

# *The Performance Advantages for SMEs of Product Innovation and Marketing Resource-Capability Complementarity in Emerging Economies*

## *Introduction*

Research focusing on SMEs has in many respects been dominated by a developed-economy perspective (Bruton, Ahlstrom, and Obloj 2008). As such, theory and research on SMEs underpinned by a developed economy perspective may not easily translate or apply to SMEs in emerging economies. Grunhagen and Mishra note (2008: 1) “(t)he field of small business and entrepreneurship research is unique in its multidisciplinary approach.” In this sense there is a need to develop a better understanding of entrepreneurship in rapidly emerging economies (Bruton, Ahlstrom, and Obloj 2008). Likewise, while the economic growth of emerging economies is often driven by SMEs, our understanding of how SMEs compete in increasingly competitive emerging economies remains extremely limited (Bruton, Ahlstrom, and Obloj 2008). As such, understanding how SMEs in emerging economies compete is crucial to entrepreneurship scholars, policy makers, and SME owner/managers.

In the area of competitive platforms, the resource-based view (RBV) with its focus on resources and capabilities has helped shape our understanding about performance differentials between firms (Barney 1991; Crook, Ketchen, Combs, and Todd 2008; Day 1994; Ketchen, Hult, and Slater 2007). Theoretical developments within this literature have largely been conceptualized and discussed within two streams of research. The first stream adopts the position that resources which are valuable, rare, inimitable, and non-substitutable drive firm performance (e.g., Barney, 1991; Crook et al., 2008; Villanueva, Van de Ven, and Sapienza, 2012). The second stream adopts the position that it is the resource deployment process (e.g., Sirmon, Hitt, and Ireland, 2007; Vorhies, Morgan, and Autry, 2009), driven by organizational capabilities that drive performance (e.g., Morgan, Vorhies, and Mason 2009; Vorhies, Morgan, and Autry, 2009). This stream is underpinned by the view that while possessing resources is important, it is insufficient to drive performance. The value of resources is reflected in their ability to enhance marketplace performance (Srivastava, Fahey, and Christensen

2001). In fact, the capabilities by which resources are deployed is what explains firm performance over time (Eisenhardt and Martin 2000; Morgan, Vorhies, and Mason 2009; Teece, Pisano, and Shuen 1997).

The distinction between resources and capabilities, therefore, raises a number of theoretical and practical implications. For example, Newbert (2007) points out a long standing criticism of the RBV literature relating to whether resources or capabilities are more important in differentiating firm performance overtime. Significantly, Newbert (2007) contends that while this issue is frequently discussed in the RBV literature, it has rarely been empirically tested. Our examination of the literature indicates that this is especially so in the context of SMEs and emerging economies. While both schools of thought identified above are influential, their overt foci tend to neglect the broader linkages between resources and capabilities. To resolve the potential explanatory power these two perspectives offer, we contend that they should be integrated and that the study of resource – capability complementarity (hereinafter R-C complementarity) as the driver of superior financial performance is imperative.

Furthermore, while giving more attention to R-C complementarity is a valid pursuit and has much to offer, some scholars additionally argue that much of the literature within RBV has emphasized performance at the firm-level in the form of profit (financial performance) to the neglect of developing an understanding of the performance outcomes of resources and capabilities at a functional-level in areas such as customer and product innovation performance (Ray, Barney, and Muhanna 2004). This study argues that in the long run firms that achieve superior product innovation performance (Schroeder, Bates, and Junttila 2002) and customer performance (Homburg, Koschate, and Hoyer 2005) through R-C complementarity will have a greater tendency to achieve superior financial performance. Despite the theoretical and practical importance of these issues, surprisingly, little attention has been devoted to exploring the performance outcomes and drivers at a functional-level – such as the SME’s product innovation and customer performance - as mechanisms through which SMEs may enjoy firm-level superior financial performance.

This study extends the argument of resources-capability combinations of Newbert (2008) by articulating the nature of R-C combinations and setting this within both the SME and emerging market contexts. Second, this study takes the suggestion of Newbert (2007) and Ray, Barney, and Muhanna (2004) and shows that SMEs that possess specific resources - capability combinations achieve marketplace performance that results in superior financial performance. In this sense, this study shows how R-C complementarities existing in two specific functional areas in emerging economy SMEs contribute differently to product and customer performance, which subsequently lead to firm-level financial performance. Third, building on the contentions of scholars such as Song, Droge, Hanvanich, and Calantone (2005) and Vorhies, Morgan, and Autry (2009) that interactions between a firm's capabilities makes it more ambidextrous, enabling it to achieve superior financial performance, this study contributes to the literature by showing that R-C complementarities within different areas interact and contribute to performance. We show, for example, that a R-C complementarity in marketing which helps a firm develop a better understanding of customer needs combined with a product innovation R-C complementarity which helps translate these customer needs into products interact to enhance specific performance outcomes. This study identifies how product innovation R-C complementarity and marketing R-C complementarity and *their interaction* achieves superior financial performance (firm-level performance) through the firm's customer and product innovation performance (functional-level performance) in emerging economy SMEs.

### ***Resource – Capability Complementarity***

The foundation of the notion of factor production complementarity is derived from the RBV. Firms, according to theorists who use the RBV lens, firms perform differently due to their varied resources and capabilities. Resources are the firms' controlled tangible assets (i.e. financial or physical) that can be quantified, valued, and traded and intangible assets that are embedded in the firm's culture or protected by legal property rights (such as reputation or patents) (see also Langerak, 2003; Leonard-Barton, 1992). Capabilities, on the other hand, are bundles of interrelated processes and routines firms have in place to carry out specific activities to deploy related resources (see also

Day 1994; Woldesenbet, Ram, and Jones 2012). The notion of complementarity reflects an RBV tenet that superior performance is a function of the unique bundling of resources and capabilities that increases the complexity and ambiguity of organizational actions (Amit and Schoemaker, 1993; Atuahene-Gima, 2005; Barney, 1991). For instance, ambiguity may be derived from the complexity of resource and capability interactions (see also Reed and DeFillippi, 1990). From this perspective, complementarity between a resource and capability will result in better outcomes when combined than if only one is present or they are managed independently (see also Milgrom and Roberts, 1995; Moorman and Slotegraaf, 1999). The emphasis here is on identifying mutually reinforcing pairs of factors (i.e. a resource and capability in this study), which do not have simple additive, but rather multiplier effects, making them especially potent (Nakata, Zhu, and Izberk-Bilgin 2011). The notion of complementarity is interpreted as firms possessing a high level of resources and a high level of capabilities in complementarity areas to achieve superior performance<sup>1</sup>. Our conception of complementarity is represented within the Figure 1 the R-C complementary matrix.

--- Insert Figure 1 here ---

Adopting the theoretical underpinning discussed above, R-C complementarity is defined in this study as a high level of congruence between a resource and capability within the same functional area, where resources and capabilities are both superior (high) levels and targeted toward a specific outcome or advantage seeking behaviour. In a related argument Kamoche (1996) argues that the mutually reinforcing interaction between the stock of resources and the organizational capabilities generates competencies whose strategic value is realizable to the extent that they are linked with complementary core competencies that deliver market advantages. This implies that superior financial

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<sup>1</sup> We focus on this notion of complementarity because firms that possess a low level of resources coupled with a low level of capabilities fall into a similar type and form of category as Miles and Snow's (1978) reactor firms and thus cease functioning. In this sense, firms with low resources and capabilities have little competitive endowments and should cease functioning. Further, when we refer to high levels of both resources and capabilities of SMEs, we are not comparing the endowed resources and capabilities of SMEs to those of large firms. We are comparing SMEs with other SMEs competing within the same industry/market.

performance is achieved only if resources and capabilities are used in complementary combinations, and more specifically where the resources are matched with capabilities that result in enhanced performance.

The present study extends Newbert's (2008) argument about resource-capability combinations where superior financial performance is the outcome of neither resources nor capabilities alone, but is the result of the complementarity between them. This view is premised on the contention that a SME possessing superior (high level) resources (assets) and the capabilities (processes in place or skills to deploy the assets) to effectively and efficiently exploit them will achieve specific market advantages. In addition, the following considerations apply to this study: (1) while both resources and capabilities are dynamic in nature, we operationalize them as static variables; (2) while there is ambiguity in defining resources and capabilities, resources in the present study are operationalized as SME controlled assets and capabilities are the processes in place or skills needed to effectively and efficiently deploy those assets; and (3) while innovation does encompass much more than product innovation (e.g. process, management, technology), the present study only incorporates product innovation as operationalized to be new and existing product development.

This study focuses on R-C complementarity within marketing and product innovation functional areas because there is strong evidence within the small business literature that marketing and product innovation are instrumental to the success of SMEs (e.g., Moller and Anttila 1987; O'Dwyer, Gilmore, and Carson 2009; Rosenbusch, Brinckmann, and Bausch 2011). Superior innovation can help firms develop superior products to satisfy customers' constant changing needs and demands (i.e. Hult, Hurley, and Knight 2004; Hurley and Hult 1998; Li and Mitchell 2009; Rosenbusch, Brinckmann, and Bausch 2011), while superior marketing can help firms promote and bring products to the market faster and serve customers better than their competitors (Vorhies and Morgan, 2005; O'Dwyer, Gilmore, and Carson 2009; Vorhies, Morgan, and Autry 2009).

### ***Hypotheses***

Barney (1991) and Bruton, Dess, and Janney (2007), among others, argue that firms are likely to achieve superior performance once they possess VRIN resources. However, the extent that such resources contribute to firms' performance is still in question for researchers and practitioners. As argued by Ray, Barney, and Muhanna (2004), different resources may contribute differently to performance outcomes implying that not all VRIN resources possess the same value in markets or when firms seek to achieve specific goals in markets. For example, while firms can leverage superior product reputation, customer service reputation (VRIN resources) to enhance customer satisfaction, retention and add-on selling (customer performance), such resources cannot be leveraged to increase the number of product offerings and the speeds of introducing the product to the market (product innovation performance). Similarly, while firms can leverage resources such as technology, or licenses to increase productivity, such resources may not successfully be deployed to enhance customer satisfaction or retention. Therefore, it is critical to extend the general assumption of VRIN resources into specific categories of resources and firm objectives. Resources that are specifically devoted to enhance customer-based outcomes (such as customer satisfaction, retention, and add-on selling) are conceptualized as marketing resources. Likewise, resources that are specifically devoted to enhance product-based performance (such as increasing the number of product offerings and the speed of introducing the products to the market) are conceptualized as product innovation resources.

This study proposes that product innovation resources and product innovation capability are complementary when an SME has both superior product innovation resources and the capability to effectively and efficiently exploit the resources. The same interaction effect is argued to be found within the context of marketing resources and marketing capability. This study operationalizes the independent variable as the complementarity (or interrelationship) between product innovation resources and product innovation capability (product innovation R-C complementarity) as well as between marketing resources and marketing capability (marketing R-C complementarity) instead of individual product innovation and marketing resources or product innovation and marketing capabilities. Product innovation R-C complementarity and marketing R-C complementarity are hypothesized to affect financial performance through product innovation performance and customer

performance as depicted in Figure 2. Product innovation performance in this study is defined to be a function of the SME's ability to continuously introduce new products and adapted products relative to their competition while customer performance is defined to be a function of the SME's ability to create customer satisfaction and to deliver value to the customers relative to their competition.

**--- Insert Figure 2 here ---**

Adopting the view of Aaker (1989), Galbreath (2005) and Newbert (2008) of resources, product innovation resources are defined in this study to include assets such as technological resources, financial resources allocated for new product innovation-related activities, trademarks, licenses, and patents. Similarly, marketing resources are defined as assets such as product reputation, firm reputation, customer service reputation, and financial resources allocated for marketing purposes. Adopting Connor' (1991) and O'Cass and Ngo's (2012) perspective of capabilities, product innovation capability is defined as the bundles of interrelated routines and processes firms have in place for undertaking innovation-related activities such as developing new products, extending product ranges, improving existing product quality, improving production flexibility and exploiting the most up-to-date technologies. Marketing capability is defined as the bundles of interrelated routines, processes or skills firms engage in specified marketing-related activities in areas such as pricing, product, distribution, marketing communication, selling, and marketing planning relative to their competitors. Specifically, this study adopts the position that R-C complementarity within specific areas such as marketing and product innovation may not only contribute to firm's performance in isolation but also depend on the interaction effect between specific areas that complement one another (such as marketing and product innovation).

Work by Connor (1991), Nelson and Winter (1982), and Sok and O'Cass (2011) suggest that firms are seen as pools of resources and capabilities, implying that firms need to possess both resources and capabilities simultaneously to achieve superior performance. Consistent with this view, Newbert (2008) also argues that resources and capabilities may have a positive effect on firm performance only when they are matched together in function and deployed in complementary

combinations. This position is adopted because resources are static (Priem and Butler 2001) and have no value in isolation (Ketchen, Hult, and Slater 2007). Capabilities, in a similar vein, do not produce any value without the presence of resources (Slotegraaf, Moorman, and Inman 2003). This suggests that firms with superior (high levels of) resources in specific areas but poor (low levels of) capabilities to deploy those resources are at a disadvantage, just as firms with superior capabilities in specific areas but with poor resources in the corresponding area are at a disadvantage against firms who possess both resources and capabilities at a superior level (Sok and O’Cass 2011).

Drawing from the above theoretical underpinning, while product innovation capability (i.e., Hult, Hurley, and Knight 2004; Hurley and Hult 1998; Rosenbusch, Brinckmann, and Bausch 2011) has been repeatedly argued as crucial in achieving superior performance, this study argues that SMEs need complementary product innovation resources (assets) such as capital equipment, licenses, and patents that facilitate the new product development and manufacturing processes to develop new products successfully. Product innovation capability (processes or skills) is insufficient to enable SMEs to develop superior products without the availability of product innovation resources to deploy (see also Slotegraaf, Moorman, and Inman 2003). Likewise, product innovation resources is insufficient by themselves to develop products without the existence of processes in place (product innovation capability in this study) to deploy and leverage them (Teece 2007). Performance outcomes are derived from neither product innovation resources nor product innovation capability, but from their interrelationship or “complementarity” which is referred to here as product innovation R-C complementarity. In this context product innovation resources serve as a firm’s know-what knowledge resources (which provide the basis) while product innovation capability serves as a firm’s complementary know-how deployment capabilities (see also Grant 1996) (which provides the means) to achieve performance outcome.

Similarly, while marketing capability (i.e., Vorhies and Morgan, 2005; O’Dwyer, Gilmore, and Carson 2009) has been argued as crucial to achieve superior performance, this study argues that SMEs need complementary marketing resources (assets) such as product, company, brand, and customer service reputation, and the capability (processes or skills) to effectively exploit these resources to



produce superior performance outcomes. Marketing capability alone is unlikely to bring the products to the market successfully. According to Berry (2000), it is often the reputation of the firm's products and brands, the firm itself, and its customer service which act as the drivers of customer's choice. Likewise, marketing resources will not produce value without the existence of the marketing capability needed to leverage and deploy them (Teece 2007). In this context marketing resources serve as a firm's know-what knowledge resources (which provide the basis) while marketing capability serves as a firm's complementary know-how deployment capabilities (Grant 1996) (which provides the means) to achieve performance outcome.

While the arguments on product innovation R-C complementarity and marketing R-C complementary have much to offer, Amit and Schoemaker (1993) argue that resources and capabilities are valuable in the context of a specific market, and Peteraf and Bergen (2003) have linked the value of a resource and its application to the satisfaction of customer needs. Further, Collis and Montgomery (1995) suggest that, if a resource is valuable, it must contribute to the creation of something customers need. Ray, Barney, and Muhanna (2004) further elaborate that while the ultimate purpose of managers is to see the financial outcome, directly linking firm resources and capabilities to such a macro-level financial performance is misleading. A closer look at the extant literature suggests that a functional-level perspective on product and customer performance may help in understanding the impact of product innovation R-C complementarity and marketing R-C complementarity on firm-level financial performances. Particularly, performance at these functional-levels may serve as a pathway to superior firm-level financial performance. Following these theoretical contentions, customer and product functional-level performance are seen as a direct outcomes of the firms' ability to develop new products and deliver them to the customers, attract and retain customers, satisfy customers and increase sales to customers (Ray, Barney, and Muhanna 2004) leading to superior firm-level financial performance. Therefore,

*H1: The relationship between product innovation R-C complementarity and financial performance is positively mediated by (a) product innovation performance and (b) customer performance.*

*H2: The relationship between marketing R-C complementarity and financial performance is positively mediated by (a) product innovation performance and (b) customer performance.*

The achievement of superior firm-level financial performance via customer and product innovation performance may occur through the interaction effect of specific R-C complementarities within firms such as marketing R-C complementarity and product innovation R-C complementarity. The role of complementary capabilities in gaining marketplace advantage has been explored by only a few studies (see, Mizik and Jacobson 2003; Moorman and Slotegraaf 1999; Song, Droge, Hanvanich and Calantone 2005). These studies deal with the complementary effects of marketing capability and R&D (see Mizik and Jacobson 2003), and marketing capability and technology (see Moorman and Slotegraaf 1999; Song, Droge, Hanvanich and Calantone 2005) ignoring the significant benefits and potential complementarity between marketing capability and product innovation capability (see also, Drucker 1954). Extending this line of research, this study argues that the presence of both product innovation R-C complementarity and marketing R-C complementarity is critical for firms to achieve superior financial performance via product and customer performance. This study adopts this position because firms that pursue specific market opportunities, but are not innovative, are less likely to achieve or be able to maintain superior performance over the long run (Atuahene-Gima 1996). Similarly, innovation is itself not necessarily the sole driver of superior performance because firms can develop offerings and or enter new markets, serve markets better or provide greater value than competitors *only* if they possess strong marketing (O’Cass and Weerawardena 2010; Darroch and Miles 2011). Therefore, firms that possess and deploy one R-C complementarity, but lack the other are at a disadvantage to those who possess and deploy both. As such firms possessing high level of the interaction effect between product innovation R-C complementarity and marketing R-C complementarity are more likely to achieve superior customer and product innovation performance that eventually leads to superior financial performance. Therefore,

*H3: The relationship between the interaction between product innovation R-C complementarity and marketing R-C complementarity and financial performance is positively mediated by (a) product innovation performance and (b) customer performance.*

A key aspect of contingency theory is that market and/or firm level influences may exist that make resources or capabilities more important (Slater, Hult, and Olson 2010). Some scholars argue that different resources and capabilities (R-C complementarity in this study) may produce different effects on different types of performance (Ray, Barney, and Muhanna 2004). They further argue that specific resources and capabilities may be more important in achieving specific firm performance than others. Building on this contention, we argue that marketing resources and marketing capabilities (marketing R-C complementarity) should enable a firm to outperform its competitors by giving it the resources and ability to identify and serve the marketplace more effectively (Weerawardena and O’Cass 2004), yielding greater customer performance. Marketing is argued to enable firms to add value to their products and services to meet competitive demands (Vorhies and Morgan 2005; Weerawardena and O’Cass 2004) and plays a greater role in linking with serving customers and less of a role in actual product innovation performance. This study extends previous studies by contending that firms that possess marketing R-C complementarity are more likely to achieve superior performance in attracting customers, keeping them, and satisfying them which is at the heart of customer performance. Marketing is a significant driver of a firm’s competitiveness and firms that possess marketing R-C complementarity will have greater customer performance. Given that marketing contributes significantly to achieving customer performance, we propose that product innovation contributes less to achieving customer performance.

An examination of the literature reveals that product innovation is often more closely linked to product innovation performance than to customer performance. Product innovation is often linked to issues such as number of innovations, timeliness in developing products and newness of products developed (Lau, Tang, and Yam 2010). Product innovation often creates radical new market offerings helping the SME develop leading edge positions based on their breakthroughs, the timeliness of

product development and market entry, and the newness of product to the market are all driven by a firm's innovation (Kim and Mauborgne 1997, O'Cass and Sok 2012). In these areas the firm's product innovation R-C complementarity is more strongly linked toward product innovation performance than marketing R-C complementarity. Therefore,

*H4a: Product innovation performance has a stronger positive meditational role on product innovation R-C complementarity – financial performance relationship than customer performance.*

*H4b: Customer performance has a stronger positive meditational role on marketing R-C complementarity – financial performance relationship than product innovation performance.*

### **Method**

Given that our theoretical framework focuses on the intersection of SMEs and emerging economies within the context of resources and capabilities the specific choice of the emerging economy context was important. Further, the critical role of emerging and developing economies in the global economy has recently encouraged scholars to move their focus beyond the developed economy context and extend it into the new emerging economies (Burgess and Steenkamp 2006). As argued by Wan (2005) the unique context of emerging economies, particularly in Asia, with nations transitioning to highly market driven economics is not well understood (Yang and Wang 2011). An emerging economy in Asia that has recently become highly market driven is Cambodia.

Cambodia has shifted from a “centrally-planned” to a “market-oriented” capitalistic economy. To do so, Cambodia dramatically reformed its trade policies to make direct foreign inward investment more attractive (Chhun et al. 2012). These economic and regulatory changes coupled with a more politically stable society have seen the influx of foreign firms into Cambodian market in the last ten years, allowing the economy to rapidly grow and emerge within the Southeast Asian Region which is creating an ASEAN Economic Community (AEC). AEC is being established to create a common market within Southeast Asia to enhance regional economic development (Association of Southeast

Asian Nations 2011). With such economic changes competition has intensified and local firms, particularly SMEs, are now not only competing with their historical local competitors, but are also competing against an increasing numbers of foreign firms entering the Cambodian market. In addition, the nature of resource-capability scarcity (Terziovski 2010) has put tremendous pressure on SMEs in Cambodia. It has been argued that if SMEs wish to maintain or increase their market share against increasingly fierce competition, they must be capable of developing superior quality products, and serving and satisfying customers better than their competitors (O'Dwyer, Gilmore, and Carson 2009; Rosenbusch, Brinckmann, and Bausch 2011). Hence, Cambodia represents an excellent context for the study of SMEs with an increasingly more competitive market that will force firms to consider strategic alternatives in the pursuit of competitive advantage. These factors make Cambodia a useful context for management scholars interested in understanding how innovation, and marketing in emerging economies enhance the ability of SMEs to grow.

The respondents for this study were the senior managers (their roles could include CEO, founder or president) of Cambodian SMEs (135 small (84%) and 25 medium (16%)) selected from provinces where the majority of manufacturing SMEs are located (Luo, Sivakumar, and Liu 2005). Any firms whose total employees are between 11 and 50 are classified as small, while those whose total employees are between 51 and 100 are classified as medium, according to the Ministry of Industry Mining and Energy (MIME) of Cambodia.

Selected respondents were sorted alphabetically and by provinces from the list of all SMEs manufacturing firms obtained from the MIME. Eight hundred firms were randomly contacted to participate in the study. After the first initial contact, three hundred firms agreed to participate in the study. The senior manager within each SME was chosen for this study (Newbert 2008; Ngo and O'Cass 2009). One professional translator translated the original questionnaire in English to Khmer and then a second professional translator translated it back from Khmer to English (Sok and O'Cass 2011). Any differences were reconciled.

This study adopted a drop-and-collect technique deemed suitable in developing countries (Ngo and O'Cass 2009) where issues with mail surveys and the unreliable nature of postal systems have

been identified (Ellis 2005). In addition, this technique helps improve the response rates (Ibeh, Brock, and Zhou 2004). Further, this technique is argued to be appropriate when conducting a survey in countries such as Cambodia where personal interaction is crucial for information exchange and where the respondent was clearly identified (Hofstede 1980; Sok and O’Cass 2011). Of the 300 surveys distributed, 160 usable surveys were collected for a response rate of 20%.

Items were drawn from the literature to measure the proposed constructs. Four senior management and marketing scholars were invited to participate in the item purification expert-judgement process. They were provided with a short description and purposes of the study. The definition of the constructs namely product innovation resources, marketing resources, product innovation capability, marketing capability, product innovation performance, customer performance and financial performance along with the item measurement of each construct were also provided. They were asked to comment on the consistencies between the definition and the measurement of the proposed construct as well as their relevance to the objectives of the study. Several items were modified or removed based on their suggestions and comments.

Importantly, two concerns were raised by the experts. The first issue related to the nature of SMEs in an emerging economy. It was suggested that product innovation in Cambodian SMEs may be limited due to the lack product innovation resources (such as patents) and limited firm-level product innovation capabilities. The second issue is related to the knowledge of the senior manager in regard to the particulars of the sector/industry his/her firm is operating in. Taking into account these two issues, a random pre-test (via both personal interviews and survey) was conducted with senior managers of 10 SMEs operating in various manufacturing industries in Cambodia. The results of the pre-test indicated that these two issues were not significant constraints to the validity of this study. Suggestions from the senior managers were also undertaken at this stage to improve the readability and wording of the survey.

To further ensure the integrity and reliability of the responses obtained, in line with Vorhies, Morgan, and Autry’s (2009) approach, two specific questions were asked to assess respondents’ knowledge and confidence in ability to accurately answer the survey questions. The respondents were

first asked to identify their knowledge about their firms' business operations, business processes, performance and business environment (at the beginning of the survey), and then asked to rate their confidence level in possessing the necessary knowledge to complete the questionnaire (at the end of the survey) using 7-point Likert scale ranging from 'not at all confident' to 7 'very confident'. Any respondents who answered below 5 to any of the two questions were removed from the study, with the remaining respondents judged to be suitable key informants.

As shown in Table 1, *product innovation resources and marketing resources* were measured via the 5-item scale and 4-item scale respectively. These scales were adapted from Aaker (1989) and Galbreath (2005). A seven-point scale ranging from 1 'well below industry average' to 7 'well above industry average' was used. *Product innovation capability* was measured via the 5-item scale adapted from Hult, Hurley, and Knight (2004) and Lau, Tang, and Yam (2010). A seven-point scale ranging from 1 'not at all' to 7 'extensively' was used. *Marketing capability* was measured via the 9-item scale adapted from Vorhies and Morgan (2005). A seven-point scale was developed ranging from 1 'much worse than competitors' to 7 'much better than competitors.' The use of different scale anchors when measuring firm capabilities has been adopted in previous research (Morgan, Vorhies, and Mason 2009; Weerawardena and O'Cass 2004; Zhou and Wu 2010) and the measures were based as closely as possible on the original items with items adapted only to make them more understandable by the respondents.

--- Insert Table 1 here ---

To operationalise the R-C complementarity first as a high level of marketing resource and marketing capability, and second as a high level of product innovation resource and product innovation capability, the scores of each R-C complementary combination (i.e., marketing R-C and then product innovation R-C) were each multiplied. This operational approach is similar to that used by Atuahene-Gima (2005) and He and Wong (2004) when they followed the same procedure to examine a combination of a high level of innovation exploration and a high level of innovation exploitation. In this sense Product Innovation R-C Complementarity was created by taking the product of the mean of product innovation resources and product innovation capability while

Marketing R-C Complementarity was created by taking the product of the mean of marketing resources and marketing capability.

*Product Innovation Performance* was measured via the 2-item scale which was built on the work of Ali, Krapfel, and LaBahn (1995) and Morgan, Zhou, Vorhies, and Katsikeas (2003). A seven-point scale ranging from 1 ‘much worse than competitors and many less than competitors’ to 7 ‘much better than competitors and many more than competitors’ was used. *Customer Performance and Financial Performance* was measured via the 2-item scale each which was built on the work of Morgan, Vorhies, and Mason (2009).

An argument can be made to support the use of relative performance measures such as product, customer and financial performance. The relative comparisons between an SME and its competition by owner- managers has been typically used due to lack of consistent financial reports and has been validated for emerging businesses by Chandler and Hanks (1994). In the present study all the Cambodian SMEs are private firms and are not subject to performance disclosure requirements. Consequently, objective financial and market data is not available. Therefore, relative performance measures for product, customer and financial performance were utilized in the present study.

Firm size (logarithm of the number of employees), firm age (logarithm of the number of years in business), industry type, market uncertainty and technology uncertainty were controlled. This study measured market uncertainty and technology uncertainty via the 6-item scale and 4-item scale respectively. These scales were adopted from Jaworski and Kohli (1993).

### ***Data analysis and results***

Non-response bias was examined by comparing firms who had completed and returned the questionnaire (160) with those who had not (140) (see also. Sok and O’Cass 2011). The sample database contained firm names, total employment, and total sales. There was no significant difference in terms of sales and firm size (number of employees obtained from MIME) among the two groups, indicating that non-response bias was not a serious issue. In addition, non-response bias was checked by comparing the responses of the questionnaire of the first 10% of respondents received with those of the last 10% received using t-test (Isobe, Makino, and Montgomery 2008), there was no significant



difference from the results of the t-tests between the two groups in term of the means for items, further suggesting that the non-response bias was not a serious concern in the current study.

As shown in Table 1 the composite reliability for each of the constructs was well above the benchmarked level of .70, indicating that the measures were reliable (Nunnally 1978). The factor loadings for all items were well above the recommended benchmark of .50 while the average variance extracted (AVE) for all constructs also exceeded the recommended benchmark of .50, thus providing support for convergent validity (Bagozzi and Yi 1988).

Further, as shown in Table 2, the square roots of the AVE values were consistently greater than the off-diagonal correlations (Fornell and Larcker 1981) and at the same time no individual correlations were higher than their respective reliabilities (O’Cass and Ngo 2007), suggesting satisfactory discriminant validity of all constructs. Importantly, the variance inflation factor (VIF) for all constructs fell within the range of 2.32 and 3.89, well below the VIF threshold of 6 suggested by Hair, Anderson, Tatham, and Black (1998), suggesting that all measures are likely to be psychometrically sound ones.

**--- Insert Table 2 here ---**

Since this study used a single informant and since some correlations between the constructs identified in Table 2 are high, two additional steps were taken to address common method bias. First, Harman’s single factor test was employed (O’Cass and Ngo 2012). The finding indicated there was no common method variance problem. Second, the marker variable technique recommended by Lindell and Whitney (2001) was undertaken. The marker variable used was satisfaction with life that has a non-significant correlation with firm performance, suggesting that the measurement model was robust, and not subject to common method variance.

This study used Partial Least Squares (PLS) to test the proposed hypotheses. The bootstrapping procedure as outlined by Brown and Chin (2004) for testing the proposed hypotheses was undertaken. Testing the significance of all paths was performed on the basis of 500 bootstrapping runs. This study

used Baron and Kenny's (1986) mediation procedure and estimated 12 models in testing the hypotheses.

Models 1 and 2 were developed to test hypothesis 1a, which predicts that product innovation performance mediates the effect of product innovation R-C complementarity on financial performance. As shown in Table 3, product innovation R-C complementarity positively influences financial performance (Model 1,  $\beta=0.34$  t-value=4.16) and product innovation performance (Model 2,  $\beta=0.30$  t-value=3.84), which also positively influences on financial performance (Model 2,  $\beta=0.83$  t-value=34.08). Comparing Models 1 and 2, this study found that the positive effect of product innovation R-C complementarity in Model 1 becomes significantly weaker in Model 2 ( $\beta=0.34$  t-value=4.16 vs.  $\beta=0.10$  t-value=2.10). Therefore, product innovation performance partially mediates the relationship between product innovation R-C complementarity and financial performance, supporting hypothesis 1a. To test hypothesis 1b, which predicts that customer performance mediates the effect of product innovation R-C complementarity on financial performance Model 3 was developed. As shown in Table 3, product innovation R-C complementarity positively influences financial performance (Model 1,  $\beta=0.34$  t-value=4.16) and customer performance (Model 3,  $\beta=0.29$  t-value=3.45), which also positively influences financial performance (Model 3,  $\beta=0.77$  t-value=21.52). Comparing Models 1 and 3, this study found that the positive effect of product innovation R-C complementarity in Model 1 becomes significantly weaker in Model 3 ( $\beta=0.34$  t-value= 4.16 vs.  $\beta=0.11$  t-value=2.20). Therefore, customer performance partially mediates the relationship between product innovation R-C complementarity and financial performance, supporting hypothesis 1b.<sup>2</sup>

--- Insert Table 3 here ---

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<sup>2</sup> Adopting the principles outlined in Figure 1 the R-C complementary matrix to confirm hypothesis 1a and 1b, we further tested the effects of a combination of a high level of product innovation resources and a low level of product innovation capability (as represented in quadrant 2 and 3) (and vice versa) as well as a combination of a high level of marketing resources and a high level of marketing capability on product innovation performance, customer performance, and financial performance. Following the approach of He and Wong (2004), a combination of high-high is the product term between product innovation resources and product innovation capability while a combination of high-low and low-high is the absolute value between product innovation resources and product innovation capability. The results show that high levels of product innovation resources and product innovation capability combination is significantly related to product innovation performance, customer performance and financial performance, while a high level of product innovation resources yet a low level of product innovation capability (and vice versa) combination is not.

To test hypothesis 2a, which predicts that product innovation performance mediates the effect of marketing R-C complementarity on financial performance, this study developed Model 6. As shown in Table 3, marketing R-C complementarity positively influences financial performance (Model 4,  $\beta=0.38$  t-value=4.81) and product innovation performance (Model 6,  $\beta=0.29$  t-value=3.60), which also positively influences financial performance (Model 6,  $\beta=0.75$  t-value=24.04). Comparing Models 4 and 6, this study found that the positive effect of marketing R-C complementarity in Model 4 becomes significantly weaker in Model 6 ( $\beta=0.38$  t-value=4.81 vs.  $\beta=0.16$  t-value=3.36). Therefore, product innovation performance partially mediates the relationship between marketing R-C complementarity and financial performance, supporting hypothesis 2a. To test hypothesis 2b, which predicts that customer performance mediates the effect of marketing R-C complementarity on financial performance, this study developed Models 4 and 5. As shown in Table 3, marketing R-C complementarity positively influences financial performance (Model 4,  $\beta=0.38$  t-value=4.81) and customer performance (Model 5,  $\beta=0.31$  t-value=3.68), which also positively influences financial performance (Model 5,  $\beta=0.82$  t-value=33.14). Comparing Models 4 and 5, this study found that the positive effect of marketing R-C complementarity in Model 4 becomes significantly weaker in Model 5 ( $\beta=0.38$  t-value=4.81 vs.  $\beta=0.13$  t-value=3.26). Therefore, customer performance partially mediates the relationship between marketing R-C complementarity and financial performance, supporting hypothesis 2b<sup>3</sup>.

To test hypothesis 3a, which predicts that product innovation performance mediates the effect of the interaction between product innovation R-C complementarity and marketing R-C complementarity on financial performance, this study developed Models 7 and 8. As shown in Table 3, the interaction between product innovation R-C complementarity and marketing R-C complementarity positively influences financial performance (Model 7,  $\beta=0.24$  t-value=2.35) and product innovation performance (Model 8,  $\beta=0.20$  t-value=2.10), which also positively influences financial performance (Model 8,  $\beta=0.84$  t-value=43.72). Comparing Models 7 and 8, this study found

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<sup>3</sup> To confirm hypothesis 2a and 2b, we adopted the same approach as above and the results show that high levels of marketing resources and marketing capability combination is significantly related to product innovation performance, customer performance and financial performance, while a high level of marketing resources yet a low level of product innovation capability (and vice versa) combination is not.

that the positive effect of the interaction between product innovation R-C complementarity and marketing R-C complementarity in Model 7 becomes insignificant in Model 8 ( $\beta=0.24$  t-value=2.35 vs.  $\beta=0.07$  t-value=1.92). Therefore, product innovation performance fully mediates the relationship between the interaction between product innovation R-C complementarity and marketing R-C complementarity and financial performance, supporting hypothesis 3a. To test hypothesis 3b, which predicts that customer performance mediates the effect of the interaction between product innovation R-C complementarity and marketing R-C complementarity on financial performance, this study developed Model 9. As shown in Table 3, the interaction between product innovation R-C complementarity and marketing R-C complementarity positively influences financial performance (Model 7,  $\beta=0.24$  t-value=2.35) and customer performance (Model 9,  $\beta=0.17$  t-value=2.05), which also positively influences financial performance (Model 9,  $\beta=0.78$  t-value=34.67). Comparing Models 7 and 9, this study found that the positive effect of the interaction between product innovation R-C complementarity and marketing R-C complementarity in Model 7 becomes significantly weaker in Model 9 ( $\beta=0.24$  t-value=2.35 vs.  $\beta=0.10$  t-value=1.96). Therefore, customer performance partially mediates the relationship between the interaction between product innovation R-C complementarity and marketing R-C complementarity and financial performance, supporting hypothesis 3b.

This study also conducted Sobel's (1982, 1988) test<sup>4</sup> to determine whether the mediating variables carried the effect of the independent variable on the endogenous variables. Significant t-values indicate that product innovation performance and customer performance are critical mediators of the linkages between product innovation R-C complementarity, marketing R-C complementarity, interaction between product innovation R-C complementarity and marketing R-C complementarity and financial performance.

Hypothesis 4a predicts that product innovation performance has a stronger meditational role on product innovation R-C complementarity – financial performance relationship than customer performance. Comparing Models 1, 2 and 3, this study found that the positive effect of product

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<sup>4</sup> Sobel (1982, 1988) provided an approximate significance test for the indirect effect that includes three variables ( $X_1 \rightarrow X_2 \rightarrow X_3$ ) as follows: a and b are the path coefficients for the direct effects of  $X_1 \rightarrow X_2$  and  $X_2 \rightarrow X_3$ , respectively.  $SE_a$  and  $SE_b$  are denoted as the standard errors. The standard error of the indirect effect (the product ab) is:  $SE_{ab} = \text{SQRT}[(b^2 SE_a^2 + a^2 SE_b^2 + SE_a^2 * SE_b^2)]$

innovation R-C complementarity in Model 1 drops more significantly in Model 2 ( $\beta=0.34$  t-value=4.16 vs.  $\beta=0.10$  t-value=2.10) than in Model 3 ( $\beta=0.34$  t-value=4.16 vs.  $\beta=0.11$  t-value=2.20). Therefore, hypothesis 4a is supported. To further support Hypothesis 4a this study developed Models 10 and 11. Comparing Models 10 and 11, it is evidenced that product innovation R-C complementarity has a stronger relationship with product innovation performance ( $\beta=0.30$  t-value=3.49) than with customer performance ( $\beta=0.28$  t-value=3.25) further supporting hypothesis 4a. Hypothesis 4b predicts that customer performance has a stronger meditational role in the marketing R-C complementarity – financial performance relationship than product innovation performance. Comparing Models 4, 5 and 6, this study found that the positive effect of marketing R-C complementarity in Model 4 drops more significantly in Model 5 ( $\beta=0.38$  t-value=4.81 vs.  $\beta=0.13$  t-value=3.26) than in Model 6 ( $\beta=0.38$  t-value=4.81 vs.  $\beta=0.16$  t-value=3.36). Therefore, hypothesis 4b is supported. To further support Hypothesis 4b this study developed Models 12 and 13. Comparing Models 12 and 13, it is evidenced that marketing R-C complementarity has a stronger relationship with customer performance ( $\beta=0.31$  t-value=4.63) than with product innovation performance ( $\beta=0.29$  t-value=4.24) further supporting hypothesis 4b.

### ***Discussion and implications***

The key objectives of this study were, first, to advance our understanding the role of the interrelationship between SME resources and capabilities within and between specific functional areas by examining how product innovation R-C complementarity, marketing R-C complementarity and their interaction contribute to superior financial performance of SMEs in emerging markets. This study provides a theoretical case and supporting empirical evidence that product innovation R-C complementarity, marketing R-C complementarity, and their interactions facilitate a SME's product and customer functional-level performance, which in turn positively influences firm-level financial performance. In addition, this study identifies a stronger contribution from product innovation R-C complementarity to financial performance via product innovation performance than through customer performance. Likewise, there is also a stronger contribution from marketing R-C complementarity to financial performance via customer performance than through product innovation performance.

Given the findings, this study offers several contributions. First, although the core logic of RBV argues that the possession of heterogeneous resources or capabilities may result in superior performance, scholars still have a limited understanding of what and how firms deploy resources and capabilities simultaneously to achieve superior financial performance (Newbert 2007, 2008). This study contributes by empirically investigating the impact of R-C complementarity in driving superior financial performance. Extending Newbert's (2008) argument, the findings show that superior firm performance is achieved only when the resources deployed are complementary with the firm's capabilities to strategically exploit the deployed resources. The managerial implication of this is that to enhance financial performance emerging market SMEs must deploy resources that are complementary to their capabilities.

Second, the findings indicate that product innovation and marketing R-C complementarity are critical performance drivers reaffirms the conventional wisdom by Drucker (1954) that product innovation and market are the two activities that enable firms to succeed. In addition, the findings suggest that it is neither product innovation nor marketing capabilities alone that drive financial performance, but the ability of the SME to deploy resources that it has the capabilities to strategically leverage.

The findings about product innovation and marketing R-C complementarities extend the work of Mizik and Jacobson (2003), Moorman and Slotegraaf (1999), Morgan, Vorhies, and Mason (2009), and Song, Droge, Hanvanich, and Calantone (2005) who have explored the role of complementary capabilities in gaining marketplace advantage. The findings also provide an important theoretical and empirical contribution to the current literature which had not previously identified the role of R-C complementarity within the areas of marketing and product innovation in achieving superior financial performance. The findings not only underscore the individual contribution of the product innovation and marketing R-C complementarities, but also lend support for the impact of the interaction effects via product and customer performance on financial performance. Marketing allows firms to understand and meet customer needs. Product innovation allows firms to transform these customer needs into products that then can satisfy customers. The value of innovation is contingent upon an

effective understanding of customer needs and linking the SME with customers via marketing. Extending the work of Vorhies, Morgan, and Autry (2009), the findings contribute significantly to the literature by suggesting that some firms may outperform others not only because they possess a specific individual R-C complementarity, but also because they possess R-C complementarities that generate a competitive position that is difficult to imitate. The managerial implication of this is that SMEs need a balanced approach to developing and managing innovation and marketing R-C complementarities to enhance performance.

Third, the findings of the meditational roles of product and customer performance in facilitating R-C complementarity within and between innovation and marketing areas to achieve superior financial performance contribute to the literature by addressing concerns raised by Ray, Barney, and Muhanna (2004) that linking a firm's resources and capabilities directly to a firm's financial performance may lead to misleading conclusions. The findings also advance our understanding of performance at both the functional- and firm-levels by identifying that superior functional-level product innovation performance drives superior firm-level financial performance. Similarly, firms that achieve superior functional-level customer performance also enjoy superior firm-level financial performance. The implications for SME owner/managers are that they should develop both customer and product innovation performance to achieve firm-level financial performance. This may be accomplished by, for example, developing and delivering more products to the market (Ramani and Kumar 2008) or/and by serving customers better than their rivals (Homburg, Koschate, and Hoyer 2005).

Fourth, the findings that product innovation performance has a stronger meditational role on product innovation R-C complementarity – financial performance relationship than customer performance as well as the findings that customer performance has a stronger meditational role on marketing R-C complementarity – financial performance relationship than product innovation performance supports the arguments by Newbert (2007) and Ray, Barney, and Muhanna (2004) that particular resources and capabilities may contribute differently to performance outcomes at disaggregated levels. This study indicates that R-C complementarity associated with product

innovation contributes more significantly to product innovation performance while R-C complementarity associated with marketing contributes more significantly to customer performance. The implications for management is that the firm needs to develop superior product innovation resources and capabilities; to achieve superiority in customer performance, firms need to develop superior marketing resources and capabilities.

### ***Limitations and Suggestions for Future Research***

The findings of this study should be considered in the light of specific limitations. First, even though the approach adopted in this study to measure firm resources, capabilities and firm performance is consistent with the existing literature the cross-sectional data employed in this study may not provide the same insights as a longitudinal design. Hence, future research using longitudinal data may help evaluating the prescribed order of investment in developing the relationships among product innovation resources, marketing resources, product innovation capability, marketing capability, product innovation performance, customer performance and financial performance. Second, this study focuses on SMEs in emerging economy (Cambodia), and may not be generalizable across other contexts. Future research may focus on replication in other contexts. Third, drawing on RBV, this study focuses on product innovation R-C complementarity and marketing R-C complementarity and their interaction. Future research may take into account the role of learning R-C complementarity since it is argued that firms that possess abilities to analyse their unsuccessful business operations in areas such as innovation and marketing can improve their product offerings and serve customers better in a long run (Prieto and Revilla 2006). This approach may also be extended to a broader set of R-C complementarities by focusing on areas such as operations, technology and the like. Fourth, given the narrow perspective adapted to measure resources (product innovation resources and marketing resources), future research may consider more comprehensive measurement approach that tap a wider array of resources within the firm. Fifth, the results are limited due to the nature of a single respondent. Future research may attempt to measure customer performance in terms of both owner/manager and customer perceptions, product innovation performance in terms of both



owner/manager and competitor perceptions, and financial performance in terms of both subjective and objective data.

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**Table 1** Measurement model: Composite reliability, Average variance extracted, loadings and t-value

Construct	Items	Loading	t-values
Marketing Capability (CR = 0.94, AVE = 0.77)	<i>(7-point scale 1= “much worse than competitors” and 7= “much better than competitors”)</i> <b>Our firms’ marketing activities, compared to our major competitors, in terms of</b>		
	MC1: Doing an effective job of pricing products has been	.88	58.21
	MC2: Test marketing of new products has been	.86	48.35
	MC3: Launching new products has been	.87	54.22
	MC4: Attracting and retaining the best distributors have been	.91	79.82
	MC5: Developing and executing advertising & promotion programs has been	.90	75.39
	MC6: Analysing market information has been	.87	49.55
	MC7: Sales management has been	.91	80.21
	MC8: Developing creative marketing strategies has been	.89	60.64
	MC9: Translating marketing strategies into action has been	.89	60.57
Product Innovation Capability (CR = 0.91, AVE = 0.71)	<i>(7-point scale 1= “not at all” and 7= “extensively”)</i> <b>Within this firm we have activities, routines, business processes and behaviours for</b>		
	IC1: Exploiting the most-up-to-date technology available	.84	42.62
	IC2: Developing new products	.87	56.11
	IC3: Extending the firm’s product range	.90	68.24
	IC4: Improving existing product quality	.85	42.65
	IC5: Improving production flexibility	.86	46.39
Marketing Resources (CR = 0.90, AVE = 0.76)	<i>(7-point scale 1= “well below industry average” and 7 “well above industry average”)</i> <b>Think about the competitive environment you operate in and indicate the extent to which you possess the following resources at a superior level to the industry average</b>		
	MarR1: Company reputation	.88	48.51
	MarR2: Customer service reputation	.90	66.37
	MarR3: Product reputation	.89	62.94
	MarR4: Financial resources (allocated for marketing activities)	.81	28.52
Product Innovation Resources (CR = 0.92, AVE = 0.73)	<i>(7-point scale 1= “well below industry average” and 7 “well above industry average”)</i> <b>Think about the competitive environment you operate in and indicate the extent to which you possess the following resources at a superior level to the industry average</b>		
	InnR1: Technological Resources (Machinery and equipment)	.88	52.13
	InnR2: Patent	.89	56.50
	InnR3: License	.91	69.36
	InnR4: Trademarks	.90	65.17
	InnR5: Financial resources (allocated for innovation activities)	.87	52.37
Customer Performance (CR= 0.90, AVE = 0.91)	<i>(7-point scale 1= “much worse than competitors” and 7 “much better than competitors”)</i> <b>Our firm’s performance, compared to our major competitors, in terms of (for a particular product)</b>		
	CP1: Customer satisfaction has been	.92	68.42
	CP2: Delivering value to customers has been	.92	66.95
Product innovation performance (CR = 0.91, AVE = 0.92)	<i>(7-point scale 1= “many less than competitors” and 7 “many more than competitors”)</i> <b>Our firm’s performance, compared to our major competitors, in terms of</b>		
	PP1: Introduction of new product (completely new product and/or new product adaptation) has been	.92	71.53
	PP2: Our firm’s performance, compared to our major competitors, in terms of the number of successful new product (completely new product and/or new product adaptation) has been	.93	72.65
Financial Performance (CR = 0.90, AVE = 0.91)	<i>(7-point scale 1= “much worse than stated objectives” and 7 “much better than stated objective”)</i> <b>Our firm’s performance, compared to our stated objectives, in terms of (for a particular product)</b>		
	FP1: Profitability has been	.93	69.32
	FP2: Return on investment has been	.93	72.15



**Table 2** Descriptive statistics and construct inter-correlations (N = 171)

	CR	M	STD	MarR	InnR	MC	IC	PP	CP	FP
Marketing Resource (MarR)	.90	4.58	1.18	<b>.87</b>						
Innovation Resource (InnR)	.91	4.41	1.12	.72**	<b>.85</b>					
Marketing Capability (MC)	.94	4.62	1.16	.55**	.45**	<b>.88</b>				
Innovation Capability (IC)	.91	4.58	1.14	.56**	.43**	.67**	<b>.84</b>			
Product Innovation Performance (PP)	.91	4.20	1.28	.62**	.66**	.65**	.60**	<b>.96</b>		
Customer Performance (CP)	.90	4.47	1.26	.59**	.58**	.63**	.61**	.83**	<b>.95</b>	
Financial Performance (FP)	.90	4.32	1.31	.64**	.64**	.61**	.62**	.86**	.80**	<b>.95</b>

Note: Diagonal entries show the square roots of average variance extracted, others represent correlation coefficients

\*p<0.05

\*\*p<0.01

**Table 3** Hypotheses 1 and 2: structural equation parameter Estimates (t-value)

Independent variables	Endogenous variable									
	Hypothesis 1a			Hypothesis 1b		Hypothesis 2a			Hypothesis 2b	
	Model 1	Model 2		Model 3		Model 4	Model 5		Model 6	
	FP	PP	FP	CP	FP	FP	CP	FP	PP	FP
IRIC	.34** (4.16)	.30** (3.84)	.10* (2.10)	.29** (3.45)	.11* (2.20)					
PP			<b>.83**</b> <b>(34.08)</b>							
CP					<b>.77**</b> <b>(21.52)</b>					
MRMC						.38** (4.81)	.31** (3.68)	.13** (3.26)	.29** (3.60)	.16** (3.36)
CP								<b>.82**</b> <b>(33.14)</b>		
PP										<b>.75**</b> <b>(24.04)</b>
Control Variables										
Firm age	.04 (0.40)		.05 (0.92)		.05 (0.91)	.04 (.0.46)		.05 (0.85)		.04 (0.87)
Firm Size	.16 (1.74)		.02 (0.48)		.02 (0.27)	.15 (1.64)		.02 (0.30)		.02 (0.43)
Industry Type	.01 (0.19)		.02 (0.48)		.05 (0.95)	.01 (0.16)		.05 (1.18)		.03 (0.70)
Technology										
Uncertainty	.01 (0.19)		.03 (0.76)		.07 (1.50)	.04 (0.48)		.03 (0.62)		.04 (0.95)
Market										
Uncertainty	.11 (1.40)		.00 (0.08)		.09 (1.66)	.11 (1.53)		.07 (1.55)		.00 (0.01)

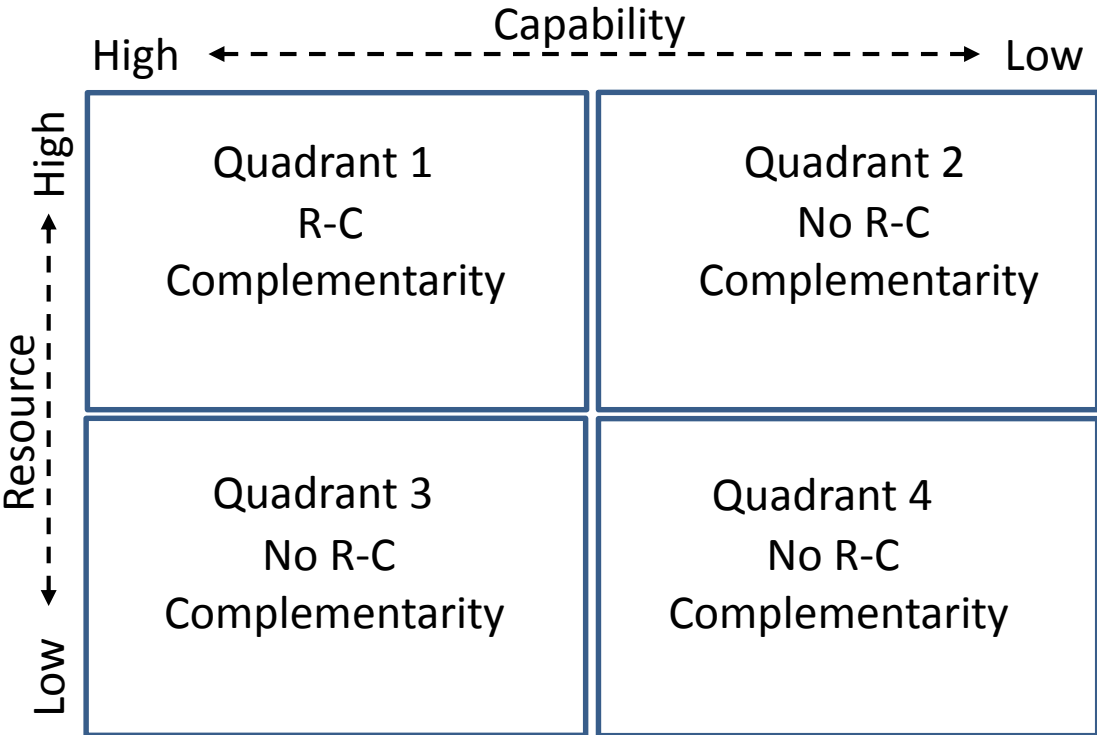
Notes: MC = marketing capability, IC = innovation capability, MR = marketing resources, IR = innovation resource, CP = customer performance, PP = product innovation performance, FP = financial performance, MRMC = marketing R-C complementarity, IRIC = innovation R-C complementarity, \*\*  $p < .01$ ; \*  $p < .05$

**Table 3 (Con't)** Hypotheses 3 and 4: structural equation parameter Estimates (t-value)

Independent variables	Endogenous variable								
	Hypothesis 3a			Hypothesis 3b		Hypothesis 4a		Hypothesis 4b	
	Model 7	Model 8		Model 9		Model 10	Model 11	Model 12	Model 13
	FP	PP	FP	CP	FP	PP	CP	CP	PP
(IRIC)X(MRMC)	.24** (2.35)	.20* (2.10)	.07 (1.92)	.17* (2.05)	.10* (1.96)				
PP			<b>.84**</b> <b>(43.72)</b>						
CP					<b>.78**</b> <b>(34.67)</b>				
IRIC						30** (3.49)	28** (3.25)		
MRMC								31** (4.63)	29** (4.24)
Control Variables									
Firm age	.05 (0.53)		.04 (0.82)		.06 (.091)	.11 (1.11)	.02 (0.22)	.01 (0.10)	.11 (1.30)
Firm Size	.19* (1.97)		.03 (0.59)		.01 (0.12)	.17* (1.98)	.23** (2.61)	.23** (2.22)	.16* (1.97)
Industry Type	.03 (0.46)		.01 (0.32)		.04 (0.78)	.04 (0.49)	.08 (1.14)	.06 (0.81)	.02 (0.27)
Technology									
Uncertainty	.01 (0.17)		.03 (0.74)		.02 (0.41)	.03 (0.34)	.01 (0.09)	.01 (0.10)	.01 (0.11)
Market									
Uncertainty	.13 (1.66)		.00 (0.15)		.07 (1.62)	.12 (1.74)	.04 (0.63)	.06 (0.73)	.13 (1.82)

Notes: MC = marketing capability, IC = innovation capability, MR = marketing resources, IR = innovation resource, CP = customer performance, PP = product innovation performance, FP = financial performance, MRMC = marketing R-C complementarity, IRIC = innovation R-C complementarity, \*\*  $p < .01$ ; \*  $p < .05$

**Figure 1 R-C Complementarity Matrix**



**Figure 2.**

**Theoretical Framework and Hypotheses**

