier relationships manage external dependencies in GVCs, and the implications of these dependencies for supplier upgrading and performance. We argue that socially embedded relational governance when interacting with relationship length facilitates strategic learning capability, which in turn influences both low and high value-added upgrading of suppliers as well as their performance. Our findings reveal that strategic learning capability serves as the mechanism through which the benefits of a socially embedded relational governance are transformed into suppliers' upgrading. Moreover, high value-added upgrading has a stronger impact on suppliers' performance than low value-added upgrading. These findings suggest that strategies for managing external dependencies are influenced not solely by external and internal factors but rather their interaction. We draw implications of these findings for research and practice.

Keywords Global value chains · Developing-economy supplier firms · Upgrading · Relational governance · Strategic learning capability · Relationship length · Performance

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1 Introduction

Over the past two decades, global value chains (GVCs) have become a dominant framework for understanding the organization and structure of international business (IB) activities, diverging from the traditional internalization argument. The internalization thesis suggests that organizing value chain activities within the hierarchical governance of multinational enterprises (MNEs) is more efficient than relying on market-based transactions. However, globalization, liberal economic policies, and advancements in information and communication technologies have significantly lowered the cost of coordinating geographically dispersed operations (Debellis et al., 2024). As a result, MNEs have fragmented their value chains, internalizing high-value, knowledge-intensive activities (e.g., marketing) and outsourcing low-value, labor-intensive tasks to developing and emerging economies. In this pursuit of lower costs and higher quality, MNEs often adopt sourcing strategies described as a "race to the bottom," limiting suppliers' opportunities for upgrading (Barrientos et al., 2016: 1214). This study investigates a central question arising from this tension: how does participation in MNE-led GVCs support developing-economy suppliers in capturing greater value and moving beyond the low value-added trap?

Much of the existing literature has focused on governance as a mechanism through which MNEs control globally dispersed suppliers, typically through formal contracts aimed at maximizing efficiency (Debellis et al., 2024; Lechner et al., 2020). Yet recent work challenges this view, proposing that governance can also take a relational form, characterized by trust and social norms rather than formal control (Debellis et al., 2024; Kano, 2018; Verbeke, 2020; Verbeke et al., 2021; Xiao et al., 2020). Relational governance, defined as "the extent to which business exchanges are coordinated via social relations and shared norms" (Zhou & Xu, 2012, p. 679), can help mitigate the rigidities of contractual governance and promote mutually beneficial outcomes (Gereffi et al., 2021; Kano & Oh, 2020). However, research has paid limited attention to the temporal dimension of these relationships—specifically, how the length of buyer–supplier relationships shapes governance, learning, and upgrading outcomes (Buckley et al., 2019). As MNEs reconfigure their global operations over time, relationship duration can influence trust-building, resource sharing, and learning—key factors in suppliers' ability to upgrade.

This study addresses these gaps by drawing on resource dependence theory (Pfeffer & Salancik, 1978) and relational exchange theory (Macneil, 1978) to examine how developing-economy suppliers manage external dependencies within GVCs to enhance their upgrading potential. Upgrading refers to suppliers' strategies for value creation and capture, achieved by improving processes or products, or moving into higher value-added segments within GVCs (Gereffi et al., 2021). We argue that relational governance, particularly when embedded in long-term relationships, enables the development of strategic learning capabilities—defined as a firm's ability to derive knowledge from past actions and apply it to future strategic decisions (Anderson et al., 2009). These capabilities allow suppliers to translate knowledge gained from GVC participation into both low and high value-added upgrading (Gereffi et al., 2021; Epede & Wang, 2022; Sun & Zhou, 2025; Xiao et al., 2020). Using survey data from 376 Bangladeshi apparel suppliers—a globally connected and strategically

important sector—we test our hypotheses regarding the direct and mediating roles of strategic learning, and the moderating effect of relationship length.

Our findings show that relational governance significantly contributes to suppliers' strategic learning capability, which in turn drives both low and high value-added upgrading. Relationship length strengthens the positive effect of relational governance on learning. Importantly, strategic learning capability mediates the relationship between relational governance and upgrading, with high value-added upgrading exerting a stronger influence on firm performance. These results offer new insights for GVC and resource dependence research by demonstrating that socially embedded governance mechanisms can help overcome opportunism and power asymmetries that undermine long-term GVC outcomes (Boehm, 2022; Poppo et al., 2008; Wang & Xin, 2024). They also highlight how proactive, learning-oriented suppliers can better manage dependencies, access partners' resources, and convert knowledge into meaningful upgrading and performance gains.

2 Theoretical Background and Hypotheses Development

2.1 Resource Dependence Perspective of Upgrading

The governance-upgrading relationship has been investigated through several theoretical lenses including transaction cost economics (TCE) (cf. Gereffi et al., 2005), power dependence theory (cf. Dindial et al., 2020), internalization theory (cf. Kano, 2018; McWilliam et al., 2020; Strange & Humphrey, 2019), the resource-based view (cf. Sinkovics et al., 2018), network theory (Kano, 2018), and resource dependence theory (RDT) (cf. Oliveira et al., 2021a, 2021b; Pham & Petersen, 2021; Wang & Xin, 2024). The transition from a pure internalization focused to hybrid organizational structure—combining internalized and externalized value chain activities to achieve higher efficiency—has presented significant challenges for MNEs in maintaining control over globally dispersed supplier networks. Early GVC research drew from TCE to examine the effectiveness of contractual governance in organizing GVC activities through external market-based contracting, arguing that such arrangements could benefit suppliers' upgrading (cf. Gereffi, 1999; Gereffi et al., 2005).

Another research stream extended this line of inquiry using internalization theory to identify mechanisms (e.g., leveraging power asymmetries) that minimize ex post transaction hazards associated with market contracting (cf. Narula, 2019). However, the governance-upgrading extends beyond ex ante contractual arrangement. Contracts are inherently incomplete and often fail to consider the social aspects of economic exchanges (Kano, 2018; Poppo & Zenger, 2002), resulting in relational frictions (Boehm, 2022; Sun & Zhou, 2025). Therefore, more recent studies have drawn on organizational theories such as RDT (cf. Oliveira et al., 2021a, 2021b; Wang & Xin, 2024) to investigate the effectiveness of socially embedded relational governance in overcoming the rigidity of contractual governance and mitigating the asymmetrical dependency constraints that impede suppliers' upgrading in GVCs (cf. Kano, 2018; Soontornthum et al., 2020).

RDT (Pfeffer & Salancik, 1978) posits that organizations are open systems dependent on contingencies within the external environment. Interorganizational dependency arises from internal resource insufficiencies—financial, physical and information—and is characterized by both competitive and symbiotic interdependence (Pfeffer & Salancik, 1978). RDT contends that an organization's survival depends on: (i) its ability to acquire and maintain tangible and intangible resources; (ii) organizations exist within a network that affects access to and the flow of resources that are needed; (iii) organizations strive to strategically manage uncertainty to reduce their dependency on other organizations, while trying to make other organizations more dependent on them; and (iv) strategies to manage dependencies are influenced by both internal and external factors (Pfeffer & Salancik, 1978).

Although external environments provide opportunities to access partners' complementary resources, such dependencies can constrain autonomy and introduce uncertainty. Organizations can manage these uncertainties mutually or by exercising power to absorb, countervail, and avoid dependence constraints (Jiang et al., 2023; Sun & Zhou, 2025) through a range of governance strategies[1] (Pfeffer & Salancik, 2003). Building on RDT's competitive interdependence dimension, hierarchical (e.g., joint ventures) and contractual governance modes have been extensively studied to understand how corporate power can reduce interfirm uncertainty (Pfeffer & Salancik, 2003; Poppo & Zenger, 2002). However, the exercise of power leads to frictions, increasing transaction costs and reducing the benefits of GVC participation (Boehm, 2022; Sun & Zhou, 2025; Verbeke, 2020; Verbeke et al., 2021). It can also lead to inflexibility, stifling innovation and yielding suboptimal outcomes (Islam & Chadee, 2024; Wang & Xin, 2024). Thus, GVCs are increasingly adopting socially embedded governance arrangements to purposefully establish and maintain cooperative supply or distribution relationships to manage mutually beneficial external dependencies (Kano, 2018; Verbeke, 2020).

Yet, collaborative relational approaches to managing external dependencies—particularly in vertical exchange relationships—have received relatively limited attention in prior RDT research (Wang & Xin, 2024). Recently, a small but growing number of studies have adopted RDT to examine how GVCs facilitate bilateral dependence (Magnani et al., 2019), suppliers' complementary capability development (Dindial et al., 2020), or support ex post learning (de Oliveira et al., 2021a, 2021b; Xiao et al., 2020). This includes support for product and process innovation (Oliveira et al., 2021a, 2021b), market intelligence, and negotiation skills for product upgrading (Pham & Petersen, 2021) as well as the development of knowledge structures (Wang & Xin, 2024). We extend the application of RDT to GVCs by integrating the self-enforcing social norms embedded in relational governance (Coleman, 1990; Granovetter, 1985; Uzzi, 1999). Relational governance can efficiently overcome market imperfections and self-serving behavior of GVC participants by promoting mutual dependencies (Gereffi et al., 2005; Kano, 2018; Verbeke, 2020). Relational governance encompassing social norms provides a strong incentive for partners to curb opportunistic behavior to engender trust (Xie et al., 2010; Yu & Liao, 2008) and

[1] Merger or vertical integration, joint ventures and interorganizational relationships, cooptation of the board of directors, political action and executive succession (Pfeffer & Salancik, 2003).

long-term commitment (Leonidou et al., 2021; Provan, 1993), which in turn improves relationships performance and satisfaction (Lawson et al., 2008). Relational governance minimizes the fear of misappropriation, encouraging buyer and supplier to share their respective knowledge and resources for common good (Birkinshaw et al., 2001). By fostering bilateral dependence (Buckley et al., 2019; Magnani et al., 2019; Xie et al., 2010; Yu & Liao, 2008; Zhang et al., 2003), it diminishes power struggles between buyers and suppliers, alleviates external dependence constraints (Lew et al., 2013), and overcoming competing value propositions (Kedia & Lahiri, 2007).

Strategic responses to external dependencies seek to reduce *uncertainty* about long-term access to critical resources (Hillman et al., 2009; Squire et al., 2009). While prior research has examined how GVC governance reduces such uncertainty, the temporal dimension of these relationships remains underexplored (Buckley et al., 2019). Relational exchange theory (Macneil, 1978) suggests that long-term interaction between exchange partners strengthens relational embeddedness and fosters confidence about partners' expected behavior. This in turn helps reduce uncertainty in external dependencies. Thus, the stability of a governance structure and the intensity of knowledge-resources accrued through them result from the relationship norms that have been developed and tested over time through a series of ongoing interactions (Ivens & Blois, 2004). In the context of GVCs, relationships between MNE-buyers and suppliers continue to evolve to adapt to the dynamic external environments. Therefore, temporal factors influence MNEs' decision related to disaggregating value chain activities to their suppliers. Omitting this temporal element leads to an incomplete understanding of governance's role in GVC relationships (Buckley et al., 2019). Typically, GVCs' exchange relationships usually start with simple tasks and over time evolve into more complex tasks as relationships mature (Buckley et al., 2019; Lechner et al., 2020). Thus, the effectiveness of relational governance is intensified by relationship maturity, which in this research defined as 'relationship length'. Longer relationships reduce uncertainty and consequently increase information sharing, trust, commitment, collaboration, absorptive capacity, and relational assets (Squire et al., 2009). Drawing from past research (Buckley et al., 2019; Gölgeci et al., 2021; Leonidou et al., 2021; Sinkovics et al., 2019), we argue that the association between relational governance and suppliers' strategic learning capability is strengthened by the relationship length between suppliers and MNE-buyers (Jean et al., 2021; Wang & Xin, 2024). As relationships mature, processes become more efficient, and both parties gain confidence, reducing uncertainty in the exchange of critical knowledge and resources (Buvik & Haugland, 2005; Gölgeci et al., 2021; Isaksson et al., 2016).

The dynamic nature of global competition requires suppliers to strategically manage their dependencies with MNE-buyers to strengthen their position in GVCs through upgrading. While relational governance creates a collaborative environment for buyers and suppliers to share their respective knowledge and resources, on its own it is insufficient for facilitating low and high value-added upgrading of suppliers. Rather, suppliers need to develop their strategic learning capability to transform external network-level knowledge and resources into actionable learning for upgrading in GVCs. Strategic learning capability leverages accumulated knowledge, embedding it in organizational routines, culture, and processes that facilitate the internalization and exploitation of external knowledge (Islam & Chadee, 2024; McDermott & Corredoira, 2010; Sinkov-

ics et al., 2018; Xiao et al., 2020). Strategic learning capability, therefore, enriches suppliers' proficiency in leveraging external knowledge by integrating the new knowledge with the firm's existing knowledge base to adjust firm strategy (Anderson et al., 2009). Given that knowledge sharing (e.g., training supplier employees) is costly for MNEs, they prefer to work with suppliers who can reciprocate by leveraging shared resources. Strategic learning capability enables suppliers to optimally use the knowledge resources accrued through relational governance to reconfigure their dependencies on buyers through innovation (Jean et al., 2017; Sun & Zhou, 2025), encourages reciprocal investment to develop complementary capabilities (Magnani et al., 2019; Wang & Xin, 2024), undertakes task diversification (Kistruck et al., 2013), and strategically allocates resources within the relationship (Bagchi et al., 2015; Murphee & Anderson, 2018). It also helps suppliers overcome limited home-country resources by accessing network-level complementary resources (Khan et al., 2018; Xiao et al., 2020) and clarifies their knowledge and resource needs in line with strategic priorities (Anderson et al., 2009). Thus, strategic learning capability helps suppliers manage their dependencies on MNE-buyers effectively and convert relationally governed knowledge and resources into upgrading outcomes (Casciaro & Piskorski, 2005).

From an RDT perspective, each exchange partner seeks to reduce dependency on the other by enhancing their bargaining power through capturing higher value (Hillman et al., 2009). For suppliers embedded in MNE-led GVCs, upgrading enhances their bargaining position by improving performance, allowing them to negotiate their role within external dependencies more effectively (Cano-Kollmann et al., 2018; Dindial et al., 2020; Pham & Petersen, 2021; Schmitz, 2006; Wang & Xin, 2024). Therefore, RDT provides the theoretical underpinning of the conceptual framework (see Fig. 1).

2.2 Hypotheses

2.2.1 Mediating Role of Strategic Learning Capability

Strategic learning capability refers to a supplier's proficiency in leveraging knowledge from MNE-buyers to strategically improve performance (Anderson et al.,

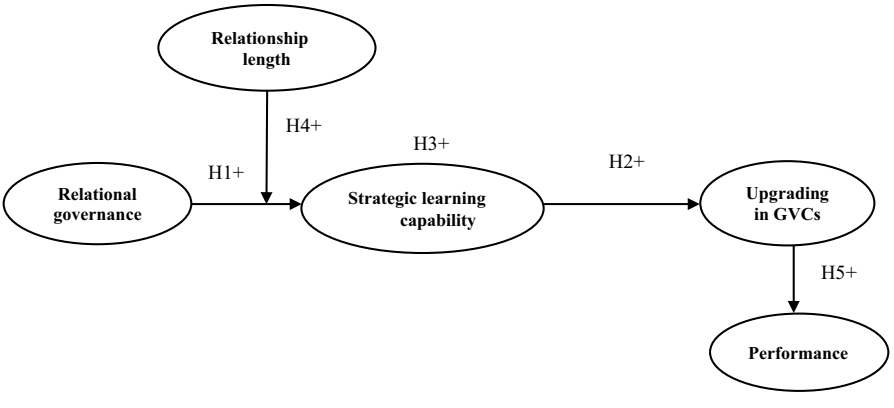


Fig. 1 Conceptual model

2009). It is distinct from other forms of organizational learning and absorptive capacity in that it integrates newly acquired knowledge with the firm's strategic change mechanisms. Theoretically, although the generation of strategic knowledge is a core focus of organizational learning and absorptive capacity (Cohen & Levinthal, 1990), such knowledge does not automatically trigger strategic change. Rather the change needs to be accomplished through well-established organizational routines and processes. Both learning and absorptive capacity emphasize the importance of acquiring 'new external knowledge' for improving firm performance, as most innovations result from borrowing rather than invention. Thus, the ability of a firm to access and exploit external knowledge becomes critical (Cohen & Levinthal, 1990). However, the primary objective of this research is to understand how firms utilize internal knowledge, generated through the repeated application of strategic routines, to transform organizational direction—an ability characterized by strategic learning capability (Anderson et al., 2009).

In GVC buyer–supplier relationships, power asymmetry can hinder knowledge-resource sharing and impede suppliers' learning. RDT suggests when exchange partners consider their relationships as symbiotic, they are more likely to adopt collaborative rather than competing approaches to foster goal congruence and mutual interests, which may reduce dependence constraints in the relationship. This view is supported by IB-GVC literature (Kano, 2018; Kano & Oh, 2020; Verbeke, 2020), although there is limited explanation from the supplier's perspective—specifically regarding their acquisition of knowledge and resources from MNEs. Symbiotic interdependence (Pfeffer, 1972), trust and personal mechanisms characterizing relational governance, all facilitate reducing opportunism in buyer–supplier relationships (Coleman, 1990; Granovetter, 1985; Uzzi, 1999). Trust implies mutual care for the relationship, making it more accountable, stable, and enduring—thereby enhancing commitment from both parties. Trust can provide a moral bond to curb opportunism and, therefore, has potentials to reduce ex ante and ex post transaction costs, especially in a volatile institutional context (Shamsollahi et al., 2021). Interpersonal relationship mechanism facilitates open and frequent communication between partners and reduce fears of resource misappropriation, resulting in strong social ties that serves as a conduit for the exchange of credible knowledge (Liu et al., 2017). Such knowledge—especially related to products, processes, and supply chains—is often scarce in emerging markets due to underdeveloped institutional infrastructures and unreliable information channels (Abdi & Aulakh, 2012; Khan et al., 2018; Poppo et al., 2008; Xiao et al., 2020). Such knowledge is only exchanged through socially embedded interorganizational ties and almost impossible to acquire through market exchanges (Nonaka, 1994). For instance, a socially embedded relational governance facilitates the exchange of personnel and technology between GVC buyers and suppliers that allow direct observation of operations, fostering experiential learning (Cavusgil et al., 2003). Therefore, relational governance enhances the overall well-being of mutual relationships (Heide & John, 1992), fostering collaboration and information sharing that reduce coordination costs, conflicts and exchange hazards (Poppo et al., 2008; Zhou & Xu, 2012). Shared understanding between buyers and suppliers further reinforces trust and commitment (McDermott & Corredoira, 2010; Xie et al., 2010; Yu & Liao, 2008). Thus, relational governance creates an enabling

environment for suppliers to reduce their dependence constraints to access complimentary resources through their linkages with GVC buyers. This in turn facilitates the development of their strategic learning capability. Hence, we posit:

Hypothesis 1 (H1) *Relational governance reduces the constraints associated with the exchange of critical knowledge and resources between buyers and suppliers, thereby positively influencing the suppliers' strategic learning capability.*

Within the GVC literature, three primary types of upgrading are identified: economic, social, and environmental. This research focuses on economic upgrading, which is recognized as foundational to the other two upgrading types and encompasses four key subdimensions: process, product, functional and chain upgrading (De Marchi, 2012; Gereffi, 2018; Humphrey & Schmitz, 2002). Based on a review of the extant literature these four subdimensions have been grouped into low value-added (process and product) and high value-added upgrading (functional and chain) (Cano-Kollmann et al., 2018; Islam & Chadee, 2021; Mudambi, 2008). This classification reflects the varying contributions of each upgrading type to overall value creation and firm performance.

Due to the lack of strategic learning capability and insufficient resource commitment, most suppliers usually engage in low value-added activities related to process (e.g., production efficiency) and product upgrading (e.g., improved product quality), leading to low economic returns (Buckley et al., 2019; Islam & Chadee, 2021; Mudambi, 2008). In contrast, functional upgrading involves acquiring new functions or increasing the knowledge intensity of activities, while chain upgrading often entails diversification, the development of proprietary brands, and the acquisition of marketing capabilities (Islam & Polonsky, 2020; Pananond et al., 2020). These high value-added activities typically remain under the control of MNEs, as they require substantial resource investment and strategic learning capability, enabling buyers to appropriate higher returns (Buckley et al., 2019; Mudambi, 2008).

Drawing on RDT, we argue that strategic learning capability enables suppliers to proactively identify and address their buyer needs, such as through new products and services introduction (i.e., product upgrading). While many suppliers depend on MNEs for critical knowledge and resources, those with well-developed strategic learning capability can better leverage shared knowledge to shape and advance their upgrading trajectories, particularly in high value-added domains (Pananond et al., 2020).

Interactions with buyers create opportunities for suppliers to learn about general management techniques, quality control, packaging, distribution, logistics, supply chain management and customer service, that can be used strategically for both low value and high value-added upgrading. These interactions, often facilitated through training and encouragement to adopt international standards, contribute to building suppliers' absorptive capacity (De Marchi et al., 2018; Pietrobelli & Rabellotti, 2011), a key precursor to strategic learning capability.

Previous studies have found that knowledge transfer from MNEs helps suppliers enhance their strategic learning capability leading primarily to the low value-added process and product upgrading (De Marchi et al., 2018). However, knowledge

and resources relevant to functional and chain upgrading are often withheld to prevent suppliers from becoming direct competitors to MNEs (De Marchi et al., 2020; Schmitz, 2006). From an RDT perspective, strategic learning capability underpinned by strategic foresight enables suppliers to overcome such constraints by diversifying their sources of knowledge and resources (Casciaro & Piskorski, 2005; Wang & Xin, 2024). For example, suppliers with high strategic learning capability may hire skilled employees with previous MNE experience, invest in internal R&D, foster collaboration with other suppliers and other institutions (e.g., universities), imitate competitor strategies, or enter into joint ventures and acquire critical resources (Pananond et al., 2020; Zhou et al., 2022).

Strategic learning capability enables suppliers to quickly internalize external knowledge, creating a path-dependent process for continuous improvement and knowledge generation relevant to upgrading value chain activities. Lechner et al. (2020) found that suppliers with higher strategic intent were more likely to undertake high value-added activities such as R&D, distribution, and marketing. Similarly, Oliveira et al., (2021a, 2021b) found that suppliers with strong strategic learning capability invested in digital technologies to diversify their sources of knowledge and resources critical for upgrading. These suppliers are more adept at identifying changing consumer needs, giving them a competitive edge in upgrading efforts (Islam et al., 2021; Schmitz, 2006; Schmitz & Knorringa, 2000). Moreover, suppliers with advanced strategic learning capabilities are also more inclined to invest in complementary capabilities (Magnani et al., 2019) to initiate catch-up strategies and leverage critical know-how to clients across multiple GVCs, thereby accelerating their transition into high value-added upgrading activities (Ernst & Kim, 2002; Hobday & Rush, 2007; Zhou et al., 2022). Therefore, we suggest that:

Hypothesis 2 (H2) *Suppliers' strategic learning capability positively influences both low and high value-added upgrading.*

IB literature suggests that the governance modes of MNEs determine suppliers' opportunities for upgrading within GVCs (cf. McWilliam et al., 2020). However, research on interorganizational governance indicates that governance mode alone does not directly determine outcomes once intermediate variables are considered (Leiblein et al., 2002; Shaver, 1998). Drawing on the RDT perspective of strategic choices and decisions (Pfeffer & Salancik, 2003), we argue that suppliers' strategic learning capability enables them to overcome dependency constraints and transform knowledge and resources gained through relational governance into upgrading opportunities (Anderson et al., 2009; Aulakh & Gençtürk, 2008).

Strategic learning capability, built on accumulated knowledge and experience, supports the application of novel ideas, proactive exploration of creative ways to meet emerging customer needs, and pursuit of new markets through the use of new technical, social, and organizational knowledge (Simsek et al., 2009). It has also been shown to reduce uncertainty and tension around knowledge and resource sharing among alliance partners, thereby ensuring stable access to resources for suppliers (Casciaro & Piskorski, 2005). Strategic learning capability fostering a strong organizational routine and culture can also remove the challenge of integrating new external

knowledge that significantly differs from the firm's existing knowledge base (Cohen & Levinthal, 1990), strengthening opportunity exploitation and enhancing firm performance (Siren et al., 2012).

Suppliers with higher strategic learning capability routinely assess their strategies, identify and address weaknesses, refine organizational routines, and adapt processes that drive innovation. This dynamic approach can also enhance the supplier's risk-taking behavior in diversifying the businesses and its capacity building in new areas such as branding and marketing (Dindial et al., 2020; Ernst & Kim, 2002; Siren et al., 2012). Furthermore, strategic learning capability fosters creative thinking (Anderson et al., 2009; Sirén, 2012), enabling suppliers to overcome the restrictive controls often imposed by MNE, which can limit upgrading opportunities. Thus, we propose the following hypothesis:

Hypothesis 3 (H3) *Suppliers' strategic learning capability positively mediates the relationship between relational governance and both low and high value-added upgrading.*

2.2.2 Moderating Effect of Relationship Length

RDT posits that "the history of social ties matter" for managing external resource dependencies (Pfeffer & Salancik, 2003, p. xxii). As relationships mature, relational uncertainty reduces and confidence in future business opportunities increases, resulting in more efficient utilization of network-level resources (Heide & Miner, 1992; Pfeffer & Salancik, 1978). This is consistent with relational exchange theory, which emphasizes the strength of relational ties (Macneil, 1978), including the frequency of interaction, emotional intensity, intimacy, and reciprocity between exchange partners (Granovetter, 1985). From this perspective, the length of the relationship between GVC buyers and suppliers influences both the frequency and quality of interaction and the intensity of knowledge sharing.

Longer-term relationships are characterized by closeness, reciprocity, and indebtedness (Zhou et al., 2014), therefore strengthening the principles of socially embedded relational governance mechanisms in GVCs' exchange relationships. Relationship length also supports the development of shared cognitive frames that help partners navigate fragile institutional contexts, particularly in developing and emerging markets where institutional voids often hinder the exchange of valuable knowledge and resources (Abdi & Aulah, 2012; Khan et al., 2018). However, the value of relationship length may be bounded by the characteristics of the GVC exchange and its transactional context. In institutional environments with strong formal contracts, for example, the time required to develop a shared understanding may be reduced, potentially limiting the relational benefits typically associated with longer partnerships (Abdi & Aulakh, 2012). Similarly, if a buyer pursues unilateral value appropriation strategies characterized by power constellation rather than helping suppliers develop their capability, the effectiveness of relationship length may not be as strong (Helper & Sako, 1995; Sun & Zhou, 2025).

Relational governance facilitates overcoming the issues of relationship discontinuity (Poppo et al., 2008), and the length of relationship can serve as a functional

substitute for hierarchical control or formal contracts to manage partners opportunism (Wang et al., 2016). Long-term relationships reduce the risk of resource misappropriation and facilitate a smoother flow of critical resources between partners. Thus, from the relational embeddedness perspective of relational exchange theory (Macneil, 1978), we expect that relationship length will interact with relational governance to strengthen the association between relational governance and strategic learning capability of a supplier. Relational embeddedness serves as a self-enforcing governance mechanism to control opportunistic behaviors, reduces fears of knowledge misappropriation, and increases relationship openness and trust (Squire et al., 2009; Zhou et al., 2014). Longer-term relationships help establish norms of reciprocity, encourage mutual assistance, and support the sharing of fine-grained tacit knowledge (Ivens & Blois, 2004; Turkina et al., 2025; Uzzi, 1996). They also strengthen mutual commitments as partners invest time and resources into the relationship, minimizing exchange hazards and promoting knowledge exchange (Buvik & Haugland, 2005; Gansser et al., 2021).

In the context of GVC buyer–supplier relationships, MNE-buyers invest time and share valuable knowledge with suppliers—covering areas such as product design, process management, customer insights, quality control, logistics, and overall management practices (Islam et al., 2021). Longer relationships lead to more frequent interactions, which enhance mutual understanding, problem-solving, and the exchange of ideas—especially tacit knowledge (Gansser et al., 2021; Islam & Chadee, 2021). Relationship length can also improve transparency and quality of information sharing (Gölgeci et al., 2021; Squire et al., 2009) and can facilitate routines and norms that safeguard against opportunism (Gansser et al., 2021; Squire et al., 2009). Further, mutual processes are more likely to be streamlined as relationships between buyer and supplier become longer. Thus, we hypothesize:

Hypothesis 4 (H4) *Suppliers' relationship length with MNE-buyers reduces relational uncertainty in the exchange of knowledge and resources that positively moderates the association between relational governance and strategic learning capability of the suppliers.*

2.2.3 Low and High Value-Added Upgrading and Performance

From an RDT perspective, suppliers' bargaining to overcome critical resource constraints arising from their dependency on MNE-buyers is influenced by their ability to upgrade. However, the relationship between different types of upgrading and suppliers' performance is relatively unexplored. Although GVC literature often suggests that upgrading leads to improved supplier performance, there is limited empirical evidence supporting this claim. As Pickles et al., (2006, p. 2319) noted, "[i]t remains an empirical issue as to whether relative changes in position [upgrading] in international value chains reflect significantly on the financial position [performance] of specific firms". It has been argued that low value-added upgrading, such as improvements in products and processes, enhances operational efficiency, management practices, product quality, design, and R&D activities. These improvements can lower operational costs, increase unit prices, and boost business volume, all of

which positively affect performance (Islam & Polonsky, 2020). In contrast, high value-added upgrading involves capabilities such as workforce skill development, market research, branding, and marketing. These strategic enhancements allow suppliers to develop and promote their own brand-named products, improve logistics capacity, and ultimately increase their bargaining power with MNE-buyers (Dindial et al., 2020). Therefore, suppliers engaged in high value-added upgrading are better positioned to negotiate better terms and conditions, which in turn can improve their performance (Simona & Axèle, 2012; Tokatli, 2013).

Islam and Polonsky (2020) found that low and high value-added upgrading contributed to suppliers' performance in different ways, such as the latter enhancing supplier export intensity while the former increased the suppliers' production volume. Similarly, Pietrobelli and Saliola (2008), analyzing export data from suppliers in Thailand's manufacturing sectors, found that suppliers engaged in high value-added upgrading achieved higher performance levels as measured by total factor productivity. Lechner et al. (2020) in a longitudinal case study of Chinese suppliers also found that high value-added upgrading had a more significant impact on performance indicators such as profitability and market growth compared to low value-added upgrading. Based on the preceding discussion, we propose that:

Hypothesis 5 (H5) *High value-added upgrading has a stronger positive impact on supplier performance than low value-added upgrading.*

Figure 1 presents the conceptual model of this study.

3 Methodology

3.1 Research Context, Sample, and Data Collection

The research hypotheses were tested using data from Bangladeshi apparel suppliers embedded in MNE-led GVCs. Bangladesh is the world's second-largest apparel exporter after China, with apparel accounting for 82% of its total export revenue, valued at US$42.61 billion in 2022 (BGMEA, 2022). The country hosts over 4,500 registered supplier firms that provide contract manufacturing services to global MNEs. These suppliers directly employ more than 4 million workers, approximately 80% of whom are women, most with primary-level education and limited alternative employment opportunities (Islam & Stringer, 2020). Many of these suppliers work with multiple MNE-buyers simultaneously, allowing them to reduce dependency on any single buyer and create opportunities to strengthen their strategic learning capability (Islam & Chadee, 2024).

Data for this study were collected between April and June 2021 via an online self-administered survey of registered members of the Bangladesh Garment Manufacturers and Exporters Association (BGMEA), which minimized potential social desirability bias (Larson, 2019). The BGMEA database provided the contact details of owners and top management team (TMT) members of 4,500 apparel supplier firms. Using a simple random sampling technique, 1350 TMT members were invited

to participate in the survey, resulting in 434 completed responses—a response rate of 32.15%, which is considered acceptable in the context of studies conducted in developing economies (Islam & Chadee, 2021).

To avoid language related bias, the original English version survey was translated into Bengali by three native speakers and then back-translated to ensure accuracy (Hult et al., 2008). A rigorous three-stage process was employed to ensure the reliability and validity of measurement of the constructs. First, after obtaining ethics approval, the survey instruments were reviewed by 10 academics with expertise in IB-strategy and management, specifically in GVCs' domain. Second, in-depth interviews were conducted with owners or senior managers of 10 suppliers. Third, a pilot study involving 40 suppliers was carried out to check the reliability of the measures (Hinkin, 1995; Islam & Polonsky, 2020).

One week prior to the distribution of the survey, an initial email was sent to the selected TMT members, outlining the purpose of the study, guaranteeing anonymity, and providing a link to the online survey. The email also offered participants the option to receive a summary of the study's findings (Chidlow et al., 2015). To increase engagement and response rates, the survey email was personalized, and a progress bar was included to help respondents track their progress (Stieger et al., 2007). Three email reminders and two follow-up phone calls were made at two-week intervals to non-respondents (Chidlow et al., 2015). After data cleaning, the final sample included 376 usable responses. This process involved removing incomplete questionnaires (25), speeders (20), and statistical outliers (13). A post hoc power analysis was conducted using the Qualtrics Sample Size Calculator and SPSS_v.30, which aligns with the recent methodological best-practices (Aguinis et al., 2023). Results indicated that a sample size of 354 and 206, respectively, would be sufficient to achieve 95% confidence in the study findings. This confirms that the final sample of 376 meets robustness criteria for statistical analysis.

3.2 Sample Characteristics

The final sample was comprised of 97.3% male respondents, the majority of whom (73.7%) were aged between 40 and 50 years. Most participants (92%) held at least an undergraduate qualification. In terms of industry experience, over half (56.6%) had 5–10 years of experience in the apparel sector, while 32.7% had 11–20 years. The majority of respondents held senior managerial positions (65.2%), with the remaining 34.8% serving as managing directors. Firm size was relatively evenly distributed across the sample: 44.1% employed between 500 and 2000 workers, 40.7% between 2001 and 4000, and 15.2% had more than 4,000 employees. On average, suppliers reported servicing six international buyers, with 77.9% having 3–9 years of experience with international buyers. Regarding market positioning, 59.6% of the firms supplied high-quality apparel brands, while the remaining 40.4% served lower-quality, mass-merchandise retailers. These clients were primarily based in North America, Europe, Asia, and Australia.

4 Measures

4.1 Dependent Variables

Unless otherwise stated, all survey items for the focal constructs were measured using a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Table 4 in Appendix A provides detailed information on the items used, factor loadings and reliability statistics.

Performance: This was measured by a six-item scale adapted from Gerschewski and Xiao (2015) and Zhou et al. (2007). Respondents were asked to indicate their firm's performance relative to their major competitors over the last three years in terms of sales revenue, sales growth, profitability, return on investment, market share, and overall performance. The scale demonstrated high internal consistency (Cronbach $\alpha = 0.95$).

Upgrading: This was measured as a higher-order construct comprising two second-order constructs, such as low and high value-added upgrading. According to Humphrey and Schmitz's (2002) upgrading typology and Mudambi's (2008) smiling curve framework, process and product upgrading were classified as low value-added activities, while functional and chain upgrading represented high value-added activities. The 19-item scales adapted from Islam and Polonsky (2020) measured process, product, functional and chain upgrading. Process upgrading was measured based on a supplier's adoption of new technology, quality management, organizational management, and improvement of business processes (Cronbach $\alpha = 0.86$). Product upgrading was measured using five items related to product quality, task complexity, product design capacity, product research and product sample development (Cronbach $\alpha = 0.85$). Items for functional upgrading included reliable quality performance, workers skill development, market research and logistics capacity (Cronbach $\alpha = 0.86$). A five-item scale was used to measure chain upgrading, which included both vertical and horizontal integration, brand development, and marketing in both domestic and international markets (Cronbach $\alpha = 0.88$).

4.2 Independent Variables

Relational governance: This was measured as a first-order construct using a six-item scale adapted from Poppo et al. (2008) and Zhou and Xu (2012). The items were trust, commitment, flexibility, information sharing, and collaboration. The scale demonstrated very good internal consistency (Cronbach $\alpha = 0.86$).

Strategic learning capability: This was measured by a six-item scale adapted from Anderson et al. (2009) that captured learning from past success and failures as well as leveraging the knowledge learned to reconfigure firm strategy (Cronbach $\alpha = 0.90$).

Relationship length: This was measured by a single item that captured the relationship length between suppliers and their main MNE-buyer (Griffith & Myers, 2005; Jean et al., 2021). Respondents were asked "How many years have you had supplying relationship with your major international buyer?".

4.3 Control Variables

Three variables related to the supplier firm and relationship-specific characteristics were included as controls for their influence on the performance. The number of full-time employees was used as a proxy for firm size to capture inertia, flexibility, and performance (Islam & Chadee, 2021). As the number of MNE-buyers that suppliers served can influence their exposure to different types of knowledge and resources, therefore, was also included as a control variable (Casciaro & Piskorski, 2005; Islam & Chadee, 2021). Lastly, dummy variables 0–1 were used to control for the influence of the type of MNE-buyers (e.g., retailer, brand marketer) (Gereffi, 1999).

4.4 Non-Response and Common Method Bias

Non-response bias was assessed by testing for the difference between the early and late respondents (Byrne, 2013). The results of independent samples t-tests that compared the early (first 10%) with the late respondents (last 10%) showed no significant differences among the focal constructs of this research at the 0.05% level; thus, non-response did not appear to be an issue.

Ex ante steps were applied to rule out any potential for common method bias (CMB) (Hair et al., 2010), including placing questions in the online questionnaire randomly, to limit respondents assessing the theoretical logic among constructs. To further assess the CMB, Harman's single factor test (Hair et al., 2010), common latent factor and marker variable were used as ex post measures (Podsakoff et al., 2003). Results of Harman's single factor test using principal component analysis showed that 42.91% of the variance was explained by a single factor, which is below the suggested 50% threshold, indicating that CMB was not an issue (Podsakoff et al., 2003). Also, the extreme model fit ($\chi^2 = 4250.124$, df = 819; Normed $\chi^2 = 5.19$; GFI = 0.540; CFI = 0.423; TLI = 0.393; RMSEA = 0.114; SRMR = 0.1158) and a nonsignificant $\chi 2$ difference ($\Delta\chi^2 = 8.630$, df = 4, $p = 0.710$) in common latent factor assessment reaffirm that CMB was not a concern with our data. Further, Lindell and Whitney's (2001) marker variable test revealed that the partial correlations between the marker variable (i.e., type of garments) and the focal constructs in the model were nonsignificant (see Table 1) further confirming no evidence of CMB.

4.5 Reliability and Validity

Construct validity was assessed via exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) (Hair et al., 2010). Principal component analysis with the promax rotation technique were used for the EFA. Results of the EFA analysis showed that the Kaiser–Meyer–Olkin test was 0.93 ($p < 0.001$), indicating the data were suitable for factor analysis (Byrne, 2013). As expected, 37 items measuring seven constructs loaded on their respective constructs with the factor loadings > 0.50 and the Eigen values > 1, explained 71.30% variance, exceeding the recommended 50% threshold, confirming measures' unidimensionality (Islam & Polonsky, 2020). CFA was then undertaken and confirmed validity of the constructs (Byrne, 2013), with all factor loadings above 0.70, supporting indicator reliability (Chin, 1998). The

Table 1 Descriptive statistics (mean, standard deviation, Pearson correlations and HTMT in bold)

Constructs	Mean	Std. Dev	RG	SLC	PSU	PRU	FNU	CNU	FP	LR	NB	TB	SF	TG
Relational governance (RG)	5.68	1.31	*0.59*[a]	**0.66**	**0.47**	**0.65**	**0.63**	**−0.27**	**0.88**					
Strategic learning capability (SLC)	5.03	1.12	0.66**	*0.68*[a]	**0.45**	**0.45**	**0.49**	**−0.07**	**0.74**					
Process upgrading (PSU)	5.25	1.20	0.39**	0.39**	*0.60*[a]	**0.75**	**0.80**	**0.15**	**0.37**					
Product upgrading (PRU)	5.50	.87	0.46**	0.36**	0.65**	*0.64*[a]	**0.87**	**−0.20**	**0.80**					
Functional upgrading (FNU)	5.66	.82	0.52**	0.44**	0.72**	0.74**	*0.67*[a]	**−0.13**	**0.55**					
Chain upgrading (CNU)	2.59	1.46	−0.12**	0.26**	0.20**	0.05	0.04	*0.73*[a]	**−0.24**					
Firm performance	5.86	0.77	0.43**	0.70**	0.36**	0.39**	0.49**	0.25**	*0.75*[a]					
Length of relationship (LR)	1.60	0.63	0.77**	0.26**	0.21*	0.10	0.25**	0.05	0.26**	*na*				
Number of buyers (NB)	2.53	0.94	0.32**	0.15**	0.16**	0.07	0.34**	0.14*	0.39**	0.40**	–			
Type of buyers (TB)	2.50	1.34	0.08	0.10	0.22**	−0.08	0.14*	0.17**	0.13*	0.28**	0.14*	–		
Size of the firm (SF)	1.72	0.69	0.06	0.03	−0.08	0.03	0.04	0.11*	0.06	0.12*	0.06	−0.11	–	
Type of garments (TG—CMB)[b]	1.64	0.79	−0.06	0.06	0.09	0.10	0.04	0.07	0.10	0.17*	0.08	0.09	0.05	–

$n=376$

[a] The numbers along the diagonal indicate average variance extracted (AVE) of each construct

[b] CMB indicates common method bias

na indicate the value is not available

**Indicate Pearson two-tailed correlations with significance level at $p<0.01$; * Indicate Pearson two-tailed correlations with significance level at $p<0.05$; and the corresponding heterotrait–monotrait (HTMT) values are shown in bold

Cronbach's α and composite reliability (CR) of all constructs exceeded 0.75 (Bagozzi & Yi, 2012; Nunnally, 1979), indicating a high level of reliability and internal consistency of the measures (see Table 4 in Appendix A). The average variance extracted (AVE) ranged between 0.59 and 0.75, suggesting that a high level of convergent validity existed in the measurement model (see Table 1) (Fornell & Larcker, 1981; Hair et al., 2010; Nunnally, 1979).

Lastly, discriminant validity was assessed using Fornell and Larcker's criterion (Fornell & Larcker, 1981) and the HTMT criterion (heterotrait–monotrait ratio of correlations) (Henseler et al., 2015). As summarized in Table 1, indicated satisfactory discriminant validity with AVE values greater than the correlations between the constructs (Fornell & Larcker, 1981). The HTMT values (see Table 1) were below 0.90, indicating adequate discriminant validity for all constructs (Henseler et al., 2015). Multicollinearity was assessed via the variance inflation factor values, which were less than 10 (ranging from 1.06 to 1.80). Tolerance scores were greater than 0.1 (ranging from 0.56 to 0.94), indicating that multicollinearity was not an issue in the data (Hair et al., 2010). Together these results indicate that the measures used in this research were reliable and valid.

5 Analysis and Results

A two-stage (i.e., a measurement model and a structural model) structural equation modeling (SEM) analysis with 5000 bootstrap samples was undertaken by using AMOS 28.0 (Anderson & Gerbing, 1988).

To address endogeneity issues, we utilized both instrumental variable approaches (Eshima & Anderson, 2017; Hamilton & Nickerson, 2003) and instrument-free Gaussian Copula methods (Eckert & Hohberger, 2023; Hair et al., 2024; Hult et al., 2018), as well as competing model assessment techniques (Bergh et al., 2016). From a relational exchange theory perspective (Macneil, 1982), a supplier's capability to purposefully create, extend, and modify its resource base through external network alliances might influence its governance choice and learning (Helfat & Peteraf, 1993). Furthermore, entrepreneurship theory contends that entrepreneurial firms outperform conservative firms in engaging with effective governance strategies and learning (Covin & Slevin, 1989). Thus, relationship capability and entrepreneurial orientation were used as instrument variables for relational governance and strategic learning capability to assess endogeneity within the research model. The rationale for using relationship capability and entrepreneurial orientation as instruments is grounded in theory. Both constructs are conceptually tied to upstream organizational capabilities and strategic intent (e.g., Iftekhar et al., 2025; Jean et al., 2021; Kotabe et al., 2003), which plausibly shape how firms engage in governance and learning relationships, but not their performance directly. Specifically, they are expected to influence performance indirectly by enhancing the firm's ability to govern relational ties and absorb knowledge—our proposed mediator.

A six-item scale for relationship capability was adapted from (Hanh, 2008; Smirnova et al., 2011) with the Cronbach's $\alpha = 0.93$. The scale for entrepreneurial orientation was adapted from Walter et al. (2006) with the Cronbach's $\alpha = 0.92$. Fol-

lowing Burgess et al. (2015) and Jean et al. (2021), we estimated the model by adding direct paths from the two instrument variables (relationship capability and entrepreneurial orientation) to relational governance and strategic learning capability as well as low and high value-added upgrading and performance. The results show that relationship capability positively and significantly influences relational governance (β = 0.43, p = < 0.001) and strategic learning capability (β = 0.31, p = < 0.001) but has no significant impacts on low value-added upgrading (β = 0.09, p = > 0.10), high value-added upgrading (β = 0.07, p = > 0.11) and performance (β = 0.011, p = > 0.06). Similarly, entrepreneurial orientation significantly influences relational governance (β = 0.21, p = < 0.01) and strategic learning capability (β = 0.14, p = < 0.05), but has no significant impact on the low (β = 0.08, p = > 0.11), and high value-added upgrading (β = 0.07, p = > 0.12) and performance (β = 0.06, p = > 0.25). These results suggest that both relationship capability and entrepreneurial orientation are strong predictors of relational governance and strategic learning capability, but not of low or high value-added upgrading, nor overall performance. Further, we applied the instrument-free Gaussian Copula method to assess endogeneity (Eckert & Hohberger, 2023; Hair et al., 2024; Hult et al., 2018). The results of the Gaussian Copula test revealed non-significant effects on the outcome variable, indicating that endogeneity is unlikely to bias our findings (see Table 5 in Appendix). Two alternative models were then tested using low and high value-added upgrading as predictors for strategic learning capability (Model 3, Table 2) and relational governance (Model 4, Table 2) as further assessment of endogeneity (Bergh et al., 2016) arising from reverse causality (Jean et al., 2021). The results of the supplementary analyses are summarized in Table 2 show that the hypothesized model achieved the best fit across all indices. Together these assessments ruled out the possibility of endogeneity (Eshima & Anderson, 2017; Hair et al., 2024; Hamilton & Nickerson, 2003).

Table 2 summarizes the fit indices of the hypothesized model and alternative models. The fit indices show a good model fit for the hypothesized structural model (Model 2) (χ^2 = 2207.34, df = 764, χ^2/df = 2.89, CFI = 0.98, TLI = 0.96, IFI = 0.98 and RMSEA = 0.06).

The results of the hypotheses testing are summarized in Table 3. The significant relationship between relational governance and strategic learning capability (β = 0.53, SE = 0.09, p = 0.000) confirms H1. The significant results of strategic learning capability on low value-added (β = 0.30, SE = 0.07, p = 0.000) and high value-added upgrading (β = 0.40, SE = 0.09, p = 0.000) confirm H2. H3 posits that supplier strategic learning capability mediates the relationship between relational governance

Table 2 Comparison of alternative model performance

(a) Statistics/Models	χ^2	df	df/χ^2	CFI	TLI	IFI	RMSEA
Model 1. Measurement model	1395.73	534	2.61	0.96	0.93	0.96	0.07
Model 2. Hypothesized model	2207.34	764	2.89	0.98	0.96	0.98	0.06
Model 3. Alternative model	2552.65	784	3.26	0.76	0.74	0.76	0.08
Model 4. Alternative model	2566.39	774	3.32	0.76	0.73	0.76	0.09
Model 5. Alternative model	1645.32	610	2.70	0.94	0.91	0.93	0.07

n = 376; χ^2 = Chi-square; DF = Degrees of Freedom; χ^2/df = Normed Chi-square; CFI = Comparative Fit Index; TLI = Tucker–Lewis Index; IFI = Incremental Fit Index; RMSEA = Root Mean Square Error Approximation

as well as low and high value-added upgrading of suppliers. The estimated mediation coefficient of strategic learning capability for both low value-added upgrading (β = 0.16, SE = 0.05 p = 0.000, at 95% CI = 0.08–0.27) and high value-added upgrading (β = 0.21, SE = 0.04, p = 0.000, at 95% CI = 0.13–0.32) were significant, thereby supporting H3. To explore whether strategic learning capability fully or partially mediates the relationships between relational governance and the two upgrading types, an additional model was tested by adding two direct effect paths from relational governance to low and high value-added upgrading. The nonsignificant direct effect of relational governance on both types of upgrading (low value-added upgrading, β = 0.10, SE = 0.08, p = 0.20; and high value-added upgrading, β = 0.09, SE = 0.07,

Table 3 Path coefficient of the structural model (hypothesized model 2)

Hypothesized paths	Coefficient (β)	Critical ratio	Standard error	Confidence interval		p-values
				Lower	Upper	
Direct effects						
Relational governance → Strategic learning capability	0.53	5.73	0.09	0.08	0.52	0.000
Strategic learning capability → Low value-added upgrading	0.30	6.31	0.07	0.16	0.43	0.000
Strategic learning capability → High value-added upgrading	0.40	8.59	0.09	0.28	0.52	0.000
Low value-added upgrading → Firm performance	0.16	3.20	0.05	0.10	0.25	0.043
High value-added upgrading → Firm performance	0.45	9.83	0.03	0.32	0.58	0.000
Moderation effects						
Relationship length_x_Relational governance → Strategic learning capability	0.25	3.28	0.08	0.10	0.58	0.003
Mediation effects						
Relational governance → Strategic learning capability → Low value-added upgrading	0.16	3.20	0.05	0.08	0.27	0.000
Relational governance → Strategic learning capability → High value-added upgrading	0.21	5.25	0.04	0.13	0.32	0.000
Index of moderated-mediation						
Low value-added upgrading	0.08	2.75	0.03	0.15	0.36	0.011
High value-added upgrading	0.11	2.93	0.03	0.16	0.41	0.001
Relative strength assessment						
Low value-added upgrading $\Delta R^2 = 0.04$						
High value-added upgrading $\Delta R^2 = 0.15$						
Controls						
Number of buyers → Low value-added upgrading	0.08	0.89	0.09	−0.06	0.15	0.365
Number of buyers → High value-added upgrading	0.13	1.73	0.52	−0.03	0.23	0.142
Number of buyers → Firm performance	0.24	4.65	0.05	0.13	0.33	0.000
Type of buyers → Low value-added upgrading	0.06	1.22	0.06	−0.03	0.15	0.185
Type of buyers → High value-added upgrading	0.11	2.31	0.33	0.02	0.21	0.018
Type of buyers → Firm performance	0.16	3.28	0.04	0.06	0.25	0.002
Size of the firm → Low value-added upgrading	0.05	1.08	0.11	−0.15	0.05	0.314
Size of the firm → High value-added upgrading	0.12	2.43	0.63	0.02	0.21	0.015
Size of the firm → Firm performance	−0.03	−0.37	0.07	−0.11	0.07	0.709

n = 376

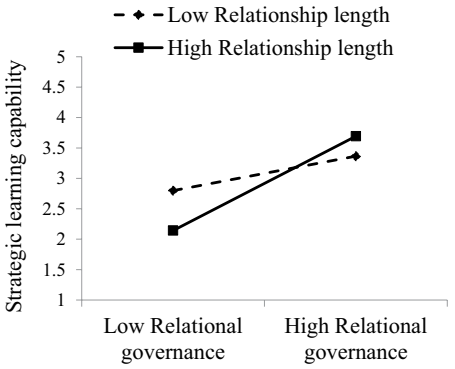
$p=0.29$) confirms this study's contention that strategic learning capability provides the mechanism to transform the benefits of a socially embedded relational governance into both low and high value-added upgrading.

H4 posits relationship length moderates the association between relational governance and supplier strategic learning capability. The results of the interaction effect (see Table 3) show that the interaction of relational governance with relationship length significantly influences supplier strategic learning capability ($\beta=0.25$, $SE=0.08$, $p=0.003$), thereby supporting H4. The moderated-mediation index (Hayes, 2009) of relationship length for low value-added upgrading (index = 0.08, $p=0.011$, at 95% CI = 0.15–0.36) and high value-added upgrading (index = 0.11, $p=0.001$, at 95% CI = 0.16–0.41) were all significant. Figure 2 illustrates the nature of interaction effect of relationship length with relational governance on suppliers' strategic learning capability and shows the effect increased as relationship length increased from a low to a high level (a) and remained significant in both regions (b) (Carden et al., 2017).

The final contention of this research is that high value-added upgrading influences suppliers' performance more than low value-added upgrading. The estimated coefficient for the high value-added upgrading ($\beta=0.45$, $SE=0.03$, $p=0.000$) was larger than for low value-added upgrading ($\beta=0.16$, $SE=0.05$, $p=0.043$) (see Table 3), which confirms H5. To test the differential effects of low and high value-added upgrading on performance, we followed Budescu (1993) approach and estimated two additional sub-models to compute the proportionate contribution of each upgrading type to the variance explained (i.e., R^2). The result (see Table 3) shows that the exclusion of high value-added upgrading severely affects the overall performance of the model by decreasing the variance explained for performance $\Delta R^2=0.15$. The statistical significance of the relative importance of low and high value-added upgrading to performance was assessed using the proportion overlap (POL) technique (Cumming, 2009). The POL results revealed that the difference in their contributions to performance was statistically significant at $p<0.001$ (see Fig. 1b in Appendix), thereby confirming our contention that high value-added upgrading has a greater impact on supplier firm performance than low value-added upgrading. The overall results support the mediating role of suppliers' strategic learning capability in the relationship between relational governance and both low and high value-added upgrading. This mediating effect is further moderated by the length of the supplier's relationship with MNE-buyers in GVCs.

Two additional models were estimated to confirm the results related to the hypothesized paths of the research model. First, based on a theoretical contention that network learning facilitates innovation (Kobarg et al., 2019; Kogut & Zander, 1992), low and high value-added upgrading were replaced with a measure of incremental and radical innovation. Suppliers in GVCs are captive to low value-added activities that results in incremental innovation while limiting their scope for radical innovation (Pietrobelli & Rabellotti, 2011; Zhou et al., 2022). Thus, examining the mediating role of strategic learning capability using incremental and radical innovation as alternative measures of low and high value-added upgrading enables us to explore the underlying mechanism through which suppliers can overcome MNEs' constraints and pursue both types of innovation. This, in turn, strengthens our main theoretical

(a) Two-way interaction effects



(b) Simple slopes and the region of significance test

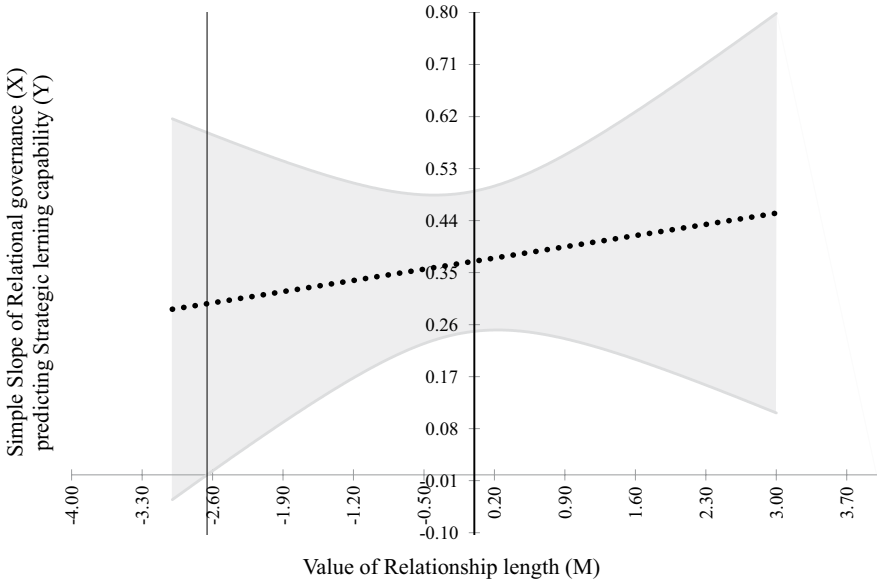


Fig. 2 Moderation effects of relationship length on strategic learning capability

contention. We used the extent to which suppliers' innovation goals were achieved (1 = not at all, …., 7 = entirely) in terms of: (1) the development of a completely new product, which was operationalized as radical innovation and (2) improvement of existing products, operationalized as incremental innovation (Kobarg et al., 2019). The results (see Table 6 in Appendix) show that strategic learning capability significantly influences both incremental (β = 0.34, SE = 0.05, p = 0.000) and radical innovation (β = 0.42, SE = 0.05, p = 0.000). Second, IB literature posits that innovation is corollary of exporting as a foreign market entry mode (Cassiman & Golovko, 2011). As such, export mode was used as an outcome variable (1 = wholly indirect,

…, 7 = wholly direct) to replace performance. The results summarized in Table 7 in Appendix show that both incremental (β = 0.17, SE = 0.05, p = 0.041) and radical innovation (β = 0.35, SE = 0.04, p = 0.000) also influence entry mode decision such that radical innovation influences more the choice of direct exporting than incremental innovation. Moreover, volume of production and export share were used as alternative performance measures to validate the robustness of our results (Islam & Polonsky, 2020). Model fit indices are summarized in Table 2 (Model 5). The results, presented in Table 8 in Appendix, show that low value-added and high value-added upgrading influenced the alternative performance measures differently. Specifically, low value-added upgrading significantly influenced supplier's production capacity (β = 0.19, SE = 0.04, p = 0.000), but had no significant effect on export share. In contrast, high value-added upgrading significantly influenced export share, but not supplier's production capacity. Overall, the additional analyses affirm the main results of this study.

6 Discussion

Upgrading within GVCs has profound implications for economic development and employment creation in host countries, which are predominantly developing economies. While past research has often investigated suppliers' upgrading from MNEs' perspective and frequently attributed this as an outcome of GVCs' governance structure, resulting in conflicting and inconclusive findings (Pickles et al., 2006). This raises an important question: Does participation in GVCs enable suppliers in developing economies to escape from the low value-added trap?

Drawing on resource dependence theory (Pfeffer & Salancik, 1978) and relational exchange theory (Macneil, 1978), this study examined the relationship among governance, upgrading, and performance from the perspective of supplier firms in a developing country context. The results show that relational governance has a significant positive effect on suppliers' strategic learning capability that in turn influences the supplier's low and high value-added upgrading. The significant positive effect of relational governance on strategic learning capability suggests that suppliers' dependency on MNE-buyers provides a self-enforcing social mechanism to reduce opportunism, reinforcing critical knowledge, and resources sharing with suppliers (Kano, 2018; Lechner et al., 2020; Wang & Xin, 2024). Moreover, the mediation effect of strategic learning capability provides a more nuanced understanding of how the benefits derived from relational governance are transformed into tangible upgrading outcomes. Supplier's relationship length with buyers positively moderates the association between relational governance and strategic learning capability. This suggests that longer-term relationships build trust and confidence between partners, reducing uncertainty around the exchange of tacit and critical know-how. Finally, as expected, high value-added upgrading was found to have a greater impact on supplier performance compared to low value-added upgrading. These findings emphasize the importance for suppliers to commit resources and take calculated risks in pursuing high value-added activities such as branding, marketing, and functional upgrades, as

a route to escape the constraints of low value-added production and enhance long-term competitiveness.

6.1 Theoretical Contributions

RDT posits that organizations are open systems dependent on the external environment for complementary resources and capabilities resulting in power constellation that influences exchange partners' subsequent strategic responses to external dependencies. Powerful actors can manage external dependencies either by exerting their power to get things done or cooperating with the other partner to accomplish mutually beneficial outcomes (Pfeffer & Salancik, 1978, 2003). Although power asymmetries as mechanisms for managing external dependencies have been extensively studied in horizontal interorganizational contexts, collaborative governance arrangements in vertical relationships—such as those between buyers and suppliers—have received comparatively limited attention (Hillman et al., 2009; Jiang et al., 2023; Wang & Xin, 2024). The findings of this research contribute to RDT by explaining how socially embedded, collaborative governance mechanisms can mitigate opportunism and support managing dependencies within GVCs exchange relationships. The positive influences of relational governance on suppliers' strategic learning capability suggest that socially embedded governance arrangements function as self-enforcing mechanisms that curb opportunism and self-serving behavior of partners. This facilitates suppliers' access to complementary resources from MNE-buyers, thereby enabling the development of strategic learning capability, which, in turn, drive both low and high value-added upgrading. Socially embedded governance mechanisms also help reduce power asymmetry and the consequent relational frictions (Boehm, 2022) as well as unfair terms and conditions that in turn support suppliers' strategic learning capability (Sun & Zhou, 2025).

Hillman et al. (2009) called for combining other theories to advance our understanding about the boundary conditions of RDT. Responding to this call, this study incorporates relational exchange theory (Macneil, 1978) to argue that longer-term relationships with MNE-buyers build partner confidence and reduce agency problems related to the exchange of critical knowledge and resources. This aligns with prior work suggesting that MNEs continuously reconfigure GVC governance structures to adapt to dynamic external environments (Buckley et al., 2019). Relationship length strengthening the ties influences the intensity of knowledge-resource sharing between GVC buyers and suppliers, therefore, sets out an important boundary spanning for relational governance. The finding related to the moderation effect of suppliers' relationship length with MNE-buyers advances our understanding about the boundary condition of socially embedded governance arrangement in managing external dependencies within vertical exchange relationships. The significant moderation role played by relationship length indicates that suppliers need to deploy more time and resources to develop a nourishing long-term relationship with MNE-buyers, as long-term relationships with MNE-buyers help suppliers reduce relational uncertainty and increase future business opportunities arising from more efficient use of network-level resources to enhance strategic learning capability to upgrade value chain activities (Hillman et al., 2009; Pfeffer & Salancik, 1978).

Leveraging the benefits accrued through GVCs calls for suppliers to be innovative to upgrade their value chain activities to enhance their bargaining power with MNE-buyer (Bagchi et al., 2015; Jean et al., 2017; Kistruck et al., 2013; Wang & Xin, 2024). Suppliers that fail to upgrade risk being locked into low value-added activities, increasing their replaceability and the likelihood of exclusion from GVCs (Islam & Chadee, 2021). Such low value-added activities will also likely increase suppliers' dependency on MNEs, reducing their autonomy and appropriation of performance benefits. While high value-added upgrading can be risky and lead to potential conflicts with MNEs, it is the only way a supplier can reduce their dependency on MNEs. Suppliers with strong strategic learning capability can enact multiple strategies such as investing in emerging technologies (Oliveira et al., 2021a, 2021b), diversifying their customer base, acquiring critical resources from external sources, forming alliances, serving alternative consumer-markets to avoid conflict with their main buyers (Ernst & Kim, 2002; Murphree & Anderson, 2018; Sun & Zhou, 2025).

Most previous studies have suggested that asymmetrical dependence in buyer–supplier relationships is exploitative in terms of weaker partner's upgrading (i.e., suppliers), especially in the context of high value-added activities (De Marchi et al., 2020; Humphrey & Schmitz, 2002; McWilliam et al., 2020). However, this study's findings suggest that suppliers' dependence on buyers is important for developing their strategic learning capability. That is, decoupling from GVCs can impede their ability to apply strategic learning capability and consequently reduce their upgrading and performance. Consistent with the previous research (Elia et al., 2014; Islam et al., 2021; Shaver, 1998), this study's findings show that while relational governance can create opportunities for knowledge and resource sharing between buyers and suppliers, it is the suppliers' strategic learning capability that enables them to proactively identify and leverage necessary knowledge to drive upgrading. By identifying the mediating role of strategic learning capability on both low and high value-added upgrading, this study provides a nuanced understanding of how network-level knowledge and resources can be transformed into tangible upgrading outcome.

Lastly, by examining the influence of both upgrading types on performance, this study addresses longstanding calls to investigate the link between firm-level upgrading and performance outcomes (De Marchi et al., 2020; Dindial et al., 2020; Islam & Polonsky, 2020; Pickles et al., 2006). The findings suggest that while both low and high value-added upgrading enhance supplier performance, the effects of high value-added upgrading are significantly stronger. This aligns with theoretical expectations and previous studies (see Islam & Polonsky, 2020; Pietrobelli & Saliola, 2008; Simona & Axèle, 2012; Tokatli, 2013).

6.2 Managerial and Policy Implications

While apparel GVC suppliers' data have been used, we believe the findings have general applicability beyond the context of this study in which an emerging economy supplier firm in buyer-driven GVCs must strategically manage external dependencies for value creation and capture. Findings of this research provide three managerial implications. First, exploring the significant effect of relational governance by interacting with relationship length on strategic learning capability, findings of

this research provide managers an insightful set of tools about how to develop trust, commitment and confidence for orchestrating mutually beneficial dependencies in GVCs exchange relationships. Managers should highlight the importance of social mechanisms when they are confident about their counterpart's long-term orientation toward the relationship. Failure to do this might result in opportunistic behavior, impeding their ability to develop complementary capability to foster bilateral dependency. Organizations learn to manage relationships over time (Buvik & Haugland, 2005; Griffith & Myers, 2005; Jean et al., 2021); therefore, managers should dedicate time and resources for developing healthy longer-term relationships. Strengthening collaborations with MNE-buyers will allow supplier managers to accumulate valuable resources, access advanced technologies and gain critical market intelligence (Sun & Zhou, 2025). However, managers need to carefully monitor the patterns that evolve as socially embedded governance mechanism alone cannot address ineffective relationship changes (Shamsollahi et al., 2021).

Second, the findings of the mediation effect of strategic learning capability suggest both buyers and supplier managers should commit resources to developing organizationally embedded routines and processes that enable the proactive identification of external knowledge and resources critical to the organization's strategic priorities. Investment in strategic learning capability will also facilitate supplier quick integration of new knowledge with existing knowledge that would prompt the speed of innovation and new product development that can contribute to higher upgrading (Anderson et al., 2009; Moon et al., 2017; Sirén, 2012; Siren et al., 2012; Turkina et al., 2025). Supplier managers deploying more dedicated time and resources to develop strategic learning capability can become indispensable for GVCs ongoing relationships that can motivate buyers relegating more responsibilities to the suppliers, creating opportunities for the supplier's high value-added upgrading (Lechner et al., 2020; Sinkovics et al., 2018).

Third, the apparent influences of low and high value-added upgrading on performance suggest that suppliers that are committed to upgrading high value-added activities such as marketing, can enhance their bargaining with MNEs to capture higher returns from their participation in GVCs. Managers of supplier firms need to accept the risks associated with high value-added upgrading and commit necessary resources. As high value-added upgrading helps suppliers reduce their dependency constraints by capturing higher value through improved performance (Dindial et al., 2020; Islam & Polonsky, 2020). Supplier managers can invest additional resources to directly enter to international markets and internationalize their production activities to exploit favorable factor conditions (e.g., institutional arbitrages) (Epede & Wang, 2022). Focusing on domestic and regional markets can also be a viable strategic option for supplier managers as well, as they can further develop their marketing skills and this can further help avoid direct confrontation with their major GVC buyers (Sinkovics et al., 2018).

The findings of this study suggest that policymaking—through financial incentives, tax benefits, fostering of knowledge sharing platforms, and the improvement of industrial infrastructure (Sun & Zhou, 2025)—can enhance suppliers' strategic learning capabilities, enabling them to engage in high value-added upgrading and escape from the low value-added trap. In addition, policymakers should promote strategic

partnerships between supplier firms and national systems of innovation—such as universities, research centers, and government agencies responsible for supporting local exporting firms. These collaborations can facilitate knowledge transfer, enhancing suppliers' strategic learning capabilities for high value-added upgrading and enabling them to move up the value chain.

6.3 Limitations and Further Research

Notwithstanding the value of its novel insights, this research has several limitations that present opportunities for further research.

First, data collection was conducted while the industry was recovering from the disruptions of COVID-19 pandemic, which may have influenced managers' responses to the survey. Future research could address this by using longitudinal data and comparing performance using both subjective and objective measures across different time periods.

Second, while relational governance is inherently a dyadic construct, this study assessed it solely from the suppliers' perspective, using cross-sectional data from a single country and industry sector. Future research could extend the theoretical scope of these findings by adopting a dyadic and GVC-level systems perspective.

Third, by focusing exclusively on relational governance, this study limits the ability to compare its findings with other governance types (cf. Gereffi et al., 2005). Future studies could address this gap by examining other governance mechanisms to provide a more comprehensive understanding of governance–upgrading–performance relationships.

Fourth, future studies may also explore additional theoretical lenses, such as absorptive capacity (Cohen & Levinthal, 1990) and upper echelon logics, by examining how managers' experience and networks influence their firms' upgrading and performance outcomes.

Fifth, while relationship length captures an objective aspect of supplier–buyer ties, it does not reflect the qualitative richness of the relationship. Although prior studies have used relationship length as a valid standalone proxy (e.g., Griffith & Myers, 2005; Jean et al., 2021; Kotabe et al., 2003), it may overlook key dimensions such as depth, trust, or strategic intensity of the supplier–buyer relationship. Future research could strengthen this construct by triangulating it with perceptual indicators such as buyer characteristics, relational trust, closeness, or interaction frequency to more holistically assess relational embeddedness.

Lastly, future research could investigate how cultural distance and institutional quality influence supplier capabilities for learning, innovation, and upgrading within GVCs. In addition, given rising concerns about the social and environmental implications of different upgrading paths (cf. De Marchi et al., 2020), future studies could employ broader performance measures—encompassing operational, social, and environmental dimensions—to explore how various types of economic upgrading affect these outcomes.

7 Conclusion

A major strategic challenge for supplier firms in developing economies is how to upgrade their value chain activities to capture higher returns from GVCs. The literature on upgrading remains fragmented, with limited quantitative evidence that has prompted growing calls for more quantitative research to systematically examine firm-level governance–upgrading–performance relationships. By systematically examining the relationships between differential firm-level upgrading's effects on performance, this research provides novel insights that address the ongoing debate over the relationship between governance and upgrading, as well as the performance implications of different types of upgrading for suppliers (or value capture) (Dindial et al., 2020; Pickles et al., 2006). In doing so, it contributes to unpacking the 'black box' of firm-level upgrading (Coe & Yeung, 2015). The results of this study assist in clarifying these complex relationships and provide a better understanding of how suppliers derive benefits from participation in GVCs, hopefully encouraging further research in this area.

Appendix A

See Table 4.

Table 4 Factor loading, reliability and validity of the measures of the focal constructs

Constructs	Items	Standardized factor loading
Relational governance (Poppo et al., 2008; Zhou & Xu, 2012) α = 0.86; CR = 0.90; AVE = 0.59		
Rate the following statements (1 = Do not agree……7 = Totally agree) keeping the most important buyer of your firm in mind:		
	Allow flexibility to adapt to the request for changes	0.86
	Committed to improvements that may benefit both our firm and buyer	0.75
	Share information very well	0.77
	Keeps us always informed about changes that may affect us	0.70
	We can trust our buyer in keeping up promises	0.73
	Always collaborate with us to solve problems	0.78
Strategic learning capability (Anderson et al., 2009) α = 0.90; CR = 0.93; AVE = 0.68		
Rate the following statements about your firm's learning capability (1 = Do not agree……7 = Totally agree):		
	Identifying strategies that did not work	0.82
	Analyzing the reasons of failure of the strategies	0.85
	Learning from past strategic or competitive mistakes	0.81
	Regularly modifies strategies and tactics	0.83
	Changing the business strategy to enhance effectiveness of actions	0.87
	Recognizing alternative approaches to achieve objectives	0.78
Low value-added upgrading:		
Process upgrading (Islam & Polonsky, 2020) α = 0.86; CR = 0.86; AVE = 0.60		
Rate the following statements relating to your firm's upgrading in the last three years (1 = Do not agree……7 = Totally agree):		
	Introduced new production machinery to reduce costs and increase productivity	0.74
	Introduced or improved total quality programs	0.78
	Introduced new organizational or management techniques	0.84
	Increased the use of internet and intranet for business purposes	0.74
Product upgrading (Islam & Polonsky, 2020) α = 0.85; CR = 0.90; AVE = 0.64		
Rate the following statements relating to your firm's upgrading in the last three years (1 = Do not agree……7 = Totally agree):		
	Improved product quality	0.86
	Improved technical characteristics of the product (e.g., complexity of design)	0.82
	Developed or improved our own product design team	0.78
	Developed or improved product research and development capacity	0.73
	Developed or improved product sample development capacity	0.81
High value-added upgrading:		
Functional upgrading (Islam & Polonsky, 2020) α = 0.86; CR = 0.91; AVE = 0.67		
Rate the following statements relating to your firm's upgrading in the last three years (1 = Do not agree……7 = Totally agree):		
	Product defection/reworking rates have decreased	0.75
	Introduced new materials/production inputs (e.g., organic fabric)	0.78
	Invested to enhance workers' skills	0.81
	Improved our market research capacity	0.87
	Improved our logistics capacity (e.g., materials and inputs handling capacity)	0.86

Table 4 (continued)

Constructs	Items	Standardized factor loading
Chain upgrading (Islam & Polonsky, 2020) α = 0.88; CR = 0.93; AVE = 0.73		
Rate the following statements relating to your firm's upgrading in the last three years (1 = Do not agree……7 = Totally agree):		
	Expanded businesses in processing yarn into fabric	0.85
	Expanded business into logistic services such as freight forwarding, insurance, shipping, IT	0.80
	Developed our own brand-named product	0.81
	Opened our own retail stores and/or collaborated with other retailers to sell our own brand-named product(s) within the domestic/local market	0.89
	Opened our own retail stores and/or collaborated with other retailers to sell our own brand-named product(s) within international markets	0.91
Firm performance (Gerschewski & Xiao, 2015; Zhou et al., 2007) α = 0.95; CR = 0.95; AVE = 0.75		
Rate the following statements to your organization's performance in relation to your major competitor in the last three years (1 = Declined more than 21%……7 = Increased more than 21%):		
	GVCs sales volume	*0.83*
	Value of GVCs sales growth	*0.89*
	Overall firm's profitability	*0.88*
	Return on investment	*0.88*
	Market share via *GVCs*	*0.84*
	Firm's overall performance	*0.87*

n = 376; CR = Composite reliability; AVE = Average variance extracted

Appendix B

See Fig. 3 and Tables 5, 6, 7, and 8.

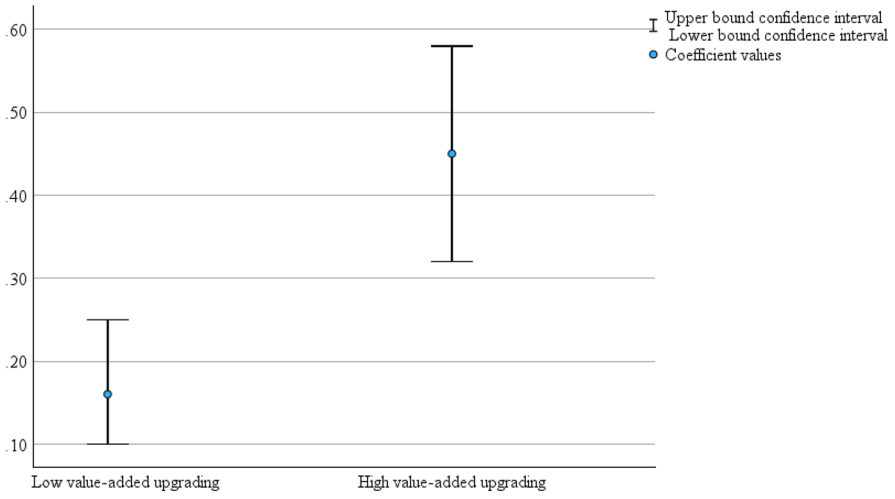


Fig. 3 Assessment of statistical significance of the relative importance of low and high value-added upgrading

Table 5 Results of Gaussian copula test

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	*P* values
Single path test					
GC (Relational governance—> Strategic learning capability)—> Strategic learning capability	0.220	0.214	0.190	1.158	0.247
GC (Strategic learning capability—> Low value-added upgrading)—> Low value-added upgrading	0.248	0.226	0.186	1.873	0.214
GC (Strategic learning capability—> High value-added upgrading)—> High value-added upgrading	0.062	0.049	0.104	0.592	0.554
GC (Low value-added upgrading—> Performance)—> Performance	0.208	0.484	0.098	1.182	0.157
GC (High value-added upgrading—> Performance)—> Performance	0.185	0.360	0.118	1.260	0.125
Two-pair test					
GC (Relational governance—> Strategic learning capability)—> Strategic learning capability	0.220	0.220	0.193	1.140	0.254
GC (Strategic learning capability—> Low value-added upgrading)—> Low value-added upgrading	0.248	0.229	0.087	1.843	0.114
GC (Relational governance—> Strategic learning capability)—> Strategic learning capability	0.220	0.219	0.192	1.145	0.252
GC (Strategic learning capability—> High value-added upgrading)—> High value-added upgrading	0.062	0.049	0.103	0.596	0.551
Three-pair test					
GC (High value-added upgrading—> Performance)—> Performance	0.235	0.360	0.115	1.359	0.121
GC (Relational governance—> Strategic learning capability)—> Strategic learning capability	0.220	0.221	0.189	1.162	0.245
GC (Strategic learning capability—> High value-added upgrading)—> High value-added upgrading	0.062	0.048	0.103	0.601	0.548
GC (Low value-added upgrading—> Performance)—> Performance	0.208	0.482	0.096	1.318	0.134
GC (Relational governance—> Strategic learning capability)—> Strategic learning capability	0.220	0.220	0.190	1.155	0.248
GC (Strategic learning capability—> Low value-added upgrading)—> Low value-added upgrading	0.218	0.227	0.086	1.878	0.134

$n = 376$

Table 6 Robustness test with incremental and radical innovation

Paths	Coefficient (β)	Critical ratio	Standard error	Confidence interval		*p*-values
				Lower	Upper	
Direct effects						
Relational governance → Strategic learning capability	0.53	5.75	0.09	0.06	0.63	0.000
Strategic learning capability → Incremental innovation	0.34	6.32	0.05	0.22	0.46	0.000
Strategic learning capability → Radical innovation	0.42	8.11	0.05	0.28	0.51	0.000
Incremental innovation → Firm performance	0.17	3.26	0.05	0.07	0.15	0.041
Radical innovation → Firm performance	0.35	6.73	0.04	0.21	0.48	0.000
Moderation effects						
Relationship length_x_Relational governnace → Strategic learning capability	0.24	3.23	0.06	0.09	0.51	0.004
Mediation effects						
Relational governance → Strategic learning capability → Incremental Innovation	0.14	3.23	0.05	0.02	0.25	0.000
Relational governance → Strategic learning capability → Radical innovation	0.19	5.28	0.04	0.07	0.27	0.000
Controls						
Number of buyers → Incremental innovation	0.07	1.20	0.06	0.05	0.16	0.253
Number of buyers → Radical innovation	0.13	2.25	0.05	0.03	0.21	0.013
Number of buyers → Firm performance	0.19	3.46	0.05	0.07	0.27	0.002
Type of buyers → Incremental innovation	0.12	1.22	0.04	0.04	0.19	0.052
Type of buyers → Radical innovation	0.13	2.31	0.04	0.02	0.23	0.004
Type of buyers → Firm performance	0.12	3.47	0.04	0.07	0.25	0.001
Size of the firm → Incremental innovation	0.03	1.08	−0.09	0.12	0.05	0.111
Size of the firm → Radical innovation	0.08	2.43	0.08	0.02	0.19	0.016
Size of the firm → Firm performance	0.10	0.37	0.02	0.16	0.07	0.123

n = 376

Table 7 Robustness test with export orientation

Paths	Coefficient (β)	Critical ratio	Standard error	Confidence interval		*p*-values
				Lower	Upper	
Direct effects						
Relational governance → Strategic learning capability	0.53	5.75	0.09	0.06	0.63	0.000
Strategic learning capability → Incremental innovation	0.34	6.32	0.05	0.22	0.46	0.000
Strategic learning capability → Radical innovation	0.42	8.11	0.05	0.28	0.51	0.000
Incremental innovation → Export mode	0.17	3.26	0.05	0.07	0.15	0.041
Radical innovation → Export mode	0.35	6.73	0.04	0.21	0.48	0.000
Moderation effects						
Relationship length_x_Relational governnace → Strategic learning capability	0.24	3.23	0.06	0.09	0.51	0.004
Mediation effects						
Relational governance → Strategic learning capability → Incremental Innovation	0.14	3.23	0.05	0.02	0.25	0.000
Relational governance → Strategic learning capability → Radical innovation	0.19	5.28	0.04	0.07	0.27	0.000
Controls						
Number of buyers → Incremental innovation	0.07	1.20	0.06	0.05	0.16	0.253
Number of buyers → Radical innovation	0.13	2.25	0.05	0.03	0.21	0.013
Number of buyers → Export mode	0.13	3.46	0.06	0.03	0.26	0.002
Type of buyers → Incremental innovation	0.12	1.22	0.04	0.04	0.19	0.052
Type of buyers → Radical innovation	0.13	2.31	0.04	0.02	0.23	0.004
Type of buyers → Export mode	0.16	3.47	0.04	0.03	0.28	0.02
Size of the firm → Incremental innovation	0.03	1.08	−0.09	0.12	0.05	0.111
Size of the firm → Radical innovation	0.08	2.43	0.08	0.02	0.19	0.016
Size of the firm → Export mode	0.05	0.37	0.07	−0.06	0.15	0.416

n = 376

Table 8 Robustness check with alternative performance measures

Paths	Coefficient (β)	Critical ratio	Standard error	Confidence interval		*p*-values
				Lower	Upper	
Direct effects						
Relational governance → Strategic learning capability	0.53	2.94	0.18	0.33	0.84	0.000
Strategic learning capability → Low value-added upgrading	0.30	5.00	0.06	0.22	0.45	0.000
Strategic learning capability → High value-added upgrading	0.40	8.00	0.05	0.23	0.59	0.000
Low value-added upgrading → Volume of production[a]	0.19	3.80	0.05	0.09	0.30	0.001
Low value-added upgrading → Export share[b]	−0.05	1.00	0.05	−0.17	0.04	0.292
High value-added upgrading → volume of production	−0.06	1.00	0.06	−0.18	0.07	0.364
High value-added upgrading → Export share	0.24	3.00	0.08	0.08	0.39	0.004
Moderation effects						
Relationship length_x_Relational governnace → Strategic learning capability	0.26	3.71	0.07	0.16	0.57	0.002
Mediation effects						
Relational governance → Strategic learning capability → Low value-added upgrading	0.15	3.00	0.05	0.02	0.25	0.000
Relational governance → Strategic learning capability → High value-added upgrading	0.23	5.75	0.04	0.07	0.27	0.000
Controls						
Number of buyers → Low value-added upgrading	0.09	0.10	0.05	−0.05	0.16	0.329
Number of buyers → High value-added upgrading	0.10	1.86	0.07	−0.02	0.23	0.108
Number of buyers → Volume of production	0.38	3.46	0.06	0.27	0.48	0.000
Number of buyers → Export share	0.12		0.07	−0.02	0.26	0.106
Type of buyers → Low value-added upgrading	0.05	1.22	0.05	−0.04	0.14	0.313
Type of buyers → High value-added upgrading	0.12	2.37	0.05	0.03	0.21	0.010
Type of buyers → Volume of production	0.22	3.47	0.04	0.03	0.28	0.02
Type of buyers → Export share	0.04					
Size of the firm → Low value-added upgrading	0.11	1.08	0.05	−0.15	0.05	0.356
Size of the firm → High value-added upgrading	0.12	2.42	0.05	0.02	0.20	0.014
Size of the firm → Volume of production	0.07	0.37	0.05	−0.02	0.26	0.167
Size of the firm → Export share	0.05		0.06	−0.15	0.09	0.445

$n = 376$

[a]Volume of production was measured by the number of garment items produced annually in the preceding three years

[b]Export share was measured by % of total production exported in international markets

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Declarations

Conflict of interest None.

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