



# Product resource–capability complementarity, integration mechanisms, and first product advantage<sup>☆</sup>



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## ABSTRACT

The current study extends work on resource-based theory (RBT) by exploring resource–capability complementarity in a new context—that of new technology ventures’ (NTVs) first product (FP) commercialization in India. This study examines the influence of marketing and technology resource–capability complementarity on FP positional advantages (differentiation and cost-efficiency) and their influence on first product performance (FPP). Furthermore, this study incorporates the influence of supplier integration (SI) mechanisms (in terms of knowledge sharing and co-commercialization) in the process of FP commercialization. The findings suggest that asset complementarities have a positive relation with FP positional advantages, in that both differentiation and cost-efficiency enhance an NTV’s FPP, and that SI moderates the relationships between both marketing and technology R–C complementarity and FP positional advantages.

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## 1. Introduction

NTVs are young SMEs that develop R&D-oriented products in technology-based markets (Li & Zhang, 2007). The success of their FP is a harbinger of the ultimate success of an NTV (Song, Song, & Benedetto, 2011). NTVs have many product related asset limitations (Fernhaber & Li, 2012) which make commercialization of the FP a challenge (Song et al., 2011). Research on product asset deployment leading to new product superiority is substantial; however, much research targets established firms (e.g., Kim & Atuahene-Gima, 2010; Kim, Im, & Slater, 2013). Current research does not emphasize how NTVs can more effectively configure their assets to enhance FPP (Song, Di Benedetto, & Song, 2010). Stakeholder integration in the new product commercialization process is critical. However, the mechanisms that NTVs use to cooperate with suppliers are still unclear (Cavazos, Patel, & Wales, 2011), particularly in relation to FP commercialization processes. This study suggests that when technology and marketing resources and capabilities are complementary they enhance an NTV’s FP market performance via the generation of FP positional advantages. Building on social capital theory this study suggests that the influence of technology and marketing resource–capability (R–C) complementarity on FP cost efficiency and differentiation is contingent on the effective integration of suppliers during the commercialization process.

## 2. Theory development

This study extends Day and Wensley’s (1988) positional advantage framework for an NTV’s FP. In this sense, achieving first product differentiation and cost-efficiency comes from the ability of the NTV to achieve complementarity between the R–C deployed in first product commercialization. Fit is a critical factor in the success of any organization (Zott & Amit, 2008) because efficiency and effectiveness are the result of fit between internal and external contingency factors. Two elements fit well if complementarities exist between them. The sources of positional advantage are complements if increasing one of them increases the returns to the other.

Fig. 1 summarizes the conceptual model identifying marketing capability and resources. Marketing capabilities are experiential knowledge, skills, and related processes to undertake marketing activities (Vorhies & Morgan, 2005). Marketing resources include market knowledge and the marketing budget—both critical for new product marketing (Morgan, 2012). Market knowledge denotes the breadth, depth, tacitness, and specificity of knowledge about customers and competitors for the purposes of commercialization (De Luca & Atuahene-Gima, 2007). The marketing budget reflects the allocation of funds to marketing during product commercialization (Song et al., 2011). On the basis of the notion of complementarity, marketing resources and capabilities should undergo fine-tuning to enhance each other’s contribution to the FP commercialization process (Huang, Sinha, & Dong, 2004). Marketing capabilities require exploiting complementary marketing resources to achieve differentiation and cost-efficiency (Slotegraaf, Moorman, & Inman, 2003). Marketing resources are static factors of the firm (Makadok, 2001) and need pairing with complementary capabilities to create synergy to enhance the venture’s ability to identify customer needs and offer a superior value proposition to customers (Ngo &

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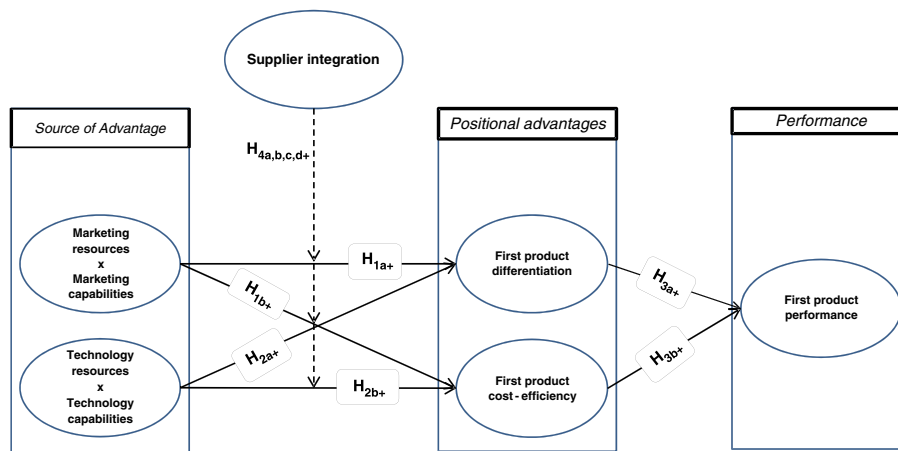


Fig. 1. Conceptual model.

O'Cass, 2012) in the form of the first product. For example, through deploying marketing capabilities in complementary with financial resources in promotion, NTVs try to inform customers about how the first product is different or costs less. Therefore,

**H1a.** Marketing R–C complementarity has a positive relationship with FP differentiation.

**H1b.** Marketing R–C complementarity has a positive relationship with FP cost-efficiency.

Technology capabilities denote experiential knowledge, skills, and related processes in designing, developing and manufacturing the product (Song, Droge, Hanvanich, & Calantone, 2005). Technology resources include physical resources and the R&D budget—both vital to new product success (Song, Podoynitsyna, Van Der Bij, & Halman, 2008; Zahra & Bogner, 2000). The R&D budget reflects the financial resources available to invest in product development activities (Song et al., 2011). Physical resources include plant, machinery, and test equipment for product development activities (Sirmon & Hitt, 2009). Complementary deployment of technology resources and capabilities should also enhance each other's contribution to FP commercialization (Fig. 1). Innovation related to product newness, features, and breakthrough technology resides in the capacity of the firm's technology capabilities. For example, the usefulness of technology capabilities only occurs through funding capacity development during the FP design and prototype stages. This enables an NTV to create a low-cost and differentiated product that meets the needs of the current market or potentially creates a new market. Therefore,

**H2a.** Technology R–C complementarity has a positive relationship with FP differentiation.

**H2b.** Technology R–C complementarity has a positive relationship with FP cost-efficiency.

NTVs possess limited assets and face challenges to make trade-offs in pursuing either effectiveness or efficiency (Morgan, Clark, & Gooner, 2002). The relative advantage of a novel FP is positively related to its rate of adoption (Rogers, 1995). Likewise, product advantage appears as a significant feature in describing the adoption of new products (Langerak, Hultink, & Robben, 2004). Particularly in emerging economies, the customers' ability to afford the FP is vital in markets in emerging economies, and affordability is critical to converting non-adopters to customers (Sheth, 2011) as outlined in Fig. 1 both FP differentiation and cost efficiency are related to FPP. Therefore,

**H3a.** FP differentiation has a positive relationship with FPP.

**H3b.** FP cost efficiency has a positive relationship with FPP.

Social capital theory underpins a firm social networking with its suppliers (Lin, 2008). Social networking can lead to more effective integration of suppliers (Zhang & Wu, 2012) in the process of FP commercialization in NTVs. This study examines SI in terms of information-knowledge sharing and product co-commercialization (Lau, Yam, & Tang, 2010). Information sharing occurs in terms of shared knowledge about the market and technology, inventory, and production (Lau et al., 2010). Informal information exchanges among suppliers and firms' product teams provide synergy to co-commercialize innovative products and lower the costs of commercialization operations by increasing efficiency (McDermott & Handfield, 2000). Suppliers are key sources of innovative ideas for developing novel products (Baldwin & Hanel, 2003). Real time information about market and technology changes provided by suppliers aids NTVs in obtaining a more comprehensive understandings of their customers and more effectively deploying their assets in the new product development project (Lau et al., 2010). Effective information sharing minimizes information asymmetries and, consequently, leads to higher performance because commercialization processes run more efficiently (Rosenzweig, Roth, & Dean, 2003). Market information provided by suppliers at early stages help NTVs to devise effective pricing and sales strategies while also arranging effective launch and promotion tactics for introducing the FP to the market.

Integrating suppliers into operations reduces the risks associated with changing technology and market needs (Johnston, McCutcheon, Stuart, & Kerwood, 2004). Joint production is often a foundation for collaborative product commercialization with suppliers, increasing the chance of commercializing products that create new markets (Song & Di Benedetto, 2008) (Fig. 1). Early SI enhances market linking capabilities to accumulate knowledge about the market. Integration is transactional as NTVs work closely with suppliers to create products that meet cost, quality, and delivery goals. SI processes also lead to better design, lower operation costs, and a shorter time to market (Primo & Amundson, 2002). Therefore,

**H4 (a, b).** SI positively moderates the relationship between marketing resource–capability complementarity and a) FP differentiation; and b) FP cost-efficiency.

**H4 (c, d).** SI positively moderates the relationship between technology resource–capability complementarity and c) FP cost-efficiency; and d) FP differentiation.

### 3. Method

This study takes India as the context because this country is a key emerging economy (Javalgi, Todd, Johnston, & Granot, 2012). The records of the Indian Chamber of Commerce yield a list of 650 NTVs. One selection

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