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Innovative capabilities: Their drivers and effects on current and future performance ☆

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ABSTRACT

This study investigates the role of a firm's orientation, both customer and competitor, in driving innovative capabilities and the impact of those capabilities on a firm's current and future performance. The study's contribution is threefold in that it (1) examines market-related exploitative and explorative capabilities in conjunction with product development exploitative and explorative capabilities in terms of their strategic drivers (firm orientation) and performance outcomes; (2) disentangles the effects of exploitative and explorative capabilities on current and future performance; and (3) examines the role of innovative capabilities within the particularly relevant, but understudied, context of exporting. The findings suggest that, although customer orientation relates to both exploitative and explorative capabilities, competitor orientation relates only to exploitative capabilities. Exploitative capabilities affect current performance, whereas explorative capabilities affect future performance. These findings are of crucial relevance to export managers in their quest to identify, extend, and create new market opportunities.

1. Introduction

World markets are increasingly challenging for firms. Increasing complexity and pace of change, globalization of demanding customers, and hypercompetition are conditions firms deal with every day (e.g., Brown & Eisenhardt, 1998). Product development and innovation are vital to a firm's survival and success, as they can satisfy customer needs and requirements more effectively than existing offerings (Yalcinkaya, Calantone, & Griffith, 2007). Innovation is critical in high-tech industries, where firms face greater uncertainty and competition for new product share (Kobrin, 1991; Madhok & Osegowitsch, 2000). In the dynamic capabilities perspective, firms need to continuously build, integrate, and reconfigure their skills and abilities to adapt to their environment and sustain competitive advantage (Eisenhardt & Martin, 2000). The most important capabilities in the area of innovation are expoitation and exploration (Atuahene-Gima, 2005). Exploitation concerns the refining of existing capabilities, whereas exploration refers to the challenge of existing ideas (e.g., March, 1991).

A key issue of concern for business practitioners and scholars alike is that, despite the development of enhanced and/or new products, many firms – regardless of size, nationality, and/or industry – struggle to create, extend, and capitalize on market opportunities. Although prior research clearly points to the importance of exploitative and explorative capabilities in firm performance, the bulk of studies mainly contemplate technology and product development capabilities (e.g., Atuahene-Gima, 2005), thus disregarding other possible domains (Lavie & Rosenkopf, 2006). Nonetheless, innovation involves other areas, too. The exclusive focus of attention on technology and product development limits the understanding of the role of exploitative and explorative capabilities in the successful launch and diffusion of innovations.

Supplier involvement, customer feedback, and retailer participation are but three examples of market constituents that can provide valuable insights into the product development process and innovation, especially in high-tech industries. Yli-Renko and Janakiraman (2008) suggest that customers participate in all three phases of idea generation, development, and testing in the context of advanced technology products, either as an information source or as codevelopers. Further, Moon (2006) indicates that the interface with customers is a main determinant of radical innovation. In a similar vein, the business literature notes that, for technology firms, research and development (R&D) splinters across networks consisting of suppliers, assemblers, and – more important – customers (The Economist, 2007). Also, firms may find technological solutions that are unique but difficult to communicate to clients, thereby leading to product acceptance problems. The mini-disc technology that Sony announced in 1991 is an example. Markets will or will not accept the innovations firms launch, and thus markets determine firm performance. Against this backdrop, the primary contribution of this study is the

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investigation of the drivers and performance outcomes of market-related exploitative and explorative capabilities, along with product development ones.

The secondary contribution of this study is twofold. First, the study disentangles the current and future performance outcomes of innovative capabilities. The importance of both expoitative and explorative capabilities notwithstanding, exploitation centers on short-term success but overlooks long-term viability, whereas exporation focuses on long-term outcomes but neglects immediate ones (Atuahene-Gima, 2005; March, 1991). Researchers theorize that juggling exploitative and explorative capabilities is the solution to the problem of balance between current and future viability (Eisenhardt & Martin, 2000). Nevertheless, the literature lacks empirical evidence indicating the actual effects of exploitative and explorative innovative capabilities on current and future performance.

Second, this study investigates the role of innovative capabilities in the relevant but understudied context of exporting. The exporting literature gives little attention to innovative capabilities (for an exception, see Yalcinkaya et al., 2007), which is surprising considering that exporting activities are critical to the survival, growth, and success of firms (e.g., Morgan, Kaleka, & Katsikeas, 2004) and that intangible capabilities can help exporters overcome the liability of foreignness (i.e., the advantages of indigenous firms in terms of familiarity with national culture, industrial structure, and governmental requirements, as well as existing relationships with customers, suppliers, and regulators; e.g., Luo, 2000). Fig. 1 presents the research model.

2. Conceptual framework and hypotheses

An enduring competitive advantage in dynamic markets depends on firms' ability to obtain, integrate, and reconfigure resources in ways that match the markets (Teece, Pisano, & Shuen, 1997). Firms sustain competitive advantage and performance through knowledge (Lee, 2008) and innovative capabilities such as exploration and exploitation (Eisenhardt & Martin, 2000). Exploitative capabilities involve the refining of existing paradigms (March, 1991). Product development exploitative capabilities pertain to existing product improvement, whereas market-related exploitative capabilities entail reinforcing relationships in existing markets. Explorative capabilities involve searching and applying new options (March, 1991). Product development explorative capabilities correspond to new product development, whereas market-related explorative capabilities involve developing relationships in new markets.

Customer and competitor orientations reflect the capture and use of current and future customer and competitor information to sustain customer value creation (Narver & Slater, 1990). Both orientations are precursors to organizational learning and capability building in general and to innovative capabilities in particular (Chung & Kim, 2002). Customer-oriented export firms show a continuous disposition toward identifying and meeting customers' needs (Han, Kim, & Srivastava, 1998). Such firms tend to pursue product improvements, to create and maintain bonds with export customers, and to obtain timely feedback from them (Zhou & Li, 2010). Thus, customer-oriented export firms are more aware of the potential obsolescence of existing products and the requirement to constantly refine and develop those products.

H1. Customer orientation relates positively to (a) product development exploitative capabilities and (b) market-related exploitative capabilities.

By actively collecting competitor-related information and monitoring rivals' behavior, competitor-oriented export firms identify their relative strengths and weaknesses in terms of resources, cost position, and financial performance (e.g., Narver & Slater, 1990). Knowledge of their own and their export competitors' strengths and weaknesses allows the identification of possible inadequacies of existent offerings, ways to improve them, and better adaptation to market needs.

H2. Competitor orientation relates positively to (a) product development exploitative capabilities and (b) market-related exploitative capabilities.

Market-oriented firms anticipate future market conditions (e.g., Narver & Slater, 1990). By proactively capturing and disseminating customer information, such firms can detect rapid changes in customers' preferences, which is crucial in high-tech industries (e.g., Qian & Li, 2003). Thus, customer-oriented firms are more prone to invest in developing new product offerings and to act in advance of market changes.

H3. Customer orientation relates positively to (a) product development explorative capabilities and (b) market-related explorative capabilities.

Information on current and potential export competitors can help firms recognize the need to challenge existing ideas, routines, and practices to stay ahead of competition (Teece et al., 1997). Such insights can serve as a catalyst for initiating new product development and moving to new markets.

H4. Competitor orientation relates positively to (a) product development explorative capabilities and (b) market-related explorative capabilities.

Exploitative and explorative capabilities reflect distinct logics, but they are interwoven and complementary. Exploitation supports current

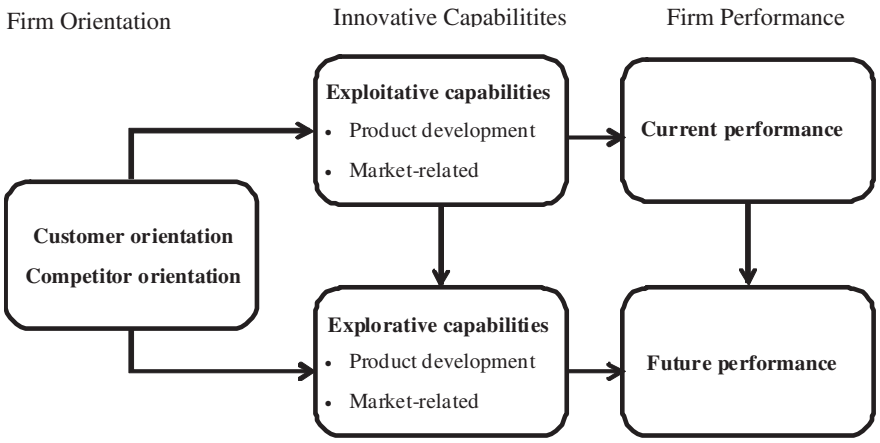

Fig. 1. Research model.

viability, whereas exploration supports future viability (March, 1991). Thus, exploitative capabilities can act as a foundation for explorative capabilities (Yalcinkaya et al., 2007).

H5. (a) Product development exploitative capabilities relate positively to product development explorative capabilities, and (b) market-related exploitative capabilities relate positively to market-related explorative capabilities.

Performance is a multifaceted concept. Nevertheless, profit is a key component of export performance (e.g., Vorhies & Morgan, 2005). Exploitative capabilities concern refinement and incremental improvements. By leveraging the firm's existing products and markets and assisting in adaptation to the current market environment, exploitative capabilities contribute to a firm's short-term success (Atuahene-Gima, 2005; March, 1991).

H6. (a) Product development exploitative capabilities and (b) market-related exploitative capabilities relate positively to current performance.

Explorative capabilities enable the firm to continuously renew the firm's resource base and proactively anticipate market changes. Disregarding exploration may lead firms to technological exhaustion and market collapse (Lee, Lee, & Lee, 2003). This risk is particularly present in high-tech industries, where firms face shorter product life cycles and heavier R&D investments (e.g., Kobrin, 1991). Notably, the positive performance effects of explorative capabilities can take some time to materialize given the nature of the exploration outcomes.

H7. (a) Product development explorative capabilities and (b) market-related explorative capabilities relate positively to future performance.

Organizational learning theory posits that past actions have a cumulative effect on future actions and outcomes. Hence, past actions and outcomes are a foundation for future decisions and outcomes (Lages, Jap, & Griffith, 2008). Path dependence explains the reinforcing effect of this feedback loop, where success in the past induces similar behavior in the future (e.g., Nelson & Winter, 1982).

H8. Current performance relates positively to future performance.

3. Methodology and results

The design of this study includes a series of pretests of the primary instrument and field interviews with industry experts and export managers, along with discussions with academic researchers, to assess the face and content validity of the study's constructs. The items measuring customer and competitor orientations come from the work of Cadogan, Diamantopoulos, and de Mortanges (1999) and Narver and Slater (1990). The responses range from "strongly disagree" (1) to "strongly agree" (7). Innovative capabilities capture the extent to which a firm engaged in certain processes in the previous three years. The responses range from "no extent" (1) to "great extent" (7). The items measuring product development exploitative and explorative capabilities derive from the work of Atuahene-Gima (2005). The work of Morgan et al. (2004) and insights from field interviews provide the relevant material for measuring market-related exploitative and explorative capabilities. Current and future (for the subsequent three years) performance measures come from the work of Vorhies and Morgan (2005). The responses range from "very badly" (1) to "very well" (7) and "will worsen significantly" (1) to "will improve significantly" (7), respectively. Firm size (logarithm of the number of full-time employees) and export scope (logarithm of the number of countries the firm has export operations in) serve as covariates.

The sampling frame is the Portuguese Statistics Institute database. Members of the research team contacted firms by phone to explain the purpose of the study, to identify key informants, and to request participation. Then, the research team sent an online survey link to 1271 key informants in each firm, which resulted in 262 usable surveys (a response rate of 20.61%). The study tests for nonresponse bias by comparing early and late respondents (the first 25% and the last 25% to return surveys, respectively) in terms of years of exporting, number of full-time employees, and number of export markets. The results show no significant differences between the two groups. The average export intensity (i.e., percentage of sales that accounts for export activity) of the sample firms is 59%. The average firm size (i.e., number of employees) is 142. The location of the firms is in the north (39%), center-north (24%), and center (19%) of Portugal. Most respondents are chief executive officers (31%) or export managers (32%). Also, the study used Harman's (1967) test to check for common-method bias. A confirmatory factor model with all manifest items loading on a single latent factor produces a poor fit (χ^2 of 7888.13, 945 degrees of freedom (d.f.), $p<.000$, χ^2/d.f. = 8.35, comparative fit index (CFI) = .81, incremental fit index (IFI) = .81, Tucker-Lewis fit index (TLI) = .80, and root mean square error of approximation (RMSEA) = .168). Similarly, an exploratory factor analysis for all study variables indicates that the first factor accounts for only 12% of total variance.

Confirmatory factor analysis, using a full-information maximum-likelihood estimation procedure in LISREL 8.80, assesses the validity of the study measures (Jöreskog & Sörbom, 1993). The measurement model shows an acceptable fit (χ^2 = 1550.01, 900 d.f., $p<.000$, χ^2/d.f. = 1.72, CFI = .97, IFI = .97, TLI = .97, RMSEA = .05). The large loadings of each item on its intended construct (average loading size = .80) provide evidence of convergent validity. All constructs have good levels of composite reliability (ρ) and average variance extracted (AVE): customer orientation (ρ = .81; AVE = .52), competitor orientation (ρ = .81; AVE = .58), product development exploitative capabilities (ρ = .90; AVE = .60), market-related exploitative capabilities (ρ = .89;

Table 1
Means, standard deviations, and correlations.

	1	2	3	4	5	6	7	8	9	10
1. Customer orientation	**.72**									
2. Competitor orientation	.69	**.76**								
3. Product development exploitative capabilities	.62	.51	**.78**							
4. Market-related exploitative capabilities	.52	.55	.69	**.77**						
5. Product development explorative capabilities	.47	.34	.70	.54	**.78**					
6. Market-related explorative capabilities	.49	.46	.47	.69	.60	**.83**				
7. Current profit performance	.26	.23	.43	.41	.32	.19	**.89**			
8. Anticipated performance	.12	.16	.28	.33	.31	.31	.21	**.89**		
9. Firm size	.01	.01	.04	.12	.24	.02	.20	−.09	**NA**	
10. Export scope	.06	.18	.11	.23	.16	.26	.20	−.02	.46	**NA**
α	.80	.79	.89	.87	.92	.92	.94	.95	NA	NA
M	5.91	5.32	5.56	5.40	4.95	5.41	5.14	4.75	4.30	2.11
SD	.87	1.05	.85	.96	1.29	1.06	1.07	1.32	1.04	1.07

Note: All correlations $p<-.10$ or $p>.10$ are significant at the .05 level. The diagonal (in bold) shows the square roots of AVE.

AVE = .59), product development explorative capabilities (ρ = .93; AVE = .62), market-related explorative capabilities (ρ = .93; AVE = .69), current performance (ρ = .94; AVE = .78), and future performance (ρ = .94; AVE = .78). Also, all possible pairs of constructs pass Fornell and Larcker's (1981) test of discriminant validity (see Table 1).

The study uses structural equation modeling to test the research hypotheses. The results show an acceptable model fit ($\chi^2 = 1601.01$, 915 d.f., $p < .000$, $\chi^2/\text{d.f.} = 1.75$, CFI = .97, IFI = .97, TLI = .97, RMSEA = .05; Table 2). With the exception of H_4, coefficients are all significant and in the theorized direction. Overall, the model explains a considerable amount of the observed variance in the endogenous constructs of future performance (12%), current performance (20%), market-related explorative capabilities (51%), product development explorative capabilities (44%), market-related exploitative capabilities (40%), and product development exploitative capabilities (44%).

The study model suggests that product development and market-related exploitative and explorative capabilities mediate the effects of customer and competitor orientations on current and future performance. A rival model might posit that innovative capabilities do not play a mediating role and that customer and competitor orientations and product development and market-related exploitative and explorative capabilities directly influence current and future export performance. This model yields worse goodness-of-fit results ($\chi^2 = 1665.23$, 909 d.f., $p < .000$, $\chi^2/\text{d.f.} = 1.83$) than the study model, which suggests that the rival model does not explain the data as well as the proposed structural model does. In addition, firm size may affect how customer and competitor orientations drive innovation capabilities; whether a firm engages in innovation activities such as improving product quality or learning or acquiring new technology and managerial skills may depend on the size of firm. To test this possibility, a model included the corresponding interaction terms and assessed them for statistical significance. The results show that firm size does not play a moderating role here.

4. Main findings and discussion

This study provides an original perspective on innovative capabilities research by emphasizing the role of market-related capabilities together with product development ones. Also, this study is the first to disentangle the current and future performance outcomes of exploitative and explorative capabilities. Further, the study examines the role of innovative capabilities in the particularly relevant but understudied context of exporting.

The study confirms the role of customer and competitor orientations as precursors to innovative capabilities. Both customer and competitor orientations encourage firms to deploy exploitative capabilities. Customer orientation involves an understanding of customers. Enhanced customer understanding can result in the development of improved products and can strengthen a firm's presence in the market (Zhou & Li, 2010). Competitor orientation entails attention to what competitors are doing. Responsiveness to competitors' actions may involve improving existing products and strengthening relationships with business partners. These findings suggest that export managers need to invest in both types of orientation to ensure the development of product development and market-related exploitative capabilities. Further, customer orientation gives rise to explorative capabilities, as information gathered about current and potential customers opens up opportunities for product innovation and unexplored export markets.

Surprisingly, competitor orientation is not related to explorative capabilities. The exporting context of the study may explain this result, which is not consistent with prior research (e.g., Atuahene-Gima, 2005). When managers take into account current products or markets, they can easily identify their main competitors and use that information to expand the firm's capabilities. Yet the collection and use of competitor information becomes more difficult in unknown markets, mainly because of the difficulty in identifying exact competitors. As Cadogan et al. (1999) note, the complexity and dynamism of the export environment; the resultant increase in information requirements; and the well-documented problems associated with the low availability, accessibility, and quality of export information may pose additional obstacles to firms in this regard.

The results not only corroborate the link between product development exploitative and explorative capabilities (Yalcinkaya et al., 2007) but also extend that link to market-related capabilities. This new finding indicates that, just as the accumulation of knowledge about existing technologies helps firms deal with new technology-specific knowledge, a firm's knowledge about its existing export

Table 2
Hypotheses-testing results.

Hypotheses	Standardized estimate (t-value)	Conclusion
H_{1a} Customer orientation (CO) → product development exploitative capabilities (PDEXT)	.51 (5.23***)	Support
H_{1b} CO → market-related exploitative capabilities (MREXT)	.31 (3.25***)	Support
H_{2a} CO → product development explorative capabilities (PDEXR)	.20 (1.97**)	Support
H_{2b} CO → market-related explorative capabilities (MREXR)	.16 (1.90*)	Support
H_{3a} Competitor orientation (CP) → PDEXT	.19 (2.07**)	Support
H_{3b} Competitor orientation → MREXT	.38 (3.86***)	Support
H_{4a} Competitor orientation → PDEXR	−.07 (−0.73)	No support
H_{4b} Competitor orientation → MREXR	.02 (0.21)	No support
H_{5a} PDEXT → PDEXR	.56 (6.30***)	Support
H_{5b} MREXT → MREXR	.59 (7.57***)	Support
H_{6a} PDEXT → current performance	.33 (4.75***)	Support
H_{6b} MREXT → current performance	.13 (1.99**)	Support
H_{7a} PDEXR → future performance	.15 (2.33**)	Support
H_{7b} MREXR → future performance	.19 (3.13***)	Support
H_8 Current performance → future performance	.11 (1.80*)	Support
Control variables		
Firm size → current performance	.14 (2.06**)	
Firm size → future performance	−.10 (−1.63)	
Export scope → current performance	.05 (0.75)	
Export scope → future performance	−.05 (−0.82)	

*** $p < .01$.
** $p < .05$.
* $p < .1$.

markets enhances the firm's ability to learn and deploy knowledge to new markets.

The effect of both types of exploitative and explorative capabilities on current and future export performance is another fresh finding in the field. On the one hand, exploitative capabilities provide the immediate capital flow that enables firms to perform in the present. Improvements in existing products enable firms to extend the product life with minor costs and risk. Firms that reinforce their relationships in the market can enjoy benefits from cross-selling and up-selling. On the other hand, explorative capabilities ensure a firm's renewal. The development of completely new products enables the firm to stay technologically ahead of competitors. The search for new export markets and relationships facilitates the broadening and renewal of a firm's market portfolio.

This study has three main limitations. First, the findings are specific to the exporting context. Replication of this research in other settings would test the study's external validity. Second, anticipated performance is a proxy for future performance. Collecting objective performance data in the near future would assist in validating the model. Finally, the cross-sectional research design of this study limits the ability to draw causal inferences. Thus, longitudinal data can offer further insights into the cause-and-effect links among customer and competitor orientations, innovative capabilities, and performance outcomes.

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