The Bright and Dark Sides of Domestic and International Collaborations: The Effects of Exploitation-Focused and Exploration-Focused Innovations on Export Performance

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The Bright and Dark Sides of Domestic and International Collaborations: The Effects of Exploitation- and Exploration-Focused Innovations on Export Performance

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Statement of Copyright

Declaration

I declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where states otherwise by reference or acknowledgment.

Yu Li (Rebecca) 2018.06.30

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Abstract

Research Summary

This study questioned whether exploitation and exploration were both "panaceas" for export performance by developing an integrated theoretical model that drew on explanations from innovation ambidexterity and the internationalization process literature. It was assumed that exploitation- and exploration-focused innovation follow two distinctive paths: efficiency-enhancing versus demand-expansion, which help explain their export performance heterogeneities. The study further investigated the implications of the geographical (i.e. domestic vs. international) proximity of knowledge-sourcing strategies in influencing the effects of exploitation- and exploration-focused innovations on export performance. Based on 852 exporting firms from the UK Community Innovation Survey (CIS) between 2010 and 2014, the investigation found opposing relationships with regards to the impact of exploitation- versus exploration-focused innovations on export performance and significant interactions in terms of the breadth of domestic and international collaborations.

Managerial Summary

One of the principal challenges export managers face is understanding how exploitation- and exploration-focused innovations differently contribute to export performance. The results suggested that exploration-focused innovation boosts export performance whereas exploitation-focused innovation negatively impacts it. In addition, this study unmasked domestic and international collaborations as being double-edged; that is, they serve as a magnifying glass, amplifying the negative and positive effects of exploitation- and exploration-focused innovations on export performance, respectively. Consequently, exporting firms need to open up innovation

to domestic and international partners when developing exploration-focused innovation but concentrate on in-house innovation when developing exploitation-focused innovation.

Keywords: *Innovation ambidexterity; International Business; Knowledge Sourcing; Domestic collaboration; International collaboration.*

Chapter 1. Introduction

Innovation and export become inseparable when an increasing number of companies set up ex-ante strategic objectives in pursuing the former, specifically targeting business opportunities in international markets (Filipescu, Rialp, & Rialp, 2009; Hortinha, Lages, & Lages, 2011; Love & Roper, 2015) We distinguish between two paths by which exploitation- and exploration-focused innovations affect export performance. Exploitation-focused innovation refers to refinement-led actions required to improve existing product–market domains (March, 1991) and follows an efficiency-enhancing path aimed at extending the life cycle of well-established but highly limited current product-market solutions. In contrast, exploration-focused innovation refers to discovery-led actions required to enter new product–market domains (He & Wong, 2004) and follows the demand-expansion path aimed at accepting emerging customer needs or creating demand abroad via a new and broadened product portfolio (Scalera, Perri, & Hannigan, 2018).

Despite the fact that past studies have examined both exploitation- and exploration-focused innovations (Love & Mansury, 2009; Scalera, et al., 2018), the following gaps remain in the literature. First, prior empirical research has predominantly associated ex-post innovation outcomes with decisions to export but has overlooked the connection between the strategic intent of the innovation and export performance heterogeneity (Cassiman & Golovko, 2011). We argue that exploitation- and exploration-focused innovations exert opposite influences on export performance due to the distinctive efficiency-enhancing versus demand-expansion paths that they each follow. This matter is of concern not only because the two innovation strategies are primarily used to overcome the liability of foreignness in the international markets, which are diverse with respect to customer needs, cultures, and competitiveness

(Hortinha, et al., 2011; Hughes, Martin, Morgan, & Robson, 2010; Lisboa, Skarmeas, & Lages, 2011, 2013) but also because international market conditions may shape firms' specific innovation activities differently (Jansen, Van Den Bosch, & Volberda, 2006).

Second, few studies have explicitly examined knowledge sourcing strategies on the efficacy of exploitation- or exploration-focused innovations in influencing export performance. Organizational learning theory emphasizes a company's ability to acquire, disseminate and apply knowledge to improve export performance (Argote & Ingram, 2000; Fernández-Mesa & Alegre, 2015). Although past innovation ambidexterity studies have explored a few notable internal contingency factors relating to learning activities – e.g. social capital (Atuahene-Gima & Murray, 2007), collaborative technological activities (Belderbos, Faems, Leten, & Looy, 2010), existing knowledge stock (Wu & Shanley, 2009) and absorptive capacity (Rothaermel & Alexandre, 2009), the roles of external knowledge sourcing strategies have been largely ignored.

This gap is further compounded by the fact that scholars have failed to consider the geographical proximity (i.e. domestic vs. international) of knowledge-sourcing strategies. Domestic and international collaborations are important sources of external knowledge for innovation (Scalera, et al., 2018) and are highly relevant for international business because they relate to the fact that domestic and international partners are embedded in separate national innovation systems and which differ significantly in their institutional proximities (Beers & Zand, 2014; Frenz & Ietto-Gillies, 2009).

To address the aforementioned gaps, a sample of UK firms obtained from the

eighth and ninth wave of the UK Community Innovation Survey (CIS) database was used to specifically investigate: (1) the impacts of exploitation- and exploration-focused innovations on export performance; and (2) how the relationships between (a) exploitation-focused innovation and export performance and (b) exploration-focused innovation and export performance depend on the breadth (low vs. high) of domestic and international collaborations.

Our research herein contributes to the literature in two ways. Firstly, it closely interweaves the ex-ante strategic intent of innovation into the context of export. We identify the opposing consequences of exploitation- and exploration-focused innovations on export performance, thus challenging the viability of the simultaneous pursuit of exploitation-exploration (Mueller, Rosenbusch, & Bausch, 2013). In comparison with extant studies that have focused primarily on the link between innovation outcomes and internationalization (Cassiman & Golovko, 2011; Filipescu, Prashantham, Rialp, & Rialp, 2013), we propose that the key motive for initiating innovation is driven by two distinct paths: the efficiency-enhancing path (exploitation-focused innovation), which is detrimental for export performance; and the demand-expansion path (exploration-focused innovation), which is beneficial for export performance. As such, this research deepens the understanding of the importance of strategic intent in innovation for firms wishing to improve export performance.

Secondly, this study advances the context-based refinement of the relationship between exploitation-focused/exploration-focused innovations and export performance by considering the breadth of domestic and international collaborations as moderators. This breadth of collaborations refers to the variety of external sources

that firms rely upon in their innovative activities (Laursen & Salter, 2006). Through this enriched framework, we made an attempt to respond to the call for research examining a more micro-level model of exploratory and exploitative learning by considering the moderating role of geographic knowledge-sourcing strategies (Belderbos, et al., 2010; Gupta, Smith, & Shalley, 2006; Wu & Shanley, 2009; Zhang, Wu, & Cui, 2015). Specifically, within the literature on geographic knowledge sourcing, the international business literature has focused on international knowledge sourcing, while the economic geography literature believes knowledge sourcing remains localized (Scalera, et al., 2018). However, both research streams are limited by the assumption that knowledge-sourcing strategies remain unchanged rather than that they are aligned with innovation strategies in order to improve export performance. This paper argues that what is more important is to orchestrate the type and breadth of collaborations for particular innovation strategies so as to achieve the desired export performance. By doing so, we challenge the "collaboration-fits-all" approach for innovation (Hottenrott & Lopes-Bento, 2016) and testify against the widespread perception that increasing the variety of knowledge sources is always positive in innovation (Ahuja & Katila, 2004).

The paper is organized thus: firstly, a theoretical background and conceptual framework are presented, based on an overview of the relevant literature. This is followed by the proposed hypotheses. The next section introduces the data sources and methodology applied in the study and presents the empirical findings. The paper concludes with a discussion of the study's implications and limitations, and proposes future research directions.

Chapter 2. Theoretical Backgrounds and Conceptual Framework

2.1 Exporting led by exploitation- and exploration-focused innovations

Prior research has found that following a strategy of innovation is the principal stimulus that drives a firm to engage in export activities (Hitt, Hoskisson, & Kim, 1997; Leonidou, Katsikeas, Palihawadana, & Spyropoulou, 2007). March (1991) develops a framework that classifies innovation strategies as exploitation and exploration based on differences in their strategic intents, processes, and returns. Exploitation-focused innovation emphasizes the improvement of a firm's existing product–market efficiency via incremental improvements (Feldman & Kanter, 1965; He & Wong, 2004; March, 1991; Mueller, et al., 2013). It maximally extracts the benefits of existing products and services within their product life cycles using minimal resource commitments (Lu, Zhou, & Wang, 2016) through streamlining organizational processes and variance-reduction (Fiol & Lyles, 1985; Zhang, et al., 2015). Therefore, exploitation-focused innovation captures the efficiency-enhancing path effect of innovation on export performance.

Meanwhile, exploration-focused innovation emphasizes new product–market domain expansion through the research, discovery, and experimentation of radically new products and services (He & Wong, 2004; March, 1991). It addresses new customer needs or creates demands that go beyond existing products and services (Jansen, et al., 2006; Mueller, et al., 2013) through novel reconfiguration of organizational resources and processes (Zhang, et al., 2015). Therefore, exploration-focused innovation captures the demand-expansion path effect of innovation on export performance.

The stream of research on organizational ambidexterity has been devoted to balancing the simultaneous pursuit of exploitation-exploration and methods of

alleviating the tension between the two to achieve superior performance (Benner & Tushman, 2003; Jansen, et al., 2006; Tushman & O'Reilly III, 1996). Some studies have found a positive interaction between exploitation and exploration strategies on a firm's sales growth (He & Wong, 2004) whereas others have found a negative association (Atuahene-Gima, 2005). Hughes, et al. (2010) extended the innovation ambidexterity hypothesis to international high-technology new-venture firms and found innovation ambidexterity to be a fundamental enabler of international success. The focus of this paper is not on generalizing the mutually reinforcing interactive effects of exploitation- and exploration-focused innovations on export decision/performance but on contributing to a distinction between their independent influences on export performance via an examination of their different mechanisms – namely the efficiency-enhancing versus the demand-expansion path.

2.2 The complementarity between innovations and collaborations

Organizational learning theory suggests that firms accumulate knowledge from internal learning activities or external searching (Huber, 1991). According to path-dependency logic, knowledge is accumulated following an established path or within a technology trajectory (Dosi, 1982), so that it is intrinsically limited by the degree to which a firm can innovate through recombinant uses of its existing knowledge sets (Carnabuci & Operti, 2013). Hence, the effectiveness of exploitation- and exploration-focused innovations hinge critically on knowledge-sourcing strategies. Inter-organizational collaborations help firms to "break-free" from path dependency as well as to counteract their liability of "outsidership" and foreignness related to international activities (He & Wei, 2013; Johanson & Vahlne, 2009).

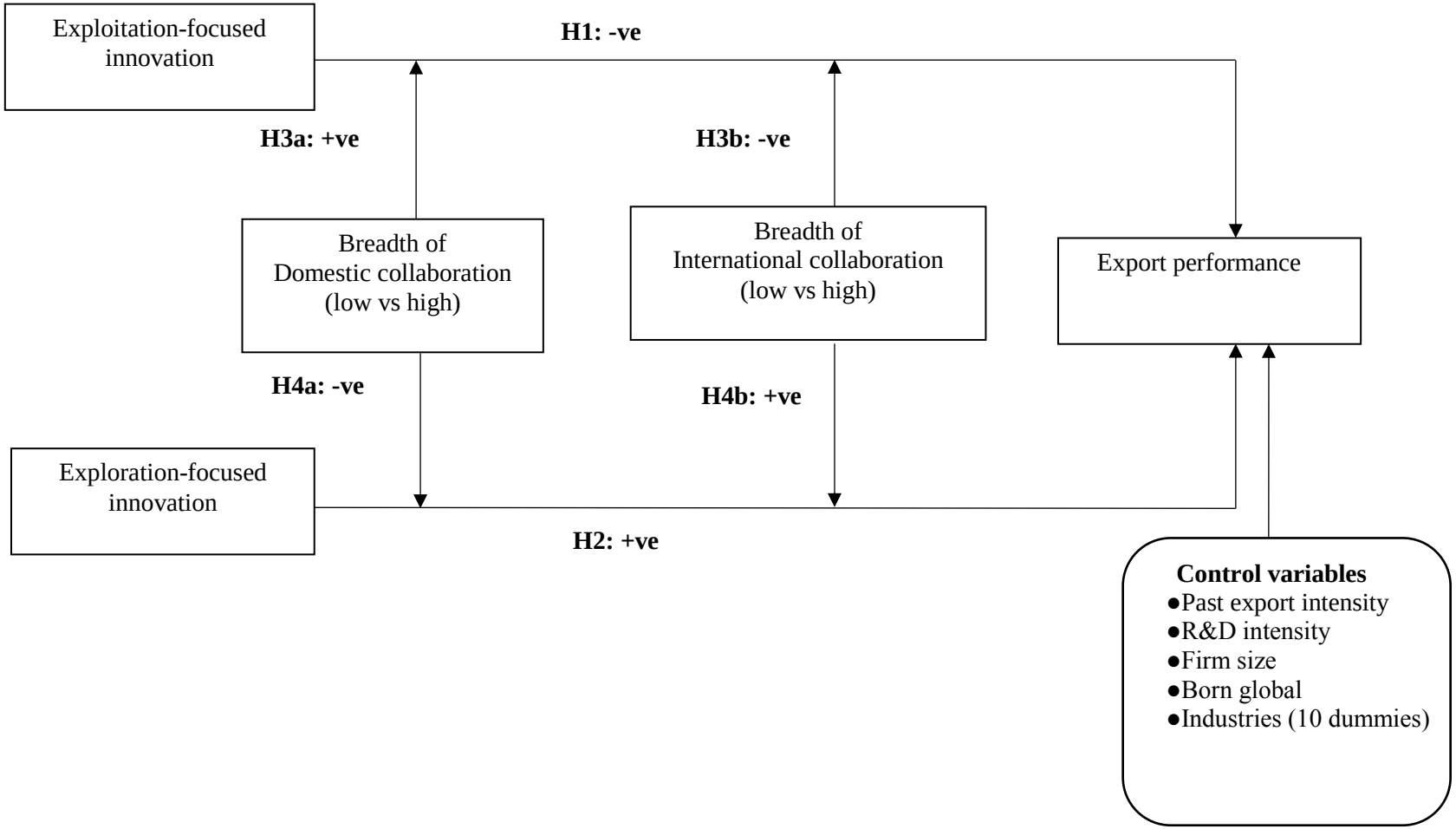
With the expansion into international markets, linkages with other firms are frequently overturned or rebuilt, market conditions and customer preferences are radically shifted, and existing knowledge becomes quickly obsolescent (Li, Chu, & Lin, 2010). Geographic knowledge-sourcing strategies and their breadth have unique implications on the ability of a firm to integrate new knowledge inputs into its innovation process (Scalera, et al., 2018). Recent research suggests that the level of innovation novelty is associated with the geographic location of partners (Hsieh, Ganotakis, Kafouros, & Wang, 2018). Domestic and international collaboration can be used as complementary strategies for exporting firms wishing to acquire knowledge in order to develop exploitation- and exploration-focused innovations; however, the current understanding of the effects of geographic knowledge-sourcing strategies in developing exploitation- and exploration-focused innovations by exporting firms is limited.

Domestic and international partners differ widely in their national innovation systems, managerial practices, norms, and values so that they have distinctive influences on knowledge recombination processes and need to be treated separately (Lu, et al., 2016; Scalera, et al., 2018) – specifically, domestic collaboration involves a knowledge search within a firm's national boundaries (Wu & Wu, 2014) but has the benefit of easily-formed and well-communicated relationships (Patel, Fernhaber, McDougall-Covin, & Van der Have, 2014). Nevertheless, being derived from the same innovation system of which the firm is a part, domestic collaboration places constraints on the novelty of knowledge combinations (Hsieh, et al., 2018) and can induce inertia, which hold firms back from implementing fundamental changes to their underlying processes, routines, and structures (Hsieh, et al., 2018; Wu & Wu, 2014).

International collaboration involves a knowledge search beyond the firm's national boundaries. Diversities embedded in this type of collaboration may cause excessive information noise because (1) cross-country collaboration faces greater coordination challenges and risks of misappropriation (Hsieh, et al., 2018); and (2) a different institutional regime often confounds different economic, institutional, and cultural structures, as well as foreign practices (Wu & Wu, 2014). As such, a high breadth of international collaboration can create exponentially increasing difficulties and challenges (Wirsich, Kock, Strumann, & Schultz, 2016). Nonetheless, international collaboration allows firms to access partners with heterogeneous knowledge and potentially more advanced or specialized technologies from separate national innovation systems (Hsieh, et al., 2018; Wu & Wu, 2014). A high breadth of international collaboration offers an extended knowledge base with greater possibilities of identifying novel ideas (Hsieh, et al., 2018).

To summarize, this study examined the impact of exploitation- and exploration-focused innovations on export performance. Moreover, we proposed that the breadths (low or high) of the different types of collaboration (domestic or international) have different moderating effects on the relationship between exploitation/exploration-focused innovations and export performance (see Figure 1).

Figure 1. Conceptual model



Chapter 3. Hypothesis Development

3.1 Exploitation- and exploration-focused innovations on export performance

Exploitation-focused innovation frequently reviews information available on current customer requirements, existing markets, competitive products and services in current market domains, and established market linkages (Lisboa, et al., 2013). This periodic review targets the efficient utilization of a firm's current expertize and knowledge such that its existing products, services, or methods can be adapted to reinforce existing customer loyalty (Dasí, Iborra, & Safón, 2015). However, exploitation-focused innovation creates highly limited product-market solutions bounded within the firm's current experience and, hence, can lead to the potential exhaustion of recombination possibilities (Aharonson & Schilling, 2016; Atuahene-Gima & Murray, 2007).

As a firm's knowledge stock reaches its inherent limits, not only do the costs of each marginal improvement increase but uninspired products are more likely to be developed (Aharonson & Schilling, 2016; Santos, Doz, & Williamson, 2004) due to experiential and proximate knowledge emphasized by exploitation-focused innovation continually losing its degree of novelty – i.e. it is discounted against time (Aharonson & Schilling, 2016). As the existing knowledge repertoire becomes increasingly ineffective and inflexible with regard to solving problems and accommodating changes in the turbulent international market (Li, et al., 2010; Wang & Li, 2008), weakened export performance is expected.

Exploitation-focused innovation is also linked to the benefits of experience-based learning curves, upon which firms make improvements to their operational efficiency and quality management with reduced risks and errors (Atuahene-Gima & Murray, 2007; Piao & Zajac, 2015; Voss, Sirdeshmukh, & Voss, 2008). This said, such

incremental improvements may be inadequate for extending the life cycles of existing product/service offerings in the dynamic international market. Of the amassed timely market and technological information gained through learning-by-exporting (Salomon & Shaver, 2005), exploitation-focused innovation purposely filters out unfamiliar information requiring additional resources for absorption. This can be dangerous because exploitation-focused innovation is self-reinforcing in the sense that it deliberately shapes a firm's internal environment according to the bias that current behavior is most desirable (Hughes, Hughes, & Morgan, 2007). This efficiency-emphasized path can lead to firms specializing in inferior routines that are suboptimal in accommodating constant changes in the international market. Thus, we suggest the following hypothesis:

H1. Exploitation-focused innovation is negatively associated with export performance.

Exploration-focused innovation engages heavily in the expansion of knowledge bases for new products, ideas, markets, or relationships to search for greater demand or to create it anew in the foreign markets (Dasí, et al., 2015; Hortinha, et al., 2011). Inflows of technological and market information that are beyond the current experiences of the firm facilitate the identification of problems and distinctly increase problem-solving competency during the product development process (Levinthal & March, 1993; Wu & Shanley, 2009). This supports exporting firms' implementation of new broadened product/service solutions with a wider range of export prices to meet the demands of changing international markets (Boso, Story, Cadogan, Micevski, & Kadic-Maglajlic, 2013; Manova & Zhang, 2012).

Exploration-focused innovation is also necessary for creating demand abroad by continually differentiating products and solutions from competitors' offerings (Fiol & Lyles, 1985; Katila & Ahuja, 2002). Firms that pursue pronounced and influential innovations with the highest possibility of attaining positions of market and technological leadership (Wu & Shanley, 2009) are able to drive export market demands by addressing and shaping customers' preferences more effectively than existing products or services (Boso, et al., 2013). Such innovations enjoy a prolonged period of first-mover advantage, along with a price premium paid for superior user experience, which contributes to high returns (Mueller, et al., 2013). Therefore, exporting firms relying on exploration-focused innovation gain from greater novelty effects; this creates new demand in the export market and is expected to lead to superior export performance. Thus, we suggest the following hypothesis:

H2. Exploration-focused innovation is positively associated with export performance.

3.2 Exploitation-focused innovation: Domestic and international collaboration contingencies

Firms developing exploitation-focused innovation are efficiency-oriented and hence less tolerant of information noise (Rowley, Behrens, & Krackhardt, 2000). They assimilate familiar knowledge bases to secure efficiency (Hortinha, et al., 2011; Lisboa, et al., 2011), preparing exportable, market-ready innovations within the shortest possible time. In this case, domestic collaboration mitigates the negative impact of exploitation-focused innovation on export performance by offering a manageable "twist" in terms of knowledge recombination possibilities. Specifically, domestic collaborators share the

same institutional framework with the focal firm in terms of sets of common habits, routines, established practices, the institutional environment and competitive demands (Boschma, 2005; Sirmon & Lane, 2004), which requires less effort from partners when connecting with each other. Along with a common language, exploitation-focused innovation enhances interactions among firms in such a way that new knowledge can be readily understood and absorbed by the recipients without delay (Tunisini, Bocconcelli, & Pagano, 2011).

A high breadth of domestic collaboration further increases alternative and valuable combinations of knowledge, which complements exploitation-focused innovation for guarding export sales. Commonly seen in domestic collaborations is the sharing of joint distribution strategies and marketing delegations for foreign markets (Felzensztein, Stringer, Benson-Rea, & Freeman, 2014); reliable local referrals that optimize the use of local sourcing, such as labor, materials, half-made parts, and R&D acquisition; direct face-to-face contact; immediate on-the-spot assessment; and personnel mobility. Access to more of these options is privileged when a rapid and flexible response is requested to build an agile supply chain (Tunisini, et al., 2011), further reducing the costs of each marginal improvement in relation to exploitation-focused innovation. Based on the above arguments, we propose the following:

H3a: Domestic collaboration mitigates the negative relationship between exploitation-focused innovation and export performance.

Conversely, international collaboration intensifies the negative impact of exploitation-focused innovation on export performance. International collaborators share a heterogeneous institutional framework in terms of sets of languages, common

habits, routines, established practices, rules or laws (Boschma, 2005; Erkelens, van den Hooff, Huysman, & Vlaar, 2015). Although distant institutional proximity allows firms to tap into knowledge exhibiting multinational diversity (Wu & Wu, 2014), international collaboration that is too great and too diverse introduces excessive information noise, which reduces the efficiency of knowledge search (Kotabe, Dunlap-Hinkler, Parente, & Mishra, 2007). On the one hand, a high breadth of international collaboration incurs exponentially increasing coordination costs associated with the creation of trust and elimination of task disagreements (Pesch & Bouncken, 2018) and misunderstandings due to limited face-to-face meeting opportunities (Kafouros, Buckley, Sharp, & Wang, 2008; Wirsich, et al., 2016), further hampering the efficiency of knowledge exchange. On the other hand, the integration of international collaboration sources that are too numerous or heterogeneous is constrained by a firm's limited capabilities and managerial attention (Laursen & Salter, 2006; Wirsich, et al., 2016), hampering the ability to fully exploit the potentials of each collaboration source (Wirsich, et al., 2016). Consequently, broad international collaboration is unjustifiable for exploitation-focused innovation considering it risks harming a firm's core competencies by raising the costs of each marginal improvement as well as impairing the speed of information processing, which results in missed export market opportunities targeting existing customers. Thus, we suggest the following:

H3b: International collaboration intensifies the negative relationship between exploitation-focused innovation and export performance.

3.3 Exploration-focused innovation: Domestic and international collaboration contingencies

Although domestic collaboration can be easily established given the close institutional proximity between partners, the inward-looking characteristics of such proximity, however, raise the problem of institutional inertia (Boschma, 2005) when exploring new demand abroad. Players residing in the same national innovation system are highly routinised and conservative due to their interdependent structural positions (Boschma, 2005). This is less likely to stimulate changes in a firm's underlying processes, routines, and structures (Hsieh, et al., 2018; Wu & Wu, 2014). Multiple types of domestic collaboration only intensify the self-reinforcing interaction between firms (Narula, 2002). The resultant technology lock-in can transform a firm's core competencies into core rigidities if the current competencies are sustained irrespective of changes in demand occurring in the foreign market (Wu & Wu, 2014).

Furthermore, technological specialization patterns are distinct across countries (Narula, 2002) and broad domestic collaboration is, therefore, more likely to offer redundant knowledge due to innovation system overlaps (Garcia Martinez, Zouaghi, & Sanchez Garcia, 2018; Wirsich, et al., 2016). This situation obstructs novel knowledge combinations for exploration-focused innovation, making disruptive product offerings less likely. As such, domestic collaboration hinders the development of exploration-focused innovation that requires completely new knowledge and skills, new organizational arrangements, or new institutions (Boschma, 2005). As a result, domestic collaboration can erode the distinctiveness of exploration-focused innovation that can drive sales in the export market. This leads us to the following hypothesis:

H4a: Domestic collaboration weakens the positive relationship between

exploration-focused innovation and export performance.

International collaboration offers diverse and specialized forms of knowledge stemming from separate innovation systems abroad (Hsieh, et al., 2018) such that the ideas, perspectives and technologies being offered differ considerably in sophistication and characteristics compared to those available domestically (Beers & Zand, 2014; Kafouros & Forsans, 2012). Such heterogeneous knowledge provides more potential opportunities for truly novel and valuable combinations of knowledge by evoking "kaleidoscopic thinking" (Jung, 2016; Wu & Wu, 2014; Zhou & Li, 2012). Kaleidoscopic thinking denotes behaviors that link to a combination of knowledge bases from a variety of disciplines and heterogeneous market domains in unprecedented ways, which generate breakthrough ideas (Wu & Shanley, 2009; Zhou & Li, 2012). Having a greater number of combination opportunities enhances the performance benefits of exploration-focused innovation by generating novel insights relating to problem identification, formulation, and solution (Wu & Shanley, 2009). This helps firms to overcome their embeddedness in existing search trajectories and gives rise to innovation breakthroughs, creating new demand in the export market. Broad international collaboration further contributes to exploration-focused innovation by way of nation-specific resources, providing firms with access to specialized workforces, specific foreign clusters, and institutional communities at the technology frontier with an international outlook (Beers & Zand, 2014; Chung, Yang, & Huang, 2015). As optimal expertise is sourced in the process of exploration-focused innovation, this innovation strategy is more likely to achieve a competitive position for a firm, and one which its rivals in the foreign market cannot easily imitate.

Moreover, broad international collaboration increases the probability of detecting new technological trends or blind spots (Wirsich, et al., 2016) through involving more players directly from the export market-specific innovation system. This assists a firm in adapting its products to specific requirements, preferences and industry developments in the foreign market (Garcia Martinez, et al., 2018; Wu & Shanley, 2009). In addition, through broad international collaboration, firms can access an abundance of direct and reciprocal feedback regarding the design of new features and processes (Salomon & Shaver, 2005), which enhances the compatibility of exploration-focused innovation with foreign customers' needs, thereby leading to superior export performance. Thus, we suggest the following:

H4b: International collaboration strengthens the positive relationship between exploration-focused innovation and export performance.

Chapter 4. Research Methodology

4.1 Data

Two waves of the firm-level UK Community Innovation Survey (CIS8 and CIS9) conducted by the UK Office for National Statistics covering the years 2010 to 2014 are employed to test the framework proposed in this research. Covering all manufacturing sectors and most private services as well as small, medium, and large firms, the CIS reports provide the most comprehensive data in terms of the range of firms surveyed (Frenz & Ietto-Gillies, 2009). The survey was voluntary and conducted every two years, with an average sample size of approximately 29,000 firms with ten or more employees via a postal questionnaire and a follow-up telephone interview for businesses that had not yet completed a postal response. A response rate of 51 percent was achieved in both CIS8 and CIS9. The responses were weighted back to the total business population of those in the Inter-Departmental Business Registration (IDBR). They were not weighted by factors that would give more weight to larger firms, such as employment or turnover, in order to further ensure its representativeness of the UK enterprise population (Tsinopoulos, Sousa, & Yan, 2018). Moreover, all the information contained in the surveys is subject to strict controls for validity and consistency, and the surveys have been used extensively by academics owning to their insight into firm-level innovation activities (Iona, Leonida, & Navarra, 2013; Laursen & Salter, 2006).

A frequently accepted period for the effect of an innovation to materialise is two years (Salomon & Shaver, 2005; Tsinopoulos, et al., 2018). Therefore, our independent variable (exploitation-focused and exploration-focused innovations), moderating variables, and control variables are measured using CIS8 (which covers the years 2010 to 2012), while our dependent variable is lagged by one survey period (two years) and is

measured using CIS9 (specifically, the export sales value in the year 2014).

The obtained sample constitutes an unbalanced panel because a stratified design drawn from the IDBR with a Neyman allocation is used to determine the sample size in each stratum. Overall, roughly 10 percent of the target population is sampled in each survey, and the firms constituting the sample vary across the surveys. Since this study specifically targets exporting firms, we identify them as companies reporting a positive value of export sales. A final sample of 852 exporting firms is obtained, with an average of 236 employees and covering several industries (see Table 1).

4.2 Variables and measures

Our measures are based on previous research. Table 1 provides information regarding the operationalization of the different constructs.

Table 1. Measurement of constructs

Construct	Measurement
Exploitation-focused innovation *(CIS8)*	"During the 3 year period, how important were each of the following factors in your decisions to innovate in goods or service and/or processes?" (1 ="low", 2 = "medium" and 3 = "high"). EXPLOIT1: Improve quality of goods or services EXPLOIT2: Improve flexibility for producing goods or services EXPLOIT3: Improve capacity for producing goods or services EXPLOIT4: Reduce cost per unit produced or provided
Exploration-focused innovation *(CIS8)*	"During the 3 year period, how important were each of the following factors in your decisions to innovate in goods or service and/or processes?" (1 ="low", 2 = "medium" and 3 = "high"). EXPLORA1: Increase market share EXPLORA2: Increase range of goods or services EXPLORA3: Enter new markets EXPLORA4: Increase value added
Breadth of domestic collaboration *(CIS8)*	"During the 3 year period, did your business co-operate on any innovation activities with any of the following?" Firms confirm having such cooperation in any of the two geographical areas ("UK regional", "UK national") with any of the seven partners listed below are coded as 1 or 0 otherwise. Subsequently, the seven types of domestic collaboration are added up so that a higher number indicates the breadth of domestic collaboration is higher.
Breadth of international collaboration *(CIS8)*	"During the 3 year period, did your business co-operate on any innovation activities with any of the following?" Firms confirm having such cooperation in any of the two geographical areas ("European Countries", "Other Countries") with any of the seven partners listed below are coded as 1 or 0 otherwise. Subsequently, the seven types of international collaboration is added up so that a higher number indicates the breadth of international collaboration is higher. *Partners list: (a. suppliers of equipment, materials, services or software; b. clients or customers from the private sector; c. clients or customers from the public sector; d . competitors or other businesses in your industry; e. consultants, commercial labs, or private R&D institutes; f. universities or other higher education institutions; g. government or public research insti*tutes)
Export performance *(CIS9)*	Natural logarithm of export sales volume
Control Variables (CIS8)	
Past export intensity	Share of export sales over total sales
R&D intensity	R&D expenditures divided by total sales
Firm size	Natural logarithm of total number of employees
Born Global	A score of 1 is given to exporting firms established in 2010–2012 period and 0 otherwise
Industry Dummies	A score of 1 is given to firms operating in each of the 10 industries and 0 for those who do not respectively

Dependent variable. Our empirical model measures firms' export performance by the logarithm of export sales volume (Golovko & Valentini, 2011). The total value of exports (in thousands of GBP) for the year 2014 from CIS9 is used. A log transformation is applied to address the negative skewness.

Independent variables. The operationalizations of exploitation-focused and exploration-focused innovations are adapted from He and Wong (2004) to reflect the emphasis either on improving existing product–market domains or entering new product–market domains, in a firm's decision to innovate, which should be stable for three years (He & Wong, 2004; Li & Atuahene-Gima, 2001). We therefore based our measures on CIS8 covering the 2010–2012 period, to capture the all-round characteristics of a firm's exploitation-focused and exploration-focused innovations.

Moderator variables. We elaborate on Frenz and Ietto-Gillies (2009) and introduce two variables from CIS8 (covering the years 2010 to 2012), reflecting the breadth of domestic and international collaborations. Breadth of domestic collaboration is measured by adding the number of external parties with which firms report co-operating on a UK regional or national basis, while breadth of international collaboration is measured by adding the number of external parties with which firms report co-operating on an international (outside the UK) basis.

Control variables. We control for past export intensity, R&D intensity, firm size, born-global, and ten industry dummies to address concerns of the potential endogeneity of the exploitation-focused and exploration-focused innovation measures and other firm-level unobserved heterogeneity, all based on questions from CIS8. Past *export intensity* is measured as the share of export sales over total sales in the year 2012 (Monreal-Pérez, Aragón-Sánchez, & Sánchez-Marín, 2012). This captures firms'

previous international market involvement. Prior studies have shown that the extant intensity of the interactions between a firm and foreign markets influences the development of following international operations and the creation of new experimental knowledge that can contribute to better export performance (Papadopoulos & Martín, 2010). Controlling this lagged level of international market involvement also addresses potential dynamic effects (Abdallah, Goergen, & O'Sullivan, 2015). *R&D intensity*, measured as R&D expenditures divided by total sales in the year 2012 (Chen, Huang, & Lin, 2012), is controlled for because firms with a strong focus on internal technological development are more successful in the export market (Wang, Cao, Zhou, & Ning, 2013). We also include *firm size* as a control variable, measured as a logarithm of the firms' number of employees (Yi, Wang, & Kafouros, 2013). Furthermore, being young, born-global firms may lack substantial financial, human, and physical resources (Knight & Cavusgil, 2004) and the relevant experience required to fulfil export orders in a timely and efficient manner. To capture this effect, we include *born global* as a control variable, coded as 1 if the exporting firm was established in the period 2010–2012, and 0 otherwise. Finally, we also control for *industry* (ten industry dummies are generated), because the type of industry within which a firm competes has the potential to determine the firm's export performance (Boso, Cadogan, & Story, 2012).

4.3 Method of analysis

We used Structural Equation Modelling (SEM) in Stata 14.0 to test our hypotheses. This is most appropriate when the research model is driven by strong theoretical foundations (Richter, Sinkovics, Ringle, & Schlägel, 2016), as in our case. It offers three further advantages over conventional regression and causal path analyses. Firstly, it allows the use of latent constructs with multiple indicators to measure exploitation-focused and exploration-focused innovations, which is consistent with He and Wong's (2004) modelling of exploitative and explorative innovation as latent variables. Secondly, SEM allows the simultaneous estimation of multiple relationships between observed and latent constructs, and accounts for measurement errors (Ambos, Andersson, & Birkinshaw, 2010). Finally, it enables us to conduct multi-group analyses for the moderation analysis (Chi & Sun, 2013; Richter, et al., 2016). We first conducted a confirmatory factor analysis assessing the validity of the measurement model and the discriminant validity of individual constructs (exploitation-focused and exploration-focused innovations). Secondly, we fit a structure model to estimate the path coefficients for the control variables and the main effects concerning H1 and H2.

For H3a and H4a, a multi-group approach was adopted to test the interaction effects (Boehe & Cruz, 2010). We split the sample into two groups, using the median value of breadth of domestic collaboration, such that each observation was allocated to a high group if it was above the median value and the low group if it was below the median value. Subsequently, we ran SEM for the high and low groups, allowing the coefficients to be freely estimated within each group and explicitly comparing how the significance of the corresponding coefficients of exploitation-focused and exploration-focused innovations varied between the high and low groups. By doing this, we avoided the risk raised in the IB literature about overstating the moderation results by solely interpreting

the significance of the interaction coefficient for moderations as whether the marginal effects differ from each other for any specific value of a moderating variable being examined (Kingsley, Noordewier, & Bergh, 2017). The same procedure was applied to test H3b and H4b, but instead using international collaboration to split the sample.

To ensure the robustness of our multi-group analysis, we performed a structural invariance test by conducting a chi-square difference test between a freely estimated multi-group SEM (used to test H3a, H3b, H4a, and H4b) and a constrained multi-group SEM (all structural coefficients between the two groups to be constrained as equal, equivalent to no moderation effects). The result of the chi-square difference test, if significant, would support the argument that the freely estimated model provides a better fit to the sample, further validating its result.

Chapter 5. Empirical Results

5.1 Descriptive statistics

We provide a correlation matrix and summary statistics among the variables in Table 2. It shows that, on average, exporting firms have 236 employees, an export sales value of 16,950.70 (thousand GBP), and an R&D intensity of 4 percent. The R&D intensity in our sample is higher than the UK average, which was 1.1 percent in the year 2012, according to the UK Office for National Statistics. This corroborates the claim that exporters are more innovative than non-exporters (Monreal-Pérez, et al., 2012). Exporting accounts for 29 percent of a firm's total turnover in our sample. In addition, 4 percent of the firms are born-global, established during the survey period 2010–2012. On average, the breadth of international collaboration (a mean of 0.96) is lower than the breadth of domestic collaboration (a mean of 1.87).

We also find no confounding effect of independent variables with the dependent variable, because there are no significant correlations between them. We then tested multicollinearity effects and reported the variance inflation factor (VIF) (see Table 2). The maximum VIF is 1.66, which is lower than the threshold of 10, indicating that multicollinearity is not a concern (Baum, 2006).

Table 2. Descriptive statistics, correlations, mean, standard deviations and VIF

	Mean	**SD**	1	2	3	4	5	6	7	8	9	**VIF**
1 Export performance (log)	7.31	2.55	1									
2 Exploitation-focused innovation**	0.00	0.67	0.06	1								1.62
3 Exploration-focused innovation**	0.00	0.74	0.04	0.55*	1							1.53
4 Breadth of domestic collaboration	1.87	1.81	0.04	0.18*	0.25*	1						1.55
5 Breadth of international collaboration	0.96	1.35	0.22*	0.11*	0.17*	0.55*	1					1.66
6 Past export intensity	0.29	0.33	0.53*	0.05	0.01	0.05	0.30*	1				1.32
7 R&D intensity	0.04	0.15	0.03	-0.03	0.03	0.18*	0.30*	0.30*	1			1.30
8 Firm size (log)	4.53	1.38	0.49*	0.20*	0.06	0.10*	0.07*	-0.01	-0.14*	1		1.14
9 Born-global	0.04	0.18	-0.09*	-0.03	-0.02	0.06	0.00	0.01	0.01	-0.05	1	1.03
												mean VIF= 1.33

Note: * the correlation is significant at the 0.05 level; ** standardized; N = 852

5.2 Measure validation

Table 3 provides further evidence of the scale reliability, convergent validity, and discriminant validity of the measurement model. We followed the confirmatory factor analysis (CFA) approach to assess the validity of all the multi-item constructs. The composite reliability of the indicators of each construct is acceptable, with values all higher than 0.83 (Bagozzi & Yi, 1988). A good discriminant validity of measurement scales is supported, because the average variance explained (AVE) was above the recommended level of 0.5 (Fornell & Larcker, 1981). Additionally, convergent validity was established firstly by the large and significant standardised loadings ($p < 0.001$) of each observed indicator (or item) for the respective constructs (Shoham, 1999); secondly by the critical ratios of factors, which are higher than 15.89, indicating highly significant loadings (Boehe & Cruz, 2010); and thirdly, by the fact that shared variance between any two constructs (i.e. the square of their inter-correlation) is less than the average variance explained in the items by the construct (Fornell & Larcker, 1981), indicating that the focused construct is undeniably different from the other constructs (Ambos, et al., 2010). Taken together, the exploitation- and exploration-focused innovation constructs are homogeneous. Further evidence for the validity of our exploitation- and exploration-focused innovation constructs is reflected in the goodness-of-fit statistics for the measurement model in terms of the chi-square test, the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation index (RMSEA): $\chi 2$ (df) = 56.69 (11); p = 0.00; CFI = 0.98; TLI = 0.95; and RMSEA = 0.07.

Table 3. Measurement model

Construct	Factor loadings	Critical ratios	AVE	Composite reliability
Exploitation-focused innovation			0.57	0.84
Improve quality of goods or services	0.80	17.07		
Improve flexibility for producing goods or services	0.78	20.76		
Improve capacity for producing goods or services	0.67	22.98		
Reduce cost per unit produced or provided	0.75	25.72		
Exploration-focused innovation			0.56	0.83
Increase market share	0.62	20.27		
Increase range of goods or services	0.66	23.11		
Enter new markets	0.67	23.47		
Increase value added	0.98	15.89		

Table 4. Standardized results of structural equation modelling

	Model 1 Control only		**Model 2** Main effects		**Model 3** Breadth of domestic collaboration			**Model 4** Breadth of international collaboration	
Paths	n=852	H	n=852	H	Low breadth n = 434	High breadth n = 418	H	Low breadth n = 442	High breadth n = 410
Control Variables									
Past export intensity	0.56		0.57		0.53	0.60		0.54	0.57
	(0.00***)		(0.00***)		(0.00***)	(0.00***)		(0.00***)	(0.00***)
R&D intensity	-0.06		-0.06		0.00	-0.09		-0.05	-0.09
	(0.02***)		(0.02***)		-0.942	(0.02**)		(0.17)	(0.01**)
Firm size	0.49		0.51		0.49	0.54		0.50	0.55
	(0.00***)		(0.00***)		(0.00***)	(0.00***)		(0.00***)	(0.00***)
Born-global	-0.06		-0.06		-0.07	-0.06		-0.01	-0.12
	(0.01***)		(0.01***)		(0.04**)	(0.08*)		(0.77)	(0.00***)
Industry dummies	Yes		Yes		Yes			Yes	
Independent Variables									
Exploitation-focused innovation		H1	-0.12	H3a	-0.06	-0.20	H3b	-0.05	-0.19
			(0.00***)		(0.23)	(0.00***)		(0.47)	(0.00***)
Exploration-focused innovation		H2	0.07	H4a	0.02	0.13	H4b	0.00	0.11
			(0.03**)		(0.60)	(0.02**)		(0.98)	(0.02***)

Note: Level of statistical significance: *** p≤0.01, ** p≤0.05, * p≤0.10.
Source: own elaboration on the basis of UK Innovation Survey, UKIS8 and UKIS9, N= 852.

5.3 Robustness checks

Although our use of a lag structure may have reduced endogeneity, to examine whether there is any potential endogeneity arising due to any other unobserved effects that influence both exploitation-, exploration-focused innovation and export performance, we ran the two-stage least squares (2SLS) regression with instrumental variables. The 2SLS technique accounts for the correlation in the disturbance term across equations to produce more efficient estimates with the inclusion of instrumental variables which are correlated with the second-stage dependent variable but not with the first-stage one (Hashai, 2011). It also provides a greater ability to identify potential interpretational confounding between independent and dependent variables.

Innovation design, which indicates whether a firm invests in design activities, including strategic ones, for the development or implementation of new or improved goods, services and processes, was chosen as the instrumental variable. It provides instructions for new innovations through creative visualization of concepts, plans and ideas; and the representation of those ideas (Walsh, 1996). It aims at promoting commercially profitable innovation but not directly aimed at promoting export.

As we cannot be fully sure that innovation design is perfectly exogenous to export performance, a second instrumental variable "importance of reducing environmental impact in the decision to innovate in goods or services and/or process(es)" is added to run overidentification tests. It determines the priorities regarding the kind of innovation opportunities to pursue in order to provide socio-political benefits. We expect it to shape the strategic choice of exploitation-focused or exploration-focused innovation, rather than directly influencing the extent to which sales can be generated from export.

These two instrumental variables were examined and shown to be significantly correlated

with exploitation-, exploration-focused innovation but not with export performance and hence meets the criteria of being instruments. We tested for whether the two instruments are endogenous using the Sargan test of over-identification, conducted separately for exploitation-focused and exploration-focused innovations. The result does not reject the over-identifying restrictions, suggesting that these two instruments are valid and our model is correctly specified for exploitation-focused innovation (Sargan score = 0.08, p = 0.78; Basmann score= 0.07, p =0.79) and for exploration-focused innovation (Sargan score =0.34, p =0.56; Basmann score=0.33, p =0.57. The first-stage regression summary statistics further rejected our null hypothesis that our instrument variables are weak for exploitation-focused innovation (Minimum eigenvalue statistic = 50.15) and for exploration-focused innovation (Minimum eigenvalue statistic =18.27).

We then examined Durbin–Wu–Hausman test of endogeneity along with the Wu–Hausman F test of endogeneity to test for the exogeneity of exploitation- and exploration-focused innovations. The tests for exploitation-focused innovation (Durbin score = 1.79, p = 0.18; Wu-Hausman =1.76, p = 0.19) and for exploration-focused innovation (Durbin score =1.52, p = 0.22; Wu-Hausman =1.49, p = 0.22) were not significant, indicating that exploitation- and exploration-focused innovation are not endogenous and our estimates of the non-instrumented regression are more appropriate than the instrumented variable regression.

Overall, the above result shows that the use of instrumented 2SLS over non-instrumented regression is not justified. The SEM approach therefore provides unbiased and robust estimates.

5.4 Testing of hypotheses

Table 4 presents the results of our conceptual framework testing with SEM. The results reveal that H1, H2, H3b and H4b are supported, whereas H3a and H4a are refuted.

Model 1 includes only the control variables. The results indicate that firms' past export intensity and size are related to their export performance. Firms with higher past international market involvement and of larger sizes tend to achieve better export performance (path coefficient = 0.56, p = 0.00; path coefficient = 0.49, p = 0.00, respectively). However, R&D intensity and whether firms are born-global are negatively related to their export performance (path coefficient = -0.06, p = 0.02; path coefficient = -0.06, p = 0.01, respectively). This is possibly because high R&D investments do not effectively materialise in terms of export outcomes in a relatively short period of time and born-global firms suffer from liability of newness because they lack business acumen and knowledge of markets and methods to compete effectively (Hughes, et al., 2007) in the international market.

We then estimated the main effect model. As can be seen in Model 2, the exploitation-focused innovation–export performance path estimate is negative and significant (path coefficient = -0.12, p = 0.00), showing that exploitation-focused innovation leads to a decrease in export performance. However, the exploration-focused innovation–export performance path estimate is positive and significant (path coefficient = 0.07, p = 0.03), meaning that exploration-focused innovation leads to an increase in export performance. Therefore, both H1 and H2 are supported.

In terms of the moderating effects, Model 3 indicates that high breadth of domestic collaboration is detrimental to export performance for exploitation-focused innovation (low breadth of domestic collaboration: path coefficient = -0.06, p = 0.23; high breadth of domestic collaboration: path coefficient = -0.20, p = 0.00), refuting H3a. High breadth of

international collaboration is also detrimental to export performance for exploitation-focused innovation (low breadth of international collaboration: path coefficient = -0.05, p = 0.47; high breadth of international collaboration: path coefficient = -0.19, p = 0.00), supporting H3b. Model 4 indicates that high breadth of domestic collaboration is beneficial to export performance for exploration-focused innovation (low breadth of domestic collaborations: path coefficient = 0.02, p = 0.60; high breadth of domestic collaborations: path coefficient = 0.13, p = 0.02), refuting H4a. High breadth of international collaboration is also beneficial to export performance for exploration-focused innovation (low breadth of international collaboration: path coefficient = 0.00, p = 0.98; high breadth of international collaboration: path coefficient = 0.11, p = 0.02), consistent with H4b. To better explain the moderating effects of breadth of domestic and international collaboration, these relationships are visualised in Figure 2.

Concerning the robustness of the multi-group analysis, it can be observed in Table 5 that after using the chi-square difference test described in section 4.3, both Model 3 and Model 4 provide a significantly better fit than the corresponding constrained model (at a confidence level of 1%). In addition, the fit indices of Model 3 and Model 4 (TLI, CFI, RMSEA, and Akaike Information Criterion [AIC]) are superior to those of the corresponding constrained model. Taken together, the moderation effects are validated.

Figure 2. Moderating roles of (low vs high) breadth of domestic collaborations on exploitation-focused innovation

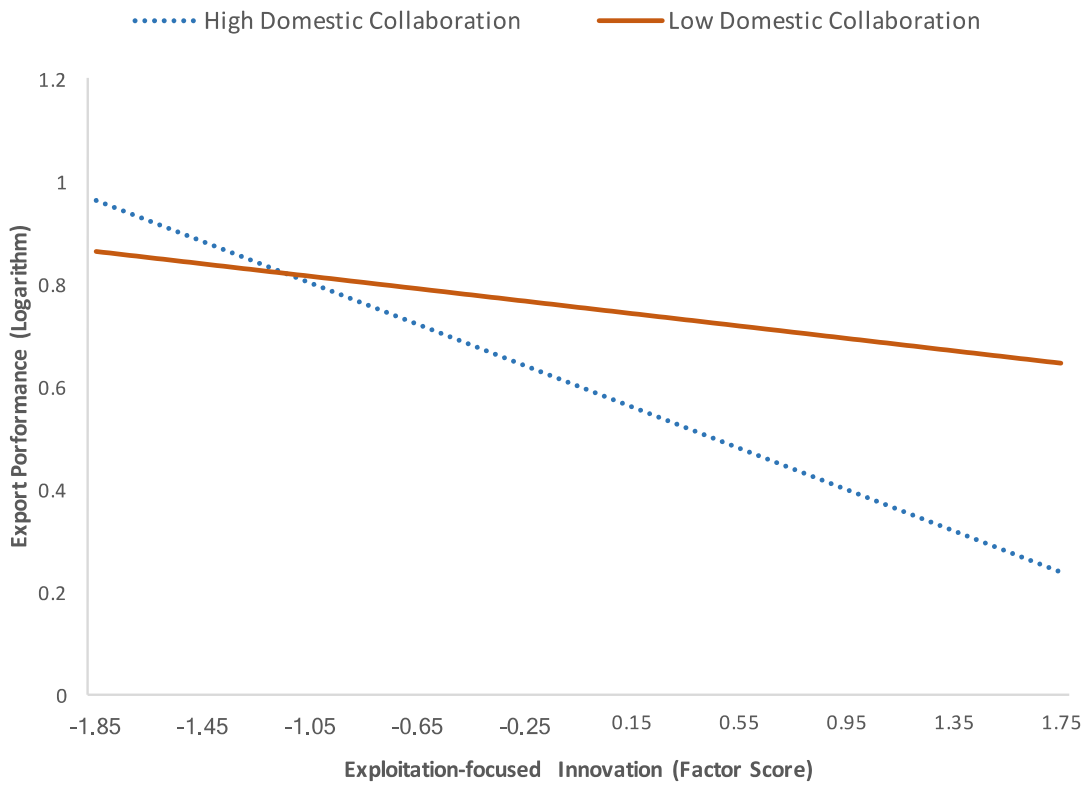


Figure 3. Moderating roles of (low vs high) breadth of international collaborations on exploitation-focused innovation

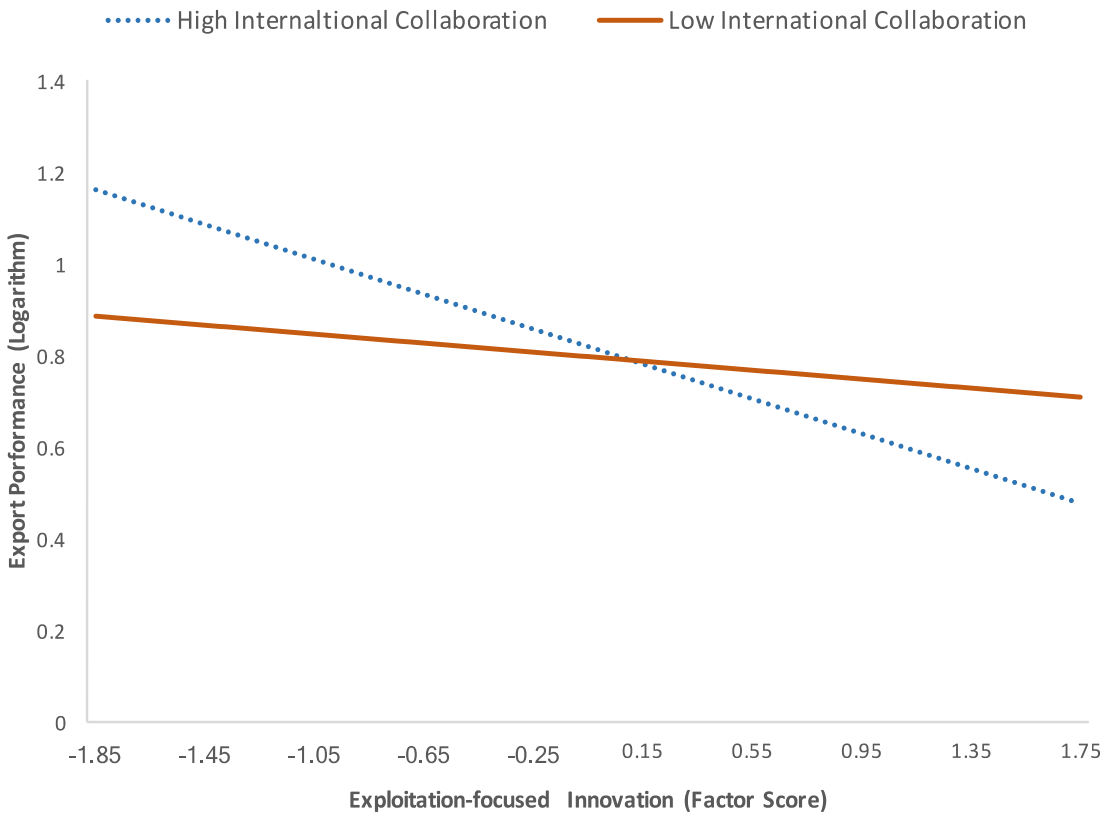


Figure 4. Moderating roles of (low vs high) breadth of domestic collaborations on exploration-focused innovation

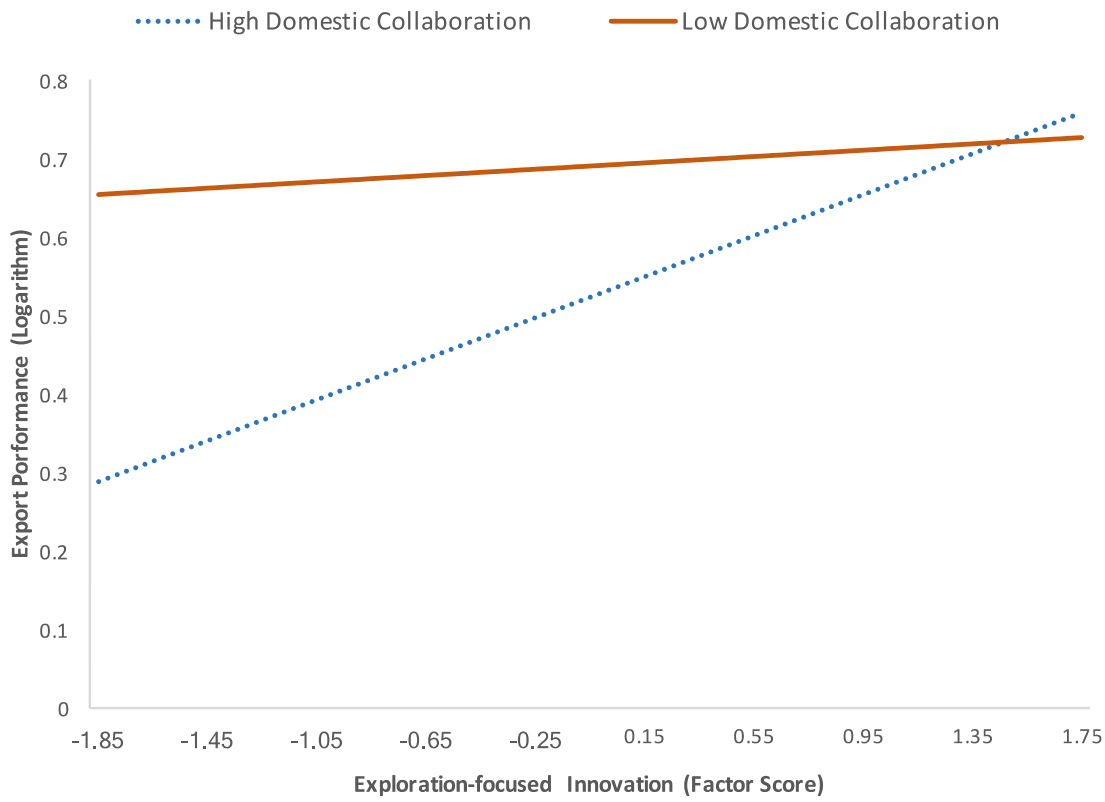


Figure 5. Moderating roles of (low vs high) breadth of international collaborations on exploration-focused innovation

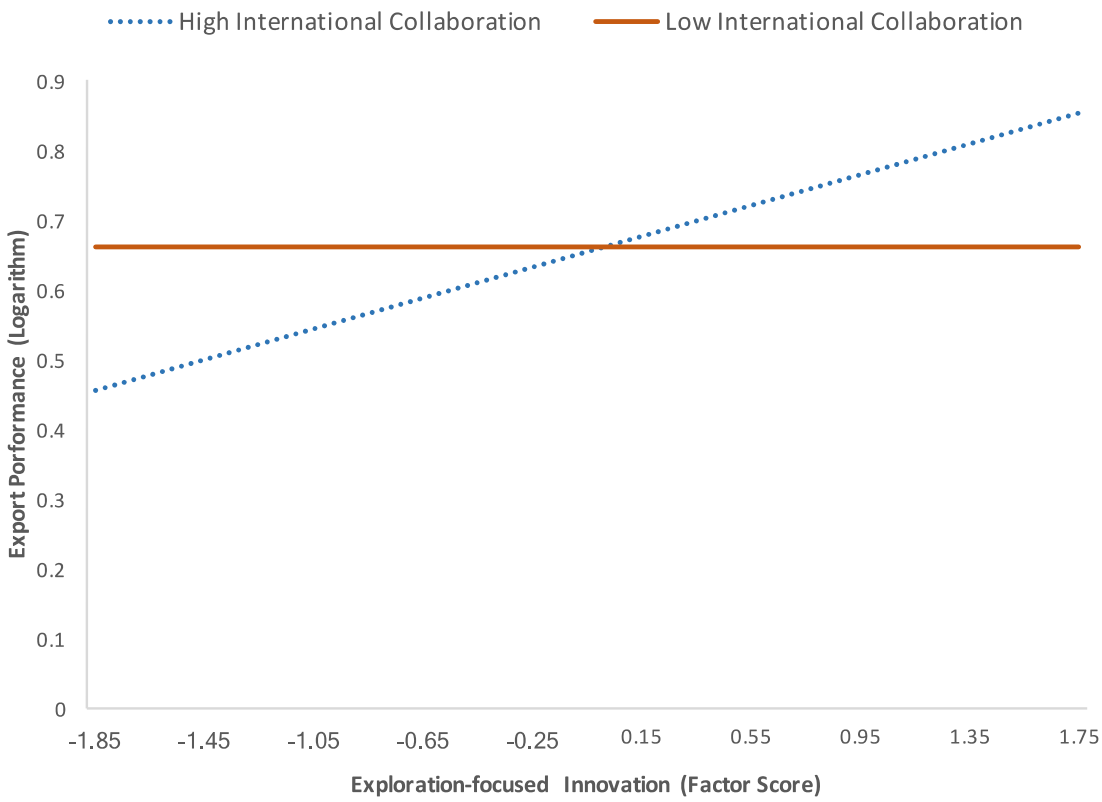


Table 5. Model fit results, Note: N= 852

									χ2 difference test		
Model #	χ2	DF	χ2/DF	TLI	CFI	RMSEA	RMSEA 90% CI	AIC	χ2 Diff	DDL	p-value
Model 2 main effects	249.63	95	2.63	0.92	0.95	0.04	**0.04-0.05**	19888.57			
Model 3 Domestic Collaboration	**345.11**	**202**	**1.71**	**0.93**	**0.95**	**0.04**	**0.03-0.05**	**19283.22**	**164.06**	**38**	**0.00*** **
Model 3 all parameters constrained equal	509.17	240	2.12	0.88	0.91	0.05	0.05-0.06	19371.28			
Model 4 International collaboration	**360.49**	**202**	**1.78**	**0.92**	**0.95**	**0.04**	**0.04-0.05**	**19051.31**	**123.22**	**38**	**0.00*** **
Model 4 all parameters constrained equal	483.71	240	2.02	0.89	0.92	0.05	0.04-0.06	19098.53			

Chapter 6. Discussion and Implications

6.1 Discussion

Exporting firms must collaboratively address the twin problems of exploitation-exploration and geographic knowledge-sourcing strategies to generate the desired export performance. A missing connection between the innovation ambidexterity literature and the theory of internationalization inhibits understanding of the opposite influences exploitation- and exploration-focused innovations have on export performance (Cassiman & Golovko, 2011). Our findings revealed that exploration-focused innovation improves export performance whereas exploitation-focused innovation weakens it. These contrasting effects are the results of limited product-market solutions developed with increased marginal costs that follow the efficiency-enhancing path versus broadened product-market solutions developed with a wider range of export prices that follow the demand-expansion path when faced with changes in the international market. This corroborates the view that specialization in exploration is not only viable (Gupta, et al., 2006; March, 1991) but also necessary in the context of export.

Previous studies on organization learning emphasize the benefits of knowledge-sourcing strategies (Frenz & Ietto-Gillies, 2009; Laursen & Salter, 2006). However, such benefits are not universally beneficial in the development of all innovation strategies. To address this second gap, we examine the breadth of domestic and international collaborations in relation to the efficacy of exploitation- and exploration-focused innovations in influencing export performance. The findings demonstrated that international collaboration, particularly with a high breadth, indeed amplifies both the negative impact of exploitation-focused innovation and the positive impact of exploration-focused innovation on export performance. However, domestic

collaboration, particularly when it is broad, does not reduce but rather reinforces both the negative impact of exploitation-focused innovation and the positive impact of exploration-focused innovation on export performance.

These results can be interpreted as a warning that firms should avoid the risks of misappropriating matured exploitation-focused innovation by judiciously closing the innovation model to any external partners, whether they be domestic or international. As for exploration-focused innovation, the need for complementary and novel knowledge inputs has motivated a shift towards open innovation in both domestic and international collaborations.

6.2 Theoretical implications

The disconnected theoretical underpinnings of innovation ambidexterity and internationalization processes has obstructed an outstanding of the full range of dynamics, processes, and conditions that help firms devise ex-ante innovation strategies that will be of greatest benefit in the international market. Bringing the two theories together enables a different perspective regarding the distinct effects of the two possible paths of efficiency-enhancing and demand-expansion in explaining the contradictory cause-and-effect trends observed in exploitation- versus exploration-focused innovations on export performance (Cassiman & Golovko, 2011). In so doing, it is possible to explain the reasoning behind specialization in exploration-focused innovation for generating greater export performance.

Furthermore, the study herein enhances contextual intelligence regarding the literature on innovation ambidexterity (Benner & Tushman, 2003; Mueller, et al., 2013). Its theoretical development also highlights the fact that it is vital for geographic

knowledge-sourcing strategies to be managed in alignment with exploitation- and exploration-focused innovations in the international market context. Specifically, as far as exporting firms are concerned, a closed innovation model is an effective knowledge-sourcing strategy to guard against opportunistic behavior and slow decision-making processes posed by domestic and international partners, which matches the efficiency requirement of exploitation-focused innovation and reduces any delays that may lead to weakened export performance. In contrast, opening up the innovation model to domestic and international partners is an effective means of accelerating innovation speed and increasing the diversity of knowledge input (Bahemia, Sillince, & Vanhaverbeke, 2018); this facilitates exploration-focused innovation in meeting and creating new demands abroad. These additional insights contribute to the nuanced understanding of geographic knowledge sourcing as complementary search strategies to influence the effectiveness of learning involved in exploitation- and exploration-focused innovations. The results of the study indicated that a "collaboration-fits-all" approach is inappropriate when developing innovation ambidexterity in the export market. Inherent in this contribution is a complex view of the double-edged nature of domestic and international collaborations, both as a liability in exploitation-focused innovation and as a knowledge asset in exploration-focused innovation.

6.3 Managerial implications

This study also represents important managerial implications. Though innovation enables the majority of exporters to continue to be competitive in the international market, many others remain laggards due to poor innovation strategy decisions (Deng, Guo, Zhang, & Wang, 2014); as such, export managers should work closely with R&D

managers. We concluded that exploration-focused innovation follows a demand-expansion path, which presents some important implications for practice. Economic policies often emphasize increased productivity as a primary reason for export (Cassiman & Golovko, 2011), which biases exporting firms towards exploitation-focused innovation. This approach, however, may not be as effective as exploration-focused innovation in targeting demand-expansion, as supported by the empirical evidence.

Managers should also be aware of the need to periodically review and thus make necessary adjustments to their geographic knowledge-sourcing in alignment with innovation strategies. Export managers should expand or at least maintain the variety of their domestic and international collaborations, making use of all possible knowledge sources to develop exploration-focused innovation. Although domestic collaboration is bounded by the same national innovation system, it can manifest in the forms of innovation support, export assistance offered by local trade associations, or government programs (Gençtürk & Kotabe, 2001; Laursen & Salter, 2006). Institutions act as network intermediaries for interaction and information exchange (Zhang & Li, 2010) and a broad range of intakes from these knowledge sources stimulates new technological advances in foreign markets to a larger extent (Gençtürk & Kotabe, 2001; Kim & Lui, 2015).

By contrast, export managers should reduce the variety of their domestic and international collaborations for the sake of exploitation-focused innovation, the core of which is one's experiential knowledge. Managers should be wary of the exponentially increased complexity that a high breadth of domestic and international collaboration entails, which can further undermine exploitation-focused innovation and the export

performance it generates.

6.4 Limitations and directions for future research

Notwithstanding its theoretical and managerial contributions, this study is not without limitations, which might serve as starting points for future research. First, our use of a two-year-lagged structure considerably improves the precision for assessing the causality between exploitation-focused and exploration-focused innovations, breadth of domestic and international collaborations, and export performance. Although an accepted period for innovation to materialise is two years (Salomon & Shaver, 2005; Tsinopoulos, et al., 2018), an extended period could be used to further capture the change in the tendency (Love, Roper, & Vahter, 2014) for exploitation-focused and exploration-focused innovations and the breadth of domestic and international collaborations over time. This can also help mitigate the potential issues when measuring the outcomes of exploration-focused innovation, which may take a longer timeframe to materialize than exploitation-focused innovation.

Second, our hypotheses have been empirically tested without identifying export destinations. This segregation is encouraged in future studies to validate our findings across both developing and developed markets, who are at different stages of technological development and hence may place different emphasis on exploitation- and exploration-focused innovations. In addition, it has been shown that in emerging markets such as China, “Guanxi” (business and political ties) may enhance the effect of exploitation-exploration on business performance (Chung, et al., 2015). In this case,

firms establish external collaborations based on close and established network ties, making external collaboration choices more limited and selective.

Finally, future studies could also examine the importance of other contingency factors not considered in the current study by linking CIS to other databases. For instance, the impact of export experience-related factors could be of interest, as more experienced firms are in a better position to concentrate their efforts on the most profitable opportunities available in the overseas market (Bernini, Du, & Love, 2016).

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Appendix-Antecedents, Marketing Capabilities Contingencies and Performance Consequences of Innovative Imitation Orientation: A Resource Orchestration Perspective

Book Chapter Publication

Sousa, C. M., Li, Y., & He, X. (2018). Antecedents, Marketing Capabilities Contingencies and Performance Consequences of Innovative Imitation Orientation: A Resource Orchestration Perspective. In Advances in Global Marketing (pp. 169-186): Springer.

Abstract

Innovative imitation orientation, conceptualized as a multidimensional knowledge reconfiguration process composed of learning for adaptation, strategic direction focused on innovative imitation, and transfunctional support mechanism that encourages flexibility in reverse R&D, has received little attention until recently due to exporting firms' reluctance to admit to this and to discuss it publicly. Our research identifies three organizational-level attitudinal antecedents (export market openness, export competitive aggressiveness, and export market risk avoidance), which affects innovative imitation orientation. Drawing on the resource orchestration perspective, the authors further propose that the four constituent factors of marketing capabilities (communication, distribution, pricing and product management) interact with innovative imitation orientation to enhance export performance.

Keywords: Innovative imitation, Marketing capabilities, Export performance, Resource orchestration

1. Introduction

Businesses favour innovation while disparaging imitation, as the latter is deemed less honourable (Kellaway, 2011). Nevertheless, Luke Johnson, the founder of Risk Capital Partners, views imitation as an inevitable part of the innovation process. In a column for Financial Times, he stated, 'The level of replication in any so-called new product or service is simply a matter of degree' (Johnson, 2012). In this study, we focus on innovative imitation orientation by investigating firms' behaviours of imitating (without fully cloning) their competitors' products or services. We define innovative imitation orientation as a multidimensional knowledge reconfiguration process composed of learning for adaptation, strategic direction focussed on innovative imitation, and transfunctional support mechanism that encourages flexibility in reverse R&D.

The rapid growth of international trade provides ample business expansion opportunities for firms (Chi & Sun, 2013). A number of studies have shown that innovation increases the likelihood that firms will have positive export results (Deng, et al., 2014; Vicente, Abrantes, & Teixeira, 2015). Under a highly turbulent international market environment, an innovative imitation orientation plays a pivotal role in bridging the gap between a firm's offerings and customers' needs in export markets. It enables firms to effectively and cost-efficiently refine highly profitable and thoroughly tested competitors' products and services in new and unfamiliar foreign markets (Johnson, 2012).

Indeed, the impact of exporting firms' innovative imitation orientation on performance may be more complex than previously thought. Our review of the existing literature highlights four problems that limit our understanding of exporting firms'

innovative imitation. First, to the best of our knowledge, all innovative imitation research has focused on the domestic market, and no attention has been devoted to the conceptualization of innovative imitation orientation in the export literature. This inhibits the exploitation of elements that are essential for developing exporting firms' innovative imitation orientation and its potential impact on firms' export performance.

Second, the concepts of innovative imitation orientation and innovation orientation are used interchangeably in the literature, despite their fundamental differences regarding their sources of idea generation, their originality, their associated costs, and risks (Ethiraj & Zhu, 2008; Lee & Zhou, 2012; Posen, Lee, & Yi, 2013). Firms that are innovation-oriented aim to obtain a first mover advantage by becoming the pioneers that bring innovative products and services to markets, as opposed to innovative-imitation-oriented firms, which seek to challenge market pioneers' share of the pie (Zhou, 2006). Therefore, the validity of the research may be undermined by an inconsistent conceptualisation of innovative imitation orientation.

Third, organisational attitudes are idiosyncratic to exporting firms (Yi, et al., 2013). They can predict firm's different strategic choices. However, little is understood about the role of organisational attitudes in aiding or impeding an innovative imitation orientation in exporting firms. Therefore, generating new insights in this respect is a scholarly and managerial priority.

Fourth, little is known about how the benefits of the innovative imitation orientation may depend on the exporting firms' marketing capabilities. Marketing capabilities are vitally important to exporting firms due to those capabilities' high levels of value,

scarcity, inimitability, and non-substitutability, which influence the success of firms' exporting activities (Tan & Sousa, 2015). Resource orchestration theory suggests that the ability of a firm to 'orchestrate' the unique resources it controls facilitates the achievement of its strategic objectives (Sirmon, Hitt, Ireland, & Gilbert, 2011). However, previous models involving innovative imitation orientation offer no insights into how firms make the most of specific firm-level marketing capabilities that may help them reap rewards from innovative imitation orientation. This lack of knowledge represents a significant gap in the literature.

This study aims to shed light on these issues and to identify the right direction for exporting firms to effectively accrue value from an innovative imitation orientation with the help of appropriate marketing capabilities. The paper will proceed as follows: A theoretical background based on an overview of the relevant literature will be presented, followed by our research propositions. We will then discuss the theoretical contributions and implications, and conclude with directions for future research.

2. Theoretical Background and Research Propositions

2.1 Innovative imitation orientation versus innovation orientation

To enhance the understanding of the innovative imitation orientation, it is necessary to differentiate it from innovation orientation. Innovation orientation, according to Siguaw et al. (2006, p. 560), refers to 'a multidimensional knowledge structure composed of a learning philosophy, strategic direction, and transfunctional beliefs that, in turn, guide and direct all organisational strategies and actions', which 'promote innovative thinking and facilitate successful development, evolution, and execution of innovations'. Thus, sources of idea generation, originality, associated costs, and risks are key concepts for understanding our proposed distinction between the innovative imitation orientation and the innovation orientation.

In relation to the sources of idea generation, an innovative imitation oriented exporting firm extends the R&D efforts made by export market leaders, whereas the innovation oriented exporting firm develops and offers new products and services based on its own R&D efforts and proprietorial knowledge (Chesbrough, 2003; Lee & Zhou, 2012; Love, et al., 2014).

In terms of the level of originality, although an innovative imitation oriented exporting firm is prone to develop a product or service based on its competitors' imperfections, its 'new discovery' exhibits traces of its competitors' existing market offerings and causes less disturbance in the export market (Dickson, 1992). Since customers are familiar with these 'common elements', they may treat the 'new' offerings more as alternative options. Therefore, we expect the level of originality to be higher with an innovation orientation than with an innovative imitation orientation.

On the topic of associated costs, adopting an innovative imitation orientation incurs lower costs for R&D; for inter-departmental coordination and inter-firm collaboration compared with an innovation orientation (Kotler, Keller, Ancarani, & Costabile, 2014; Zhou, 2006). In addition, innovative imitators benefit from their competitors' established market presence through their competitors' advertising and promotion in the export market (Zhou 2006).

Lastly, the risks associated with an innovative imitation orientation are relatively lower than those for innovation orientation. This is because the knowledge of competitors' successful innovations offsets the uncertainty and potential errors that may occur during innovative imitation experimentation, providing that the exporting firms' have reasonable expectations for their return on investment (Potter & Lawson, 2013). Consequently, the conceptualization of the innovative imitation orientation needs to be differentiated from that of the innovation orientation. In the following sub-section, we propose a definition of the concept of the innovative imitation orientation.

2.2 Innovative imitation orientation

Previous research has identified innovation as a multi-dimensional concept which is comprised of pure innovation and innovative imitation (Grahovac & Miller, 2009; Lee & Zhou, 2012). In an export market, where customer preferences are more dynamic, the propensity of a firm to remain creative and responsive in offering products and services with added and/or different sources of value relative to its competitors is critical for its international success (Boso, et al., 2013). Although previous research recognises innovative imitation's potential for enabling firms to take advantage of pioneers'

innovation efforts (Lee and Zhou 2012), an investigation of the literature on innovative imitation reveals a lack of theoretically-derived operationalisations for the concept of an innovative imitation orientation and its application to the export market.

First, prior research recognises the role of innovative imitation in supporting the objectives of learning for adaption (Lee & Zhou, 2012). For example, Lee and Zhou (2012) discussed that innovative imitation behaviours involve taking advantage of market leaders' R&D efforts and learning from their mistakes in product design. Shenkar (2010a) urged firms to learn from the mistakes of failed firms to make appropriate adaptation when inventing their own commercialisation models. Lee, Smith, Grimm, and Schomburg (2000) held a similar view. They promoted the idea that firms learn from first movers' experiences so that they can benefit with more manageable development and testing costs. These conceptualizations strongly imply that learning for adaption is a central component of innovative imitation orientation. In the context of exports, we believe that the innovative imitation orientation is a learning-for-adaptation behaviour that encourages all functional areas within a firm to learn from competitors in the export market in order to adapt to the demands of that market.

Second, prior work has shown that innovative imitation is a strategic direction (Levitt, 1966). Shenkar (2010b) pointed to the imitative activities that drives a firm's intentional, intelligent search for cause and effect that could generate additional value based on existing market reactions. Shenkar (2010a) explained that 'imitative' actions have gained popularity due to their lower costs incurred during product management, distribution, and service, around 60-75% of what these costs would be without any imitative action. Therefore, we believe innovative imitation is pre-planned to enhance

an innovative imitator's low cost and differentiation advantages. Similarly, Levitt (1966) viewed innovative imitators' R&D efforts as pre-planned and directed towards the innovator's proven practices to achieve a speed premium. As such, in the context of exports, we believe the innovative imitation orientation is a strategic direction that guides firm-wide commitment to shorten the product-to-export-market time and to reduce the costs incurred due to the liability of foreignness through innovatively imitating competitors' products or services in the export market.

Third, the preceding work on innovative imitation argues for the introduction of an affirmative policy that can legitimise systematic innovative imitation thinking within the entire organization (Levitt, 1966). A set of common understandings and beliefs can propel a coherent effort among all functional units to actively engage in reverse R&D (i.e., working backwards from what competitors have done) (Levitt, 1966; Siguaw, Simpson, & Enz, 2006). Therefore, we believe the innovative imitation orientation is a transfunctional support mechanism that promotes flexibility in the reverse R&D of competitors' products or services in the export market. By synthesising these three different facets of innovative imitation orientation, we define it as:

A multidimensional knowledge reconfiguration process composed of learning for adaptation, strategic direction focussed on innovative imitation, and transfunctional support mechanism that encourages flexibility in reverse R&D.

2.3 Proposed conceptual model

Exporting firms face problems associated with the availability, accessibility and quality of export information and of network and financial resources to compete with existing

market players (Cadogan, Diamantopoulos, & De Mortanges, 1999). We identify three key organisational attitudes that are needed to support an exporting firm's innovative imitation orientation. The three attitudinal factors being investigated in our research are export market openness, export competitive aggressiveness, and export market risk avoidance.

The belief that "what a firm does with its resources is at least as important as which resources it possesses" (Hansen et al., 2004; p. 1280) encourages an extension of the resource-based view for understanding how managers influence firm performance (Ireland, Hitt, & Sirmon, 2003). In response, there are two emerging research frameworks. They are resource management and asset orchestration. Both look explicitly at the actions managers take to effectively manage a firm's resources (Helfat, et al., 2007; Sirmon, Gove, & Hitt, 2008; Sirmon, Hitt, & Ireland, 2007). In their recent work, Sirmon, et al. (2011) recognized the need for an integration of these two complementary frameworks. They adopted the term 'resource orchestration' to define the integrated framework.

Resource orchestration is concerned with the managerial actions involved in structuring, bundling, and leveraging a firm's resources for the purpose of achieving superior performance (Ireland, et al., 2003; Sirmon, et al., 2007). It is through leveraging processes that firm's idiosyncratic capabilities and their configurations are matched with market opportunities to achieve superior performance (Sirmon, et al., 2007). The three critical elements of leveraging are mobilising, coordinating, and deploying. These three elements requires the synchronisation of capabilities to be leveraged effectively (Sirmon, et al., 2007).

Mobilising is the process of identifying the capabilities needed to support the capability configurations necessary to exploit opportunities in the market before the capabilities can be coordinated and then deployed. Coordinating is required to integrate the mobilised capabilities in an effective and efficient manner to create capability configurations. Deploying involves physically using capability configurations to support the chosen leveraging strategy (Sirmon, et al., 2007). These three mechanisms are particularly important when decoding the tacit know-hows that are embedded in competitors' products and services for knowledge regeneration.

In our model, we contend that the innovative imitation orientation acts as a mobilising vision that guides how firms use their resources to identify the capabilities needed to exploit opportunities in the export market. However, mobilising through an innovative imitation orientation is insufficient for realising performance effects on its own, because the coordinating and deploying processes are necessary to maintain effective leveraging. As marketing capabilities are rooted in valuable, non-imitable, and non-substitutable market knowledge, skills and experiences regarding customers' needs in the export market (Tan & Sousa, 2015; Zou, Fang, & Zhao, 2003), the possession of such capabilities is relevant to exporting firms for accruing benefits from innovative imitation orientation. Lee and Zhou (2012) further provided evidence that showed that innovative imitation benefits from the presence of general high marketing capabilities. As such, we focus on how marketing capabilities moderate innovative imitation orientation-export performance relationship. Consistent with Katsikeas (1994), four functional export marketing capabilities (i.e., communication capability, distribution capability, pricing capability, and product management capability) are included in our

framework.

The intent of coordinating is to integrate mobilized capabilities in an effective and efficient manner for the implementation of innovative imitation orientation. Sirmon, et al. (2007) first referred to the coordinating role of communication and distribution capabilities whose purpose is to facilitate the effective integration of co-specialized assets, such as heterogeneous yet complementary new technologies and export market information held by a diversified portfolio of collaboration partners (Gesing, Antons, Piening, Rese, & Salge, 2015; Laursen & Salter, 2006) in ways difficult for competitors to observe and duplicate.

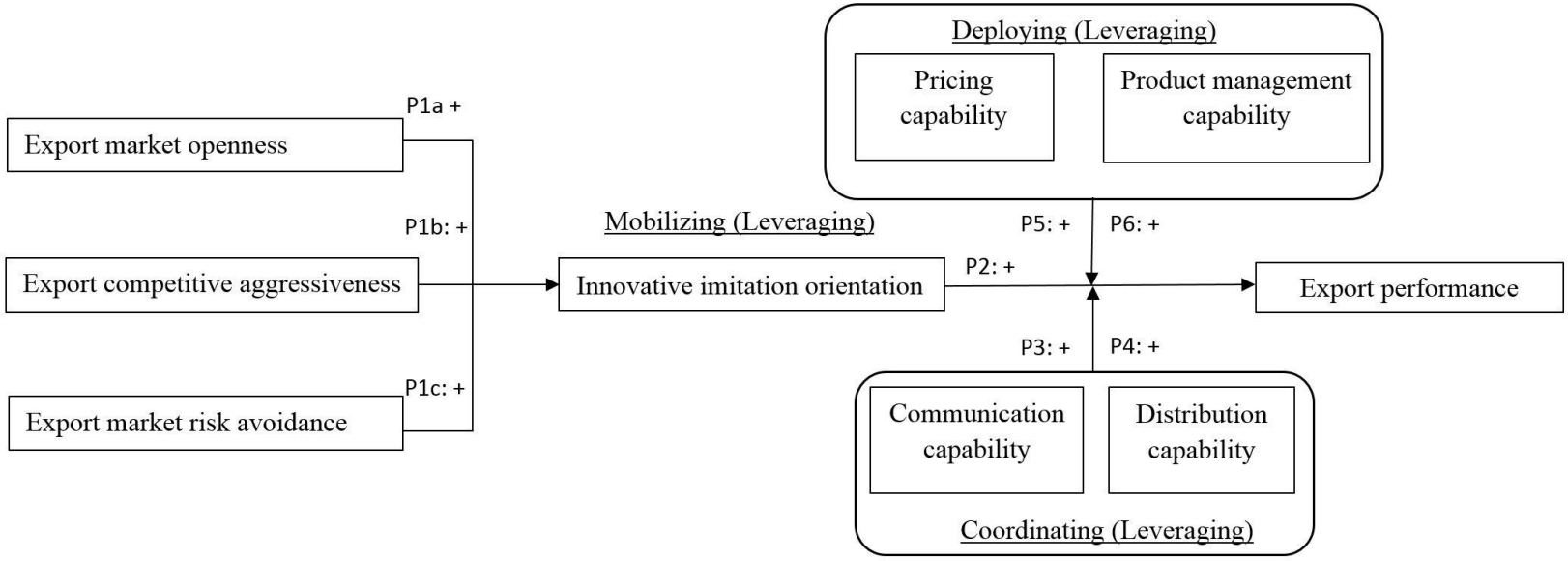
Specifically, communication capability shows the ability of an exporting firm to effectively deliver their intended marketing communications to their export customers, while distribution capability reflects an exporting firm's ability to maintain a close relationship with its export distributors (Zou et al. 2003; Tan and Sousa 2015). The coordination process ensures synergetic efforts are put into sharing newly acquired or accumulated resources among different organisational units (Sirmon, et al., 2011). While communication capability facilitates the smooth flow of marketing communication between an exporting firm and its distributors and customers (Murray, Gao, & Kotabe, 2011; Tan & Sousa, 2015), distribution capability enhances an exporting firm's access to important information about local markets, customers, and distributors' marketing services (Sousa & Bradley, 2009).

Pricing capability, which is the ability of an exporting firm to use and manage pricing tactics based on its skills and accumulated knowledge, is needed to fulfil the deploying

mechanism. Codifying gathered and absorbed market information into organisational routines improves an exporting firm's sensitivity to changes in the export market (Wales, Patel, Parida, & Kreiser, 2013; Zou, et al., 2003) and leads to effective deployment of related capabilities (Sirmon, et al., 2007) to develop innovative imitative products and services. On the other hand, the product management capability, the ability of an exporting firm to develop and manage a balanced product portfolio in order to satisfy export customers' needs (Morgan, Vorhies, & Mason, 2009), is also needed for the deployment process. Product management capability heightens the efficiency of a firm as it broadens its product portfolio by allocating resources wisely for the rapid launch of innovative imitation products and/or services to exploit new export market opportunities (Murray, et al., 2011; Vorhies & Morgan, 2005).

Taken together, the three antecedents of innovative imitation orientation and the moderating effect of the four dimensions of marketing capabilities provide a more complete perspective on how firms can overcome their liability of foreignness in the export market by improving their resource orchestration's efficiency and effectiveness. Our conceptual framework is based on the aforementioned arguments and appears in Figure 1.

Figure 1. Conceptual framework



2.4 Antecedents of innovative imitation orientation

2.4.1 Export market openness

Export market openness captures attitudes that facilitate a firm's internal receptiveness to new ideas and innovations of competitors in the export market (Vicente, et al., 2015). It involves the coordination of attitudes and behaviours among different departments to closely monitor and study competitors in the export market (Vicente, et al., 2015). As such, it can indicate the extent to which an exporting firm is willing to adopt approaches that are new and that have been successfully tested by their competitors in socially and culturally different export markets (Calantone, Cavusgil, & Zhao, 2002; Sousa & Lages, 2011).

We contend that export market openness is fundamental for exporting firms to access knowledge resources that may subsequently be reconfigured with their existing resources in a way superior to their competitors' deployment. As an innovative imitation orientation encourages exporting firms to search for new ideas and technologies for innovation based on competitors' existing products and services (Lee & Zhou, 2012), export market openness is likely to help exporting firms catch up to or surpass their competitors by moving toward the technological frontier (Kafouros & Forsans, 2012). In other words, export market openness contributes to firm's propensity to innovative imitation; that is, it adds more novelty value to competitors' innovations through reconfiguring one's knowledge resources more creatively due to its willingness to adapt new approaches and ideas. Therefore, we believe high export market openness leads to exporting firms making greater efforts to innovative-imitate competitors' ideas. Therefore, we propose that:

P1a: There is a positive relationship between a firm's export market openness and its level of innovative imitation orientation.

2.4.2 Export competitive aggressiveness

Export competitive aggressiveness captures an exporting firm's attitude towards directly and intensely challenging its competitors in an unconventional way using the limited resources it possesses (Gupta & Pandit, 2012; Porter, 1985). This approach increases the likelihood of it introducing innovative products or services based on their competitors' innovations in the export market.

The dynamic environment of the export market suggests that a competitive advantage is ephemeral. As such, exporting firms need to speed up the product-development cycle time by 'fast-following' export market leaders to replace or overtake them with improved products or services (Gupta & Pandit, 2012; Schilke, 2013). Greater innovative imitation orientation is therefore a result of exporting firms' increased awareness of competitors' innovation-related moves and proactively allocating resources wisely in support of reverse R&D on competitors' products and services so that they could challenge their competitors' market positions (Dickson, 1992; Lumpkin & Dess, 1996). Therefore, we propose that:

P1b: There is a positive relationship between a firm's export competitive aggressiveness and its level of innovative imitation orientation.

2.4.3 Export market risk avoidance

Export market risk avoidance reflects the attitude of an exporting firm towards risk-

averse activities when conducting uncertain innovation projects in the export market (Covin & Slevin, 1991). High export market risk avoidance shows as exporting firm's preference for imitating competitors' established products and services in the export market over developing new products and services from scratch, as the former is time-proven and runs a lower risk of failure (Jaworski & Kohli, 1993). The greater the export market risk avoidance a firm possess, the more likely the exporting firm displays an innovative-imitation-oriented behaviour.

Managerial actions are directed towards the development and realisation of strategic resources throughout the firm to facilitate conservative investment decisions under uncertain, diverse, and idiosyncratic foreign environments (Chirico, Sirmon, Sciascia, & Mazzola, 2011; Covin & Slevin, 1991; Sousa & Bradley, 2005). To avoid a commitment of significant resources to new-to-the-market products and services with no guaranteed returns, exporting firms that are more risk adverse will devote more effort to developing products and services targeted for the export market that are based on tried and proven innovations of competitors with positive returns expected. They thereby incur a lower risk of failure (Lumpkin & Dess, 1996). Therefore, we propose that:

P1c: There is a positive relationship between a firm's export market risk avoidance and its level of innovative imitation orientation.

2.5 Innovative imitation orientation and export performance

A high innovative imitation orientation increases an exporting firm's flexibility to orchestrate resources, as it enables the firm to identify the resources necessary to take

advantage of a competitors' innovation efforts while giving them newness (Lee & Zhou, 2012; Shankar, Carpenter, & Krishnamurthi, 1998). Specifically, innovative imitation orientation guides exporting firms to use resources for R&D, production, their sales force, and advertising at reduced costs. It also guarantees a low switching cost for customers in the export market, who perceive less risk in purchasing similar products or services that have an established market presence compared with completely new ones (Lee & Zhou, 2012). Further, innovative imitation orientation directs exporting firms to improve or create new products and service features that could generate more defensible customer value to compete with their competitors' existing innovation offerings. Resource orchestration efficiency increases as new product and service offerings with higher probabilities of meeting and exceeding customer market needs are pursued, which will lead to superior export performance (Wales, et al., 2013). Therefore, we propose that:

P2: There is a positive relationship between innovative imitation orientation and export performance.

2.6 Moderating roles of marketing capabilities

2.6.1 The moderating role of the communications capability

While an innovative imitation orientation provides an exporting firm with a mobilising vision that guides the use of resources, its communication capability plays the coordinating role in the resource orchestration process. This capability maintains a smooth flow of marketing communication between the exporting firm and its distributors and customers in the export market (Murray, et al., 2011; Tan & Sousa, 2015). Specifically, it facilitates the discovery of innovative imitation opportunities in

the export market by keeping potential conflicts within the supply chain to a minimum (Murray et al. 2011).

Moreover, an exporting firm with a greater communication capability is more effective in coordinating within its supply chain for supportive interactions. Good communication helps create positive opinions among customers (Wales, et al., 2013) regarding the exporting firm's innovative imitation oriented products and services and drives brand trials and new product diffusions in the export market (Lee et al. 2000). Consequently, these positive views enhance an exporting firm's product acceptance and market position in the foreign market (Lee and Zhou 2012; Zou et al. 2003), allowing more return to be accrued from increasing levels of innovative imitation orientation. Therefore, we propose that:

P3: Communication capability positively moderates the relationship between innovative imitation orientation and export performance

2.6.2 The moderating role of the distribution capability

An exporting firm may lack export market knowledge or the confidence to operate directly in foreign markets (Sousa & Bradley, 2009). Distribution capability, the skills and knowledge a firm uses to support its distributors (Zou, et al., 2003), helps generate crucial knowledge resources that fuel the firm's innovative imitation orientation. Greater levels of distribution capability increase the efficiency and effectiveness of resource coordination within an exporting firm by facilitating its access to important information about local markets, customers, and their distributors' marketing services (Sousa and Bradley 2009; Wales et al. 2013). Furthermore, possessing a strong

distribution capability provides the coordination mechanism that helps an exporting firm maintain constructive interactions and knowledge-sharing with its distributors. It ensures innovative imitation orientation is effectively and efficiently managed, marketed and serviced properly in the export market, leading to superior performance outcomes. Therefore, we propose that:

P4: Distribution capability positively moderates the relationship between innovative imitation orientation and export performance.

2.6.3 The moderating role of the pricing capability

A greater degree of effectiveness in its pricing capability, defined as a firm's ability to choose the appropriate pricing practices, improves the efficacy of an exporting firm's deployment efforts. It improves the configuration of its pricing-related competitive posture, price-setting philosophy, and its pricing processes and practices that addresses changes in customers' needs (Zou, et al., 2003) and are difficult for competitors to replicate. Specifically, a highly effective pricing capability motivates an exporting firm to conduct frequent pricing reviews and make flexible adjustments during this review process (Tan & Sousa, 2011). In this way, an exporting firm could perfect its organisational routines for collecting, analysing, and monitoring its pricing more effectively (Kemper, Engelen, & Brettel, 2011; Murray, et al., 2011), which would help it set the right prices for accruing the most value from its innovative imitation products or services.

Pricing capability also reflects an exporting firm's ability to choose the appropriate pricing practices regarding price adaptation, the level of the export pricing relative to

the domestic price, the level of innovative imitation pricing relative to its competitors' prices, the choice of currency, and price discrimination (Tan & Sousa, 2011). It serves to increase an exporting firm's ability to reduce asymmetries between the current and the optimal pricing based on the deployment of its skills and knowledge of tacit nature (Wales, et al., 2013). As a further consideration, identifying and benchmarking the prices of competitors' innovations enables an exporting firm to identify optimal profit margins and the configuration of capabilities to achieve it (Kemper, et al., 2011). An exporting firm could thus secure a unique innovative imitation product position and enhance the benefits associated with its innovative imitation efforts. Therefore, we propose that:

P5: Pricing capability positively moderates the relationship between innovative imitation orientation and export performance.

2.6.4 The moderating role of the product management capability

Possessing a well-developed product management capability enables an exporting firm to effectively and efficiently deploy its capabilities configuration to respond to export market needs when updating its product portfolios (Schilke, 2014; Vorhies & Morgan, 2005). Prior experience in developing and managing products and services facilitates an exporting firm's creative thinking concerning ways to improve upon competitors' existing innovation offerings and to allocate resources wisely to internal R&D and to R&D outsourcing to achieve that purpose (Grimpe & Kaiser, 2010). . Specifically, product management capability allows an exporting firm to integrate technology, internal R&D, and export customers' needs (Tan & Sousa, 2015) into a configuration that supports minimal R&D costs and maximum operational efficiency for the whole

product portfolio (Subramaniam, 2006). Consequently, this configuration enables exporting firms to react to market opportunities in a timely manner and quickly develop and launch competitive new products that are of higher quality and more tailored to meet customers' preferences than those of their competitors in the export market (Murray, et al., 2011; Vorhies & Morgan, 2005). Therefore, we propose that:

P6: Product management capability positively moderates the relationship between the innovative imitation orientation and export performance.

3. Contributions of the framework

This research contributes to three important streams of the literature: innovative imitation, international marketing, and resource orchestration, by detailing the mechanisms undertaken by exporting firms through which an innovative imitation orientation and marketing capabilities can add value to their export performance.

It first contributes to understanding the richness of a product and/or service strategy by providing a theoretically driven definition of innovative imitation orientation, the applicability of which is extended to the export context. We conceptualise an innovative imitation orientation as a multidimensional knowledge reconfiguration process composed of learning for adaptation, strategic direction focussed on innovative imitation, and transfunctional support mechanism that encourages flexibility in reverse R&D. This improves our understanding of specific behaviours related to all areas of innovative imitation, which is required to achieve a competitive advantage in the export market.

Second, a review of existing literature shows that an innovative imitation orientation is largely ignored in the export literature, and our study improves the understanding of the innovative imitation orientation by differentiating it from innovation orientation. A comprehensive comparison of the four key attributes, namely, the sources of idea generation, originality, associated costs, and risks between the two constructs is provided. Innovative imitation orientation advocates extending the R&D efforts made by competitors. Though it has relatively lower originality value compared with to an innovation orientation (Lee and Zhou 2012), firms applying an innovative imitation orientation benefit from lower associated costs and risks (Zhou 2006; Kotler et al.

2014). This highlights the underlying rationale explaining why an innovative imitation orientation could offer a plausible alternative for exporting firms to roll out imitative products in foreign markets. From a practical standpoint, our study encourages managers be more open minded to adopting an innovative imitation orientation and to consider including it in their formal export planning.

Third, to the best of our knowledge, we are the first to explore the antecedents of the innovative imitation orientation. The factors impacting an exporting firm's innovation orientation do not directly lend themselves as the antecedents to a firm's innovative imitation orientation (Zhou, 2006). We argue that promoting innovative imitation is worthwhile for exporting firms with high levels of export market openness, export competitive aggressiveness, and export market risk avoidance.

Fourth, our study provides theoretical contributions to the innovative imitation and international marketing literature by recognizing the importance of innovative imitation as a critical product or service pathway for exporting firms to achieve superior performance. Concerning the highly competitive, dynamic, and culturally-distant nature of export markets, exporting firms need to be more flexible in planning their innovations to offset their short-lived competitive advantage in the foreign market (Sousa & Novello, 2014). Innovative imitation becomes particularly valuable when firms export because it allows firms to develop products and/or services that match foreign market requirements within a shortened product or service-to-market time and at reduced cost compared to pure innovation (He, Brouthers, & Filatotchev, 2013).

Fifth, based on resource orchestration theory, we are making the first effort to link the

constructs of innovative imitation orientation, marketing capabilities, and export performance. Our study illustrates how marketing capabilities can be aligned with an innovative imitation orientation to achieve performance gains in the export market. We explicitly explain how communication, distribution, pricing, and product management capabilities individually contribute to the enhancement of innovative imitation efforts through a more effective orchestration of an exporting firm's resources. In particular, this study proposes that communication and distribution capabilities should be coordinated to facilitate knowledge sharing and supportive interactions within a firm's supply chain, while pricing and product management capabilities are deployed to achieve an optimal profit margin and a balanced product portfolio.

4. Implications for future research

While this paper has provided a new conceptual framework that could be useful in the study of innovative imitation orientation in the context of exporting, considerable potential exists for future research to improve this framework and to elaborate on the innovative imitation literature.

First, priority should be given to developing a standard measure of innovative imitation orientation based on the elements defined in this study. We encourage researchers to refine and verify the constituent factors within innovative imitation orientation by identifying new factors applicable to research based on further qualitative and quantitative research. We could then compare one dimension of innovative imitation orientation with others to pinpoint that dimension that contributes the most to firms' export performance.

Second, future studies are also encouraged to empirically compare the effects of an innovative imitation orientation on export performance with the effects of an innovation orientation. Due to the distinction and tension of resource allocation between these two innovation-related orientations (Zhang, et al., 2015), contrasting the differential effects of innovative imitation orientation and innovation orientation in distinct export outcomes could provide us valuable insights for achieving an optimal balance between the two.

Third, three organisational level attitudinal antecedents unique to exporting are identified as playing a potentially important role in influencing an exporting firm's innovative imitation orientation. More antecedents should be explored in future studies.

For example, prior studies suggest that absorptive capacity-the ability of an exporting firm to recognise the value of information from competitors in the export market and to assimilate and apply this information to its own innovation (Cohen & Levinthal, 1990), enables a firm to anticipate current opportunities and future developments (Wu & Voss, 2014). We believe further study may tell whether absorptive capacity can identify the need for innovative imitation.

Fourth, while we have theorised the moderating role marketing capabilities play in the innovative imitation orientation–export performance relationship, we have not explored other contingent factors that may influence this relationship (Lee & Zhou, 2012; Lumpkin & Dess, 1996). For example, the institutional based view emphasises that institutional factors shape the behaviour of actors in the export market (Yi, et al., 2013). Future research could integrate the resource orchestration theory and the institutional based view into a coherent theoretical model, and examine the complementarities and interactions between different external (e.g. competitive intensity and customer dynamism) and internal (e.g. foreign ownership, government relationship, business group) institutional conditions and innovative imitations. This research could provide insights into the role each institutional factor plays in promoting or hindering an exporting firm's resource orchestration processes in the export market when pursuing an innovative imitation orientation.

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