

# Linking Developing Country Firms' Relational Capital to Their Export Performance in Global Value Chains: The Moderating Role of Technological Turbulence

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Volume 27, Number 1, 2024

URI: <https://id.erudit.org/iderudit/1112339ar>  
DOI: <https://doi.org/10.55482/jcim.2024.33509>

[See table of contents](#)

Publisher(s)

Management Futures

ISSN

1481-0468 (print)  
1718-0864 (digital)

[Explore this journal](#)

Cite this article

Chowdhury, M., Sui, S., Morgan, H. & Li, D. (2024). Linking Developing Country Firms' Relational Capital to Their Export Performance in Global Value Chains: The Moderating Role of Technological Turbulence. *Journal of Comparative International Management*, 27(1), 31–42.  
<https://doi.org/10.55482/jcim.2024.33509>

Article abstract

Global value chains (GVCs) involve globally dispersed activities among interdependent firms. They provide an avenue for developing country firms to improve their export performance. A dominant view is that they can accomplish this outcome with close or trusted relationships with more established GVC partners. However, other factors determine how much such relational capital translates into superior export performance. Drawing on an interfirm learning perspective, we explain why the export effects of developing country firms' relational capital with GVC buyers and suppliers could depend on technological turbulence. We hypothesize a positive relationship between these firms' export performance and their relational capital with GVC buyers and suppliers. But we expect technological turbulence to weaken this relationship. Based on a sample of 95 Bangladeshi firms in the ready-made garment industry, this quantitative analysis reports evidence that partially supports our predictions. Specifically, we find a positive relationship between these firms' relational capital with GVC buyers and their export performance. In addition, the higher the technological turbulence, the weaker this relationship. Overall, this research adds to the theory and practice of interfirm learning in GVCs from the perspective of developing country firms.

# Linking Developing Country Firms' Relational Capital to Their Export Performance in Global Value Chains: The Moderating Role of Technological Turbulence

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## ABSTRACT

Global value chains (GVCs) involve globally dispersed activities among interdependent firms. They provide an avenue for developing country firms to improve their export performance. A dominant view is that they can accomplish this outcome with close or trusted relationships with more established GVC partners. However, other factors determine how much such relational capital translates into superior export performance. Drawing on an interfirm learning perspective, we explain why the export effects of developing country firms' relational capital with GVC buyers and suppliers could depend on technological turbulence. We hypothesize a positive relationship between these firms' export performance and their relational capital with GVC buyers and suppliers. But we expect technological turbulence to weaken this relationship. Based on a sample of 95 Bangladeshi firms in the ready-made garment industry, this quantitative analysis reports evidence that partially supports our predictions. Specifically, we find a positive relationship between these firms' relational capital with GVC buyers and their export performance. In addition, the higher the technological turbulence, the weaker this relationship. Overall, this research adds to the theory and practice of interfirm learning in GVCs from the perspective of developing country firms.

**Key Words:** Developing country firms; global value chain; relational capital; interfirm learning; technological turbulence; export performance

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**To cite:** Chowdhury, M. U., Sui, S., Morgan, H. M., & Li, D. (2024). Linking Developing Country Firms' Relational Capital to Their Export Performance in Global Value Chains: The Moderating Role of Technological Turbulence. *Journal of Comparative International Management*, 27(1), 31-42. <https://doi.org/10.55482/jcim.2024.33509>

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## INTRODUCTION

An increasingly important form of international business is the integration of upstream and downstream activities among interdependent firms across developed and developing countries (Epede & Wang, 2022; Gereffi, 2011; World Bank, 2017). The underlying value-creating process or sequence is called a global value chain (GVC), which converts raw and intermediate resources into final goods. In other words, GVCs organize and govern value chains globally (Gereffi, 2017; Lee et al., 2018). Although developing country firms are often weaker partners in such GVCs (Inkpen & Pien, 2006; Ramaswamy & Gereffi, 2000), they are expected to fare better as GVC partners than as independent exporters (Solaz, 2018). Some studies have conveyed this view by appealing to learning-related and other benefits linked to relational capital, a perspective that broadly captures the value that firms derive from their close relationships with other firms (Giovannetti et al., 2015; Martínez-Torres, 2006; Pietrobelli & Rabellotti, 2011; Ryu et al., 2021; Whipple et al., 2015). This implies that less established GVC partners, such as developing country firms, can repeatedly interact with and learn from established GVC partners, such as developed country firms, in performance-improving ways (Pietrobelli & Rabellotti, 2011).

Still, there are inadequately addressed interfirm learning challenges linked to various factors. One of the factors is technological turbulence, which results from rapid technological advancements in products and manufacturing process optimization (Hsu & Chen, 2004; Song et al., 2005). More precisely, technological turbulence refers to the rate of technological change over time within an industry (Slater & Narver, 1994; Trkman & McCormack, 2009). Developing country firms could face serious learning challenges in GVCs when subject to accelerated technological changes in an industry (Calantone et al., 2003; Gaur et al., 2011; Tsai & Hung, 2016; Wu et al., 2017). Thus, we ask this question: How does such technological turbulence impact developing country firms' capacity to convert their relational capital in GVCs into superior export performance?

This study addresses this question by articulating an interfirm learning perspective (Lane & Lubatkin, 1998). To do so, we draw on a relational view of absorptive capacity. Specifically, we associate it with a focal firm's ability to evaluate, assimilate, and apply the knowledge generated by its organizational partner in the context of interdependent relationships (Lane & Lubatkin, 1998; Lane et al., 2001). In this case, a focal firm can learn more from its partner when it can meet the absorptive capacity requirements of interfirm knowledge transfer (Alcacer & Oxley, 2014; Soontornthum et al., 2020). Relational capital can help in various

ways – from fostering trusted interfirm interactions to motivating partner-specific investments and inducing more established partners to share essential knowledge and other resources with weaker partners (Alcacer & Oxley, 2014; Dyer & Singh, 1998). On the contrary, increased technological turbulence can undermine partner-specific absorptive capacity by disincentivizing partner-specific investments or resource commitments for capability development in weak partners (Terawatanavong et al., 2011). Thus, increased technological turbulence can erode the learning-related benefits a focal firm derives from its relational capital with an organizational partner.

To apply these insights, we associate focal firms and organizational partners with developing country firms and their GVC partners, respectively. A primary objective is to explain and predict the export performance implications of developing country firms' relational capital with GVC partners and the contingent influence of technological turbulence. We explore the export performance effects of developing country firms' relational capital with buyer and supplier partners in GVCs. This is appropriate because GVCs involve cross-border activities among interdependent buyers and suppliers (Del Prete et al., 2017; Kim et al., 2017). For example, if the developing country firm is a manufacturing firm, it could transact with GVC suppliers of raw materials or with GVC buyers of intermediate goods (Awan, 2019). Drawing on our theoretical framework, we hypothesize a positive association between developing country firms' export performance and their relational capital with GVC suppliers and buyers. Meanwhile, we hypothesize that technological turbulence will weaken these relationships. We empirically validate these hypotheses in the context of the ready-made Bangladeshi garment (RMG) industry. Bangladesh's economy is expanding quickly due to the RMG sector, the largest export-earning sector in the country but is established for low-value apparel products at low prices (Islam et al., 2016). Thus, it is an appropriate empirical context for our study.

Our research contributes in several ways. First, we add to a small stock of evidence on the learning-related benefits of GVCs from the perspective of developing country firms (Epede & Wang, 2022; Pietrobelli & Rabellotti, 2011; World Bank, 2017). Second, we contribute theoretically by contextualizing an interfirm learning perspective (Dyer & Singh, 1998; Lane & Lubatkin, 1998; Lane et al., 2001). We clarify the mechanisms by emphasizing the export-learning benefits of relational capital operating in the context of GVCs with partners from developed and developing countries. By explaining why such export-learning benefits depend on technological turbulence, we also clarify and verify a relevant external contingent factor. In doing so, we complement prior

research that emphasizes the role of internal contingent factors (e.g., GVC partners' size, resources, capabilities, culture, knowledge management practices, relationship history, the scope of the outsourcing contract, and willingness to learn from others) (Alcacer & Oxley, 2014; Schmitz & Knorrington, 2000; Soontornthum et al., 2020). Third, we contribute to the broader international business literature on GVCs in the context of developing countries (e.g., Epede & Wang, 2022). Specifically, we provide a more nuanced perspective on the conditional efficacy of GVCs as an indirect mode of internationalization for less established firms, such as developing country manufacturers. Our research is helpful for understanding and predicting the ebb and flow of knowledge from GVC leaders in developed countries to developing country firms, among other technologically delayed firms. We expect developing country managers and policymakers to find these insights useful.

## THEORETICAL FRAMEWORK

An interfirm learning perspective can clarify why less established firms, such as developing country firms, may learn from their more established partners in GVCs (Lane & Lubatkin, 1998; Lane et al., 2001; Schmitz & Knorrington, 2000; Soontornthum et al., 2020). Interfirm learning is generally associated with interfirm knowledge transfer (Alcacer & Oxley, 2014; Easterby-Smith et al., 2008; Soontornthum et al., 2020; Van Wijk et al., 2008). Given such knowledge transfer, interfirm learning is expected to improve firm performance (Huber, 1991; Kotabe et al., 2003). In the case of GVCs, performance improvements could involve various forms of upgrading – from improvements in processes (i.e., more efficient and accelerated operational or production processes) and products (i.e., quality or price competitiveness of intermediate product improvement) to upward shifts toward to higher value-added positions in the chain (i.e., design, marketing, or customer-facing tasks) (Cheung et al., 2011; Humphrey & Schmitz, 2002).

Local firms in developing countries can learn about exporting from leading GVC partners in developed countries (Schmitz & Knorrington, 2000). However, some developing country firms may derive more export-enabling benefits from interfirm learning than other local firms. A potentially significant source of variation is their relational capital with their GVC partners. As previously stated, relational capital refers to the value that firms derive from having close or trusted relationships with other firms (Giovannetti et al., 2015; Martínez-Torres, 2006; Ryu et al., 2021; Whipple et al., 2015). Although prior research points to the importance of relational capital for interfirm learning (Pietrobelli & Rabellotti, 2011), we still have an incomplete

understanding of the export implications of developing country firms' relational capital with both GVC buyers and suppliers.

The underlying relationships are complex because of contingent factors at work (i.e., GVC partners' size, resources, capabilities, and relationship history) (Alcacer & Oxley, 2014). An understudied but potentially significant contingent factor is technological turbulence, which we associate with unexpected disruptions from changing technologies in an industry (Calantone et al., 2003; Gaur et al., 2011; Wu et al., 2017). Businesses are vulnerable to a quicker rate of change in their production and product development processes when they operate in more technologically turbulent environments (Hanvanich et al., 2006), and developing country firms may be constrained to adapt to the change. Therefore, it would be helpful to understand whether and why the export effects of developing country firms' relational capital with GVC buyers and suppliers could depend on technological turbulence.

### Relationship between Export Performance and Relational Capital with GVC Buyers

Developing country firms generally have less power and fewer resources or capabilities than typically more established GVC buyers (i.e., world-leading brands) from advanced Western countries (i.e., United States) (Epede & Wang, 2022; Schmitz & Knorrington, 2000). But when they have relational capital with such GVC buyers, they could fare better in their interfirm activities and outcomes than they otherwise would. Specifically, developing country firms with higher relational capital could benefit from greater export-enabling knowledge transfer from GVC buyers. One reason is that relational capital could motivate these parties to make reciprocal partner-specific investments or commitments. On the one hand, developing country firms could be motivated to substantially adapt their sourcing, production, communication, and related internal processes to accommodate their GVC buyers' standardized processes and systems (Soontornthum et al., 2020). On the other hand, these GVC buyers could be motivated to help their less technologically capable or under-resourced developing country partners adapt and improve. GVC buyers could share technological and market knowledge to help them meet the demand for high-quality and competitively priced products or services under flexible and fast response arrangements (Alcacer & Oxley, 2014; Schmitz & Knorrington, 2000).

Under these conditions, developing country firms with higher relational capital with specific GVC buyers could have more partner-specific absorption capacity. This is possible because we associate higher relational capital with more trusted and confidential interfirm social interactions.



In GVC networks, interdependent firms must share sensitive, strategic, and confidential information with their chain partners. Thus, trust is essential for continuing a smooth flow of information and knowledge within such business networks (Sambasivan et al., 2013). Moreover, interdependent parties can better share knowledge when mutual trust strengthens (Cheung et al., 2010). When combined with GVC buyers' technological and market knowledge provision, increased mutual trust could enable developing country firms to better understand, assimilate, and apply such knowledge (Epede & Wang, 2022). This could lead to export-enabling upgrading (Humphrey & Schmitz, 2002). In addition to streamlining the production of intermediate goods for sale to their GVC buyers, developing country firms could make these goods more reliable and offer faster response times (Schmitz & Knorringer, 2000). Consequently, they could increase the scale and value of their exported intermediate goods in GVCs; hence, our first hypothesis:

*H1: Developing country firms' export performance is positively associated with their relational capital with GVC buyers.*

### Relationship between Export Performance and Relational Capital with GVC Suppliers

Developing country firms are not only exporters of intermediate goods in GVCs. They must also operate as importers of intermediate inputs required to manufacture their intermediate exports (Amiti & Wei, 2009; Solaz, 2018). Thus, it is important to consider GVC suppliers alongside GVC buyers. We expect developing country firms to derive or realize similar or complementary benefits from their relational capital with GVC suppliers. Prior research indicates that GVC suppliers of raw materials or intermediate goods can improve the operational efficiency and competitiveness of GVCs through the provision of high-quality and competitively priced raw materials or equipment under fast response times (Chiarvesio et al., 2013).

When developing country firms have a higher relational capital with GVC suppliers, we similarly expect reciprocated partner-specific investments or commitments at levels that increase partner-specific absorptive capacity. In this case, we expect trusted interfirm relationships, accompanied by an increased flow of operational and productivity-enhancing knowledge from GVC suppliers (Chiarvesio et al., 2013). For example, these suppliers could help developing country firms understand, assimilate, and apply knowledge about inventory management and how to use or reconfigure the mix of current and new raw materials and equipment in cost-saving or value-generating ways. These expectations are consistent with evidence that links interfirm learning from suppliers to

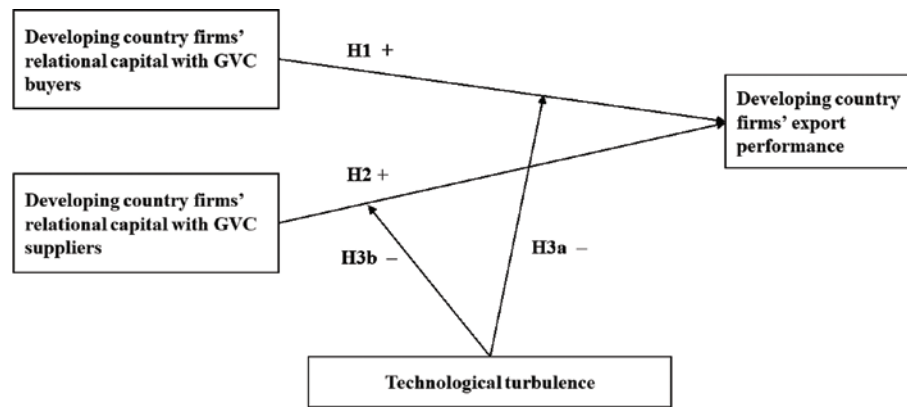
reduced manufacturer inventory costs and lead time (Kotabe et al., 2003), along with quality and performance improvements (Kannan & Tan, 2006). Consequently, if developing country firms have a higher relational capital with GVC suppliers, they could be better positioned to achieve export-enabling upgrading. Specifically, they may more efficiently convert imported intermediate inputs into more and better intermediate exports in GVCs. This leads to our second hypothesis:

*H2: Developing country firms' export performance is positively associated with their relational capital with GVC suppliers.*

### Moderating Effects of Technological Turbulence

To what extent do the export performance effects of these firms' relational capital with GVC buyers and suppliers depend on technological turbulence? Technological turbulence is usually regarded as one of the significant factors behind new ventures' international performance (Crespo et al., 2022). We also recognize that technological turbulence can create a high rate of technology obsolescence in any industry (Kandemir et al., 2006). When firms operate in more technologically turbulent environments, they are subject to a faster rate of change in production and product development processes (Hanvanich et al., 2006). To maintain a competitive advantage, they must revisit their business models, become more operationally flexible, and accelerate the pace of technology adoption relative to their competitors (Schermerhorn et al., 2018; Terawatanavong et al., 2011). Given these increased strategic demands, the resource and capability gaps between developing country firms and their GVC buyers and suppliers could constrain their capacity to co-adapt to technological changes.

Specifically, developing country firms could find it challenging to sustain partner-specific investments at levels that maintain their relational capital with GVC buyers and suppliers. This could mean a diminished potential for sustained mutual trust and integration into these parties' increasingly sophisticated sourcing, production, and communication processes. Meanwhile, GVC buyers and suppliers could reduce technology-driven uncertainty by establishing outsourcing relationships with more technologically ready firms (Selnes & Sallis, 2003). On the contrary, they could commit fewer resources toward developing more technologically delayed firms, including developing country firms. These insights suggest that increased technological turbulence could be associated with a decline in relational capital and partner-specific absorptive capacity (Terawatanavong et al., 2011). When developing country firms experience such declines, they will be less able to sustain export-enabling upgrading



**FIGURE 1** Conceptual Model

through ongoing interfirm learning with buyers or suppliers. As a result, we expect a decrease in the scale and value of their exported intermediate goods in GVCs. This leads to our final set of hypotheses:

*H3a: When technological turbulence is high, a weaker relationship exists between developing country firms' export performance and their relational capital with GVC buyers.*

*H3b: When technological turbulence is high, a weaker relationship exists between developing country firms' export performance and their relational capital with GVC suppliers.*

Figure 1 illustrates our application of an interfirm learning perspective that can address these theoretical issues. It predicts positive associations between developing country firms' export performance and their relational capital with GVC buyers and suppliers. However, we expect technological turbulence to weaken the strength of these relationships. We will explain these proposed relationships in the following sections.

## METHODOLOGY

### Context

The research sample for this study was selected from the Bangladeshi RMG industry because it plays a vital role in the global apparel value chain (Rahman & Sayeda, 2016). Manufacturers of RMG maintain strong relationships with their international buyers: large retailers and brand marketers (Nuruzzaman et al., 2013). However, they depend on their neighboring countries to supply raw materials and other intermediate inputs such as textiles (Nuruzzaman et al., 2016). Manufacturers of RMG operate as critical players in

the global apparel value chain because they maintain backward linkage with international suppliers and forward linkage with international buyers simultaneously (Rahman & Sayeda, 2016). Thus, the Bangladeshi RMG industry offers an interesting developing country context for this study.

### Data Collection

We used Qualtrics, an online survey tool, to administer a survey and collect the required data. Due to the lack of relevant data sources in developing countries and the need to maintain manufacturers' business secrecy, a perception survey was conducted using a self-completion questionnaire to collect data for our quantitative research design.

We employed a simple random sampling to initially select 550 RMG manufacturing firms based on the Bangladesh Garment Manufacturers and Exporters Association (BGMEA) directory. In September 2019, we sent out invitation emails with the survey link to senior officials, managers, and owners of 550 RMG manufacturers in Bangladesh. One invitation was sent to each firm, with a reminder email sent later. Attention monitors were used to check whether participants stayed focused while answering the survey. Of the 550 invitations, 116 were accepted. Finally, responses from 95 firms were usable, representing a 17% response rate. Early and late responses did not reveal any significant differences ( $p > 0.05$ ) in our study (Armstrong & Overton, 1977). Thus, non-response bias should not represent an issue (Yayla et al., 2018). To reduce the potential of method bias, we structured the questionnaire in sections so that respondents could read the instructions, and afterward, proceed to answer the questions in each section (Whipple et al., 2015).

### Development of Construct Measurements

Table 1 details the constructs measurements, factor loadings, reliability tests, and fit statistics. Our key dependent construct is export performance. We measured this construct using a

**TABLE 1** Details of Measures of the Constructs, Factor Loadings, Reliability Tests, and Fit Statistics

Item Description	Factor Loadings	Composite Reliability	AVE	t Value
Export performance (1 = "very dissatisfied" to 7 = "very satisfied")				
➤ Export sales growth.	0.82	0.85	0.59	13.27
➤ Export profitability.	0.83			21.48
➤ Export market share.	0.62			8.00
➤ Degree of meeting expectations.	0.79			15.92
Relational capital with buyers (1 = "strongly disagree"; 7 = "strongly agree")				
➤ Our key international buyers are trustworthy.	0.75	0.86	0.55	8.65
➤ These buyers are genuinely concerned that we succeed.	0.76			8.84
➤ These buyers keep the promises they make.	0.74			14.80
➤ We believe the information these buyers provide us.	0.74			11.80
➤ The goals and objectives of both parties in the relationship with our international buyers are compatible.	0.61			9.05
➤ We expect the relationship with our major international buyers to continue for a long time.	0.62			7.80
Relational capital with suppliers (1 = "strongly disagree"; 7 = "strongly agree")				
➤ Our key international suppliers are trustworthy.	0.83	0.90	0.51	16.50
➤ These suppliers are genuinely concerned that we succeed.	0.81			20.46
➤ These suppliers keep the promises they make.	0.74			10.40
➤ We believe the information these suppliers provide us.	0.79			13.56
➤ The goals and objectives of both parties in the relationship with our international suppliers are compatible.	0.69			9.58
➤ We expect the relationship with our major international suppliers to continue for a long time.	0.81			18.77
Technological turbulence (1 = "strongly disagree"; 7 = "strongly agree")				
➤ The technology in our industry is changing rapidly.	0.66	0.80	0.61	5.93
➤ Technological changes provide big opportunities in our industry.	0.78			7.98
➤ It is very difficult to forecast where the technology in our industry will be in the next 2-3 years.	0.55			3.48
➤ A large number of new product ideas have been made possible through technological breakthroughs in our industry.	0.82			11.28

AVE, average variance extracted.

4-item scale based on prior research (Sousa & Novello, 2012). The primary independent construct is relational capital. We used a 6-item scale to operationalize relational capital in line with prior literature (Jean et al., 2016; Whipple et al., 2015). It measures firms' relational capital with GVC buyers and suppliers (Whipple et al., 2015). Technological turbulence is our moderating variable, measured using a 4-item scale (Jaworski & Kohli, 1993; Wong & Ellis, 2007). A 7-point Likert scale, which ranges from 1 ("strongly disagree") to 7 ("strongly agree"), was adopted to measure most constructs in this study. Finally, we controlled for these firm-level factors: (1) firm age and (2) firm size, which is measured by a firm's number of employees (Giovannetti et al., 2015; Jiang, 2009; Nurrusaman et al., 2016).

## Statistical Methods

Reliability and validity are crucial markers of the caliber of survey data (Gonyea, 2005). Following Kline (2005), we deleted respondents who did not answer key questions. To assess unidimensionality, this study conducted confirmatory factor analysis (CFA) using the statistical software SmartPLS 3. All items were loaded significantly on their corresponding factors ( $p < 0.05$ ); loadings were all  $> 0.6$ , and all absolute  $t$  values were higher than 1.96. These loadings indicated an adequate level of convergent validity (Fornell & Larcker, 1981). The composite reliability of each construct was calculated to assess the measurements' internal consistency. All composite reliability was  $> 0.7$ , which was above the recognized acceptable level of 0.7 (Fornell & Larcker, 1981). The average variance extracted (AVE) was found to be above 0.5 for all constructs. Table 2 indicates a good level of discriminant validity among the constructs in this study, as their diagonal elements are greater than the off-diagonal elements in their corresponding rows and columns (Fornell & Larcker, 1981).

**TABLE 2** Discriminant Validity (Fornell–Larcker Criterion)

	Export Performance	Relational Capital with Buyers	Relational Capital with Suppliers	Technological Turbulence
Export performance	0.768			
Relational capital with buyers	0.629	0.706		
Relational capital with suppliers	0.505	0.702	0.780	
Technological turbulence	0.439	0.520	0.434	0.709
Mean	5.920	5.809	5.587	6.079
SD	0.600	0.669	0.728	0.542

Multicollinearity is measured by variance inflation factors (VIFs). This study's VIF values ranged from 1 to 2.84, meaning the data set does not suffer from multicollinearity problems (Shumon, 2019). Cross-loadings are absent from the CFA model. The final CFA model demonstrated that the model has a good fit with the data set: chi-square = 354.97, standardized root mean square residual (SRMR) = 0.093, Normed Fit Index (NFI) = 0.64.

We used structural equation modeling (SEM) to empirically evaluate the hypothesized relationships among the variables in the study. We assess model fit and parameter estimates by looking at  $R$ -squared ( $R^2$ ), coefficient estimates, and corresponding  $t$  values. The estimation approach uses a bootstrap procedure with 5,000 replications (Hair et al., 2011).

## RESULTS

Table 3 summarizes the main results. We found a positive and statistically significant association between firms' export performance and their relational capital with buyers ( $\beta = 0.387$ ;  $p < 0.05$ ). Thus, H1 is supported. H2 proposes that firms' export performance is positively associated with their relational capital with suppliers. Contrary to our expectations,

**TABLE 3** Summary of the Findings

Hypotheses	Coefficients ( $\beta$ )	$t$ -Values	$p$ -Values	Supported (Yes/No)
H1+	0.387	(2.886)	0.004	Yes
H2+	0.032	(0.307)	0.759	No
H3a-	-0.306	(2.754)	0.006	Yes
H3b-	0.204	(1.855)	0.064	No



we did not find a statistically significant association ( $\beta = 0.032$ ;  $p > 0.05$ ). Thus, H2 is not supported. H3a posits that technological turbulence moderates the relationship between firms' export performance and their relational capital with buyers. The coefficient of technological turbulence is negative and statistically significant ( $\beta = -0.306$ ;  $p < 0.05$ ); hence, H3a is supported. H3b examines the moderating effect of technological turbulence on the relationship between firms' export performance and their relational capital with suppliers. However, the coefficient of technological turbulence is not statistically significant in this case ( $\beta = -0.204$ ;  $p < 0.05$ ). Thus, H3b is not supported. The reason might be that GVC buyers are usually from developed countries, so developing country firms can benefit from knowledge transfer from these partners. GVC suppliers, on the other hand, are usually related to raw materials or intermediate goods that could not offer as much knowledge as possible.

## DISCUSSION

We have articulated an interfirm learning perspective on the relationship between developing country firms' export performance and their relational capital with GVC buyers and suppliers. In addition to proposing positive associations, we predicted technological turbulence would weaken these associations. The reported findings indicate a positive association only between developing country firms' export performance and their relational capital with GVC buyers. However, this positive association is weaker at higher levels of technological turbulence. These findings are consistent with our interfirm learning perspective.

### Empirical and Theoretical Contributions

We also make notable empirical and theoretical contributions. First, we contribute empirically by showing that developing country firms primarily derive export-enabling gains from having relational capital with GVC buyers rather than suppliers. Furthermore, we show that the export-enabling gains from such relational capital depend on technological turbulence: The gains from having relational capital with GVC buyers are smaller when these buyers and developing country firms are subject to high levels of technological turbulence. By reporting these findings, we further confirm prior evidence pointing to the flow of performance-enhancing knowledge from lead GVC partners (i.e., global branded buyers) to less established firms, such as developing country firms (Alcacer & Oxley, 2014; Epede & Wang, 2022). This prior finding is consistent with our finding on the positive association between developing country firms' export performance and their relational capital with GVC buyers.

However, prior studies suggest that the strength of this association could depend on intrafirm or interfirm characteristics, including internal resources (i.e., financial slack) and capabilities (i.e., prior technological competencies or capacity to organizational change and adaptation), the interfirm relationship history (i.e., how long the parties have been involved in a GVC relationship) or scope (i.e., extent to which their outsourcing arrangements cover essential upstream and downstream activities), and the parties' willingness to learn from each other, business culture, and knowledge management practices (Alcacer & Oxley, 2014; Epede & Wang, 2022; Schmitz & Knorrington, 2000; Soontornthum et al., 2020). Therefore, we add to these empirical studies by verifying technological turbulence as a relevant contingent factor, which is established in the context of developing country firms (i.e., local manufacturers in Bangladesh) paired with GVC buyers from potentially advanced developed countries (i.e., global clothing brands or retailers from North America or Western Europe).

Second, we contribute theoretically by clarifying inadequately addressed interfirm learning mechanisms when GVCs involve less established firms and dominant GVC partners. Building on the received wisdom that relational capital fosters interfirm learning (Dyer & Singh, 1998; Lane & Lubatkin, 1998; Lane et al., 2001), we associate the weaker GVC partner's relational capital with GVC leaders with reciprocal partner-specific investments (i.e., the weaker party partially bears the costs and risks of integrating into stronger party's standardized systems) and commitments (i.e., GVC leaders provide relevant technological and market knowledge to upgrade production processes or product quality). Under these conditions, weaker GVC partners, such as developing country firms, can attain partner-specific absorptive capacity at levels that facilitate the transfer of performance-enhancing knowledge from GVC leaders in a specific domain (i.e., production and related upstream activities) (Alcacer & Oxley, 2014; Schmitz & Knorrington, 2000).

In addition to accounting for technological change, we suggest it is more problematic for developing country firms than their developed country counterparts. Specifically, given pre-existing resource and capability gaps between these firms, increased technological turbulence can significantly undercut knowledge transfer from GVC leaders to developing country firms. According to our theoretical framework, this is possible because more accelerated technological change could discourage these parties from sustaining reciprocal partner-specific investments and commitments. Consequently, developing country firms will lack the partner-specific absorptive capacity to understand, assimilate, and apply GVC leaders' knowledge. Thus, we provide a more geographically contextualized interfirm learning perspective compared to what we already

know from prior interfirm learning research across developed or developing country contexts (Epede & Wang, 2022; Dyer & Singh, 1998; Lane & Lubatkin, 1998; Lane et al., 2001). Our articulated interfirm learning perspective is more helpful for understanding and predicting the ebb and flow of knowledge from GVC leaders in developed countries to developing country firms, among other technologically delayed firms. In doing so, we add to existing and emerging theoretical insights on interfirm learning from the perspective of developing country GVC partners (Epede & Wang, 2022; Pietrobelli & Rabellotti, 2011).

## Practical Implications

A crucial lesson for business leaders in developing country firms is that they can improve their export performance when participating in GVCs. They can accomplish this by building and sustaining relational capital with leading GVC buyers. However, given their relative resource disadvantage, it could be difficult to concurrently do so and adjust to technological changes. Consequently, they could struggle to derive export-enabling knowledge transfer from GVC leaders as the business environment becomes more technologically turbulent. Given the digital divide between developed and developing countries [Chen & Wellman, 2004; Comin et al., 2008; Papadopoulos & Cleveland, 2023; United Nations Conference on Trade and Development (UNCTAD), 2021], such technological impediments to interfirm learning in developing country contexts are beyond the control of individual firms. The GVC parties and developing country governments could explore collective solutions to reduce technological gaps between developed and developing countries, integrating national GVC policies into a larger set of policy initiatives that improve social cohesion, physical and regulatory infrastructure, and skill sets (Taglioni & Winkler, 2014).

## Limitations and Future Research

Our study has notable limitations that provide opportunities for future research. The factors examined are from the context of the RMG industry. Therefore, generalizing the reported findings to different geographic and industrial contexts could be inappropriate. Another concern involves the moderating influence of technological turbulence on the relationship between export performance and relational capital. When accounting for technological turbulence, it would be helpful to more cleanly isolate its effects from other forms of turbulence, including market, social and political turbulence. In addition, they could explore the impact of relational capital on other aspects of a developing country manufacturers' performance, such as new technology adoption or process improvement. Alternatively, they could evaluate

the export performance effects of relational capital with GVC buyers and suppliers in other sectors, such as leather goods, jute products, or agricultural products. Turning to our econometric method, we used the SEM approach to analyze survey data. However, the SEM does not test cause-and-effect relationships between variables (Hair et al., 2011). Furthermore, the sample size in this study is only 95 firms, which is relatively small for applying SEM. Finally, conducting cross-country panel data analyses of one or more industries could reduce limitations arising from single-industry and single-country studies.

## CONCLUSION

As more developing country firms participate in GVCs, it is essential to understand the underlying drivers of their export performance. We have partially validated an interfirm learning framework that untangles the complex nature of such drivers. Comparable developing country firms in developed country firms' GVCs can vary in export performance because of differences in GVC-specific relational capital. Having more relational capital with GVC buyers can yield export-enabling knowledge transfer from them. However, this interfirm knowledge transfer process requires ongoing GVC-specific investments under stable conditions. Thus, we emphasize that accelerated technological turbulence can reduce the return to GVC-specific investments, which foster GVC-specific relational capital. In sum, contextualizing export performance drivers in GVCs can improve the explanatory power of an interfirm learning perspective. Thus, our study enables international business scholars to adopt a more nuanced approach to theorizing about GVCs in the context of developing countries.

## CONFLICT OF INTEREST DISCLOSURES

No potential conflict of interest was reported by the authors.

## FUNDING

This work was supported by the 111 Project and MOE (Ministry of Education in China) Project of Humanities and Social Sciences (Project No.18YJC790074).

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