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International new venture performance: Role of international entrepreneurial culture, ambidextrous innovation, and dynamic marketing capabilities

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ABSTRACT

International new ventures (INVs) contend with environmental dynamism in global markets, compelling firms to enhance their innovation and marketing capabilities. While the INV literature is growing, it is not informative as to how INVs develop and utilize dynamic capabilities to overcome resource-constraints to enhance performance. We utilize the concept of international entrepreneurship culture (IEC) to better understand how INVs advance innovation and dynamic marketing capabilities to succeed in their internationalization activities. Building on the dynamic capabilities view (DCV), we empirically examine the relationships among IEC, ambidextrous innovation, dynamic marketing capabilities, and INV performance under varying levels environmental dynamism. The findings highlight that IEC influences both ambidextrous innovation and dynamic marketing capabilities; and, together, these link to INV performance gains. Furthermore, this research finds support for the mediating effects of ambidextrous innovation and dynamic marketing capabilities in the IEC – INV performance relationship. Additionally, the results indicate an international entrepreneurial culture is of greater significance in developing ambidextrous innovation when environmental dynamism is present. The study context is a sample of 286 high-technology INVs from India, a large and dynamic emerging market.

1. Introduction

In the era of an integrated global economy, scholars and practitioners alike have witnessed the rise of small and medium enterprises entry and rapid expansion in international markets. As a result, international entrepreneurship (IE) scholars aim to understand how these firms successfully internationalize given their resource deficiencies (Gassmann & Keupp, 2007). These firms are often referred to as international new ventures (INVs); which are characterized as firms that seek significant competitive advantages from being players in international markets at or near their inception (Knight & Cavusgil, 2004; Oviatt & McDougall, 1994).

While INV internationalization has lacked a unifying theoretical direction, dynamic capabilities as a theoretical lens has gained momentum in recent years (Knight & Liesch, 2016). However, research that explores dynamic capabilities specific to INVs, their antecedents, and performance outcomes is only just beginning to emerge. That is, our understanding of how these global start-ups nurture and utilize dynamic capabilities is still limited (Weerawardena, Mort, Salunke, Knight, & Liesch, 2015; Zahra, Sapienza, & Davidsson, 2006; Zahra, Sapienza, & Davidsson, 2006). Accordingly, IE scholars call for more research as it relates to dynamic capabilities of INVs (Cavusgil & Knight, 2015).

Drucker (1954) argued innovation and marketing to be the two most basic functions of firm. Accordingly, keys to early success for global startups are the abilities to develop innovative offerings and communicate value to attract customers. Accordingly, scholars recently indicate an emphasis for INVs to pursue a high degree of exploratory and exploitative innovation (Martin, Javalgi, & Cavusgil, 2017), and dynamic marketing capabilities (Weerawardena et al., 2015) to drive international performance. Therefore, it makes sense to view ambidextrous innovation and dynamic marketing capabilities as two essential competences for resource-constrained INVs to develop and nurture.

The literature suggests INVs embrace an international entrepreneurial culture (IEC) to contend with resource deficiencies by aggressively pursuing distinctive capability advantages (Zahra, Korri, &

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Yu, 2005). IEC is the culture of a firm that facilitates new ideas and creativity in seeking novel international opportunities; and is comprised of international entrepreneurial orientation, international market orientation, international learning orientation, international (competitor and non-competitor) network orientation, and international motivation (Dimitratos, Voudouris, Plakoyiannaki, & Nakos, 2012). In this study, we draw on the dynamic capabilities view (DCV) to bring forward IEC as a means to examine how INVs' shape ambidextrous innovation and dynamic marketing capabilities necessary to support international performance.

In developing our conceptual model, we aim to provide four important contributions to the IE literature. First, the literature lacks integration as to the collective dimensions of IEC and how they enhance international performance of INVs. The concept of IEC, a comprehensive portrayal of INV entrepreneurialism, has only recently gained momentum to conceptualize INVs' degree of international entrepreneurship. An IEC is argued to enable INVs to leverage resources, discover, and exploit opportunities abroad to achieve superior performance (Teece, 2016). While the literature has begun to examine the concept of IEC and how it uniquely supports INV performance, additional empirical studies are needed to better understand the nature of the relationship. Accordingly, we study the linkage between IEC and INV performance.

Second, scholars contend further study of the IE construct – capabilities relationships are necessary to better understand their theoretical connections (Miller, 2011). While the literature has recently examined the performance outcomes of INVs' dynamic marketing capabilities and ambidextrous innovation, we still lack a clear understanding as to how INVs develop and sustain such complex capabilities. Consequently, we explore the relationships between IEC, ambidextrous innovation and dynamic marketing capabilities, and their respective relationships with INV performance. This is the first study, which we know of, to explore IEC as the foundation that supports the development of INVs' vitally important innovation and marketing capabilities. In conducting these analyses, we examine the mediating effects of ambidextrous innovation and dynamic marketing capabilities in the relationship between the IEC - INV performance.

Third, further studies are necessary to understand the impact of contextual variables as it relates to the benefits of firm culture and strategic capabilities of small global start-ups (Cadogan, Kuivalainen, & Sundqvist, 2009; Cadogan, 2012). Accordingly, there is a need to explain the development of INVs complex innovation and marketing activities within international markets potentially fraught with uncertainty. To highlight the magnitude of unpredictable markets for INVs, we examine the moderating role of environmental dynamism between the interplay of IEC, ambidextrous innovation and dynamic marketing capabilities. In exploring the nature of the IE – capabilities relationship under varying levels of environmental dynamism provides a deeper understanding as to the importance of an IEC in the context of INVs.

Lastly, while INV research in emerging economies has recently received increased attention, scholars argue for more studies on firms from East Asia (Kiss, Danis, & Cavusgil, 2012). Accordingly, we examine a sample of high-technology INV firms from the under-researched emerging market, India. According to the National Association of Software and Service Companies (NASSCOM, 2016), India contains one of the largest start-up ecosystems, in terms of accelerators, active angels, venture capitalists, and start-ups. Indian INVs are developing an entrepreneurial drive that enables them to succeed in a dynamic global environment (Javalgi, Todd, Johnston, & Granot, 2012). An examination of the coaction between IEC, ambidextrous innovation, and dynamic marketing capabilities in the Indian context provides new insights as to the dynamic capability development of INVs from emerging markets.

The remainder of the paper is organized as follows: First, we review the literature on key constructs in order to develop a conceptualization of INV dynamic capabilities. Next, we offer a discussion of the theoretical model and hypotheses. A discussion of research methods is provided next. Measures and estimate of a structural equation model (SEM) are discussed, followed by an analysis of the results. Finally, we conclude with a discussion of theoretical and practical implications, as well the limitations of our study and future research directions.

2. Dynamic capabilities of international new ventures

The dynamic capabilities view (DCV) evolved from the resource-based view (RBV), which suggests firms' competitive advantages are a result of their resources and capabilities (Barney, 1991). IE scholars use RBV to examine the performance effects of INVs' orientations and operational capabilities (Bello, Radulovich, Javalgi, Scherer, & Taylor, 2016; Jantunen, Nummela, Puumalainen, & Saarenketo, 2008; Knight & Cavusgil, 2004). In contrast to the RBV, the DCV suggests firms develop combinations of competences in which they leverage resources to capitalize new opportunities (Newbert, 2007). This theoretical perspective is fitting to INVs, especially in the emerging market context, given their resource constraints.

The DCV theorizes higher order capabilities enable firms to implement new strategies by modifying available resources and/or combining and transforming said resources in new and different ways (Teece, Pisano, & Shuen, 1997). Consistent with extant literature, we conceive dynamic capabilities to be the capacity of INVs to systematically solve problems, formed by their propensity to sense opportunities, make timely strategic decisions, and to purposefully create, extend, or modify their resource bases (Barreto, 2010; Helfat & Peteraf, 2003; Teece, 2012). This highlights INVs' penchant to identify opportunities in international markets and develop the necessary resource combinations to exploit these opportunities. The DCV is applicable to the INV context, as these firms are distinct by their dynamic process of capability building in gaining competitive advantage within foreign markets, rather than by their possession of tangible resources (Efrat & Shoham, 2012; Weerawardena, Mort, Liesch, & Knight, 2007).

IEC provides a comprehensive opportunity-based conceptualization of the firm that embodies new ideas and creativity, as the behavioral dimensions collectively influence alertness, identification and pursuit of opportunities in international markets (Gabrielsson, Gabrielsson, & Dimitratos, 2014; Naldi, Achtenhagen, & Davidsson, 2015). INVs overcome their lack of resources by leveraging an IEC to cultivate their alertness- and exploitation- of opportunities to develop capabilities and strategies, accelerate their international growth, and enhance their performance. Scholars suggest that the elements of an IEC constitute a mixture of activities and processes that have a liberating effect on capabilities, which makes INVs more dynamic (Gabrielsson et al., 2014). See Table 1 for key definitions of IEC dimensions, which are the guiding behaviors of entrepreneurs and managers that reflect the strategic directions which lead to superior performance (Noble, Sinha, & Kumar, 2002; Slater, Olson, & Hult, 2006)

The DCV is fitting as IEC encompasses traits that support managerial activities associated with sensing opportunities, seizing resources, and transforming the firm (Dimitratos, Buck, Fletcher, & Li, 2016). Furthermore, there is evidence that IEC distinguishes INV behavior compared with traditional exporters (Zhang, Tansuhaj, & McCullough, 2009). An IEC enables INVs to develop the necessary innovation and marketing skills that facilitate their international venturing. We contend IEC is the glue that brings assets together and enables INVs to combine, modify, and deploy them advantageously to develop critically important capabilities. A review of the literature reveals that empirical research which explores the performance implications of a comprehensive IEC is limited.

INVs are the result of a start-up developing valuable, quality enhanced offerings that meet the current and future needs of international markets (O'Cass & Ngo, 2011). As such, scholars have generally emphasized innovation intensity as a key driver of INV performance (Kim,

Table 1
IEC and dimension definitions.

Construct	Construct definition	Citation
International entrepreneurial culture	The culture of an organization that facilitates the entrepreneurial activities of the firm internationally	(Zahra, 2005)
IEC dimension	Construct definition	
International entrepreneurial orientation	Propensity to engage in innovative, proactive, and risk-taking behaviors to achieve strategic objectives in global markets	(Knight, 2001)
International market orientation	Propensity to collect market information as to create superior value for international customers, and monitor strategic moves of competitors	Knight and Kim (2009)
International motivation	Propensity to initiate and stimulate aggressive behavior toward international venturing	Dimitratos et al. (2012)
International learning orientation	Propensity to develop and utilize new knowledge in foreign markets	Slater and Narver (1993)
International network orientation	Propensity to engage with competitors and non-competitors through alliance formation in foreign markets to gain access to resources	Gabrielsson et al. (2014)

Basu, Naidu, & Cavusgil, 2011; Knight & Cavusgil, 2004; Weerawardena, 2003; Weerawardena et al., 2015). However, the process of continually bringing new innovations to market is resource consuming (i.e. financial and time), which is problematic for global start-ups that can ill afford to miss windows of opportunity (Ries, 2011). Additionally, to maintain competitive advantages these firms need to respond and adapt to market conditions. In addition to developing breakthrough innovations, INVs need to collect validated learning about customers to make incremental improvements in a timely fashion. This necessitates the ability to develop incremental and disruptive innovations simultaneously.

Ambidexterity has been recently used to explore how INVs conduct these competing innovation dualities (Hughes, Martin, Morgan, & Robson, 2010). Ambidextrous innovation is the ability of a firm to conduct explorative and exploitative innovation simultaneously (He & Wong, 2004). Exploitation refers to the refinement or incremental product improvement. In contrast, exploration is characterized by disruption and discovery to generate advanced product designs (Kyriakopoulos & Moorman, 2004).

While some argue exploration and exploitation compete for scarce assets, an alternate stream suggests ambidextrous firms manage synergistic effects between exploiting existing competences and exploring new opportunities with equal dexterity to experience superior performance (Gibson & Birkinshaw, 2004; Raisch & Birkinshaw, 2008). The integration of explorative and exploitative innovations is critical to INVs, as these dual capabilities complement each other in a way that enables INVs to overcome resource constraints and strengthen competitiveness. Accordingly, ambidextrous innovation is a dynamic capability reflected in a complex set of routines that enables firms to sense and seize both incremental and more disruptive innovation opportunities through the reallocation and reconfiguration of firm assets (O'Reilly & Tushman, 2013). We follow these studies in conceptualizing ambidextrous innovation as a multi-dimensional dynamic capability, with innovation exploration and exploitation each constituting a separate, but interrelated, non-substitutable dimension. Considering the high failure rate of newly formed firms; a key issue for INVs is to conduct enough innovation to ensure their current viability, yet, also focus on exploration to create new products that ensure future growth. As there is a lack of understanding as to how INVs develop these short- and long-term focused competences, there is a need for empirical studies that explore the utility of their simultaneous usage (Lubatkin, Simsek, Ling, & Veiga, 2006; Markides, 2013).

While INVs contend with competitive pressures for innovation and tight profit margins, it is their ability to provide valuable offerings that yields a competitive advantage. Innovation helps INVs to create entirely new value propositions to satisfy customers' latent needs. However, from innovation arises the need to effectively communicate value propositions to attract customers located in international markets. Marketing capabilities generally reflect INVs ability to differentiate products and services from competitors and build brands to enhance performance (Kotabe, Srinivasan, & Aulakh, 2002). Thus, innovation and marketing capabilities are inextricably linked.

Theoretically, dynamic marketing capabilities are considered the ultimate form of competitive advantage in complex global markets as they allow firms to enhance operational capabilities (Morgan, 2012). Dynamic marketing capabilities are distinctive from traditional marketing capabilities in that they are comprised of elements of marketing resource reconfigurations and capability enhancement. More specifically, they are the ability to build, integrate, and reconfigure strategic marketing acumen to effectively identify and deliver value to international markets (Weerawardena et al., 2015). Scholars conceptualize INVs' dynamic marketing capabilities as having three elements: incremental, resource renewal, and capability regenerative. Incremental refers to gradually improving INVs current resource base. Renewal refers to the INVs capacity to extend or modify resources in ways that fit with the requirements of the environment; while regenerative refers to their ability to restructure, relearn and improve capabilities in ways that fit the environment (Evers, Andersson, & Hannibal, 2012; Morgan, 2012).

INVs utilize dynamic marketing capabilities to formulate effective marketing skills critical to identifying and accessing international opportunities (Weerawardena et al., 2007). Accordingly, the possession of dynamic marketing capabilities to create value for international customers are a necessity for newly internationalized firms. Marketing skills require fewer resources than more complex capabilities (Wolff & Pett, 2000), therefore are key dynamic capabilities for INVs to develop. In line with resource constraints, INVs develop distinctive marketing capabilities to modify or extend their resource base as a means to address customer preferences and develop unique value propositions (Weerawardena et al., 2015). However, scholars contend additional research is needed to provide a better understanding of firm micro behaviors that contribute to dynamic marketing capabilities of reconfiguring and enhancing marketing skills in the context of INVs (Moorman & Day, 2016; Morgan, Feng, & Whitler, 2018), and how they support INV performance (Zhou, Wu, & Barnes, 2012).

This discussion highlights the research gaps regarding the development and linkages of INVs dynamic capabilities. IEC, ambidextrous innovation and dynamic marketing capabilities fit the INV context as they represent the core competences of young, resource-constrained global firm. Accordingly, we contend it is the interplay of these dynamic capabilities that support INV performance.

3. Research model and hypotheses

The conceptual framework (Fig. 1) suggests that INV performance is driven by an international entrepreneurial culture, ambidextrous innovation, and dynamic marketing capabilities. Additionally, the model examines the effect of environmental dynamism as INVs develop ambidextrous innovation dynamic marketing capabilities.

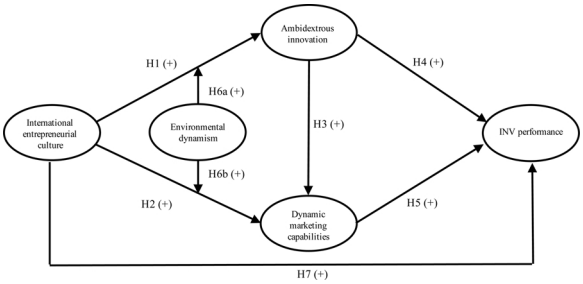

Fig. 1. Conceptual Framework of INV performance.

3.1. International entrepreneurial culture and ambidextrous innovation

An entrepreneurial INV is one that is characterized as having the propensity to be innovative, proactive, and take risks (Freeman & Cavusgil, 2007). The exploration dimension of ambidextrous innovation is driven by risk-taking and innovativeness elements (Prange & Verdier, 2011), as entrepreneurially oriented INVs utilize creativity and inventiveness to explore new product and service offerings. While IEO may inherently be linked with exploratory-based actions, it also supports the development of exploitative activities. Proactiveness and innovativeness stimulate broadening and refining of established product and service offerings necessary (Lisboa, Skarmeas, & Lages, 2011), necessary to maintain and grow market share In support of this discussion, Arunachalam, Ramaswami, Herrmann, and Walker (2018) recently found that IEO leads to dual innovation activities of Indian INVs. Accordingly, IEO is a key antecedent of INVs simultaneous exploratory and exploitative innovation skills.

With respect to IMO, INVs capacity to effectively gather and integrate market information to sense customer trends and potential competitor actions is essential in their ability to uncover new markets and design disruptive innovations (Ozkaya, Droge, Hult, Calantone, & Ozkaya, 2015). This supports previous studies that find market orientation is positively related to INVs' various types of innovation development efforts (Hult, Hurley, & Knight, 2004; Langerak, Hultink, & Robben, 2004). IMO reflects what INVs should focus on in terms of which information sources are relevant (i.e. customers and/or competitors), as it relates to developing product and service offerings that either fit explicit needs or reshape markets by addressing more latent needs.

Vision as part of a firm culture has been identified as a key source of ambidexterity (Tushman & O'Reilly, 2006). International vision or motivation supports INVs ability to simultaneously bring established innovations, albeit with modifications, to global markets; while exploring the landscape in search of new offerings to eventually create new markets. This trait enables these firms to see the potential growth opportunities in bringing nascent technology to new international markets (Knight & Kim, 2009). International motivation is just as likely to facilitate INVs' penchant for applying existing offerings to new markets as a means to extend revenue opportunities.

Additionally, scholars find INV learning to be linked to their exploratory and exploitative innovation activities (Atuahene-Gima & Murray, 2007; Keskin, 2006). INVs that possess a learning propensity are likely committed to develop breakthrough innovations (Calantone, Cavusgil, & Zhao, 2002), in addition to refine existing innovations (Cohen & Levinthal, 1990). Learning helps INVs not only enhance existing offerings by more effectively utilizing their limited assets, but also gain an understanding of how to develop technological breakthroughs.

Networking with customers abroad enables INVs to obtain technological and market trend knowledge to better develop product and service offerings (Lee, Lee, & Pennings, 2001; Mort & Weerawardena, 2006) that fit the needs of international markets. Furthermore, networking with other complementary firms positions INVs to uncover unmet market demands, both explicit and latent, which result in dual innovation opportunities (Vasilchenko & Morrish, 2011). This provides INVs the ability to better understand which specifications are needed to satisfy the specific market, leading to either a product refinement or potentially a radically new offering. Additionally, Chetty and Wilson (2003) find competitor-based networks support INVs development of technological resources. Boso, Story, and Cadogan (2013) reveal INVs from emerging markets effectively utilize competitor and non-competitor networks to support their innovation development activities. As ambidextrous innovation can be an asset consuming activity, INVs leverage channel relationships and coopetition to gain access to unavailable resources that are critical to their dual innovation activities.

From the preceding discussion, IEC enables INVs to sense and seize opportunities to simultaneously develop incremental (exploitative) and disruptive (exploratory) product and service offerings through a mixture of guiding activities (i.e. proactive, risk-taking, creativity, market knowledge acquisition, learning, networking, and coopetition). The opportunity sensing and seizing nature of IEC is like two sides of the same coin. On one side, an entrepreneurial culture better enables INVs' to recognize opportunities for innovative offerings that address unmet needs in international markets (Hitt, Ireland, Sirmon, & Trahms, 2011). On the other hand, an entrepreneurial culture enables INVs to strategically manage available resources, which is of critical importance in developing dual innovation activities (Ireland, Hitt, & Sirmon, 2003). These firms draw on a collection of traits to simultaneously navigate between the ability to incrementally improve their offerings, while generating offerings to open up new markets. Therefore, an IEC is critical the development of INVs' ambidextrous innovation capabilities.

Hypothesis 1. International entrepreneurial culture is positively related to ambidextrous innovation of INVs.

3.2. International entrepreneurial culture and dynamic marketing capabilities

Given the high rate of failure and costs associated with attracting new customers, development of dynamic marketing skills needed to operate in international markets is an entrepreneurial action. INVs that possess an IEC are able to enhance core capabilities (Zahra et al., 2006a, 2006b), and marketing capabilities play a critical role in INVs internationalization activities (Ripollés & Blesa, 2012). Scholars contend the INV rapid internationalization triggered by IEO is related to creating valuable capabilities used to target new customers (Aspelund, Koed Madsen, & Moen, 2007). IEO embraces the uncertainty of entering new international markets and mobilizing resources for identifying new customers, while analyzing new markets and competitors (Lisboa et al., 2011). In a sample of high-tech INVs from emerging markets, Martin and Javalgi (2016) find the relationship between IEO and marketing capabilities to be a key determinant as to how well these capabilities are aligned to complex global markets.

Market-oriented INVs develop capabilities to rapidly take their products and services to market. Firms that possess IMO develop appropriate marketing capabilities needed to implement strategic initiatives (Morgan, Slotegraaf, & Vorhies, 2009). Scholars find this dimension to be positively linked to dynamic marketing capabilities of INVs (Weerawardena et al., 2015). INVs that possess IMO are better positioned to develop marketing capabilities that better fit market conditions (Cadogan, Cui, & Kwok Yeung Li, 2003). Complex and changing market conditions require INVs to increase their market intelligence activities so that they can combine and augment available marketing resources to align with prospective customer demands and offer them superior value. This is critical for INVs as they lack an abundance of marketing personnel. Thus, understanding market characteristics is a prerequisite for effective development and deployment of marketing skills.

To achieve their international goals, INVs recognize an international

vision is needed to develop market-related skills. Weerawardena et al. (2015) find these firms build and foster distinctive marketing capabilities from an international vision that enables them to adequately adapt their limited marketing acumen to international markets. This orientation influences managers' openness to, and ability to embrace cultural diversity in international markets. This in turn supports their ability to combine and augment marketing resources that effectively meet the value expectations of varied markets.

Autio, George, and Alexy (2011) reveal young global start-ups operating in new uncertain markets rely upon learning to generate new dynamic market-related capabilities. Specifically, knowledge-questioning values facilitate INVs capabilities to seek out new methods to attract global customers and launch new products/services in global markets, as well as be creative in distribution (Keskin, 2006). As a result, learning-oriented INVs are equipped to collect and utilize knowledge to mobilize available marketing resources in a manner that aligns with global markets.

INV networking supports internationalization by developing relationships with other firms that possess complementary resources, which INVs use to develop and enhance their own marketing resources. Scholars find that resource-constrained firms leverage strategic partnerships to provide greater customer value through development of marketing capabilities (Srivastava, Fahey, & Christensen, 2001). Chetty and Wilson (2003) find competitor-based networks supports INVs development of organizational resources (i.e. marketing capabilities). Additionally, Gabrielsson et al. (2014) find networking and leveraging channel relationships with both competitors and non-competitors to be important in enhancing INVs market-related resources. In line with this discussion, Mort and Weerawardena (2006) find networking provides INVs access to marketing resources necessary to identify and secure global customers. A proclivity for creating networks with competitors and non-competitors is critical to resource-impoverished INVs, as they lack the financial and human resources to undertake significant market research and development in international markets.

INVs are defined by their mindsets and behaviors, which lie at the core of INVs' ability to create value for international customers beyond their more established resource-rich competitors. It is their behaviors and resourcefulness, not the amount or types of resources they control, that facilitates their ability to create dynamic marketing capabilities to adapt to the requirements of- and meet the needs of- global markets. This discussion shifts the emphasis to how INVs utilize their unique entrepreneurial culture to develop dynamic marketing capabilities that support their internationalization.

Hypothesis 2. International entrepreneurial culture is positively related to marketing capabilities of INVs.

3.3. Ambidextrous innovation and dynamic marketing capabilities

The marketing strategy literature suggests marketing capabilities facilitates the success of innovations (Weerawardena, 2003). Innovation is vital to INVs' marketing capabilities, because innovation gives rise to alternate ways of doing business in new markets. Innovation has been positively linked to marketing capabilities, as innovation promotes INVs' capability to generate and implement new ideas that result in more efficient marketing activities, as well as deliver better services to customers (Lee & Hsieh, 2010). Accordingly, firms that possess innovation abilities are more successful in developing capabilities to navigate international markets.

Ambidextrous innovation provides the interface for the development of marketing capabilities, in that this dual innovation path will shape INVs' ability to effectively meet the value expectations of targeted customers (Hughes et al., 2010). Strategic efforts to develop marketing skills results from the ability to advance new technology and refine current product-market innovations (Kyriakopoulos & Moorman, 2004). As INVs develop and refine innovations, they gain an understanding of market preferences and compatibility of new products with customer needs.

Empirical findings suggest INVs that possess innovation capabilities are more likely to develop distinctive marketing capabilities (Weerawardena, 2003). Martin et al. (2017) find ambidextrous innovation strengthens the development and market positioning effects of INVs marketing capabilities. Arunachalam et al. (2018) further support this contention, as their study finds that dynamic marketing capabilities supports the performance effects of ambidextrous innovation of Indian SMEs. In their case study findings, Weerawardena et al. (2015) find INVs transform innovation capabilities into dynamic marketing capabilities which provide an edge in meeting customer needs. Consequently, firms that possess ambidextrous innovation are better positioned to successfully develop marketing capabilities and convert them into a competitive advantage. Thus, ambidextrous innovation plays a key role in the development of INVs dynamic marketing capabilities in new international markets.

Hypothesis 3. Ambidextrous innovation is positively related to dynamic marketing capabilities of INVs.

3.4. Ambidextrous innovation and INV performance

The literature increasingly find support for the importance of ambidextrous innovation as empirical results show the combination of explorative and exploitative innovation are positively linked to financial performance (He & Wong, 2004). The difficulty in achieving ambidextrous innovation provides a unique source of competitive advantage (March, 1991). This is especially true for young, smaller firms that lack an abundance of financial resources and human capital. The ability of some INVs to effectively develop both sets of innovation activities enables them to attract and retain customers and meet financial objectives, more so than those global startups that experience difficulty in managing these divergent activities. Empirical evidence supports the idea that firms capable of simultaneously pursuing exploitative and explorative innovation are more likely to achieve superior performance than those that conduct just a single activity (Lubatkin et al., 2006; Morgan & Berthon, 2008).

Innovation capabilities have been found to be positively related to international performance of high-tech INVs (Volchek, Jantunen, & Saarenketo, 2013). As innovation is a core activity for tech firms, the concept of ambidextrous innovation is a critical function for INVs success in international markets. INVs often pursue differentiated or niche strategies, so developing unique products and services that disrupt markets are important to attract customers (Cavusgil & Knight, 2015). As technology continually evolves INVs need to re-focus towards developing tomorrow's offerings to continually attract new customers and ensure a sustainable competitive advantage. However, disruptive innovation can be resource-consuming, so it becomes important for these smaller firms to dedicate efforts towards developing incremental updates that support customer retention and extend revenue potential of existing product and service offerings. Accordingly, scholars find performance benefits for smaller firms that engage in dual innovation activities (Yalcinkaya, Calantone, & Griffith, 2007). This offers a compelling argument suggesting that to sustain competitive advantage, INVs must balance their innovation efforts between short-term and long-term perspectives. The importance of both activities is further emphasized as refraining from exploratory innovation is associated with a vulnerability to the effects of obsolescence; while shunning exploitative innovation will increase the cost of experimentation, forgoing many of its benefits, such as a failure to accrue the returns of knowledge (Levinthal & March, 1993).

INVs tendency towards integration of exploitative and explorative innovation activities enables global startups to compete and survive while also working to ensure their future growth (Prange & Verdier, 2011). Kollmann and Stöckmann (2014) find ambidextrous innovation

to be a necessary linkage in the relationship between entrepreneurship and performance of INVs. In addition, Hughes et al. (2010) find emerging market INVs operating in high-tech sectors couple these divergent innovation activities to enhance international performance. Development of both incremental and radical innovation capabilities should be a significant priority for INVs to stay competitive while creating new demand for their products and services in international markets. Therefore, we propose the simultaneous integration of explorative and exploitative innovations strengthens international performance of high-tech INVs.

Hypothesis 4. Ambidextrous innovation is positively related to INV performance.

3.5. Dynamic marketing capabilities and INV performance

Internationalization is a market penetration strategy, therefore, INVs planning to grow through internationalization require marketing capabilities. However, as a result of their liabilities of smallness and newness, traditional marketing resources such as strong brands have been found to have an insignificant impact toward INV performance (Kuivalainen, Puumalainen, Sintonen, & Kyläheiko, 2010), as their brands typically are not recognizable across international markets. Therefore, INVs require skillful marketing to gain a better understanding of who their customers are, motivations that drive purchasing behavior, and communicate how their products and services uniquely meet customers' needs.

In the INV literature, marketing capabilities have been identified as an important driver in their international growth and performance (Martin & Javalgi, 2016; Zhou et al., 2012). INVs utilize marketing capabilities to rapidly launch and deliver new products, respond quickly to changes in customer preferences, deliver high-quality post-sales service, and work closely with distributors and retailers in target markets (Day, 2011). As INVs enter new markets and aim to attract customers, they must be able to update and enhance resources and capabilities as needed (Morgan, Slotegraaf et al., 2009). The extent to which these firms can interact with international markets determines their ability to discover why and how resources and capabilities should be modified and upgraded (Morgan, Vorhies, & Mason, 2009). Marketing capabilities that fail to quickly evolve in a way that effectively adapts product and service offerings to fit the needs of international customers, result in organizational rigidities (Leonard-Barton, 1992) which ultimately leads to missed opportunities and suboptimal performance (Hunt & Morgan, 1995).

The ability to learn customer needs and effectively develop and position products accordingly are critical skills for young internationalizing firms aiming to attract customers and generate revenue. This is often achieved by testing early concepts of product and service offerings in the hands of customers, which provide INVs with critical insights necessary to make effective product pivot decisions. For example, customer feedback may lead an INV to simplify an offering by turning one feature of an offering into the product. This incremental enhancement offers a more streamlined product offering. On the other hand, INVs may utilize market information to consider a pivot in which a single product feature becomes a larger suite of new product innovations.

INVs that possess dynamic marketing capabilities are in a better position to establish customer relationships and identify and respond to customer needs, which are necessary to develop a competitive advantage in international markets. As a result, these firms are better positioned to gain market share and achieve financial objectives (Zou, Fang, & Zhao, 2003). Therefore, it is the ability to get close to- and learn from- prospective customers, and create and communicate a compelling value proposition, that becomes critical to INVs success. In summary, dynamic marketing capabilities are important drivers of high-tech INVs international performance.

Hypothesis 5. Dynamic marketing capabilities are positively related to INV performance.

3.6. Moderating role of environmental dynamism

Environmental dynamism refers to the dramatic rate and state of change (volatility) in an environment and is associated with unpredictability (uncertainty) (Miller & Friesen, 1983). In relatively stable and predictable environments, firms develop core competencies; while in highly changing and unpredictable environments, firms must adapt and upgrade their resources to develop more effective dynamic capabilities (Wang & Ahmed, 2007). This issue is especially critical to INVs due to the limited nature of their resource-bases.

Previous research indicates new ventures from emerging markets potentially view highly dynamic markets as sources of potential opportunities as a result of their home country experiences (García-Canal & Guillén, 2008; Welter & Smallbone, 2011). In these turbulent markets, INVs require the ability to rapidly respond to changing conditions. Accordingly, entrepreneurial cultures have been found to be effective in dynamic environments (Lumpkin & Dess, 2001; Miller & Friesen, 1982). In a sample of high-technology firms from emerging markets, Li and Liu (2014) find operating in turbulent environments to be a significant factor in the development of their dynamic capabilities. In the context of Indian INVs, Javalgi and Todd (2011) find entrepreneurial proclivities to be critical in entering highly dynamic markets. The basic premise is that INVs must assess the environment and align their IEC with essential capabilities to succeed in these volatile and unpredictable markets.

INVs with high levels of IEC will be more likely to adapt and reconfigure ambidextrous innovation and dynamic marketing capabilities necessary to meet to changing environments. Huang, Ding, and Chen (2014) find that entrepreneurship generates an understanding that ambidextrous innovation is necessary, more so for firms in dynamic environments. Additionally, Martin and Javalgi (2016) find entrepreneurial proclivities strengthen INVs ability to develop marketing capabilities in unpredictable environments. Accordingly, the linkage between IEC and strategic capabilities is more pronounced for INVs operating in volatile environments. We contend an IEC enables INVs to coordinate and adapt their dynamic capabilities so that they can capitalize on profitable opportunities in highly dynamic markets. Therefore, we suggest that the linkages between IEC and ambidextrous innovation, and IEC and marketing capabilities will be strengthened as INVs operate in markets with higher degrees of environmental dynamism.

Hypothesis 6a. Environmental dynamism positively moderates the relationship between international entrepreneurial culture and ambidextrous innovation.

Hypothesis 6b. Environmental dynamism positively moderates the relationship between international entrepreneurial culture and dynamic marketing capabilities.

3.7. International entrepreneurial culture and INV performance

Previous discussion posits an opportunity-based IEC supports the development of ambidextrous innovation and dynamic marketing capabilities. Building on this idea, IEC is the means by which INVs explore and exploit opportunities across international markets to facilitate international growth. These opportunities can be gaps in competitors' coverage, or projections for new market segments. Effectively identifying and capitalizing on international opportunities is key to developing a competitive advantage (Lumpkin & Lichtenstein, 2005) and successful internationalization (Oviatt & McDougall, 2005). As INVs explore novel ways to approach markets differently, as well as profitably exploit existing knowledge; they are able to attract new international customers and maximize value from international markets.

Table 2
Sample Descriptives.

Firm age (years)	16.95 (mean)		
Firm size (number of employees)			
10 to 50	76		
51 to 250	210		
	% firms		% firms
Position		Speed of internationalization (years from startup)	
Executive managers	51	less than 2	13
Owners	33	2 to 3	56
Senior level directors	16	4 to 5	31
Type of industry		Scale of internationalization (FS/TS)	
Information technology software	47	25 to 50	57
Information technology services	37	51 to 75	39
Aerospace and aviation	12	76 to 100	4
Biotechnology and aviation	4		
Entry mode		Scope of internationalization (number of markets)	
Direct exporting	52	1 to 3	30
Used a sales agent	18	4 to 6	33
Used a distributor	17	7 to 9	35
Joint venture	8	10+	2
Wholly-owned subsidiary	4		
Licensing	1		

This discussion supports research on the positive linkage between entrepreneurship on performance of INVs (Kuivalainen, Sundqvist, & Servais, 2007).

In an early empirical study, an IEC was not only found to have a positive effect on INVs' performance but be more prevalent in INVs as compared to traditional exporters (Zhang et al., 2009). The implications of such a finding is that an IEC enables INVs to evaluate and respond to international opportunities more effectively than conservative exporters. This offers support for the performance implications of an IEC in the INV context. Recent empirical results find that IEC supports international performance of INVs originating from emerging markets (Zhang, Gao, & Cho, 2017).

Additionally, scholars have connected elements of an IEC (i.e. knowledge acquisition to manage risk, developing market research, involve partners in value-creation processes, and leverage alliances to overcome liabilities of smallness) to the international success (i.e. market entry and growth) of high-technology INVs (Dimitratos, Buck et al., 2016; Dimitratos, Johnson, Plakoyiannaki, & Young, 2016; Gabrielsson et al., 2014). Additionally, there is extensive empirical research that acknowledges a positive relationship between the dimensions of IEC and INV performance, individually (Cadogan et al., 2009; De Noni & Apa, 2015; Martin & Javalgi, 2016; Nummela, Saarenketo, & Puumalainen, 2004), and to some degree, collectively (Falahat, Knight, & Alon, 2018; Jantunen et al., 2008). The guiding behaviors and processes of an IEC enable global start-ups to remain alert to new opportunities across international markets and provide the foundation for the necessary acumen needed to profitably act on said opportunities. Therefore, INVs should possess a specific combination of elements that comprise an IEC and maximize their utility to grow and succeed in international markets.

Hypothesis 7. International entrepreneurial culture is positively related to INV performance.

4. Research methodology

Indian INVs have experienced significant international growth over the past decade due to their high-tech offerings (Bello et al., 2016; Kim et al., 2011). Accordingly, data collection was accomplished with a cross-sectional multi-industry sample of high-technology INVs from India. High-technology industries in India include: information technology software, information technology services, electronics, aerospace and aviation, and biotechnology and pharmaceuticals. A multi-industry sample was used to strengthen generalizability of the findings and to increase observed variance (Autio, Sapienza, & Almeida, 2000; Knight & Cavusgil, 2004). In emerging markets publicly available data is often limited and unreliable (Khavul, Pérez-Nordtvedt, & Wood, 2010; Varma & Budhwar, 2012). Therefore, we follow Hoskisson, Eden, Lau, and Wright (2000) for administering surveys in emerging markets by collaborating with a market research firm. Qualtrics was used to collect surveys from 286 high-tech Indian INVs.

4.1. Operational definition of INVs

INVs are defined as" start-ups that, from inception, seek to derive significant competitive advantages from…the sale of outputs in international markets" (Oviatt & McDougall, 1994, p. 49). The defining characteristics of INVs are their speed and scale of international activities. In following previous research regarding INVs from India, we operationalize INVs as firms that internationalize within 5 years of inception with international revenues accounting for 25% or more of total revenues (Kim et al., 2011). Additionally, we operationalize INVs as 10–250 employees. We omitted those with fewer than 10 employees, as these micro firms may be characterized by part-time operations which can misrepresent results (Hughes et al., 2010).

4.2. Data collection

This survey uses the owner-entrepreneur, director, or manager of the firm as the key respondent. As the individuals responsible for implementing organizational strategies towards accomplishing firm objectives, they should be knowledgeable about dynamic capabilities, performance, and environmental effects in international markets. The survey was prepared and administered in English, as this is the primary language used by businesses in India. Table 2 illustrates a breakdown of the final sample descriptive statistics.

We compared early and late respondents, examining the first 25% and last 25% to return the surveys, to estimate potential late-response bias. Using a *t*-test to identify potential differences on key demographic variables (i.e. firm size, industry, year of establishment, speed of

internationalization, scope of internationalization, and scale of internationalization) (Armstrong & Overton, 1977), we found no significant differences in these t-tests ($p > .05$). As a result, nonresponse bias likely does not pose an issue to our results.

Due to the challenges in collecting data from firms located in emerging markets, the use of key informants is often the most practical method. However, as a result of utilizing key informant surveys to collect data, common method bias is a potential concern. We followed established guidelines to reduce the potential of common method bias (Podsakoff & Organ, 1986). The item wordings were reviewed to ensure survey respondents had a clear understanding of the questions. To avoid socially desirable responses, we assured respondents of confidentiality and that there were no correct or incorrect responses. Lastly, we separated the items of independent and dependent variables by adding items that were not used in this study.

Additionally, we assess potential common method bias using two statistical techniques. First, we utilized Harman's Single-Factor Test (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The first factor accounted for only 20% of total variance with no single factor emerging. Next, we compared two models, in which variables were loaded onto a single factor and then compared to a confirmatory factor analysis. The results of a chi-squared difference test reveal a single factor results in poor fit ($\Delta \chi 2 = 1623.28$, Δ df = 19, $p = 0.00$).

4.3. Construct operationalization

All measures were adapted from previously used scales, with four academic researchers in international business serving as expert judges evaluated the survey to assess face validity. As previously discussed, IEC is a reflection of six interrelated international organizational culture dimensions. The six dimensions are not expected to "cause" IEC, but rather collectively reveal the latent, intangible nature of the construct (Hult & Ketchen, 2001; Knight & Kim, 2009). Therefore, we operationalize IEC as a second-order reflective measure. In this study, we utilize the 23-item scale developed by Dimitratos et al. (2012). The scale uses a seven-point Likert scale ranging from (1) 'strongly disagree to (7) 'strongly agree.

Ambidextrous innovation is modeled as a reflective second-order measure to offer an interpretable approach for combining the exploratory and exploitative dimensions (Lubatkin et al., 2006; Martin et al., 2017). We draw upon He and Wong (2004) to operationalize the ambidextrous innovation scale items. These measures use a seven-point Likert scale ranging from (1) 'not important' to (7) very important'.

Dynamic marketing capabilities are operationalized as the capacity to build, integrate, and reconfigure marketing resources and skills. We use a reflective dynamic marketing capability measure developed by Weerawardena et al. (2015) for the INV context. This scale uses a seven-point Likert scale ranging from (1) 'much worse' to (7) 'much better'. To capture environmental dynamism, we used items developed by Miller and Friesen (1982). These reflective measures were based on a seven-point Likert scale ranging from (1) 'strongly disagree' to (7) 'strongly agree'.

We follow Hult et al. (2008) call to use multiple types of performance measures in IB research and adopt Morgan, Katsikeas, and Vorhies (2012) multidimensional performance measure to capture financial and market performance of INVs. This seven-point Likert scale ranging from (1) 'much worse' to (7) 'much better', evaluates INV performance over the past year relative to major competitors.

We included three control variables in the structural model. First, the importance of the industry in which a firm competes has been recognized as a predictor of performance (Zhou et al., 2012). Additionally, we used the number of international markets in which the INV operated or sold products to measure degree of internationalization (Lu & Beamish, 2001). Lastly, the number of full-time employees is used to capture firm size.

5. Results

To assess the fit of the second-order CFA measurement model of the study factors, we followed Zou and Cavusgil (2002). First, we examined the model fit statistics. The results reveal a statistically significant chi-square ($X^2 = 726.30$; df = 329; $p < .01$). However, the chi-square statistic should not be used as the only measure of model fit (Bagozzi & Yi, 1988). Therefore, we examined other fit indexes (standardized root mean square residual [SRMR] = [.041], Tucker-Lewis fit index [TLI] = .91, comparative fit index [CFI] = .92, incremental fit index [IFI] = .92, and root mean square error of approximation [RMSEA] = .057), which suggest good model fit. Considering the relatively complex nature of the measurement model, which includes second-order factors, these fit indices suggest that the second-order CFA model fit the data satisfactorily (Bentler, 1995).

Additionally, we conducted a CFA to compare the proposed five-factor model to an alternative twelve-factor model (including all first-order dimensions). Model fit for the proposed five-factor model was superior to the twelve-factor model ($X^2 = 1789.65$; df = 923; $p < .01$, SRMR = .044, TLI = .90, CFI = .91, IFI = .91, and RMSEA = .059). In addition, the value of another comparative fit index, Akaike's information criterion (AIC) (Boomsma, 2000; Hu & Bentler, 1999) was better (smaller) for the five-factor model (AIC = 2105.65) than for the twelve-factor (AIC = 2157.27) model. These results indicate that our higher-order five-factor model provided better fit to the data than its rival model.

Next, we assessed the convergent validity of the measurement models through the examination of factor loadings, composite reliabilities and average variance extracted. Item loadings of their respective factors all exceed 0.73 with t-values exceeding 12.62 (Anderson & Gerbing, 1988). Composite reliabilities range 0.82 to .92, which suggest satisfactory internal consistency (Bagozzi & Yi, 1988). Average variance extracted (AVE) estimates range from 0.63 to 0.88, exceeding the recommended 0.50 threshold (Fornell & Larcker, 1981). In addition, the loadings of the first-order dimensions on IEC, ambidextrous innovation and INV performance are also positive and statistically significant. Item loadings exceed 0.88, coupled with composite reliabilities greater than .95, and AVE estimates above .89 indicate an adequate level of construct validity (Table 3).

To assess the discriminant validity of the constructs in the measurement model, we conducted 3 analysis. First, we conducted a series of two-factor models to assess all possible pairs of constructs. We performed each model two times: initially constraining the phi coefficient to 1.0 and then freeing the parameter (Bagozzi, Yi, & Phillips, 1991). The results demonstrate the unconstrained model had a significantly better fit ($p < .05$) for all pairwise comparisons, indicating discriminant validity between constructs (see Table 4 Table 4).

Additionally, we performed a confidence interval test to assess discriminant validity between constructs. This test involves calculating a confidence interval of plus or minus 2 standard errors around the correlation between constructs and determining whether this interval includes 1.0. If it does not include 1.0, support is found for the discriminant validity of the constructs (Anderson & Gerbing, 1988). We found the confidence interval between constructs to range between .29 and .94, meaning that it is unlikely the actual population correlation of constructs is 1.0. In summary, we conclude that all constructs in the measurement models possess convergent and discriminant validity and the second-order CFA models fit the data adequately.

6. Structural model and results

We tested the structural model using SPSS AMOS 25 (Byrne, 2001). To achieve a ratio of sample size to estimated parameter of greater than 5 to 1 which is necessary for reliable parameter estimates, a parsimonious structural model estimation (SME) procedure was used to test the hypotheses for this study (Bentler, 1995). In this procedure the

Table 3
Results of Second Order CFA.

Factor and items	Standardized loadings	*t-value*
International Entrepreneurial Culture (Second-Order Factor)		
International Entrepreneurial Orientation (CR = .92, AVE = .61)		
We favor high-risk projects (with chances of very high return)	0.77	13.15
We believe that owing to the nature of the environment in this foreign country it is best to achieve the firm's objectives in its marketplace via bold and wide-ranging acts	0.77	14.48
Our firm typically initiates actions to which competitors then respond	0.78	13.35
Our firm is very often the first firm to introduce new products/services, administrative techniques and operating technologies	0.80	13.71
Our firm typically adopts a very competitive 'beat-the-competitors' posture	0.78	13.26
In the past five years, our firm has marketed very many new lines of products or services	0.77	13.12
In the past five years, changes in product or service lines have usually been quite dramatic	0.73	[b]
International Market Orientation (CR = .89, AVE = .62)		
We have many routine or regular measures of customer service	0.83	15.14
Our product or service development is heavily based on good market and customer information	0.83	15.23
We have a very good sense of how our customers value our products/services	0.74	13.31
Our firm always collects information on our customers through any	0.75	13.54
Our firm always collects information on our competitors through any means	0.77	[b]
International Motivation (CR = .82, AVE = .69)		
In regard to the management philosophy for firm activities in foreign markets, developing an employee's own ideas are encouraged	0.85	16.11
In regard to the management philosophy for firm activities in foreign markets, top management are ignorant and unreceptive toward employees' ideas and suggestions (R)	0.82	[b]
International Learning Orientation (CR = .84, AVE = .63)		
We have many formal information links established between departments/functions	0.75	14.45
We have many formal/informal processes that provide direction on implementation of activities	0.80	15.63
We have many formal/informal processes that evaluate the effectiveness of its activities	0.84	[b]
International Competitor Network Orientation (CR = .92, AVE = .65)		
Cooperates with competitors in joint manufacturing agreements	0.83	17.29
Cooperates/participates to a very large extent with competitors in joint research	0.83	17.18
Cooperates heavily with competitors in advertising and marketing	0.86	[b]
International Non-Competitor Network Orientation (CR = .92, AVE = .65)		
Cooperate with non-competitors in joint manufacturing agreements	0.84	17.09
Cooperates to a very large extent with non-competitors in joint research	0.83	16.76
Cooperates heavily with non-competitors in joint advertising and marketing	0.84	[b]
Second-Order International Entrepreneurial Culture Scale (CR = .98, AVE = .89)		
International Entrepreneurial Orientation	0.96	12.62
International Market Orientation	0.97	13.41
International Motivation	0.92	13.55
International Learning Orientation	0.94	14.27
International Competitor Network Orientation	0.88	13.72
International Non-competitor Network Orientation	0.90	[b]
Ambidextrous Innovation (Second-Order Factor)		
Explorative Innovation (CR = .65, AVE = .88)		
Introduce a generation of new products	0.82	15.76
Extend product range	0.82	14.75
Open up new markets	0.82	16.36
Enter new technology fields	0.78	[b]
Exploitative Innovation (CR = .65, AVE = .85)		
Improve existing product quality	0.76	17.17
Improve production flexibility	0.80	17.11
Reduce production cost	0.75	[b]
Second-Order Ambidextrous Innovation Scale (CR = .94, AVE = .89)		
Explorative Innovation	0.94	17.86
Exploitative Innovation	0.99	[b]
Marketing Capabilities (CR = .90, AVE = .65)		
Invest in developing products or services having a global appeal	0.79	15.52
Use promotional activities (e.g. advertising) to rapidly gain international market share/sales growth	0.80	16.58
Use marketing resources and skills to effectively meet the value expectations of targeted customers	0.81	15.93
Combine marketing resources and skills more effectively to meet the customers' needs	0.78	15.92
Recombine marketing resources to meet changing customer expectations and competitor activity	0.85	[b]
INV Performance (Second-Order Factor)		
Market Performance (CR = .88, AVE = .66)		
Market share growth	0.86	14.92
Growth in sales revenue	0.81	14.33
Acquiring new customers	0.82	13.69
Increasing sales to existing customers	0.81	[b]
Financial Performance (CR = .88, AVE = .65)		
Profitability	0.86	14.51
Return on investment	0.83	15.64
Margins	0.80	15.72
Reached financial goals	0.75	[b]
Second-Order INV Performance (CR = .95, AVE = .90)		
Market Performance	0.96	12.61
Financial Performance	0.93	[b]
Environmental Dynamism (CR = .90, AVE = .65)		
In our industry, methods of production change often and in major ways	0.84	14.52
Our firm must change its marketing practices frequently	0.82	14.17
In our environment, new business models evolve frequently	0.81	[b]

Model Fit						
	$\chi 2$ / df	2118.17 (1061)	TLI	0.91	CFI	0.92
	SRMR	0.041	IFI	0.92	RMSEA	0.057

Note: CR = composite reliability, AVE = average variance extracted.
[b]Fixed to set the scales.

indicators for each construct are averaged, therefore second-order constructs (IEC, ambidextrous innovation, and INV performance) are treated as first-order with composites of their dimensions (Martin et al., 2017; Morgan, Kaleka, & Katsikeas, 2004). Overall, the fit indexes for the structural model (X^2 = 197.57, df = 108, p < 0.01; TLI = .97; CFI = .97; RMSEA = .054) suggest good fit to the data. Additionally, the structural model offers satisfactory explanatory power; as the squared multiple correlations are .64 for ambidextrous innovation, .79 for dynamic marketing capabilities, and .87 for INV performance.

Table 5 provides a summary of results for our theoretical model. Hypotheses 1 and 2 posit that IEC is positively connected with ambidextrous innovation and dynamic marketing capabilities, respectively. The results are positive and significant (β = .80, p < .01; β = .63, p < .01) so both hypotheses are supported. In support of H_3, the findings exhibit ambidextrous innovation is positively associated with dynamic marketing capabilities (β = .30, p < 0.01). Ambidextrous innovation are the organizational activities that support INVs' ability to

Table 4
Results of the discriminant validity chi-square difference test.

Test	Constrained		Unconstrained		
	χ^2	df	χ^2	df	$\Delta\chi 2$
IEC					
Marketing Capabilities	2083.55	1060	2078.58	1059	4.98*
Ambidextrous Innovation	2110.24	1060	2078.58	1059	31.66**
Environmental Dynamism	2082.69	1060	2078.58	1059	4.11*
INV Performance	2092.63	1060	2078.58	1059	14.06**
Ambidextrous Innovation					
Marketing Capabilities	2114.98	1060	2078.58	1059	34.41**
Environmental Dynamism	2124.90	1060	2078.58	1059	46.32**
INV Performance	2129.80	1060	2078.58	1059	51.22**
Marketing Capabilities					
Environmental Dynamism	2088.07	1060	2078.58	1059	9.50**
INV Performance	2089.73	1060	2078.58	1059	11.15**
Environmental Dynamism					
INV Performance	2138.76	1060	2078.58	1059	60.18**

** $p \leq .01$.
* $p \leq .05$.

develop and recombine marketing resources that meet the value expectations of international markets.

While ambidextrous innovation is related to dynamic marketing capabilities, our data do not support the predicted relationship between ambidextrous innovation and INV performance ($\beta = .09$, $p > .05$). Therefore, H_4 is not supported. Accordingly, our results illustrate that higher levels of ambidextrous innovation alone do not lead to INV performance. The relation between dynamic marketing capabilities and INV performance is positive and significant ($\beta = .87$, $p < 0.01$). As such, H_5 is supported. These findings further support the view that marketing capabilities are an important driver of INV performance. Lastly, the relation between IEC and INV performance is negative and not significant ($\beta = -0.05$, $p > 0.05$). Accordingly, H_6 is not supported. These results indicate, INVs that transfer an IEC into ambidextrous innovation and dynamic marketing skills are more successful.

We conducted an additional analysis to asses that environmental dynamism moderates the relationships between IEC and ambidextrous innovation. We re-estimated two structural models by splitting the sample at the median level into high and low groups (Boehe & Jiménez, 2016; Morgan et al., 2004). In the first model we constrained the path between IEC and ambidextrous innovation to be equal across the two groups, and in the second model we allowed the path coefficients to vary freely. As a result of the significant chi-square difference ($\Delta x^2 = 6.85$, $p < 0.01$) the unconstrained model offers a better fit. Therefore, indicating a difference between IEC and ambidextrous innovation in the high and low groups. As shown in Table 5, the two-group moderator test of environmental dynamism supports H_{6a}. The results indicate the relationship is positive and significant for both the low ($\beta = .62$, t-value = 5.43, $p < .01$) and high environmental dynamism group ($\beta = .83$, t-value = 8.44, $p < .01$). In a similar analysis, a non-significant chi-square difference ($\Delta x^2 = 0.7$, $p > 0.05$) indicates the relationship between IEC – dynamic marketing capabilities is not different in the two groups. Thus, H_{6b} is not supported.

Additionally, the results of our data suggest ambidextrous innovation and dynamic marketing capabilities mediate the IEC - INV performance relationship. Therefore, we estimated a model of the indirect effects to verify mediation. Our results indicate the joint effect between an IEC and dynamic marketing capabilities plus the effect between dynamic marketing capabilities and INV performance is greater than the direct effect between IEC and INV performance (Table 4). Also, the joint effect between an IEC, ambidextrous innovation and dynamic marketing capabilities plus the effect between ambidextrous innovation and dynamic marketing capabilities toward INV performance is greater than the direct effect between IEC and INV performance. Thus, we can confirm the mediated effect of ambidextrous innovation and dynamic marketing capabilities.

7. Discussion and implications

7.1. Theoretical implications

Our research offers four valuable contributions for IE theory development in INV performance. First, few studies have examined how an IEC can impact key dynamic capabilities critical to the international success of INVs. Our study reveals that IEC supports such capabilities of high-tech INVs, notably ambidextrous innovation and dynamic marketing capabilities. IEC enables INVs to be flexible and avoid inertia,

Table 5
SEM Results.

Structural Relationships	Standardized Loading	t-Value
Hypothesized Relationships		
H_1 International Entrepreneurial Culture → Ambidextrous Innovation	0.80	13.28**
H_2 International Entrepreneurial Culture → Marketing Capabilities	0.63	7.75**
H_3 Ambidextrous Innovation → Marketing Capabilities	0.30	3.76**
H_4 Ambidextrous Innovation → INV Performance	0.09	1.04
H_5 Dynamic Marketing Capabilities → INV Performance	0.87	9.57**
H_7 International Entrepreneurial Culture → INV Performance	−0.85	−0.46
Goodness-of-Fit Statistics:		
χ^2 (df) = 246.10 (123), $p < .000$, NFI = .94, TLI = .96, IFI = .97, CFI = .97, RMSEA = .059		
H_{6a} Moderation Test-Group Split at the median level of Environmental Dynamism	$\Delta^2 = 6.85$, $p < .01$	
Low-Intensity Group		
International Entrepreneurial Culture → Ambidextrous Innovation	0.62	5.43 **
High-Intensity Group		
International Entrepreneurial Culture → Ambidextrous Innovation	0.83	8.44 **
H_{6b} Moderation Test-Group Split at the median level of Environmental Dynamism	$\Delta^2 = 0.70$, $p > .05$	
Low-Intensity Group		
International Entrepreneurial Culture → Dynamic Marketing Capabilities		
High-Intensity Group		
International Entrepreneurial Culture → Dynamic Marketing Capabilities		
Control Variables		
Degree of Internationalization → INV Performance	−0.002	−0.07
Firm Size → INV Performance	−0.009	−0.27
Industry → INV Performance	−0.029	4.00

** $p \leq .01$.
* $p \leq .05$.

often plagued by larger firms. This allows INVs to continually pursue disruptive and incremental innovation activities simultaneously. These findings are consistent with the literature confirming entrepreneurial proclivities enable INVs to refine existing products as well as develop new products and marketing activities in international markets (Martin & Javalgi, 2016). Accordingly, an IEC promotes high-tech INVs' ability to utilize and recombine their resources effectively to develop new ideas and know-how needed to attract international customers. INVs leverage elements of an IEC (learning aptitude, proactive nature, market sensing, etc.) to develop marketing acumen that enables these firms to best understand 'who' their customers are and 'why' they will buy their offerings. Additionally, our findings suggest that dual innovation paths support the development of dynamic marketing capabilities, used to communicate with customers and utilize lessons learned to modify and enhance their competitive positions. In high-tech start-ups, the entrepreneur and/or executives define the product vision and then use marketing capabilities to find customers and a market for the vision (Blank & Dorf, 2012). The results further show that ambidextrous innovation and dynamic marketing capabilities support the linkage between IEC and INV performance. Collectively, these results begin to shine a light as to how resource-constrained INVs develop and sustain complex innovation and marketing activities. As a result, this study provides new insights to examine dynamic capabilities in INV research.

Second, is the non-significant relationship between ambidextrous innovation and INV performance. This is potentially interesting as previous scholars find support for the positive relationship between innovation and INV performance (Keskin, 2006; Hughes et al., 2010; Weerawardena, 2003). While we know that innovating firms generally outperform non-innovating firms, there may be limit as to the linear nature of the innovation - performance relationship, especially in the context of smaller INV firms. In line with resource constraints, innovation is resource consuming, even if some of the focus in on more incremental enhancements. Too great a focus on innovation will sap a firm's resources needed in other areas. An interesting avenue for future research would be to look at a non-linear relationship, specifically inverted u-shape. Non-innovating INVs and those that place too significant portion of resources towards innovation may underperform alike. However, INVs that commit a moderate level of effort towards innovation yet assign enough resources towards other critical activities (i.e. marketing), will be most successful.

The results of our study suggest ambidextrous innovation provides value potential to INVs. However, to realize value from this potential, INVs will need to invest in dynamic marketing capabilities. To explain this finding, we consider research that indicates marketing capabilities influence the linkage between innovation and performance (Arunachalam et al., 2018; Kyriakopoulos and Moorman, 2004). Larger, established firms can prioritize product and service innovation as they already understand their customer markets. Smaller, start-ups on the other hand, do not yet know who will buy their products and services and 'why' these customers will buy. Many successful high-tech start-ups follow a cycle of getting early iterations of products to market, measure progress, and learn from customers to determine next steps (Ries, 2011). This process requires marketing acumen to interact with customers in a way that enables INVs to modify and extend designs that better fit customers' needs and wants. We contend ambidextrous innovation provides the potential for superior performance; however, its effects on performance necessitate dynamic marketing capabilities to connect value propositions to potential customers. Considering the findings, ambidextrous innovation and dynamic marketing capabilities together mediate the IEC – INV performance relationship, it makes sense that ambidextrous innovation alone does not guarantee better performance for INVs (Table 6).

Third, the findings run counter to our prediction that IEC is positively linked with INV performance. An IEC explains how INVs conceptualize their competitive terrain and develop their competitive strategy to overcome their resource deficiencies while exploiting opportunities. As previously discussed, IEC is a collection of behaviors and processes that chart the course for INVs activities abroad. So, while it is an important contributor towards success in international markets, guiding principles alone do not result in a competitive advantage. In considering the high failure rate of start-up firms, many are entrepreneurial in nature. Those that survive and thrive, successfully transfer their IEC into actionable innovation and marketing skills necessary to develop a scalable, repeatable, and profitable businesses (Blank & Dorf, 2012).

Table 6
Total effects of IEC on INV performance.

	Standardized Loading	p-value
Direct effect	−0.01	ns
Indirect effect [a]	0.82	**
Indirect effect [ab]	0.86	**

[ab] Joint effects of IEC and marketing capabilities toward INV performance.
[ab] Joint effects of IEC, ambidextrous innovation, and marketing capabilities toward INV performance.
ns = not significant.
** $p \leq .01$.
* $p \leq .05$.

Fourth, when operating in unpredictable environments, an IEC becomes a key trait that enables INVs to develop offerings and strategies to create growth in new markets, while enhancing current offerings and processes in established markets. Therefore, an IEC is important in conceptualizing this landscape as it relates to projecting trends to successfully develop the next generation of products and services. Conversely, the findings reveal IEC is no more important for INVs nurturing dynamic marketing capabilities in turbulent markets as those that operate in more stable environments. This is interesting as the limited empirical research that explores the impact of turbulence in the relationship between entrepreneurship and marketing capabilities is contradictory to our findings (Martin & Javalgi, 2016). A possibility is that environmental dynamism drives IEC and dynamic marketing capabilities, which is consistent with recent findings regarding environmental dynamism – dynamic capabilities of INVs from emerging markets (Li & Liu, 2014; Teece, 2007). While scholars have begun to explore the impact of dynamism in the ambidextrous innovation – INV performance (Stock, Six, & Zacharias, 2013), and marketing capabilities – INV performance relationship (Cadogan et al., 2009), this study is one of few that attempts to explore how dynamism impacts the way in which entrepreneurship shapes ambidextrous innovation and dynamic marketing capabilities. In considering these results, we gain some understanding as to the utility of IEC in nurturing key innovation activities of high-tech INVs that experience environmental dynamism. However, additional research is warranted regarding the interplay of entrepreneurship, dynamic marketing capabilities, and external environmental conditions.

7.2. Managerial implications

The results of our research provide insights for INV managers as well. IEC is an organizational culture comprised of key traits, which enable INVs to succeed in spite of their resource constraints. An international vision forces INVs to uncover opportunities outside of their domestic borders. The entrepreneurship aspect supports their drive and propensity for taking risk in committing resources to the simultaneous pursuit of exploratory and exploitative innovation. The market sensing component allows INVs to better understand the needs of the market and how to counter potential competitors' actions. The network component enables INVs to leverage customers, suppliers and coopetition in ways that support their internationalization efforts. Lastly, the learning component facilitates INVs continuous innovation and resource

Table 7
Above- Versus Below- Median Performing INVs.

International Entrepreneurial Culture Dimensions	Above-Median Performer Mean (S.D.)	Below-Median Performer Mean (S.D.)	t-Value (Probability ≤)
International entrepreneurial orientation	6.36 (.67)	5.24 (1.07)	10.58 (.001)
International market orientation	6.44 (.62)	5.46 (.97)	10.14 (.001)
International motivation	6.46 (.69)	5.49 (1.08)	9.00 (.001)
International learning orientation	6.35 (.72)	5.43 (1.11)	8.30 (.001)
International competitor network orientation	6.30 (.79)	5.18 (1.23)	9.17 (.001)
International non-competitor network orientation	6.39 (.82)	5.28 (1.14)	9.39 (.001)
Explorative innovation	5.82 (.31)	5.23 (.91)	7.26 (.001)
Exploitative innovation	5.88 (.40)	5.28 (.88)	7.37 (.001)

Notes: S.D. = standard deviation

utilization. These key attributes allow INVs' to develop essential innovation and marketing skills to succeed.

While our sample-size limits an exhaustive SEM analysis as to the relationships between the dimensions of our higher-order constructs and INV performance, we offer additional insights. We split our sample at the median level of INV performance, into high- and low-performance groups, and examine the IEC and ambidextrous innovation dimensions (Table 7).

This analysis offers further support for the usefulness of an IEC. The results indicate that investments in all six dimensions lead to superior INV performance. Incorporating entrepreneurship, keeping a finger on the pulse of the market, looking abroad for opportunities, and building social capital should individually and collectively support INVs' success.

Additionally, the analysis suggests both exploitative and explorative innovation lead to stronger performance results. Our analysis indicates that high technology INVs should consider investment in innovation skills that simultaneously focus on delivering new product offerings and opening new markets, as well as developing incremental enhancements to existing offerings and processes. Young, hi-tech firms develop disruptive innovations that attract early adopters. However, these firms need to quickly develop incremental pivots to ensure their offerings continue to appeal to mainstream customers. Without such a competence, an INV's early growth success is likely to flatline and ultimately stall. Thus, simultaneous ambidextrous innovation is necessary to support INVs continued growth and survival.

While innovation is critical to success, managers need to develop marketing acumen to communicate INVs' value proposition in effort to attract customers. Such skills enable INVs to communicate value and obtain feedback from customers as to make the necessary and timely decisions to pursue or pivot on their offerings. These smaller, resource-constrained firms typically do not possess a wealth of skilled marketing personnel. Therefore, INVs must be resourceful in effectively combining and adapting available marketing resources to promote the firm's offerings to best meet the evolving needs of prospective customers. INV managers in their early stages, should develop a set of dynamic marketing skills. Accordingly, INV managers should consider the synergy between innovation and marketing capabilities.

7.3. Limitations and future research

Several limitations of the present research provide opportunities for further scholarly investigations. The essence of emerging economies is that they are dynamic, so it is necessary to take into account these market changes. Thus, our use of cross-sectional research design and self-reported survey data may limit the conclusions that can be drawn relative to other research designs and methods. A longitudinal study would allow firms to be studied over time to provide a clearer picture of the causal effects of IEC, ambidextrous innovation, and dynamic marketing capabilities on INV performance. Second, data were collected from high-tech INVs from India. It is not certain to what extent the study findings are generalizable to other contexts. We advise future research to collect data from several regions to validate our findings. Third, we are unable to follow-up with respondents as Qualtrics does not provide respondents contact details, citing proprietary reasons. While this is a limitation, we are confident in the reputation of Qualtrics to provide quality of responses.

The current research utilizes a dynamic capabilities paradigm to highlight the importance of an IEC in fostering ambidextrous innovation and dynamic marketing capabilities, and their collective interplay in driving the performance of high-tech INVs. As previously discussed, an IEC is more present in INVs as compared to traditional exporters (Zhang et al., 2009). While the current research has begun to examine antecedent factors of key innovation and marketing capabilities, it would be equally useful to better understand how INVs develop an IEC. An examination of the traits and experiences of the entrepreneur(s) and key executive(s), through the lens of upper echelon theory (Hambrick & Mason, 1984), could prove useful in identifying how such unique firm culture is nurtured. Likewise, international business research explains how institutional factors impact international strategies of firms', especially those originating from emerging markets (Peng, Wang, & Jiang, 2008). In exploring how INVs from emerging markets develop an IEC, we suggest bringing forward an institutional-based view to examine the potential impact of contextual factors. The accelerated rate at which many emerging markets evolve in terms of market liberalization (i.e. competition), technological advances, and growing middle classes (i.e. consumer preferences), potentially shapes the guiding principles and approaches of new global start-ups. Additionally, this study provides insights into the performance outcomes of ambidextrous innovation and dynamic marketing capabilities of INVs. Dynamic capabilities are characterized as higher-order capabilities and process that support operational capabilities (Teece, 2012). While this aspect of dynamic capabilities has been examined in larger firms (Wilden & Gudergan, 2015), future studies should first examine if this phenomenon holds in the INV context, and second, the types of operational capabilities that emanate from ambidextrous innovation and dynamic marketing capabilities. Lastly, many INVs faced with limited or saturated domestic markets necessitate a unique constellation of dynamic capabilities to quickly establish overseas markets and build a foundation for sustainable growth (Cesinger, Fink, Madsen, & Kraus, 2012). Accordingly, future research should also examine the relationships between foundational dynamic capabilities identified in this study towards early (speed and scale) internationalization of INVs. This analysis will further enrich the INV literature as early internationalization is the defining characteristic of INVs.

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