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Value co-creation on technology-enabled platforms for business model responsiveness and position enhancement in global value chains

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Abstract

Global value chains (GVCs) enable multinational enterprises (MNEs) to engage supplier and partner firms in developing/emerging economies for lower production costs and sell products in advanced economies for maximum profits. However, digital technologies are shifting the basis of value offering in GVC from products and services to platforms. Considering that these platforms facilitate business exchanges in multi-actor networks, the partner or supplier firms of MNEs can easily become competitors to MNEs if these firms participate in different networks. Nevertheless, relatively little research addresses how MNEs can develop structural flexibility for competitive association with and differentiation from their partner firms while developing effective strategies to optimize value creation and capture from their relationship with these partner firms. This study develops a conceptual framework to explain how value co-creation on technology-enabled platforms facilitates structural flexibility and strategic management of firm relationships and activities in GVC. The framework has significant implications for responsive business models and enhanced positions for firms to participate and influence value creation and appropriation in GVC.

KEYWORDS

exchange relationships, global value chains, multi-actor networks, technology-enabled platforms, value co-creation

JEL CLASSIFICATION

F23, M15, L10, L14, L17, L25

1 | INTRODUCTION

The global value chain (GVC) framework offers theoretical concepts and analytical tools for evaluating and interpreting value creation forms within the international division of labor (De Marchi, Di Maria, Golini, & Perri, 2020). Through GVC, multinational enterprises (MNEs) from advanced economies enjoy low production costs by exerting power over their network of suppliers, key partners, and other firms in developing and emerging countries while enabling new MNEs to emerge from those countries (Coe & Yeung, 2015; Kano, Tsang, & Yeung, 2020; Yeung, 2016). While the exertion of power by MNEs in

those networks are based on products as the basis of offering value, information technologies are increasingly shifting the basis of value offering from products and services to platforms (Nambisan, Zahra, & Luo, 2019). Considering that such platforms facilitate exchanges for firms in multi-actor networks, MNEs and their partner or supplier firms may quickly become competitors if the partner or supplier firms engage in exchanges in different networks that offer better upgrading opportunities in GVC.

Accordingly, MNEs must develop operational flexibility for competitive differentiation and association with their stakeholder firms in different geographical locations where appropriate, as well as strategic

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effectiveness to optimize value creation and capture beyond transactional exchanges with these stakeholder firms while enabling those firms to emerge and thrive in GVC (Buckley, 2009; Kano et al., 2020; Mudambi, 2007; Siaw & Sarpong, 2021). However, international economics research on GVC focuses on the efficiency of the contractual organization, that is, MNEs, through transactional exchanges (Aichele & Heiland, 2018; Antràs & Chor, 2013; Grossman & Rossi-Hansberg, 2008), whereas international business research on GVC focuses on how stakeholder firms of MNEs can use their relationship with the MNEs to strengthen and exploit their competencies for profits across countries (Buckley, 2009; Kano, 2018; Laplume, Petersen, & Pearce, 2016; Mudambi, 2007). Considering the limited scholarly research on the structural organization and strategic management of GVC activities beyond transactional exchanges, scholars (e.g., Kano et al., 2020) have called for more research to further understand how structural organization of firm relationships and strategic management of firm-specific activities affect GVC.

This paper aims to develop a conceptual framework to explain how MNEs and their strategic partners, key suppliers, and other related firms can achieve structural flexibility and strategic effectiveness in GVC through value co-creation on technology-enabled platforms. Value co-creation in business systems involves joint value creation between firms playing multiple roles simultaneously as suppliers, partners, customers, competitors, among others, in multi-actor networks or in more strategic and restricted relationships (Aarikka-Stenroos & Jaakkola, 2012; Marcos-Cuevas, Nätti, Palo, & Baumann, 2016; Vargo & Lusch, 2011). On technology-enabled platforms, value co-creation facilitate structural flexibility for firms to easily switch between purposive and mundane relationships to create and capture value effectively from both transactional and non-transactional exchanges as a result of the generic actor role of firms on those platforms (Breibach & Maglio, 2016; Ekman, Raggio, & Thompson, 2016). Accordingly, technology-enabled platforms can facilitate operational flexibility for competitive differentiation and association between MNEs and their stakeholder firms while enabling effective strategies to optimize value creation and capture beyond transactional exchanges in GVC.

The paper is structured as follows. Section 2 reviews the literature on GVCs. Section 3 discusses the value co-creation concept to provide the theoretical background for the conceptual framework. Section 4 presents a conceptual framework with propositions to explicate the interfaces between value co-creation and GVC for MNEs and their stakeholder firms. Section 5 discusses the theoretical and managerial implications, acknowledges limitations and suggests avenues for future research.

2 | CONCEPTUAL FOUNDATIONS OF GVC

Global value chains (GVCs) emphasize the interconnectedness of various functions, operations, and activities for the sourcing, production, distribution and consumption of goods and services across the globe (Coe, Hess, Yeung, Dicken, & Henderson, 2004; Coe & Yeung, 2015;

Henderson, Dicken, Hess, Coe, & Yeung, 2002). Research shows that value creation and capture in GVC is largely orchestrated and influenced by the power exerted by multinational enterprises (MNEs) over their network of suppliers, key partners, and other firms regarding products and services as value offerings (Gereffi & Fernandez-Stark, 2010; Kano et al., 2020). However, technological advancements and digital affordances for value creation and capture are shifting the exertion of power in GVC from products and services as the basis of value offerings to the creation or orchestration platforms as the basis for offering value (Nambisan et al., 2019). These platforms require MNEs to develop operational efficiencies for exchanges beyond transactions while developing strategic effectiveness for competitive differentiation beyond collaboration with their stakeholder firms (Kano et al., 2020; Siaw & Sarpong, 2021).

However, research on the operational efficiencies of MNEs in GVC emphasizes economic and transactional exchanges through geographical mapping (Aichele & Heiland, 2018; Antràs & Chor, 2013; Grossman & Rossi-Hansberg, 2008; Johnson & Noguera, 2012; Lee & Yi, 2018). Conversely, research on the strategic effectiveness of GVC emphasizes the exploitation of micro-specialized skills and competencies by the suppliers and/or partners of MNEs for profits through international business relationships facilitated by the MNEs across countries (Buckley, 2009; Kano, 2018; Laplume et al., 2016; Mudambi, 2007). These two perspectives mainly capture the incentives of transactional exchanges and ignore non-transactional exchanges whose benefits may be exploratory for MNEs and their network of stakeholder firms.

However, irrespective of which of the two perspectives GVC is viewed from, Fernandez-Stark and Gereffi (2019) identified four main underlying dimensions of GVC, which can provide conceptual foundations for understanding the incentives for exchanges between MNEs and their stakeholder firms beyond transactions. First among the four dimensions is the geographical and industrial scope, which explains the input-output structure of the value chain activities that enable a given product to be conceived as an idea to the point of consumption as a finished product (De Marchi et al., 2020). This dimension examines the structural processes involved in the production and manufacturing of goods, the location of each activity in the process, how the location of activities evolve with industry dynamics and actors over time, and countries where the goods are traded or consumed (Bair & Gereffi, 2001; Fernandez-Stark & Gereffi, 2019). While this dimension involves the international division of value chain activities across various geographical locations, it emphasizes transaction cost mechanisms such as outsourcing or offshoring as the primary driver of value creation and capture in GVC. These transaction cost mechanisms ignore the incentives provided by coordinators or influencers of GVC activities within specific geographical locations or across the globe.

Nonetheless, the governance dimension in GVC captures the incentives provided by coordinators or influencers of GVC through the exertion of power by lead firms over other actors to influence joint value creation, distribution and appropriation by firms within intra-MNE network (Bair, 2009). Governance delineates the power

asymmetries in GVC by emphasizing the role of lead firms as either global producers or buyers whose strategies drive GVC orchestration (Dallas, Ponte, & Sturgeon, 2019; Gereffi, 1994), facilitate network linkages for integration and co-ordination of internationally dispersed activities (De Marchi et al., 2020), and normalize value chain activities through the establishment of rules and standards guiding actors, industries, and national outcomes of GVC (Dallas et al., 2019; Gereffi & Lee, 2016; Ponte & Sturgeon, 2014). However, the governance mechanism limits the incentive to participate in GVC to strategic relationships that lock in smaller firms from developing or emerging economies to the network of MNEs as international lead firms.

Nonetheless, research on the upgrading dimension in GVC shows that smaller firms can benefit from multiple networks depending on their embeddedness in those networks as subsidiaries and their linkages with other firms for FDI spillovers and innovation (De Marchi et al., 2020) to step-up value creation and appropriation in GVC (Ivarsson & Alvstam, 2011; Schmitz & Knorringa, 2000). With upgrading, smaller firms or suppliers from developing and emerging economies can take advantage of lead firm support or mentorship in one network to upgrade their production processes and product sophistication in GVC (Fernandez-Stark & Gereffi, 2019; Sako & Zylberberg, 2019). Alternatively, they can participate in another network that facilitates regional clusters' growth to engage in functional upgrading for higher value-added activities (Bair & Gereffi, 2001; Gereffi, 1999). When stakeholder firms of MNEs participate in multiple networks to maximize their competencies on global markets, the potential of a competitor relationship arising between the MNE and its stakeholder firms is high. However, research on upgrading in GVC considers suppliers or smaller firms—especially from developing or emerging economies—as systemically embedded in the governance mechanisms of lead firms (e.g., global buyers) for collaborative, but not competitive, engagements (De Marchi et al., 2020). This consideration of suppliers or smaller firms as systematically embedded in the governance mechanisms of lead firms requires MNEs, as international lead firms, to develop flexible business models that enable competitive differentiation from their network of partner firms depending on institutional contexts or arrangements that instantiate such competition.

While the institutional context dimension of GVC emphasizes the extent to which local, national and international conditions and policies enable or constrain the globalization of the stages of the value chain (De Marchi et al., 2020), it is not clear how institutional contexts delineate competitive and collaborative relationships between MNEs and their stakeholder firms. Competitive and collaborative relationships between MNEs and their stakeholder firms may be defined by local/national, regional, or global conditions and policies that localize, regionalize, or globalize GVC activities such as sourcing, production, marketing, and innovation among others (e.g., Bair & Werner, 2011; Fernandez-Stark & Gereffi, 2019; Gereffi, 2014). However, individual firms can transform such competitive and collaborative relationships in GVC if they influence or orchestrate networks that enable or constrain value creation and capture at the country, regional or global

level. This transformation of competitive and collaborative relationships is especially true in cases where digital technologies and platforms enable companies to influence GVC activities in various foreign markets without physical investments on such markets (Coviello, Kano, & Liesch, 2017). In such scenarios, value co-creation in business systems can help to understand how MNEs and their stakeholder firms develop structural flexibility to switch between collaborative and competitive exchanges.

3 | VALUE CO-CREATION IN BUSINESS SYSTEMS

Value co-creation in business systems occurs when multiple actors (e.g., suppliers, partners, and customers) jointly create value with, and for, one another through resource integration and reciprocal service provision that generates holistic and meaning-laden experiences in hierarchical and overlapping ecosystems, regulated and evaluated by institutional arrangements (Vargo & Lusch, 2016). The institutional arrangements that regulate hierarchical and overlapping relationships may restrict value co-creation to a purposive relationship or extend value co-creation to mundane relationships in multi-actor networks (Chandler & Vargo, 2011; Vargo & Lusch, 2011).

In purposive relationships, value co-creation occurs between actors who agree or consent to direct exchanges that enable exploration of ideas from co-conception to co-experience of the outcomes of such ideas (e.g., Aarikka-Stenroos & Jaakkola, 2012; Chen, Tsou, & Ching, 2011). However, in mundane value co-creation, actors participate in an exchange with other actors either directly or indirectly as a result of their position in a particular value chain or participation in a network of relationships (e.g., Corsaro, Ramos, Henneberg, & Naudé, 2012; Reypens, Lievens, & Blazevic, 2016). Accordingly, value co-creation may facilitate business exchanges at differing levels of intensity and variety for different purposes including joint problem solution (Aarikka-Stenroos & Jaakkola, 2012) or solution delivery in dyads (Biggemann, Kowalkowski, Maley, & Brege, 2013; Storbacka, 2011), open innovation alliances in triads (Han et al., 2012) and market configuration in networks (Storbacka & Nenonen, 2011).

Exchanges at differing levels of intensity and variety require firms to develop operational flexibility and strategic effectiveness to detect the relationships that need *open* or *closed* boundaries to maximize value creation and appropriation. In an open boundary exchange, a firm may commit joint-functional teams across departments to co-create a desired outcome (Enz & Lambert, 2012; Storbacka, 2011). However, a closed boundary exchange involves a firm's commitment of representatives only from specific departments such as sales to engage in co-creation activities (Haas, Snehota, & Corsaro, 2012; Salomonson, Åberg, & Allwood, 2012).

To achieve such operational flexibility for more open or closed boundary exchanges and strategic effectiveness for maximizing value co-creation in such relationships, a firm must adopt a generic actor role in business systems. Such generic actor roles become increasingly

important on technology-enabled platforms where a firm can play dynamic roles such being a supplier, a partner, a competitor and a customer in value co-creation (Ekman et al., 2016). On technology-enabled platforms, a firm may assume several roles simultaneously, as a generic actor, and perceive multiple forms of co-created value (Breidbach & Maglio, 2016). Assuming several roles simultaneously on such platforms can facilitate broader engagements between a firm and other firms across geographical locations for structural flexibility and operational agility in GVC (Gunasekaran, Lai, & Cheng, 2008). However, the connectivity on the platform as the basis for offering value (Nambisan et al., 2019), can facilitate deeper engagements between a firm and other firms for an enhanced position to create and capture value from foreign countries without investment in physical presence (Coviello et al., 2017).

4 | TECHNOLOGY-ENABLED PLATFORMS FOR VALUE CO-CREATION IN GVC

Technology-enabled platforms for GVC orchestration and/or participation break space and time barriers, which often characterize disaggregated and geographically dispersed GVC activities. In GVC, these platforms eliminate the boundaries that make products and services the basis of value offering and become the basis for offering the value of products and services (Nambisan et al., 2019). Platforms as the basis of value may have complex implications for firms, their value creation activities, relationships, and participation or orchestration of GVC (Kano et al., 2020). Yet, relatively little is known about how digital platforms facilitate value co-creation and co-capture between lead firms and their suppliers, and strategic partners, among other firms in GVC. Thomas, Autio, and Gann (2014) identify four typologies of platforms for (a) organizational capabilities development, (b) product family development, (c) market intermediation between two or more market participants and (d) ecosystem supporting a collection of complementary technology assets. These typologies capture platforms as a multi-scaler and a systemic phenomenon, which facilitate differing

levels of firm interaction with other firms depending on the scope of value creation and appropriation enabled by those platforms for the firm internally and externally.

For instance, because organizational platforms are meant to develop internal capabilities, the exposure of this platform to other firms may require a strategic relationship for innovation purposes. However, to achieve flexible and cost-saving innovation through ownership and architectural control of a platform as a stable center, platforms for product family development may require strategic relationships with other firms that facilitate platform control maintenance for different product innovation streams. Because market intermediary platforms create market efficiencies for other firms through transactional exchanges, these platforms may facilitate mundane relationships between the firm and other firms through ownership and value chain institutional exchange mechanisms through transactions. Finally, because ecosystem platforms support complementary assets' collection, these platforms may require strategic relationships that enable architectural control and ownership of the critical platform and mundane relationships that facilitate flexible and cost-saving innovation, externalities of innovation, learning, and market power.

A firm's participation and/or orchestration of GVC may involve some or all of the above platforms depending on the extent to which they co-create value with other firms and their role in such value co-creation. On technology-enabled platforms, value co-creation facilitates complex interactions between interdependent actors who perform many distinct roles simultaneously as generic actors who perceive multiple forms of co-created and co-captured value (Breidbach & Maglio, 2016; Ekman et al., 2016). Such generic actor role on technology-enabled platforms may facilitate different dimensions of the GVC activities either simultaneously or distinctively for firms depending on the extent of the actor's influence or role and the type of value co-creation on those platforms. Figure 1. below outlines how technology enabled-value co-creation on digital platforms facilitate the various dimensions of GVC activities for firms and its determinants and outcomes.

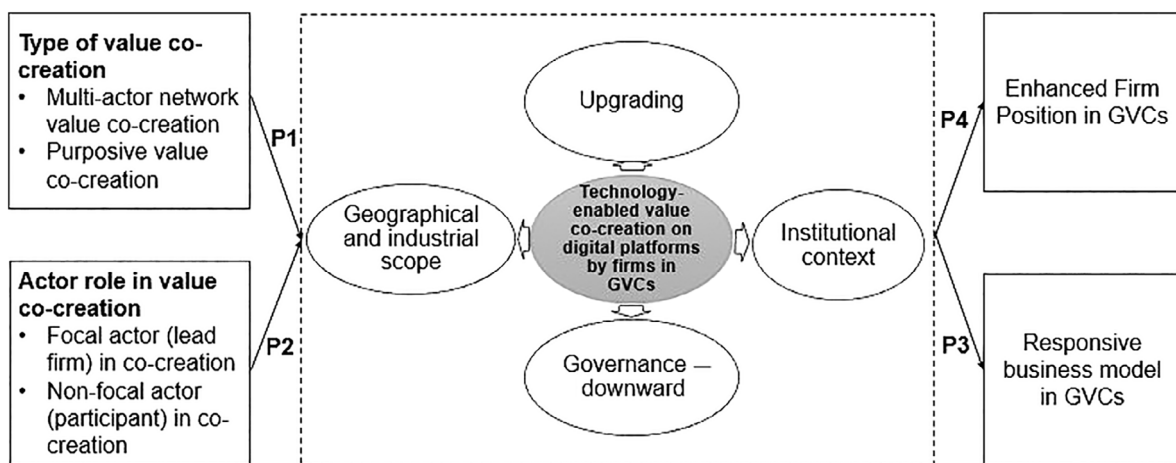


FIGURE 1 Technology-enabled value co-creation on digital platforms in GVC

At the center of the framework, technology-enabled value co-creation on digital platforms compresses the input-output structure (e.g., idea conception to finished product) of the geographical and industrial scope of GVC activities. Additionally, those platforms' interconnectivity through value co-creation facilitates governance (downward) mechanisms for actors in GVCs to exert power over other actors to influence the appropriation and distribution of value co-created on those platforms. Further, specific platforms may facilitate upgrading of the value creation activities by specific firms in GVC as a result of the deployment of such platforms to enable firms in a particular country or region climb up the value chain. This deployment of platforms will enable firms on specific platforms to engage in higher value creation activities for enhanced value appropriation and to learn by participation in GVCs compared to firms, not on those platforms. Finally, those platforms' combined effect may facilitate the institutional context of GVC for specific firms to delineate the extent to which local, national and international conditions and policies enable or constrain the globalization of the stages of the value chain for that particular firm. Now, the determinants of value co-creation on technology-enabled platforms are discussed below.

4.1 | Types of value co-creation

The concept of value co-creation emphasizes a joint value creation and capture between two or more actors engaged in relational exchanges in dyads, triads, simple networks, and multi-actor networks, which are nested and interlocked with one another (Vargo & Lusch, 2011, 2016). However, firm engagement in value co-creation with other firms may occur in strategic and purposive relationships (Grönroos, 2011) or in mundane and often multi-actor relationships (Chandler & Vargo, 2011; Cova & Salle, 2008; Vargo & Lusch, 2011).

In purposive relationships, value co-creation may involve a joint-problem solution between actors (Aarikka-Stenroos & Jaakkola, 2012), solution design and delivery between a supplier and a customer (Biggemann et al., 2013; Storbacka, 2011), development and maintenance of profitable relationships in a triad with key customers and key suppliers (Enz & Lambert, 2012), or collaboration for innovation (Chen et al., 2011). Therefore, in purposive value co-creation, a concerted, individuated, relational, ethical, empowered, and developmental strategic organizational capabilities influence a sustained engagement through linking, materializing and institutionalizing elements in the co-creation between the actors involved (Marcos-Cuevas et al., 2016).

However, in multi-actor relationships, value co-creation may involve orchestration of value creation among different stakeholder groups in network (Lempinen & Rajala, 2014; Reypens et al., 2016), for reputation enhancement, experimentation, relationship building (Pera, Occhiocupo, & Clarke, 2016), innovation (Corsaro et al., 2012), and market-scripting or configuration (Storbacka & Nenonen, 2011). Multi-actor value co-creation influences the value space in a complex system in which actors participate and co-create value if these actors occupy key positions in diverse networks (Reypens et al., 2016).

For instance, GVC emphasizes the interconnectedness of various functions, operations, and activities for the sourcing, production, distribution and consumption of goods and services across the globe

(Coe et al., 2004; Coe & Yeung, 2015; Henderson et al., 2002). Accordingly, multi-actor value co-creation on technology-enabled platforms may facilitate broader value space to engage various actors in multiple dimensions of GVC for more operational flexibility and efficiency by firms, which participate in GVC through those platforms (Buckley, 2009; Kano et al., 2020; Mudambi, 2007).

However, purposive value co-creation on technology-enabled platforms may facilitate deeper and sustained purposeful engagement between firms whose participation in GVC involve a specific dimension such as geographical and industrial scope, governance, upgrading, or institutional context. This deeper and sustained purposeful engagement may be facilitated between firms because purposive value co-creation requires a firm to open up their internal activities to other actors through cross-functional and cross-firm teams (Enz & Lambert, 2012) for greater compatibility of goals and strategic effectiveness of GVC activities (Chen et al., 2011; Kano et al., 2020). Accordingly, we propose as follows:

P1a. *Multi-actor value co-creation on technology-enabled platforms increases the breadth of value space for a firm to build different relationships with other firms for exchanges involving multiple dimensions of GVC.*

P1b. *Purposive value co-creation on technology-enabled platforms increases the depth of value space for a firm to build distinct relationships with other firms for exchanges involving single dimensions of GVC.*

4.2 | Actor role in value co-creation as determinants

The role of actors in value co-creation remains fundamental in the sense that actor integration of resources in relational exchanges enables value co-creation (Storbacka, Brodie, Böhmman, Maglio, & Nenonen, 2016; Vargo & Lusch, 2016). On technology-enabled platforms, actors create and capture value generically in multiple roles, which occur simultaneously or distinctively (Breidbach & Maglio, 2016; Ekman et al., 2016). Despite being generic actors, firms may have greater influence on value co-creation because of the control they exert on technology-enabled platforms as focal actors (Helfat & Raubitschek, 2018; Storbacka & Nenonen, 2011), or the compatibility of their business processes with those of other actors on the platform (Faridian & Neubaum, 2021; Siaw & Sarpong, 2021).

Focal actor and actor roles in value co-creation on technology-enabled platforms capture the lead firms and participating firms in GVC respectively. Focal actors can facilitate value co-creation based on the resources they provide as platforms (Fyrberg & Juriado, 2009) for firms to exchange micro-specialized resources within a network of rather than individually on the market (Vargo & Lusch, 2008). However, as an actor participating in a network of a focal actor(s), the compatibility of a firm's business processes with those of other firms on technology-enabled platforms may facilitate deeper engagements and more effective outcomes in firm exchanges (Ng, Maull, & Yip, 2009; Ordanini & Pasini, 2008).

As a phenomenon that captures international division of labor (De Marchi et al., 2020), GVC emphasizes how MNEs as lead firms exert power over their strategic partners, key suppliers, customers and other related firms (Dallas et al., 2019) to create or influence the conditions for value co-creation and co-capture (Cattaneo, Gereffi, & Staritz, 2010). A focal actor role of lead firms may facilitate broader engagement with a variety of actors in multiple dimensions of GVC activities such as geographical and industrial scope, governance, upgrading, and institutional context for greater operational flexibility and efficiency (Buckley, 2009; Kano et al., 2020). However, for non-lead firms in GVC, participating in value co-creation on a technology-enabled platform as non-focal actors facilitate deeper engagements with lead firms or other non-lead firms in specific dimensions of GVC activities. A deeper engagement in a specific dimension of GVC activities arises because of open and inclusive relationships that enable greater compatibility of goals between the firms for effective strategic actions (Kano et al., 2020; Pera et al., 2016). Accordingly, we propose as follows:

P2a. *A focal actor's role in value co-creation on technology-enabled platforms increases the breadth of value space for different firms to engage with the focal actor firm in exchanges involving multiple dimensions of GVC.*

P2b. *A non-focal actor role in value co-creation on technology-enabled platforms increases the depth of value space for specific firms to engage with the non-focal actor firm in exchanges involving single dimensions of GVC.*

4.3 | Outcomes

Value co-creation in multi-actor relationships by generic or focal actors facilitate value outcomes for all participating firms. As a result of the several roles played by actors simultaneously and distinctively, firms may experience the outcomes of value co-creation differently through relationships such as dyads, triads, and networks (Ekman et al., 2016). In business systems, value outcomes from co-creation may be consequent or antecedent to various relationships as a result of the complexity of the relationships involved (Ballantyne, Frow, Varey, & Payne, 2011; Chandler & Vargo, 2011). For instance, a firm may jointly develop a value proposition in a dyad with a supplier (Ballantyne et al., 2011), to implement customer solution (Biggemann et al., 2013; Storbacka, 2011), which is co-created by the firm, its supplier and the customer in a triadic relationship (Aarikka-Stenroos & Jaakkola, 2012; Enz & Lambert, 2012). Nonetheless, collaboration in a triadic relationship may facilitate greater value proposition by firms in a collaborative network compared to individual value propositions by each firm (Ballantyne et al., 2011). Therefore, the outcomes of value co-creation predispose the firm to occupy a key position in a configured network (Corsaro et al., 2012; Storbacka & Nenonen, 2011) to respond effectively to the demands of other firms (Biggemann et al., 2013; Storbacka, 2011).

Occupying a key position in networks underlie the structural organization of GVC by lead firms and strategic management of firm-specific activities by all, including lead and non-lead firms. Whereas structural organization of GVC enables lead firms to exercise control and co-ordination, choose locations, and configure networks of different actors, strategic management of GVC activities enables a firm to manage firm-specific activities such as sourcing, production, distribution among others in GVC (Kano et al., 2020). On technology-enabled value co-creation platforms, firms can engage various actors in multi-dimensional exchange relationships defined by geographical and industrial scope, governance mechanisms, upgrading, and institutional contexts underlying GVC. Structurally, these multidimensional relationships on the technology-enabled platform should facilitate operational flexibility and efficiency to easily integrate resources from a network of firms in geographically dispersed locations (Buckley, 2009; Kano et al., 2020; Mudambi, 2007). Easier resource integration from these networks facilitates responsive business models in which firms can perform their value chain functions required in various locations globally with agility (Coe et al., 2004; Gunasekaran et al., 2008).

Maintaining that technology-enabled platforms also facilitate deeper engagements between firms on specific dimensions of GVC due to compatibility of goals and operational processes (Ng et al., 2009; Ordanini & Pasini, 2008), firms can enhance their position to create and capture value in GVC. Strategically, a deeper engagement in specific dimensions of GVC enables firms to co-source, co-produce, and co-distribute products and services at a cheaper cost rather than doing this sourcing, production and distribution alone considering the interconnectedness of various functions, operations, and activities of GVC across the globe (Coe et al., 2004; Coe & Yeung, 2015; Henderson et al., 2002). Accordingly, we propose as follows:

P3. *The broader the value space offered on a technology-enabled platform of value co-creation for a firm to engage in exchanges involving multiple dimensions of GVC, the greater the responsiveness of the firm's business model to create and capture value in GVC.*

P4. *The deeper the value space offered on a technology-enabled platform of value co-creation for a firm to engage in exchanges involving single dimensions of GVC, the greater the enhancement of the firm's position to create and capture value in GVC.*

5 | THEORETICAL AND MANAGERIAL IMPLICATIONS AND FUTURE RESEARCH DIRECTIONS

The propositions and conceptual framework in this paper show how technology-enabled platforms facilitate business model responsiveness and enhanced firm performance in GVC. The paper draws on the literature on value co-creation in service ecosystems (Pera et al., 2016; Vargo & Lusch, 2016) facilitated by technology-enabled platforms

(Breidbach & Maglio, 2016; Thomas et al., 2014) to explicate the structural organization and strategic management of GVC activities (Fernandez-Stark & Gereffi, 2019; Kano et al., 2020). In particular, this paper highlights *closed* and *open* approaches to relational exchanges in value co-creation as fundamentals to the structural organization of relationships and strategic management of GVC activities. The framework offers several theoretical implications for the structural organization and strategic management of GVC activities.

5.1 | Theoretical implications

First, by establishing the type of value co-creation as an antecedent to technology-enabled value co-creation in GVC, the framework offers important theoretical implications for the geographical and industrial scope dimension of GVC. For instance, research on the geographical and industrial scope of GVC emphasizes how an input-output structure of value chain activities affect firm across various geographical locations (Bair & Gereffi, 2001; De Marchi et al., 2020; Fernandez-Stark & Gereffi, 2019). The current framework implies that by adopting technology-enabled platforms for value co-creation, GVC activities can become globalized when those activities are located in countries with favorable conditions for multi-actor value co-creation across countries. However, various countries and regions have different macro-environment conditions that may constrain or enhance the globalization of value chain activities. Therefore, GVC activities can be localized through purposive value co-creation between firms in countries with appropriate conditions for such value chain activities.

Second, existing research emphasizes the institutional context of GVC as an important GVC dimension, which explains how local, national, and international conditions and policies enable or constrain the globalization of the stages of the value chain activities (Chaminade & Vang, 2008; Gereffi, 2014; White, Hubacek, Feng, Sun, & Meng, 2018). While the institutional context requires some firms to initiate value creation for others to join, participation in value creation may require direct or indirect relational exchanges with the initiator of value creation activities. However, the framework highlights the actor role as crucial for firms to determine the scope of relationships that facilitate value creation and capture around firm-specific activities in GVC. By establishing the actor role as an antecedent to technology-enabled value co-creation in GVC, this framework reinforces the importance of lead firms as focal actors in orchestrating or influencing GVC by facilitating value co-creation around firm-specific activities such as production, distribution, marketing or innovation. However, the framework highlights the actor role as an important role for either lead or non-lead firms in GVC to maximize value co-creation around exchanges with other firms. In such exchanges, two firms engaged in an exchange relationship for value co-creation may switch between roles such as being a supplier, a customer, a partner, or a competitor either simultaneously or distinctively across time.

Third, the governance dimension of GVC explains the driving, linking and normalizing mechanisms that create power asymmetries and how lead firms exert such power over other actors to facilitate

the appropriation and distribution of value jointly created in the chain (Bair, 2009; Ponte & Sturgeon, 2014). Governance requires greater or enhanced value creation so that participating firms can appropriate greater value in GVC. The framework in this paper implies that firms can exert power in GVC if they open-up firm-specific activities, for example, innovation, for value co-creation in one network, link that innovation to innovation or resources in other networks through purposive relationships, and normalize the value chain activities for firms participating in these interlocking networks. However, firms that orchestrate and exert power in such interlocking networks can capture greater value if they adopt a closed boundary exchange with other firms as a structural organization mechanism to control the scope of value chain activities undertaken by different firms engaged in value co-creation on technology-enabled platforms.

Finally, the framework in this paper offers an important theoretical implication for the upgrading dimension of GVC activities. As a dimension, which mostly focuses on supplying to global buyers or producers, upgrading emphasizes learning by participation with firm, country or regional strategies to climb up and engage in higher-level value-creating activities for greater value appropriation in GVC (Gereffi, 2005; Giuliani, Pietrobelli, & Rabellotti, 2005; Pietrobelli & Rabellotti, 2011). While learning by participation is essential for upgrading in GVC, the current framework implies that firms, whether lead or non-lead, can achieve structural flexibility in upgrading firm-specific activities when they adopt open-business models that facilitate value co-creation on technology-enabled platforms if those platforms enable participating firms to upgrade their activities through participation. However, firms can achieve strategic effectiveness in upgrading when they adopt a closed business model to determine the scope of relational exchanges required to appropriate value from upgrading.

5.2 | Managerial implications

The framework developed in this paper offers several managerial implications for GVC orchestration and reconfiguration or participation to develop responsive business models and enhance position in the value chain. In particular, in the emerging sharing economy facilitated by global technology evolution, value co-creation on technology-enabled platforms shifts firm competition from controlling key resources to controlling platforms that facilitate the flow and access to key resources by firms in geographically dispersed locations.

Regarding the geographical and industrial scope dimension of GVC, the framework implies that firms seeking to facilitate greater value capture from a globalized value chain must either create or adopt technology-enabled platforms whose regulatory mechanisms facilitate transnational value creation by actors irrespective of geographical location. These platforms with regulatory mechanisms for transnational value creation are important to get actors everywhere to easily sign-up and to participate in value creation and capture enabled on those platforms. However, to capture value from such value chain, the firm must adopt platforms, whose regulatory

mechanisms are location or country-specific. These platforms with location or country-specific regulatory mechanisms are important to maximize the value capture from specific locations, countries or regions, because of the specificity of value chain activities constrained to such locations. With regards to the institutional context of GVC, value co-creation on technology-enabled platforms implies that a firm seeking to orchestrate or reconfigure various stages of a particular GVC to their advantage must create or adopt platforms that enable value creation by all actors irrespective of whether they have a formalized and direct relationship with the firm or not. This inclusion of all actors in the value chain is important to widen the operational space for value creation within the chain. However, when it comes to value capture, the firm can institute mechanisms to formalize a relationship between itself, as a focal actor, and each actor participating on the platform. These formalized relationships are important to control the space within which value can be captured by the firm from other actors.

Concerning governance mechanisms, value co-creation on technology-enabled platforms implies that firms seeking to exert power or minimize the control of other firms in GVC must emphasize relationships on such platforms for value creation activities. These relationships will offer greater access to key resources and information to facilitate value creation activities beyond firm internal boundaries. However, to capture value from such platforms, the firm must emphasize internal boundary mechanisms to exercise control over resources or activities that facilitate exchanges in relationships. This exercise of controlling resources that facilitate exchanges in relationships is an important strategic action for the firm to profit from its innovation, core competencies, and intellectual properties. Finally, for upgrading in GVC, value co-creation on technology-enabled platforms implies that firms seeking to create enhanced value and appropriate greater value through learning must emphasize how value co-creation facilitate greater responsiveness of their business model to the demands of GVC. As a tactical action, this business model responsiveness enables greater operational flexibility for the firm as a result of the connectivity to relevant resources on technology-enabled platforms. However, for value capture, firms must emphasize the key position they occupy in GVC that enable them to easily integrate resources from various actors in the chain at minimal cost as an important tactical action to achieve greater operational efficiency in GVC.

5.3 | Future research directions

As a facilitator of business model responsiveness and performance in GVC, a technology-enabled platform for value co-creation offers several avenues for future research to understand how those platforms enable or constrain value creation and capture in GVC. First, the framework makes it abundantly clear that the type of value co-creation a firm engages in, that is, multi-actor and purposive value co-creation, affect multiple dimensions of GVC broadly and specific dimensions of GVC deeply for firms. Multiple or specific dimensions of GVC may underlie some firm-specific activities such as production,

marketing, after-sales service, among others, due to the concentrated or dispersed nature of such firm activities. Future research will be useful to examine how the type of value co-creation affect firm specific-activities in multiple and specific dimensions of GVC. Understanding this phenomenon will help to explain the extent of globalization or localization of firm-specific activities in GVC. Second, the framework establishes actor role, that is, focal or non-focal actor, as an antecedent to value co-creation on technology-enabled platforms in GVC. While some firms, by their resources, size, or position in GVC are predisposed to engaging in multiple dimensions of GVC activities, others are predisposed to some specific dimensions. Future research can help to understand how a firm's role in value co-creation on technology-enabled platforms affect multiple or specific dimensions of GVC for the firm.

Third, the framework in this paper argues that the engagement in multidimensional GVC activities on technology-enabled platforms for value co-creation facilitate responsive business models by firms. While such responsiveness may be consequent to a firm's ability to manage different relationships on technology-enabled platforms, it can also result from the firm's ability to deploy resources effectively in those relationships. Future research will help to identify how a firm's engagement in multidimensional GVC activities on technology-enabled platforms for value co-creation facilitate business model responsiveness based on relationship management or the effective deployment of resources in those relationships. Finally, the framework in this paper argues that a deeper engagement in specific dimensions of GVC activities on technology-enabled platforms for value co-creation activities leads to an enhanced position to create and capture value in GVC. Such enhanced position may result from access to key resources, competence, or intellectual property from the platform or a compatible relationship that lowers the cost of resources required to create value. Future research can examine how a firm's engagement in a specific dimension of GVC activities on technology-enabled platforms facilitate enhanced position for a firm based on access to key resources or a relationship with specific actors on the platform.

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