Innovation and commercialisation: the role of the international dynamic marketing capability in Malaysian international entrepreneurial firms

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Abstract

Purpose – This study aims to investigate how international entrepreneurial firms (IEFs) successfully commercialise innovative products/services internationally. In doing so, the authors examined the role played by the international dynamic marketing capability (IDMC) in the relationship between explorative and exploitative innovation and commercialisation. In addition, the authors also evaluated how the breadth and depth of international networks facilitate IEFs in upholding the effects of the IDMC to influence commercialisation.

Design/methodology/approach – To test the research model, structural equation modelling is used based on time-lagged survey data drawn from 201 Malaysian IEFs. To validate the results, additional robustness tests and endogeneity analyses have been performed.

Findings – The findings show that the IDMC positively mediates the relationship between explorative and exploitative innovation and commercialisation. Furthermore, the finding exhibits that the effects of the IDMC on commercialisation are positively moderated by the breadth and depth of international networks.

Originality/value – Given the fragmented and general nature of the extant marketing research on the IDMC, the study contributes to the international marketing literature by providing rich and nuanced pertinent knowledge. This study advances dynamic capability theory in relation to IEFs by establishing the IDMC as a functional capability suited to enable them to successfully commercialise the products/services resulting from explorative and exploitative innovation.

Keywords International dynamic marketing capability, International entrepreneurship, Commercialization, Breadth and depth of international network

Paper type Research paper

Introduction

Why do some products with immense potential fail to succeed in the global market? Not because of inadequate innovation or hefty competition, but due to ineffectual marketing strategies. While Apple's "iPod" was highly successful in the market, Microsoft's "Zune" was not. Firms typically invest a significant amount of resources into product/service development; however, a lack of effective marketing capabilities can cause them to fall into failure traps—a cycle whereby any

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explorative and exploitative innovative efforts are doomed to fail due to the inability to successfully commercialise the resultant products/services—ultimately yielding disastrous results (Kalaignanam *et al.*, 2021; Weaven *et al.*, 2021). Therefore, an immersive marketing capability is paramount to the successful international commercialisation of products/services (Gnizy, 2019).

Despite the growing interest in marketing capabilities found in the international marketing literature, questions regarding "the extent to which conceptual and empirical approaches to studying marketing capabilities in the international context differ—and should differ—from those in domestic market contexts" remain unanswered (Morgan *et al.*, 2018, p. 61). Therefore, the aim was to unveil the mechanism through which the international dynamic marketing capability (IDMC) affects the relationship between the commercialisation of products/services and any explorative and exploitative innovation enacted by international entrepreneurial firms (IEFs). In so doing, this study tackled several critical knowledge gaps in the literature and made significant contributions. First, rather than the marketing capability—which only focusses on market sensing, expenditure, customer needs and trends (Mu, 2015)—the authors took the IDMC as the vantage point. The argument posits that the IDMC differs from its domestic counterpart and enables the performance of cross-functional international business processes with the aim of generating value and meeting customer needs while prioritising responsiveness and efficiency (Fang and Zou, 2009). While the existing literature (e.g. Falasca *et al.*, 2017; Hoque *et al.*, 2021; Mitręga, 2019; Menguc and Auh, 2006) has paid attention to the dynamic marketing capability (DMC) concept, its international perspective has been hitherto disregarded (Gnizy, 2019), leading to knowledge gaps in regard to its various applications in international contexts. In addition, the outcomes of the existing research may lack relevance because it has failed to consider the context in which dynamic capabilities operate (Lessard *et al.*, 2016; Zahra *et al.*, 2022). The study extends and deepens the extant literature by conceptualising the IDMC and demonstrating its impact on innovation and commercialisation processes in Malaysian IEFs.

Second, marketing research has explored the performance implications of the marketing capability, conceptualising it as the knowledge-seeking efforts made by firms to accumulate and pour knowledge resources into exploitation and exploration. For instance, Ngo *et al.* (2019) demonstrated that the domestic technology and market-sensing capabilities influence firm performance through the mediation of explorative and exploitative innovation. The study diverged from the extant literature by focussing on the successful commercialisation of products/services as a vital precondition to firm performance (Dhewanto and Sohal, 2015). Surprisingly, the commercialisation of products/services had hitherto been taken for granted as a prerequisite to firm performance and its empirical application/validation is not evident in the international entrepreneurship (IE) and marketing literature.

Third, theoretical knowledge on the indirect role played by marketing capability in predicting firm performance is found in the literature. For instance, Mu (2015) demonstrated how the outside-in marketing capability complements new product performance through explorative and exploitative innovation. However, such a relationship is affected by noise because this assumption provides firms with the option to either *deploy* or *not deploy* resources in innovation. Conversely, without innovative products/services, IEFs face heterogeneous challenges in the international market (Freixanet and Renart, 2020). Ngo *et al.* (2019) identified market sensing as an aspect of the marketing capability suited to accumulate knowledge, and argued that firms need to develop new and refine any existing products/services to accrue rent from the marketing capability that they are nurturing. However, the extant research has overlooked the assumption that firms develop products/services before they design any marketing strategies informed by their own capabilities (O'Cass and Ngo, 2011). The study held on to this logic and proposed a perceptible model for IEFs—one that combines explorative and exploitative innovation and the IDMC to succeed in the international market.

Fourth, to understand the interplay between explorative and exploitative innovation and the successful commercialisation of products/services through IDMCs, it is crucial to consider the Malaysian IEF sample and study context. Innovation and IE are considered as continuous and complementary processes (Reuber *et al.*, 2018) that have the ultimate goal of the successful international commercialisation of innovative products/services; this makes IDMCs crucial for IEFs in the face of intense international competition (Lee and Falahat, 2019; Li *et al.*, 2008) and global uncertainty (Pillania, 2011). As Malaysia is an emerging economy with limited access to resources (Falahat *et al.*, 2018) and a human capital that is substantially inferior to that of advanced economies (Jones *et al.*, 2021), it is much more challenging for Malaysian IEFs to commercialise innovative outputs efficiently. The authors thus argued that IDMCs can enable IEFs to detect foreign market signals, develop new processes for products/services and design and implement strategies to respond market changes (Wang *et al.*, 2013a, b; Wang, 2020; Bargoni *et al.*, 2023). Nevertheless, in the international marketing and IE literature, there is a lack of theoretical knowledge on how the IDMC enables IEFs to channel explorative and exploitative innovation towards commercialisation. Hence, the question of whether and to what extent IDMCs enable IEFs to link explorative and exploitative innovation and commercialisation remains. The aim to answer this question directed us to address one of the critical challenges faced by IEFs in their international operations and acknowledge the effectiveness of the IDMC (Morgan *et al.*, 2018; Mitręga, 2019). The argument was that, given that the possession of marketing capabilities transforms a firm's entrepreneurial efforts into competitive advantages (Pratono and Mahmood, 2015), IEFs should craft effective IDMCs suited to facilitate the correct positioning of their products/services in the international market and create economic wealth.

Finally, the optimum effectiveness of the IDMC may be affected by various factors (Sok *et al.*, 2017), as dynamic marketing capabilities are much stronger in the presence of market orientation (Joensuu-Salo *et al.*, 2018), innovation capability (Aljanabi, 2020; Ngo and O'Cass, 2012), level of efficiency (Nath *et al.*, 2010) and low-levels of uncertainty and turbulence (Ju *et al.*, 2018). Considering such logic, the study not only anticipated the relationships between innovation, IDMCs and commercialisation to be simply linear, but also proposes a contingency in the stated relationships that seems necessary for Malaysian IEFs to successfully commercialise their innovative products/services. To keep up with the dynamic international market competition, firms resort to network strategies that involve engaging in proactive network-building activities (Acosta *et al.*, 2018; Elango and Pattnaik, 2013). A network strategy is crucial for IEFs in emerging economies (Gnizy, 2019), as the shortage of domestic resources and infrastructure (Mostafiz *et al.*, 2022a, b) prompts them to expand their international networks to compensate (Ciravegna *et al.*, 2014). Furthermore, Luo and Child (2015) argued that firms are "highly networked with external providers of requisite resources and information" that help them to develop dynamic capabilities. Consequently, The authors expected the breadth and depth of international networks to act as a pivotal moderating factor in increasing the effects of the IDMC on the commercialisation process. Conversely, when plagued by ineffective and restricted international networks, IEFs may establish unsuitable partnerships, thus ending up with inadequate knowledge and inoperative marketing strategies. This raises the question of what role the breadth and depth of international networks play in the relationship between the IDMC and commercialisation. The authors argued that, in the presence of high levels of international network breadth and depth, the IDMC will enable IEFs to accurately position their products/services informed by wisdom (i.e. any knowledge resources acquired from rich networks).

In the following sections, this paper delves into various aspects related to the IDMC, innovation, network breadth and depth and their relationships. The theoretical foundations and related literature are discussed in Section 2, while Section 3 provides an overview of the data and sample, along with multivariate analysis and tests. The empirical results of the

model are presented in Section 4, highlighting the role played by the IDMC in bridging the gap between explorative and exploitative innovation and commercialisation, and how network strategies foster these relationships. Section 5 concludes with the findings and managerial implications.

Literature review

The international dynamic marketing capability as a functional asset

The IDMC has its foundations in the resource-based view (RBV) of the firm, which is one of the most influential theoretical paradigms in the field of strategic research (Zahra, 2021; Freeman *et al.*, 2021). The RBV assumes that resources are distributed heterogeneously across firms, thus providing formidable and sustainable competitive advantages over time. However, some scholars (e.g. Priem and Butler, 2001a, Winter, 2003; Priem and Butler, 2001b) have characterised the RBV as being largely static and unsuited to be applied to highly dynamic environments characterised by constantly shifting competitive landscapes (Barney, 1991; Teece *et al.*, 1997). Besides, the mere leveraging of resources is insufficient to achieve sustained strategic success, whereas capabilities can steer and alter a firm's resource profile to better align it with any environmental change and thus provide a competitive advantage (Zahra, 2021). Such views have led to extending the RBV to include dynamic capabilities (Barney *et al.*, 2021; Barreto, 2010), thus more explicitly emphasising the importance of reconfiguring resources to address any market change and volatility (Chen *et al.*, 2021). According to Teece *et al.* (1997, p. 516), a dynamic capability (DC) is a "firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments". Such dynamism is expected to bring about systematic changes by enhancing both the agility and adaptivity a firm needs to renew its operational capabilities and increase its flexibility in volatile market environments (Mikalef *et al.*, 2019; Pezeshkan *et al.*, 2016). However, marketing resources and capabilities are crucial for the generation and dissemination of the market-specific knowledge (Mostafiz *et al.*, 2023) suited to endow a firm with the valuable market intelligence needed to understand customer needs, competing products and distribution channels (Barrales-Molina *et al.*, 2014; Wang *et al.*, 2013a). Recognising the potential relevance of the marketing function, some scholars (e.g. Fang and Zou, 2009; Bruni and Verona, 2009; Morgan, 2012) have extended the DC approach and conceptualised the dynamic marketing capability (DMC), which is focussed on a firm's ability to efficiently leverage market-specific knowledge to create and deliver customer value (Dahlquist, 2021; Xu *et al.*, 2018).

The DMC has been defined in terms of the "specific and idiosyncratic cross-functional business processes to create and deliver superior customer value in response to market changes" (Fang and Zou, 2009, p. 743). This definition logically implies that the DMC fundamentally helps to absorb the market knowledge needed to reconfigure resources through cross-functional marketing processes in order to implement marketing strategies. Various scholars (e.g. Barrales-Molina *et al.*, 2014; Falasca *et al.*, 2017; Hoque *et al.*, 2022) have identified two common sets of mechanisms for the DMC. The initial feature includes the absorption and utilisation of market knowledge (resource-picking)—such as markets, environmental trends, distributors, alliance partners, competitors, customers and online communities—to respond to a variety of external and internal shocks (Maklan and Knox, 2009; Morgan *et al.*, 2012). The subsequent feature includes the cross-functional marketing capability (capability-building) that shapes routines, sales, operations and subsidiaries (Wang *et al.*, 2013a; Bruni and Verona, 2009; Menguc and Barker, 2005). Converging on these two mechanisms, Fang and Zou (2009) suggested three fundamental responsive and efficient cross-functional business processes suited to the creation and delivery of customer value: product development (i.e. the design, development and launch of products suited to maximise

customer value and experience), supply chain (i.e. the design, management and integration of an organisational supply chain) and customer relationship management (i.e. the knowledge and ability required to meet customer needs). Consequently, the DMC enables a firm to develop a set of dynamic marketing skills and competencies through responsive and efficient cross-functional business processes that reconfigure resources to adapt to the changing market environments and satisfy customer needs (Gnizy, 2019; Fang and Zou, 2009). However, such DC cannot be easily transferred across borders (Teece, 2014; Tallman *et al.*, 2018). The difficulty is due to the differences between the intrinsic nature of the DMC required for the domestic market and that required for the international one (Xu *et al.*, 2018; Morgan *et al.*, 2018).

The literature shows that, when operating in foreign markets, firms are faced with consequential complexities stemming from *cultural differences* (Brouthers, 2013), their own *liability of foreignness* (Lu *et al.*, 2022), the *marketing environment* (Luo, 2007), *market heterogeneity* (Röell *et al.*, 2022), *economic conditions* (Mihov and Naranjo, 2019), *institutional distance* (Chao and Kumar 2010) and *physical* (Kraus *et al.*, 2015) and *psychic distance* (Ellis, 2011). As indicated by Morgan *et al.* (2018), most research has characterised the IDMC in ways akin to those in which they are portrayed in the broader marketing field (Asseraf *et al.*, 2018; Wang, 2020). The significance of the IDMC is highlighted by the fact that international marketing efforts and processes occur within a global context, catering to international clients' requirements to attain objectives in the international marketplace. Consequently, the IDMC is typically perceived as a company's capacity to leverage any available resources to comprehend and address the needs of its foreign market customers better than its competitors (Mitrega *et al.*, 2021; Morgan *et al.*, 2018; Scuotto *et al.*, 2021). Dealing with such complexities requires collaboration with foreign stakeholders to acquire the critical resources needed to develop a DC (Xu *et al.*, 2018; Gnizy *et al.*, 2014). In fact, born global firms already endowed with inherent superior capabilities still rely on foreign market facilitators to develop them further (Knight and Cavusgil, 2004). Such integration with external facilitators speeds up the exchange of specialised knowledge between markets, the cultivation of new skills and the development of innovative routines and ultimately helps to achieve competitive advantages and navigate the complexities found in international markets (Gnizy, 2019; Pham *et al.*, 2017). As DCs are a significant aspect of a firm's intrinsic ability to optimise its market potential and resource allocation (Morgan *et al.*, 2009), firms must develop distinct DMCs suited to appropriately address customer needs in order to deliver superior value in foreign markets (Chatterjee *et al.*, 2022; Teece, 2014). Hence, in the international market context and consistent with the theoretical foundation of Fand and Zou (2009), The authors conceptualised the IDMC as a functional dimension of the DMC that includes the three cross-border-operational processes of product/service management, supply chain management and customer relationship management.

IDMC as an extension of the DMC was grounded on two crucial considerations. First, given the increased difficulties involved in complex international markets, situational contexts establish the boundary conditions that determine the successful development or transfer of DMCs (Spyropoulou *et al.*, 2018; Gnizy, 2019). Hence, to address the volatility of international markets and overcome situational contexts, firms need to establish IDMCs that enable them to reconfigure and allocate their marketing resources to gain a comprehensive understanding of the explicit and implicit needs specific to foreign market customers (which differ from the home country ones) (Morgan *et al.*, 2018; Tallman *et al.*, 2018). Second, DMCs enable firms to leverage their market knowledge and enhance their capabilities in specific functional areas of marketing to respond to market changes (Fang and Zou, 2009; Barrales-Molina *et al.*, 2014). However, to succeed in international markets, firms must enhance their DMCs by improving and reconciling their foreign market knowledge to enhance specific functional marketing areas such as overseas product innovation and international customer

support abilities (Chatterjee *et al.*, 2022; Morgan *et al.*, 2018). IDMCs, which are developed by using foreign market knowledge and act as a means of assimilating information (Konwar *et al.*, 2017; Buccieri *et al.*, 2020), are disseminated throughout the organisation and enable it to identify, comprehend and meet the demands of foreign market customers (Kachouie *et al.*, 2018). To acquire foreign market knowledge, firms need to establish strong relationships with external partners (e.g. customers, competitors and suppliers) in order to identify and leverage unique differences, facilitate any adaptation efforts aimed at introducing new synergies suited to renew capabilities, deliver joint solutions and ultimately achieve comparative advantages (Xu *et al.*, 2018; Gnizy, 2019; Teece, 2007). Hence, the authors postulated that the IDMC involves tweaking the configuration of a firm's internal resource bundles (e.g. knowledge, skills and routines) by actively interacting with network partners and integrating cross-functional disciplines in order to develop marketing processes specific to foreign markets. The authors also argued that the development of functional IDMCs is crucial for IEFs to generate the international market knowledge they need to attain a comprehensive understanding of customer needs, competitor strategies and distribution channels, which will ultimately assist them in the promotion of innovation and its commercialisation. While DCs dictate the organisational and strategic practices that enable firms to establish new resource arrangements in response to the emergence, intersection, divergence, development and demise of markets (Fabrizio *et al.*, 2022; Eisenhardt and Martin, 2022), IDMCs propel the methods through which a firm assimilates, reconfigures, acquires and relinquishes the specific resources it needs to become competitive internationally (Bargoni *et al.*, 2023). Table 1 compares the main characteristics of the DMC and the IDMC.

Functional areas such as the marketing department develop routines and processes aimed at supporting the access to new market knowledge resources and their dissemination throughout the organisation, leading to the development of DCs (Easterby-Smith and Prieto, 2008; Barrales-Molina *et al.*, 2014). The distribution of knowledge resources across a firm can enable it to exhibit ambidextrous innovation (Farzaneh *et al.*, 2022; Castaneda and Cuellar, 2020). In fact, O'Reilly and Tushman (2013) argued that ambidextrous innovation is a strategic effort that is reflected in a complex set of routines suited to enable a firm to exploit any opportunities through the coordination of its knowledge resources. Moreover, Weerawardena *et al.* (2015) found that the IDMC positively influences the innovation enacted by early internationalising firms. Besides, the IDMC generally reflects an IEF's ability to reconfigure its resources to the end of creating a competitive advantage through innovation (Falasca *et al.*, 2017); this necessitates the urgency of effective communication to offer value propositions suited to attract international market customers (Buccieri *et al.*, 2020). Therefore, the study postulated the existence of an inevitable nexus between the IDMC and ambidextrous innovation.

Ambidextrous innovation

Ambidextrous innovation refers to a firm's capability to simultaneously regulate explorative and exploitative innovation (He and Wong, 2004). While exploration refers to the creation of radically new and distinguishable products, services and markets, exploitation refers to learning to build upon consolidated knowledge, competencies, skills and processes through the refinement and extension of existing routines (Messeni Petruzzelli, 2019; Farzaneh *et al.*, 2022; Sheng and Hartmann, 2019). The combination of exploitative and explorative innovation is key to an IEF's success, as the related efforts support it in overcoming any resource impediment and strengthen its competitiveness. However, both exploitative and explorative innovation may not lead to a competitive advantage (Jakhar *et al.*, 2018). According to Mitręga (2019), the extent to which innovation is effectively commercialised is key to the achievement of a competitive advantage in the current business environment. Also,

Table 1. Characteristics of DMCs and IDMCs

Criteria	Dynamic marketing capability (DMCs)	International dynamic marketing capability (IDMCs)
Theoretical derivation	• The resource-based view (RBV) of the firm (Barney, 1991) • Dynamic capabilities theory (Teece, 2007)	• The resource-based view (RBV) of the firm (Barney, 1991) • Dynamic capabilities theory (Teece, 2007) • The international business perspective—e.g. born global and early internationalising firms (Knight and Cavusgil, 2004)
Extension of Focus	• Dynamic capabilities (Bruni and Verona, 2009) • Applies to firms operating in domestic or international markets (Xu *et al.*, 2018) • Focusses on generic dynamic marketing capabilities (Molina-Castillo *et al.*, 2011)	• Dynamic marketing capabilities • Specifically addresses the challenges and opportunities presented by operating in diverse international markets (Morgan *et al.*, 2018) • Focusses on the importance of understanding and responding to the unique characteristics of each international market (Chatterjee *et al.*, 2022)
Approach	• A dynamic and proactive approach to marketing (Mitręga, 2019)	• A dynamic and proactive approach to international marketing (Morgan *et al.*, 2018)
Product/service management	• Focusses on product innovation, manufacturing and the coordination of departmental relationships, regardless of the target domestic market (Falasca *et al.*, 2017; Bruni and Verona, 2009; Morgan, 2012) • Involves market knowledge, product design, product portfolio management, marketing activities and inter-departmental collaboration to satisfy local customers (Konwar *et al.*, 2017; Fang and Zou, 2009; Newey and Zahra, 2009)	• Requires a deep understanding of the cultural, political, legal and economic factors that influence consumer behaviours in different international markets (Rust, 2020; Pitelis and Teece, 2018) • Emphasises foreign market knowledge to adapt product/service design, tailor product/service solutions and manufacture product/services suited to meet the unique requirements of customers in foreign markets (Sheng *et al.*, 2015; Lisboa *et al.*, 2011; Demirbag and Glaister, 2010)
Customer and network relationship management	• Essential to discover, understand or satisfy customers' expressed or latent needs (Falasca *et al.*, 2017; Barrales-Molina *et al.*, 2014; Lee *et al.*, 2011) • Involves customer and network relationship management, conflict management and support (Maklan and Knox, 2009; Fang and Zou, 2009; Mitrega *et al.*, 2012)	• Requires the acquisition and leveraging of international customer information to better understand and serve foreign customers and maintain relationships with them to navigate intense global competition (Chatterjee *et al.*, 2022; Kaleka and Morgan, 2019) • Adds complexity due to the need to establish and maintain channel bonding, channel relationship management and channel networking (Morgan *et al.*, 2018; Pham *et al.*, 2017) • Involves adapting communication strategies, understanding cross-border business practices and providing culturally appropriate after-sales service and support (Tallman *et al.*, 2018; Knight and Cavusgil, 2004)

(*continued*)

Table 1.

Criteria	Dynamic marketing capability (DMCs)	International dynamic marketing capability (IDMCs)
Supply chain management	• Focusses on a firm's ability to design, manage and integrate its supply chain with that of suppliers and customers locally (Fang and Zou, 2009; Xu *et al.*, 2018; Crittenden *et al.*, 2011) • Involves selecting and qualifying suppliers, supplier communication, adjusting strategies, tactics and operations within the supply chain and designing workflows in product solution assembly (Mentzer *et al.*, 2001; Golgeci and Gligor, 2017; Kim *et al.*, 2013)	• Emphasises the importance of selecting and qualifying desired international suppliers, establishing and managing inbound and outbound foreign supply chains and designing workflows in product/solution assembly across borders (Ivarsson and Alvstam, 2010; Golini and Gualandris, 2018; Kano *et al.*, 2020) • Involves managing cross-border logistics, adhering to international trade regulations and coordinating with suppliers and customers in different time zones and languages (Hewett *et al.*, 2022; Wang *et al.*, 2020; Evers *et al.*, 2012)

Source(s): Created by author

Wang *et al.* (2021) discussed how the early involvement of enterprises in the innovation process plays an important role in the achievement of successful commercialisation. However, the conceptual link between innovation and commercialisation is quite intuitive; in this regard, Benner and Tushman (2003) suggested that innovation is aimed at the creation and commercialisation of enhanced products, services and business models in order to provide value for both markets and customers. Despite the importance of both exploitative and explorative innovation in enabling the commercialisation process, the literature still lacks a complete understanding of the functions and processes that support it. Various scholars (e.g. Fu *et al.*, 2018; Farzaneh *et al.*, 2022; Falasca *et al.*, 2017; Wilden *et al.*, 2018) have also called for the improvement of the understanding of the functions and processes that facilitate a firm's ability to integrate knowledge and other resources to create customer value through innovation.

Network theory and international networks

Entrepreneurial activities require continuous exchanges of knowledge across and beyond organisational boundaries (Bertello *et al.*, 2022). Moreover, knowledge is deeply rooted in the process of innovation (Purchase *et al.*, 2014; Wang and Hsu, 2014), which relies on interactions with various sources (Hohenthal *et al.*, 2015; Parker, 2012). Therefore, entrepreneurs need to engage in networking activities in order to gain the knowledge needed for the development of new products and processes suited to attain a competitive advantage (Santoro *et al.*, 2018). As a result, innovation-intensive IEFs critically depend on network relationships as a source of knowledge, experience and international opportunities (Hilmersson and Jansson, 2012; Montoro-Sanchez *et al.*, 2018; Mostafiz *et al.*, 2019). According to Smith and Smith (2021), entrepreneurs establish and use a combination of private and business networks to acquire strategically significant resources (i.e. external knowledge) suited to identify and exploit business opportunities. The fundamental concept of network theory implies that the interactions made possible by embedded social ties amongst geographically proximate actors can facilitate the development of opportunities (Davidsson and Honig, 2003; Johanson and Vahlne, 2009). Such external networks aid entrepreneurs in growing their knowledge acquisition sources, acquiring complementary resources, reducing innovation costs and improving successful innovation and innovative performance (Karamanos, 2012; Yi *et al.*, 2021). Based on the conceptualisation of the network provided by Podolny (2001), the study identified the network as a "pipeline" through which resources move. The authors thus viewed networks as channels through which IEFs can coordinate their alliance activities in order to pursue mutual strategic goals that would be unattainable with their individual resources and engage in unique resource absorption routines for value creation.

The extant international entrepreneurship literature (e.g. Khan and Lew, 2018; Reuber *et al.*, 2017; Xiao *et al.*, 2021) suggests that, in international markets, new ventures endure the liability of outsidership and resource-scarcity in effectively developing the risk-taking, innovative and proactive entrepreneurial capabilities they need to develop new products. Thus, the development of external resources embedded in alliance networks yields valuable strategic opportunities suited to acquire the knowledge-based resources possessed by partners and produce a competitive advantage in international markets (Paul and Rosado-Serrano, 2019; Bertello *et al.*, 2022). However, some studies (e.g. Sammarra and Biggiero, 2008; Seo *et al.*, 2020; Zhang *et al.*, 2016) show that the operational, competitive and innovative performance of international firms depends on the heterogeneity of external sources. Searching far and wide through heterogeneous networks provides firms with access to a plethora of sources of knowledge that offer them the capabilities they need to identify and exploit innovative opportunities (Leiponen and Helfat, 2010; Laursen and Salter, 2006). Hence, the authors argued that IEFs require their international networks to be wide and deep enough

to leverage the external knowledge sources that are critical to increase the effects of the IDMC on the commercialisation of outputs.

The breadth of international networks can be defined in terms of the number of external sources, channels, or network partners upon which IEFs rely to extract knowledge in their innovation process, while their depth can be viewed as the extent to which IEFs intensely/deeply draw resources from their external sources, channels, or network partners (Laursen and Salter, 2006; Katila and Ahuja, 2002). Any knowledge sought through the breadth of an international network tends to be aligned with the pursuit of adding valuable and advanced knowledge and of gaining access to diversified strategic assets, leading to further variations, combinations and cross-fertilisation opportunities between any existing and innovation ideas (Katila and Ahuja, 2002; Chiang and Hung, 2010; Ardito and Petruzzelli, 2017). Alternatively, any knowledge sought through the depth of an international network tends to be aligned with the refinement and deepening of the existing knowledge aimed at enhancing a firm's explorative capability to enhance the current value of its offerings (Mukherjee *et al.*, 2019; Gölgeci *et al.*, 2019). Therefore, the depth and breadth of an international network are likely to shape an IEF's knowledge extraction and utilisation process for innovation and its related performance. Nevertheless, although they have been thoroughly explored, the literature still lacks a satisfactory understanding of the role played by the breadth and depth of international networks (Gölgeci *et al.*, 2019; Xiao *et al.*, 2020), especially in relation to the role that such networks play in the relationship between the IDMC and commercialisation. Figure 1 represents the conceptual framework.

Hypotheses development

Relationship between ambidextrous innovation, the IDMC and commercialisation

Firms seeking to commercialise innovation should focus on the generation of capabilities through a knowledge system composed of different abilities and expressed through organisational processes aimed at offering superior customer value (Lukas and Ferrell, 2000). Bruni and Verona (2009) discussed the importance of the DMC in providing a vital foundation for the management and commercialisation of products/services. Furthermore, Slater and Mohr (2006) argued that the development of a strategic capability is vital for successful product/service development and commercialisation. Hence, the commercialisation of innovation involves undertaking several business functions and processes aimed at securing the resources and capabilities necessary to support it (Aarikka-Stenroos and

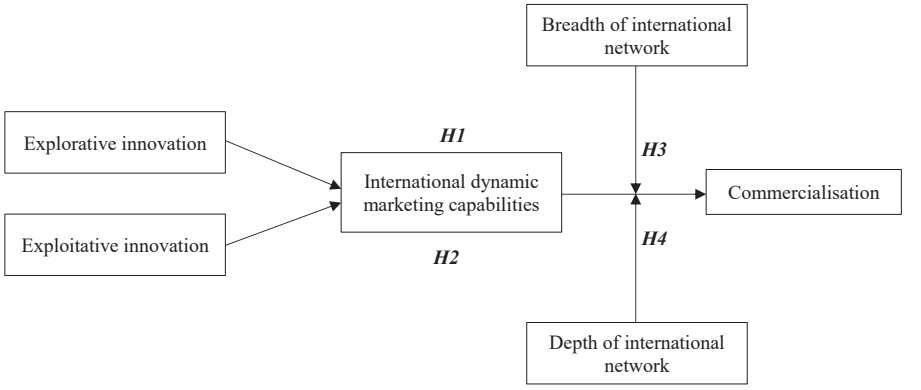

Figure 1.
The conceptual research framework

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Sandberg, 2012; Medlin and Törnroos, 2015). Moreover, the importance of the DMC for a firm's commercial performance is evident in the literature (e.g.Hsu and Wang, 2012; Krasnikov and Jayachandran, 2008; Wang *et al.*, 2015; Vorhies and Morgan, 2005). For instance, Falasca *et al.* (2017) showed that the DMC mediates the relationship between customer knowledge management and successful innovation. Likewise, Robertson *et al.* (2021) posited that knowledge-based DCs facilitate innovation activities, offering a competitive market advantage and ultimately leading to enhanced innovation performance. Hence, increased use of market knowledge leads to an improvement in a firm's DMC to enhance innovation abilities, resulting in sustainable competitive advantage through improved international market performance (Eerme and Nummela, 2019; Glavas *et al.*, 2019). Furthermore, Xu *et al.* (2018) claimed the DMC as critical to translate innovation inputs into new products and services suited to meet new market demands and generate positive commercial outcomes. Ngo and O'Cass (2012) also supported the contention by proving that the complementarity of innovation and marketing capabilities is essential to attract, satisfy and build relationships with and retain customers. In addition, Chatterjee *et al.* (2022) stated that "firms need to develop their dynamic marketing capabilities in the international marketing context by improving several of their capabilities, including product innovation capabilities" (p. 3). Therefore, the study posited that ambidextrous innovation evidently enables organisations to utilise foreign market-specific DMCs that facilitate the successful international commercialisation of products/services.

The empirical evidence suggests that the DMC plays a key role in facilitating ambidextrous innovation aimed at gaining a competitive advantage in international markets. Farzaneh *et al.* (2022) found that DCs promote firms' exploitative and explorative innovation and play an important mediator role between intellectual capabilities and innovation ambidexterity. O'Cass *et al.* (2014) showed that the deployment of exploratory product innovation and marketing capabilities enables firms to achieve superior market positional advantages. Moreover, Prange and Verdier (2011) posited that DCs increase an organisation's propensity to engage in explorative innovation, enabling it to overcome any path-dependencies and inertia in order to stimulate market growth. In this logic, Božič and Dimovski (2019) identified absorptive capacity as a DC suited to enable a firm to leverage external information and knowledge in enhancing its own exploitative innovation ability and, ultimately, performance. It is worth noting that Sheng (2017) showed how DCs enhance strategic responses and eventually, amplify both exploratory and exploitative product innovation. Accordingly, the study posited that the integration of the IDMC enables organisations to obtain extensive foreign market-specific knowledge elements suited to leveraging explorative innovation and its commercialisation. Therefore, based on these arguments, the study proposed:

H1. The international dynamic marketing capability positively mediates the relationship between explorative innovation and commercialisation.

Ambidextrous innovation enables organisations to achieve the dynamic efficiency needed to improve collaboration between different functional units and thus create better outputs with higher market success (Calantone and Rubera, 2012; Zhang *et al.*, 2021). Martin *et al.* (2017) provided evidence that a balanced explorative and exploitative innovation empowers organisations to more effectively allocate their investment in marketing capabilities to the end of creating and capturing international entrepreneurial opportunities. Voss and Voss (2013) posited that cross-functional ambidexterity can offer capabilities suited to improve organisational performance by simplifying the learning experience and promoting adaptive responses. However, by comparing countries, Mu (2015) suggested that, while being critical for ambidexterity, marketing capabilities lead to more exploitation than exploration. Through exploitation, an organisation can enhance its knowledge and increase the

development and use of DCs, which can improve cost efficiency, profits, product quality and production efficiency (Kim and Atuahene-Gima, 2010; Molina-Castillo *et al.*, 2011). For instance, O'Cass *et al.* (2014) illustrated that the integration of exploitative product innovation and DMCs acts as an intervening mechanism suited to the achievement of new product cost efficiency. DCs also facilitate the exploitation of new ideas and innovativeness and offer competitiveness (Jiang *et al.*, 2018). Limaj and Bernroider (2019) found that absorptive capacity, as a DC, drives exploitative innovation, representing a critical source of competitive advantage for SMEs. Moreover, Ngo *et al.* (2019) showed that exploitative innovation improves a firm's existing product market position by enabling it to take advantage of its own DCs. Accordingly, the study posited that exploitative innovation can be facilitated by foreign market-specific DMCs that can ultimately assist in enhancing the commercialisation process. Therefore, the study hypothesised that:

H2. The international dynamic marketing capability positively mediates the relationship between exploitative innovation and commercialisation.

The moderating role of the breadth and depth of international networks

While different controversial conclusions have been reached in regard to the relationship between external collaboration networks and firm innovation outcomes, empirical studies illustrate that access to a broad range of external channels (both in depth and breadth) can have important implications for a firm's innovation outcomes. For instance, some studies (Laursen and Salter, 2006; González-Moreno *et al.*, 2019; Bayona-Saez *et al.*, 2017) show that the depth and breadth of a firm's external channels and its performance are in an inverted U relationship, whereas Ferreras-Méndez *et al.* (2015) demonstrated that such range of external channels does not enhance a firm's innovation and performance. Alternatively, network depth and breadth facilitates frequent interactions between partners, which could enhance the transfer of complex information (Terjesen and Patel, 2017) and the likelihood of acquiring new knowledge (González-Moreno *et al.*, 2019), potentially useful for breakthrough innovation and the development of novel technologies. Moreover, Leiponen (2012) showed that network breadth benefits both service and manufacturing firms through information flow diversity and facilitates service innovation. In addition, breadth of the network can broaden an organisation's knowledge base and instigate radical innovation processes (Zhang *et al.*, 2021). Cui *et al.* (2015) found that the alignment between network breadth of and IT flexibility intensifies both the volume and the radicalness of innovation. In contrast, Cruz-González *et al.* (2015) demonstrated that the breadth of knowledge search positively influences performance in less technologically dynamic environments, whereas it appears to be counterproductive in more dynamic contexts. Gölgeci *et al.* (2019) indicated that breadth of external search did not seem to influence the knowledge transfer and innovation performance of MNE subsidiaries. However, Zhou and Li (2012) demonstrated that the interaction between network depth and market knowledge sharing can significantly facilitate radical innovation. Besides, a greater breadth of external knowledge sources is associated with greater innovation success at the firm level, particularly in regard to the "value" of newly commercialised innovations (Leiponen and Helfat, 2010). Moreover, Wang (2015) concluded that the breadth of international knowledge sources significantly contributes to the product innovation of technologically leading organisations. Therefore, the authors predicted that breadth of international network is expected to support IEF's development of advanced scientific know-how aimed at preserving its competitiveness (Satta *et al.*, 2016; Martinez *et al.*, 2017) and will influence the IDMC in regard to benefiting commercialisation. Based on the above, the study proposes the following hypothesis:

H3. The breadth of an international network moderates the relationship between the international dynamic marketing capability and commercialisation.

The use of network depth to source knowledge can promote unique perspectives and bring methodological enhancement to the decision-making process involved in new product development (Grimpe and Kaiser, 2010). In fact, firms endowed with in-depth knowledge are more likely to gain higher-level technological capabilities (Kotabe *et al.*, 2003). Previous studies (e.g. Tallman and Phene, 2007; Jane Zhao and Anand, 2009; Salomon and Martin, 2008) have shown that organisations with deeper networks are more effective in utilising and recombining knowledge to reduce potential uncertainties. In a similar vein, Wadhwa *et al.* (2016) found that depth of network knowledge strengthens positive diversity innovation in corporate venture capital relationships. Besides, deeper networks can enable firms to access valuable external information, which facilitates their innovation processes (Wang, 2015; Cruz-González *et al.*, 2015). However, Cui *et al.* (2015) found that the alignment between network depth and IT integration does not have any effect on innovation radicalness, but can lead to a greater volume of new products and services. Gölgeci *et al.* (2019) also captured that network depth moderates the relationship between the knowledge transfer mechanisms and innovation processes of MNE subsidiaries. Moreover, network depth can facilitate methodical knowledge transfer, which can set exploratory innovation in motion (Paliokaitė and Pačėsa, 2015; Kale and Singh, 2007). Besides, Zhou and Li (2012) found that the depth of network and market knowledge acquisition is positively associated with radical innovation. Also, Ferreras-Méndez *et al.* (2015) showed that network depth can significantly affect innovation and organisational performance. Therefore, an organisation endowed with international network depth is likely to benefit from the acquisition of international network-based knowledge, which would facilitate the IDMC in amplifying the commercialisation process. As a result, the study posited:

H4. The depth of an international network moderates the relationship between the international dynamic marketing capability and commercialisation.

Research methods

Research context

The authors collected time-lagged survey data from Malaysian IEFs operating in the manufacturing and service sectors. Malaysia is a unique economy with a high potential to bring its unique economic growth trajectory and entrepreneurial propensity to the international market (Falahat *et al.*, 2018). According to the World Bank (2022), "As an upper middle-income country, Malaysia is both a contributor to the development of low- and middle-income countries and a beneficiary of global experience in its own journey towards high-income and developed nation status." In addition, the World Bank's Inclusive Growth and Sustainable Finance Hub has been significantly supporting Malaysian IEFs (World Bank, 2022). For instance, the Malaysian government is being supported by the World Bank and the WTO in building new infrastructure, which plays a critical role in providing entrepreneurial firms with access to foreign resources and networks and in facilitating their entry into global supply chains (Athukorala and Narayanan, 2018).

The manufacturing and service sectors contribute in equal measure to Malaysia's growth trajectory, supporting the country in its journey to becoming an innovative and higher value-added global product supplier and service specialist (Hodgkinson *et al.*, 2016). The Innovation survey report shows that most innovation is aimed at improving the processes and reducing the production costs of the manufacturing sector—including the architectural design, infrastructure development, health and safety, market research and financial service sectors (MOSTI, 2018). Furthermore, research shows that Malaysian IEFs are highly proactive, risk-taking and innovative (Falahat *et al.*, 2018, 2021) and have a strong tendency to foster innovation (Chong *et al.*, 2019). Hence, Malaysia represented a suitable context in which to

investigate the research model, as failing to nurture an effective IDMC can lead IFEs to face costly international consequences for their innovative outputs.

Data collection and sample

The sample firms were from the MEDAC (2018) database, which contains data on approximately 29,000 entrepreneurial firms. The authors administered the survey questionnaire (in English) to 3,000 firms randomly selected from the database. During a first wave (October 2021), in which 229 firms responded (a 7.6% response rate), the authors collected data on explorative and exploitative innovation, the IDMC and the breadth and depth of their international networks from the firms' founders/entrepreneurs/CEOs. The authors did not ask the respondents for any personal information, such as their names, therefore securing their full anonymity. As the study adopted a time-lagged survey method, therefore, the authors requested the managers' email addresses to facilitate the second data collection wave. To set the criteria for the sample IEFs, the authors followed Shir *et al.* (2019) and asked the respondents about their international operations. For example, the authors asked whether, over the previous three years, their respective firms had (1) introduced any new products in an international market, (2) exported new/existing products to a new international market and (3) identified and recognised any new/novel international opportunities. International entrepreneurship is defined as "a combination of innovative, proactive, and risk-seeking behaviour that crosses national borders and is intended to create value in organizations." (McDougall and Oviatt, 2000, p. 539). The aforementioned criteria affirmed that the sample Malaysian entrepreneurial firms were proactively seeking international opportunities and taking risks in pursuit of significant value creation. A total of 207 sample firms were found to meet the criteria. In the second wave (January 2022), the authors administered a questionnaire to collect data on the performance outcomes of these 207 firms—such as their commercialisation and international performance—from their managers. The final sample size was 201 firms.

The chosen data collection method assisted us in dealing with a few potentially critical biases. First, the time-lagged survey data collection method enabled us to control for any simultaneity biases caused by the *ex ante* effects of independent variables on the dependent ones (Reed, 2015; Guide and Ketokivi, 2015). Second, the authors collected independent variable data from the firms' entrepreneurs/CEOs/founders, and dependent variable ones from managers. This assisted us in controlling for any social desirability bias (Zahra and Covin, 1995). Finally, a non-response bias test was performed by comparing the first and last 7% of the dataset, assuming that the latter were non-responses (Armstrong and Overton, 1977). The *t*-test values between the variables were found to be non-significant, which assured us of the absence of any non-response bias.

Measurements

The study sourced the measurement items for explorative and exploitative innovation from Sheng and Hartmann (2019). The authors measured explorative innovation using three items, one of which was: "our firm accepts demand that goes beyond its existing products and services". The exploitation is measured by adopting three items, one of which was: "our firm frequently refines its existing products and services".

The study sourced the IDMC measurement items from Xu *et al.* (2018). The study used three items to capture the cross-functional international operation of product/service management, supply chain management and customer relationship management. A sample item was: "ascertaining international customer needs, designing tentative new product solutions and prototypes, and manufacturing, and coordinating departmental relationships with the objective of developing and producing products that enable foreign customers to experience maximum value and benefits".

The authors sourced three measurement items for the breadth of international network measurement items from Xiao *et al.* (2020). A sample item was: "in comparison with our competitors, our firm can manage more foreign partnerships in the global market". The authors measured the depth of international network by means of four items, one of which was: "the personal networks of our senior management provide our firm with important resources for internationalisation".

The study sourced five commercialisation measurement items from Dhewanto and Sohal (2015). Two sample items were: "our firm develops and introduces a large number of products/services into the international market", and "the new products/services that are developed by our firm have a bright international market future". The authors measured all independent, mediating and dependent variables on a five-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

Four control variables were incorporated in the research model: firm size, firm age, environmental dynamism and munificence. The authors operationalised firm age and size (number of employees) by computing their natural logarithms (Cruz-González *et al.*, 2014). The study sourced environmental dynamism (five items), which captured volatility, from Miller and Friesen (1982) and Kreiser *et al.* (2013), and operationalised it on a five-point Likert scale. Finally, the study sourced munificence (four items), which captured industry impact, from Schultz *et al.* (1995) and Kreiser *et al.* (2013), also on a five-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. The sample items were: the current profitability of the industry, the projected profitability (three years or more) of the industry and the projected long-term market growth rate (three years and more). All the items adopted in the research were previously validated constructs.

Results and analyses

Descriptive statistics

Table 2 presents the results of the descriptive statistics, reliability and validity analyses. All constructs were found to be significantly correlated; in addition, the skewness and kurtosis values (± 2) of the constructs were found to show that the data were normally distributed (Shapiro and Wilk, 1965). The VIF values were found to show that multicollinearity fell below the tolerated threshold (>5) (Graham, 2003). The age of the sample firms ranged from four to nine years, and their sizes (numbers of employees) from 16 to 63. Of the manufacturing sector sample firms, 36 were found to be dealing in steel products, 29 in automobile components, four in building materials, 28 in mobile components and 18 in paper products for manufacturing. Of the service sector firms, 41 offered software solutions, 26 auditing and accountancy services, nine tax services and ten market research. The Cronbach's Alpha and composite reliability values were found to be higher than 0.70, confirming the internal consistency of the constructs (Hair *et al.*, 2010). In regard to validity, the average variance extracted (AVE) values were found to be higher than 0.50, and the standard loading values of the items (highlighted in appendix) were found to be higher than 0.60, thus confirming the convergent validity of the constructs (Cable and DeRue, 2002). The square root of the AVE values of the constructs were found to be higher than the corresponding constructs, and the AVE values to be higher than the maximum shared variance values of the constructs, therefore confirming the discriminant validity of the constructs (Fornell and Larcker, 1981).

Common method variance

To examine the effects of common method variance (CMV), the study followed Chang *et al.* (2010) and conducted rigorous tests. The authors had taken qualitative measures to handle CMV before performing the statistical analyses. First, during the data collection, the study

Constructs	1	2	3	4	5	6
Explorative innovation	0.734					
Exploitative innovation	0.273**	0.756				
International dynamic marketing capability	0.261**	0.157**	0.767			
Breadth of international network	0.155**	0.206***	0.282***	0.741		
Depth of international network	0.165**	0.205***	0.251***	0.234***	0.716	
Commercialisation	0.223***	0.266***	0.229***	0.173**	0.195**	0.754
Control variables						
Firm size	0.287	0.192	0.112	0.251	0.333	0.379
Firm age	0.301	0.231	0.257	0.193	0.205	0.154
Environmental dynamism	0.284	0.172	0.283	0.455	0.284	0.217
Munificence	0.204	0.206	0.284	0.218	0.255	0.285
Mean	13.04	13.57	13.48	12.98	18.21	23.01
Standard deviation	1.843	1.385	1.809	1.265	2.023	2.511
Skewness	0.015	0.289	0.343	−0.057	0.409	−0.105
Kurtosis	0.309	0.241	0.481	−0.276	0.918	0.729
VIF	1.071	1.071	1.384	1.423	1.082	2.022
Cronbach alpha	0.714	0.785	0.713	0.791	0.705	0.742
Composite reliability	0.731	0.793	0.782	0.818	0.713	0.769
AVE	0.539	0.572	0.588	0.549	0.513	0.568
MSV	0.207	0.244	0.257	0.257	0.215	0.228

Note(s): Diagonal values are the square root of AVE; Coefficient is significant "**" $p < 0.05$, "***" $p < 0.01$
Source(s): Created by author

Table 2. Correlation, normality, multicollinearity, reliability and validity ($n = 201$)

had included in the questionnaire redundant questions that were not to be used in the study. This method minimises the simultaneity bias and subsequently the effects of CMV (Chang *et al.* (2010) Second, the study had removed all barriers to psychological separation in order to make the respondents unaware of the research goal. These initiatives assisted us in minimising the likelihood of CMV bias. Finally, the authors performed two statistical tests to identify any CMV effects. First, as a result of Harman's single factor analysis, the percentage of the variance explained by the first component was found to be lower than 50% (18.19%). Second, the results of a single latent factor analysis (x2 = 3,149.274, df = 628, CMIN/df = 5.014, RMSEA = 0.181, CFI = 0.405) differed from those of the five-factor confirmatory model (x2 = 725.716, df = 455, CMIN/df = 1.59, RMSEA = 0.049, CFI = 0.902). Therefore, the study concluded that any effects of CMV were minimal.

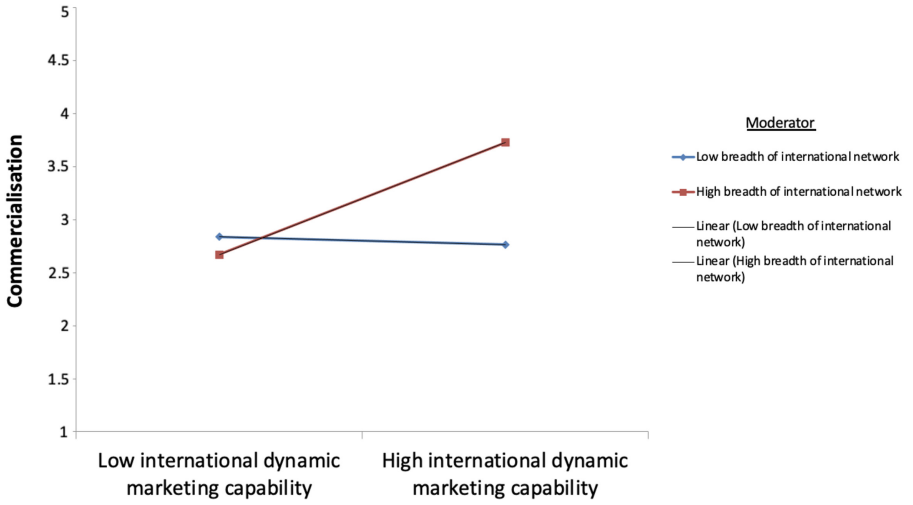
Hypotheses testing

Table 3 shows the results of the structural equation modelling performed in AMOS 26. Adequate model fit indices were obtained for the measurement and structural models in all mediating and moderating analyses. The authors performed bootstrapping with 5,000 re-samples (Weston and Gore, 2006). Model 1 showed that the IDMC mediates the relationship between explorative innovation and commercialisation (total effects: $\beta = 0.440^{**}$, $p < 0.05$) and between exploitative innovation and commercialisation (total effects: $\beta = 0.518^{***}$, $p < 0.01$). Hence, H1 and H2 were found to be supported. The authors performed an interaction moderation to investigate the role played by the breadth and depth of international networks. The results were found to show that international network breadth positively moderates the relationship between the IDMC and commercialisation ($\beta = 0.035^{**}$, $p = 0.018$) and that international network depth also moderates such relationship ($\beta = 0.053^{**}$, $p = 0.001$). Hence, H3 and H4 were also found to be supported. Figures 2 and 3 present the graph of the

Constructs	Model 1 Coefficient	Model 1 *p*-value	Model 2 Coefficient	Model 2 *p*-value	Model 3 Coefficient	Model 3 *p*-value
Explorative innovation	0.244**	0.006	0.231**	0.008	0.193**	0.011
Exploitative innovation	0.322***	0.001	0.292**	0.006	0.209**	0.008
International dynamic marketing capability	0.196**	0.010	0.167**	0.003	0.171**	0.007
International dynamic marketing capability * Breadth of international network			0.035**	0.018		
International dynamic marketing capability * Depth of international network					0.053***	0.001
Model fit indices	Measurement model	Structural model	Measurement model	Structural model	Measurement model	Structural model
x^2	747.225	788.163	739.421	751.773	749.457	771.621
df	473	423	412	498	473	432
CMIN/*df*	1.571	1.864	1.794	1.509	1.584	1.789
RMSEA	0.046	0.049	0.048	0.049	0.047	0.049
CFI	0.908	0.901	0.918	0.902	0.904	0.901
GFI	0.903	0.911	0.921	0.928	0.900	0.915
TLI	0.909	0.902	0.900	0.909	0.903	0.911
PClose	0.991	1.009	0.999	1.000	0.990	0.999
SRMR	0.030	0.031	0.038	0.039	0.041	0.038

Note(s): Coefficient significance: $^{**}p < 0.05$, $^{***}p = 0.001$
Source(s): Created by author

Table 3.
Results for the hypothesised relationships



Source(s): Created by author

Figure 2.
The moderating role of the breadth of international network

moderating relationships. Finally, the results were also found to show that firm size and firm age have non-significant effects on commercialisation ($\beta = 0.018$, $p = 0.218$ and $\beta = 0.015$, $p = 0.012$, respectively). Environmental dynamism was found to have a significant negative

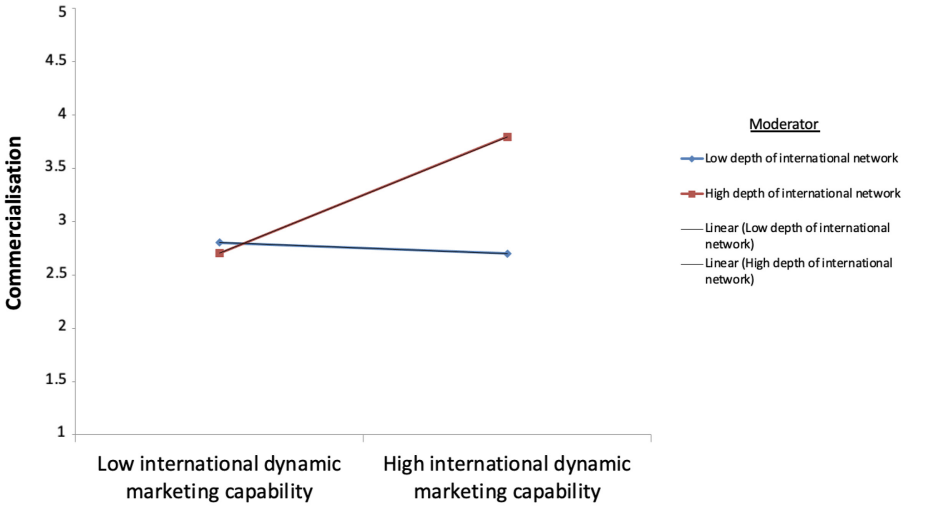


Figure 3.
The moderating role of the depth of international network

Source(s): Created by author

impact on commercialisation ($\beta = -0.029$**, $p = 0.041$), and munificence to have a positive impact on it ($\beta = 0.041$**, $p = 0.046$). Figures 2 and 3 show the moderation plotting.

Additional and robustness analyses

To validate the original results, rigorous additional and robustness analyses were performed. First, the research replaced the dependent variable with international performance from commercialisation and re-ran the research model using the same control variables. Table 4 presents the results. The additional analyses were found to show that the IDMC mediates the relationship between explorative innovation and international performance (total effects: $\beta = 0.294$**, $p < 0.05$), and between exploitative innovation and international performance (total effects: $\beta = 0.318$**, $p < 0.05$). In addition, the moderation analysis results were found to show that international network breadth positively moderates the relationship between the IDMC and international performance ($\beta = 0.023$**, $p = 0.003$), and that international network depth also moderates such relationship ($\beta = 0.031$***, $p = 0.001$). In addition, the authors checked the path relationship between commercialisation and international performance. The results were found to show that the effect of commercialisation on international performance is positive and significant ($\beta = 0.179$***, $p < 0.01$). Likewise, the study then performed a reverse causality test from international performance to commercialisation, and found a non-significant effect ($\beta = 0.032$, $p > 0.05$).

Furthermore, the authors also performed multiple regression analyses using mediation (5,000 re-samples) and intersection moderation (Baron and Kenny, 1986), using SPSS on the primary research model. The results show that the IDMC mediates the relationship between explorative innovation and commercialisation (total effects: 0.317**, $p = 0.031$), and between exploitative innovation and commercialisation (total effects: 0.429**, $p = 0.024$). Moreover, the moderating effects of breadth and depth of international networks were found to be statistically significant (coefficient value: 0.048**, $p = 0.009$; and 0.062**, $p = 0.002$, respectively). The effects of firm size, age and environmental dynamism were found to be non-significant ($p > 0.05$) and the effect of munificence to be statistically significant ($p < 0.05$).

Constructs	Model 1 Outcome variable: International performance Coefficient	*p*-value	Model 2 Outcome variable: International performance Coefficient	*p*-value	Model 3 Outcome variable: International performance Coefficient	*p*-value
Explorative innovation	0.122**	0.011	0.177**	0.026	0.112**	0.015
Exploitative innovation	0.146**	0.035	0.191**	0.017	0.121**	0.012
International dynamic marketing capability	0.172**	0.028	0.129**	0.031	0.162**	0.028
International dynamic marketing capability * Breadth of international network			0.023***	0.003		
International dynamic marketing capability * Depth of international network					0.031***	0.001
Model fit indices	Measurement model	Structural model	Measurement model	Structural model	Measurement model	Structural model
x^2	682.365	722.863	754.197	794.119	701.263	768.488
df	408	474	516	539	453	489
CMIN/*df*	1.672	1.525	1.461	1.473	1.548	1.571
RMSEA	0.049	0.047	0.048	0.049	0.049	0.049
CFI	0.900	0.902	0.901	0.902	0.916	0.902
GFI	0.906	0.903	0.913	0.901	0.905	0.915
TLI	0.911	0.908	0.913	0.915	0.904	0.902
PClose	0.997	0.999	0.997	0.998	0.995	0.992
SRMR	0.035	0.028	0.033	0.041	0.037	0.035

Note(s): Coefficient significance: **$p < 0.05$, ***$p < 0.01$
Source(s): Created by author

Table 4.
Additional analyses

Hence, the study concluded that the results obtained in the primary models were reliable and valid.

Endogeneity analyses

This study performed two stringent analyses to examine the presence of any endogeneity in the research. First, the authors conducted a missing variable endogeneity analysis [1] by incorporating absorptive capacity in the research model. Absorptive capacity is considered a pivotal determinant that complements performance outcomes in the international context (Rodríguez-Serrano and Martín-Armario, 2017). Table 5 presents the results. The analysis did not highlight any significant changes in the original results after introducing the new variable. Second, using STATA, the authors performed a Heckman second-stage test to check for self-selection bias (Zaefarian *et al.*, 2017). Table 6 presents the results. In all models, the study found the effects of the Inverse Mills Ratio to be non-significant in all second-stage regressions. Therefore, the study confirms that endogeneity is not an issue in the research.

Discussion and contributions

The authors sought to explore the mechanisms through which the IDMC affects the interplay between IEF product/service commercialisation and explorative and exploitative innovation. In addition, the study investigated the moderating effects of the breadth and depth of an

Explaining variables	Model 1 explained variable: international dynamic marketing capability	Model 2 explained variable: dynamic marketing capability	Model 3 explained variable: commercialisation	Model 4 explained variable: commercialisation	Model 5 explained variable: commercialisation
Firm size	0.062	0.035	0.049	0.094	0.025
Firm age	0.043	0.026	0.027	0.057	0.099
Environmental dynamism	0.017	0.065	0.057	0.067	0.039
Munificence	0.062	0.074	0.091	0.028	0.063
Absorptive capacity	0.084	0.013	0.011	0.019	0.014
Explorative innovation		0.141**		0.182**	0.109**
Exploitative innovation		0.152**		0.104	0.113**
International dynamic marketing capability				0.199***	0.113**
International dynamic marketing capability * of international network				0.033***	
International dynamic marketing capability * Depth of international network					0.042***
R^2	0.272	0.147	0.251	0.177	0.111
Adjusted R^2	0.047	0.088	0.081	0.038	0.025
ΔR^2		0.013		0.011	0.018
F-value	0.169	1.608**	0.229	1.615**	1.171**

Note(s): Coefficient significance: **$p < 0.05$, ***$p < 0.01$
Source(s): Created by author

Table 5.
Missing variable endogeneity analysis

international network on the IDMC-commercialisation relationship. In so doing, the authors provided a holistic understanding of the complex mechanisms underpinning the association between exploratory and exploitative innovation and the commercialisation of products/services. Prior research had taken for granted that firms achieve successful commercialisation if their overall performance increases. However, they had overlooked the fact that successful commercialisation is a fundamental prerequisite to firm performance (Dhewanto and Sohal, 2015). The study remedied this omission by empirically examining, as the dependent variable, the commercialisation of products/services resulting from exploratory and exploitative innovation.

The authors explored and validated a mediating-moderating mechanism affecting the relationships between exploratory and exploitative innovation and commercialisation. The

Explaining variables	Model 1 explained variable: international dynamic marketing capability	Model 2 explained variable: international dynamic marketing capability	Model 3 explained variable: commercialisation	Model 4 explained variable: commercialisation	Model 5 explained variable: commercialisation
Firm size	0.027	0.031	0.077	0.091	0.027
Firm age	0.098	0.098	0.037	0.016	0.053
Environmental dynamism	0.069	0.070	0.053	0.049	0.046
Munificence	0.055	0.041	0.084	0.038	0.086
Inverse mills ratio	0.018	0.138	0.101	0.133	0.107
Explorative innovation		0.197**	0.119**	0.101**	0.175**
Exploitative innovation		0.152**	0.115**	0.174**	0.111**
International dynamic marketing capability			0.169**	0.159**	0.152**
International dynamic marketing capability * Breadth of international network				0.039***	
International dynamic marketing capability * Depth of international network					0.048***
Wald χ^2	0.429	22.260**	21.681**	26.605***	27.023***
Prob > χ^2	0.717	0.014	0.012	0.003	0.002

Note(s): Coefficient significance: **$p < 0.05$, ***$p < 0.01$

Source(s): Created by author

Table 6.
Heckman second-stage endogeneity test

examination evaluated the predictive power of the IDMC as a mediator. According to Morgan *et al.* (2018, p. 86), "In general, understanding of the mediating mechanisms of how marketing capabilities impact firm performance is still in its infancy and remains under-researched in both domestic and international market contexts." The study addressed this gap in the literature by establishing that the IDMC positively mediates the relationship between explorative and exploitative innovation and commercialisation, thus finding support for H1 and H2, respectively. These findings back the view that ambidextrous innovation (which involves both exploratory and exploitative aspects) requires a rich IDMC as a vital condition to realise the benefits of any innovation efforts (Buccieri *et al.*, 2020).

As far as the moderations were concerned, the study considered the breadth and the depth of an international network's impact on the relationship between the IDMC and commercialisation. Marketing scholars seem to be reluctant to examine moderation in the relationship between the IDMC and international performance. Those who did study such contingencies extensively examined market turbulence, institutional factors—such as organisational structures, inter-functional integration and ownership type—and country-specific macro-environmental factors as moderators (Morgan *et al.*, 2018). However, the study challenge those findings by establishing the interaction effect of the breadth and depth of international networks and the IDMC on the commercialisation of products/services. The findings provided support for H3 and H4, respectively. In the additional analyses, the study also evidenced that the breadth and depth of international networks, along with the IDMCs, significantly enhance the international performance of firms. The authors echoed Xiao *et al.* (2020) by explaining the utility of the breadth and depth of international networks and how they can enhance the performance of an organisation in an international context. Below, the study presents the theoretical contributions made by the study on the basis of the results obtained.

Theoretical contributions

First, following the DC theory of IEFs (Teece, 2014), the findings evidence the existence of an intervening mechanism of the IDMC in the relationships between explorative and exploitative innovation and commercialisation. This advances the logic of the DC theory by legitimising it in relation to research on the commercialisation of products/services, prioritising the IDMC. The findings also extend the extant research by unveiling why entrepreneurial firms operating beyond their own national borders must build a strong DC specific to the international market in order to commercialise any innovative products/services stemming from exploratory and exploitative innovation (Buccieri *et al.*, 2020) and achieve performance outcomes (Mostafiz *et al.*, 2022a). On this basis, the authors developed a critical understanding of how IEFs generate economic value from "exploratory and exploitative innovation" by nurturing the IDMC.

Second, by examining the international dimension of the IDMC as the vantage point, and by demonstrating its significance in relation to the commercialisation of products/services stemming from exploratory and exploitative innovation, the study provides critical insights to the international marketing literature. Unlike the marketing capability, which is narrowly focussed on marketing sensing and customer trends, the authors conceptualised the IDMC as a functional DC linked to the three cross-border-operational processes that are pivotal for IEFs to nurture and successfully commercialise innovative products/services. Hence, the findings are in line with those of Falasca *et al.* (2017), Mitręga (2019) and Mitręga *et al.* (2022), who emphasised the need for an IDMC specifically crafted for firms operating globally, rather than a general marketing capability. According to Buccieri *et al.* (2020, p. 3), "dynamic marketing capabilities are distinctive from traditional marketing capabilities in that they are comprised of elements of marketing resource reconfigurations and capability enhancement."

Even international new ventures with innovative offerings are thought to possess marketing capabilities distinct from traditional ones (Weerawardena, 2003). Despite this, by conducting a review of the research on marketing capabilities, Morgan *et al.* (2018) showed how the IDMC is marginally represented in the literature. Additionally, as empirical research on the IDMC is still in its early stages (Mitręga, 2020), future studies could evaluate marketing capabilities in ways suited to enrich the DC perspective (Hoque *et al.*, 2021). IE scholars also point towards the importance of examining the DCs specific to the early stages of the internationalisation of entrepreneurial firms (Cavusgil and Knight, 2015). In this study, the authors responded to these calls by examining the DMC in an international context; particularly in that of resource-constrained IEFs.

Third, the study offers critical insights into the role played by the moderation of international network breadth and depth in the relationship between the IDMC and commercialisation. Although, in the analysis, the IDMC emerges as a strong predictor of commercialisation and international performance, its effects become much stronger when the breadth and depth aspects of international networking are considered. The evidence suggests that IEFs are embedded in a series of networks with external parties and that they leverage those networks to enhance their resource and knowledge bases (Loane and Bell, 2006). Moreover, Xiao *et al.* (2020, p. 615) concluded that "the ability to network extensively and broadly with their global partners increases firms' capability of accessing new and valuable technological knowledge and skills", which thereby may fuel the IDMC's ability to strongly influence the commercialisation of products/services. Furthermore, Love *et al.* (2014) underscored the performance implications of networking breadth in terms of generating innovation outputs. The findings advance this stream of literature by demonstrating the reinforcing effect of the breadth and depth of international networks on the IDMC and commercialisation relationship. The findings enable us to infer that a moderation is required to fully realise the value creation process of a marketing capability and the IDMC is no exception.

Finally, emerging economies are highly competitive (Fang and Zou, 2009; Hanssens and Pauwels, 2016) and failure to successfully commercialise their products/services can have fatal consequences for Malaysian IEFs (Mostafiz *et al.*, 2022b). The authors propose a novel solution to this dissension. The study also makes rich contributions to the literature through the additional analyses. For instance, through such analyses, the authors demonstrated that the IDMC plays a mediating role between explorative and exploitative innovation and international performance; followed by the positive moderating effects of international network breadth and depth on the relationship between the IDMC and international IEF performance. These findings extend the logic of DC theory to the international context by validating the assumption that the availability and application of resources are building blocks of a firm's IDMC in understanding and fulfilling the needs of foreign market customers better than the competition (Morgan *et al.*, 2018). Moreover, the findings extend the literature on the impact of the DMC on firm performance. For example, Xu *et al.* (2018) offered empirical evidence of the important effect exerted by the DMC on firm innovation performance. The findings from additional analyses also extend the work of Buccieri *et al.* (2020) by establishing the performance implications of the IDMC for IEFs. Last but not the least, the study evidenced the positive interplay that occurred in the sample between commercialisation and international performance. This implies that the successful commercialisation of products/services is a vital precondition upon which firms must rely to achieve any desired outcomes from their own innovative efforts. Specifically, entrepreneurial firms engaged in cross-border activities do not have the luxury of securing international performance without the successful commercialisation of their innovative products/services. This finding suggests that, by not considering commercialisation in explaining firm international performance, past research was affected by omitted variable bias and thus

provided limited insights. The authors thus urges future researchers to consider commercialisation as a prerequisite to firm performance.

Managerial implications

The study offers rich implications to the practitioners of IEFs. First, managers should carefully monitor the pace of commercialisation by sensibly managing explorative and exploitative innovation to ensure the timely market availability of products/services and attain a competitive position in the market. For example, TSMC, a top semiconductor manufacturer, utilised its international DCs to stay competitive by establishing local R&D centres (e.g. in Taiwan, the US, Japan and China) to the end of developing innovative products tailored to each region's unique demands; this enabled it to maintain its leadership position in the global market (Rasiah *et al.*, 2016). In addition, managers should carefully match each product/service to the right market segment through a rich IDMC. As the possession of innovative products/services stemming from exploratory and exploitative innovation is not sufficient in itself, any commercialisation or performance objective can be achieved when a firm possess an efficacious IDMC. For instance, through its IDMC, Uber adapted its business model and marketing approach to the specific needs of each market, appealing to local clients while maintaining a consistent global brand identity (e.g. accepting cash payments in India, text message bookings in Arizona, or 30 days advanced pre-bookings considering business customers). The implications are not also limited to Malaysian IEFs. In similar markets—such as those of Indonesia, Thailand and Vietnam—in which IEFs are also part of global value chains, managers also need to pay special attention to nurturing the IDMC while seeing off the competition by successfully commercialising their own products/services. It would also be useful for managers to focus on extending their firms' international networks' breadth and depth to seek new international partners, identify new markets, develop new channels—such as distribution, logistics, advertisement—and create new road maps for successful strategic implementation for better performance. For instance, in their study of a Pakistani motorcycle parts supplier collaborating with top Japanese and Chinese motorcycle assemblers, Khan *et al.* (2018) suggested that international networking is important as a balancing strategy to upgrade firms' capabilities to create both exploratory and exploitative innovation. Furthermore, Ivarsson and Alvstam's (2011) case study demonstrated how IKEA manages and distributes its resources throughout its network (e.g. through sourcing, business intelligence, management systems and business policies) in order to enhance its value proposition and foster innovation capabilities. As the findings evidence the relevance of the breadth and depth of international networks in securing successful commercialisation and strong international performance, the managers of IEFs should not engage in the IDMC in isolation; they should rely on both the breadth and depth of their firms' international networks to alter the cost-benefit balance of the IDMC by partnering with global parties, thereby avoiding the positioning of innovative products/services in unsuitable market segments. The IEF's global partners can assist them with valuable knowledge and by recognising any favourable opportunities to penetrate the international market. In addition, policymakers should take steps to enhance the institutional support for IEFs in expanding international operations. To counter the IEFs' liability of newness and lack of wealthy network partners (Jones *et al.*, 2021), the Malaysian Government should play an active role in supporting the partnering of such firms with global parties by devising suitable industrial policies (Khan *et al.*, 2016). Such policies could include support for innovation, financial support for international association, the organisation of business conferences, the minimisation of the bureaucracy involved in foreign investment, multilateral foreign trading agreements and the encouragement of international entrepreneurial activities.

Limitations and future research

The findings should be interpreted in the light of several limitations. First, as they may be dependent on firm types, the findings could be tested on entrepreneurial and non-entrepreneurial firms, which would provide additional insights. Second, it could be argued that international networking breadth and depth can be predictors of the DMC and/or commercialisation, an aspect the study did not consider in the analyses. As networking serves as a basis for knowledge and resource acquisition (Prashantham and Dhanaraj, 2010; Love *et al.*, 2014), it can affect capability development and innovation performance (Xiao *et al.*, 2020). Third, the mediators, the IDMC, the moderators and international network breadth and depth in relation to the relationship between exploratory and exploitative innovation and commercialisation are by no means exhaustive. Thus, future studies could incorporate more mediators in the model to further test the robustness of the theoretical prediction (Wang *et al.*, 2013b). Fourth, the study drew the sample firms from a single emerging economy. As the evidence suggests that considerable differences are in play amongst developing economies in terms of their industrial, economic, institutional and social aspects, it would be imperative to ascertain whether the findings are applicable to other emerging or developing economies (Konwar *et al.*, 2017). Finally, the study's cross-sectional design limits its ability to fully uncover the mechanism through which the IDMC affects exploratory and exploitative innovation and commercialisation. Future studies could thus adopt a longitudinal research design, given that the impact of the IDMC on commercialisation or international performance takes time to materialise.

Note

1. By performing missing variable endogeneity analysis, we aimed to identify whether any unobserved factors were driving the relationship between the variables under investigation (Hill *et al.*, 2021).

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Further reading

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(The Appendix follows overleaf)

Appendix

Constructs/items	Standard loadings
Explorative innovation	
Our firm accepts demands that go beyond its own existing products and services	0.730
Our firm experiments with new products and services in the international market	0.798
Our firm invents new products and services for the international market	0.743
Exploitative innovation	
Our firm frequently refines its existing products and services	0.784
Our firm regularly implements small adaptations to its existing products and services	0.735
Our firm introduces improved versions of its existing products and services in the international markets it serves	0.703
International dynamic marketing capability (Compared with your major international competitors, how do you rate your firm's capabilities in the following areas? The cross-border-functional process across areas of . . .)	
Ascertaining international customer needs, designing tentative new product solutions and prototypes, manufacturing and coordinating departmental relationships, with the objective of developing and producing products that enable foreign customers to experience maximum value and benefits	0.722
Acquiring and leveraging international customer information, establishing and maintaining relationships with foreign customers and channel members, and providing after-sales service and support in relation to managing relationships with foreign customers with the objective of learning about their needs and how to best satisfy them	0.727
Selecting and qualifying desired suppliers, establishing and managing inbound and outbound logistics and designing workflows in product/solution assembly with the objective of designing, managing and integrating its own supply chain with that of suppliers and foreign customers	0.716
Breadth of international network	
In comparison with our competitors, our firm can manage more foreign partnerships in the global market	0.735
Our firm constantly spends substantial time and effort in networking with different international partners, including our suppliers, customers, competitors, consultants, commercial laboratories/ R&D enterprises and research institutes	0.724
Our firm draws intensively from different search global channels or sources of innovative ideas	0.759
Depth of international network	
The personal networks of our senior management provide our firm with important resources for internationalisation	0.713
Our firm commits considerably to key foreign partners or accounts	0.792
Our firm has numerous pre-existing personal networks for internationalisation	0.751
Our firm commits considerably to frequently contacting our global partners	0.729
Commercialisation	
Our firm develops and introduces large numbers of products/services into the international market	0.772
The new products/services that are developed in our firm have a bright international market future	0.794
Our firm has a high new products/services introduction rate globally	0.705
Our firm has a high new products/services success rate globally	0.743
Our firm is frequently first to the international market with new products/services	0.714

Source(s): Created by author

Table A1. Standard loadings of the items

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