

Critical Brand Innovation Factors (CBIF): Understanding Innovation and Market Performance in the Chinese High-Tech Service Industry

Abstract

Brand innovation sweeps aside established practices and disrupts the status quo, resulting in the transformation of markets. The present study develops and tests a model of critical brand innovation factors (CBIF) by examining key factors influencing firm-level brands' innovation and increased market performance. Adapting both organizational elements and market response characteristics, the model integrates four key variables in China's industrial service markets: innovation, internationalization, market orientation, and organizational learning. Findings provide a foundation for understanding how firms improve their innovation and subsequent market performance in an emerging and dynamic market. The study demonstrates that when brands are more innovative, their performance increases: Brand innovation plays a fully mediating role on the effects of market orientation and organizational learning to market performance, but has no mediating effect on internationalization and market performance. A lack of innovation reduces market performance even when internationalization, market orientation, and organizational learning are present.

Keywords - Branding, innovation, internationalization, market orientation, organizational learning, high technology services industry, China.

1. Introduction

Services marketing researchers establish that innovation benefits firms in multiple ways (Kindström et al., 2013) and that innovating services to match customers' needs increases the attractiveness of the firms' offerings (von Hippel, Ogawa, & de Jong, 2011). This innovation process, in turn, drives the potential for co-creation (Grönroos & Voima, 2013) and long-term rewarding relationships with customers, and ultimately, sustainable competitive advantage. However, despite innovation's beneficial outcomes, it receives little attention in the branding literature (Melewar & Nguyen, 2015) and few studies have integrated branding with innovation in a comprehensive framework (Ngo and O'Cass, 2013). Separate streams of literature suggest that firms must understand and manage organizational factors and respond to market elements in order to induce innovation in firm-level brands effectively (Weerawardena, O'Cass, & Julian, 2006). Yet, such investigation of the influence of both organizational elements and market response characteristics on the market performance of brands remains mostly unexplored (Beverland et al., 2007; Kotler & Pfoertsch, 2007).

To fill this gap, the present study aims to investigate the mutual processes underlying critical brand innovation activities and their subsequent outcomes, considering *organizational elements* such as learning (Ainan-Smith & Green, 2002; Jerez-Gomez et al., 2005) and *market response characteristics* such as internationalization (Atuahene-Gima, Slater, & Olson, 2005) since both perspectives are requirements for effective innovation practices, and subsequently, for improved market performance (Han & Sung, 2008). Developing an integrated model of the 'brand-innovation'-relationship provides a greater understanding of the link between the antecedents and consequences of brand innovation and market performance, here in an industrial services context (e.g., Govindarajan & Kopalle, 2006; Vargo & Lusch, 2004; Wiersema, 2012).

The study's aims are twofold. (1) First, the study develops a critical brand innovation factor (CBIF) framework that captures key factors likely to trigger firms' brand innovation and subsequent market performance (Kirca et al., 2005; Zhou, Yim, & Tse, 2005). (2) Second, the study incorporates and evaluates the *mediating* effects of brand innovation (Nguyen et al., 2015) in order to provide further insights into the nature of market performance, previously suggested as an area for future research (Dahlin & Behrens, 2005; O'Cass & Ngo, 2007). Thus, the study fills an important gap in branding knowledge that links organizational learning, market orientation, internationalization, brand innovation, and market performance (e.g., Barney, 2014; Jiménez-Jiménez & Sanz-Valle, 2011). Implications exist for service marketers and brand managers, to provide a more holistic brand innovation strategy that may disrupt markets and facilitate competitive advantage with, for example, superior customer service experiences and differentiation. Thus, the study has major implications for industrial services marketing theory and practice with findings echoing into the implementation of brand innovation.

2. Theoretical Background and Hypothesis Development

Research shows that innovations transform existing markets, fuel financial growth, and is an important element in firms' search for sustainable competitive advantage (Zhou, Yim, & Tse, 2005). Innovation is a core driving force that allows for the creation of new opportunities and markets (Augusto & Coelho, 2009). According to the resource-based view (RBV) (Barney, 2014) and knowledge-based view (KBV) (Kogut & Zander, 1992), firms' acquired possession of unique knowledge is the main source of innovation that leads to certain firms outperforming others (Gupta et al., 2010). There is still no agreement on whether such knowledge and innovation triggers come from market demands or organizational elements that influence firms' propensity to innovate (Beverland et al., 2007).

Scholars are debating if innovations are predominantly driven by market demand or by the organizational policies and whether such influences are important to the ultimate success of innovation (e.g., Salavou & Lioukas, 2003). In branding, much remains to be studied, as little is known about these innovation triggers, especially in relation to brand innovation's mediation role in the relationships between organizational elements and market response characteristics with market performance. Brand innovation is defined as advancements in brands that result in fundamental changes to existing practices and markets. **Using RBV theory, the present study highlights that innovation arises from multiple sources** (Kuhn et al., 2008), and develops an integrated model of branding and innovation, studying more systematically both internal and external organizational responses to markets. Thus, multifaceted role of innovation in the branding of industrial services is examined and how innovation spurs a firm's growth is studied by capturing key sources of brand innovation.

2.1 Effects of Organizational Learning on Brand Innovation

Research suggests that learning remains a pivotal cornerstone to achieve innovation (e.g., Jiménez-Jiménez & Sanz-Valle, 2011). Organizational learning theory considers learning as a cultural foundation for the way an organization utilizes market information inside the firm (Slater & Narver, 1995). While some researchers describe the learning orientation concept as a company's process in using market intelligence, dissemination, and management of information (Kohli, Jaworski, & Kumar, 1993), others recognize that organizational learning does not only focus on learning actions related to market information, but also concerns management's adoption of information technology (Barrales-Molina et al., 2015). For example, knowledge- and data management systems are typical organizational learning schemes.

Organizational learning approaches help companies to systematically acquire, disseminate, and use customer information to serve them better (Narver & Slater, 1990). Learning disperses valuable information on products and services to improve both customer response and faster informed decision-making inside the firm (Ainan-Smith & Green, 2002). This knowledge is disseminated in the organization and may involve the use of a customer relationship management (CRM) platform to customize offerings to fit customers' values. This study considers organizational learning as a critical determinant of brand innovation success and posits that as firms utilize customer knowledge better, innovation generation increases, leading to subsequent market performance. Thus, focusing on the relationship between organizational learning and brand innovation, the study develops the following hypothesis:

H1: Organizational learning is positively related to brand innovation, in the industrial services sector.

2.2 Effects of Market Orientation on Brand Innovation

Research reveals that firms' specific market orientations help them develop markets and innovate (Augusto & Coelho, 2009). Marvel and Lumpkin (2007) suggest that firms adopt two orientations towards innovation. Some firms focus on customer preferences to discover, understand, and satisfy customers' needs in an existing market structure. This *responsive* market orientation (Narver et al., 2004) guides firms towards recognizing disequilibrium opportunities in existing markets. Other firms utilize the *proactive* market orientation (Narver et al., 2004) and focus on addressing customers' latent needs. As these latent needs are largely unexpressed, these firms, thus, explore innovative opportunities more proactively than their competitors (Cai et al., 2015) in order to create their own strategic advantage by changing the market structure or the competition basis (Jaworski et al., 2000). Researchers

suggest that one orientation does not preclude the other and firms will often use both perspectives to gain market knowledge (e.g., Kohli et al., 1993; Nguyen et al., 2015).

Previous studies show different effects of market orientation on innovation (Narver et al., 2004), however, consensus on the issue does not exist (Christensen, 2000). To deal with the potential contingencies, the present study focuses on combining the sub-dimensional aspects of market orientation. Accordingly, the study adopts Narver and Slater's (1990) multi-dimensional perspective, which suggest three main dimensions of effective market orientation, namely, customer orientation, competitor orientation, and inter-functional coordination, and thus captures a more combined perspective of market orientation. Based on this discussion, the following hypothesis is therefore stated:

H2: Market orientation is positively related to brand innovation, in the industrial services sector.

2.3 Effects of Internationalization on Innovation

Researchers suggest that firms' internationalization orientation leads to more novel ideas, products, and services, through the understanding of foreign firms' capabilities and customers' needs (Kylaheiko et al., 2011). Atuahene-Gima et al. (2005) note that such an international orientation, as an "outside-in" process, places greater emphasis on discovering customer needs. Thus, internationalization efforts, utilizing customer knowledge, stimulate the development and implementation of novel ideas. The study posits that proactive efforts towards internationalization are associated with more innovation. Atuahene-Gima (1996) finds a positive effect of international investments on aspects of product innovation. In the current services context, high-tech service firms are likely to exhibit this same effect. The study posits that this effect arises due to a focus on the absorbing of knowledge from across-cultural customers, across-markets, and different service sectors, benefitting firms' brand

innovation (Chandy & Tellis, 1998). While several studies establish the effects of general export investments on innovation, less attention is given to the association between internationalization, brand innovation, and market performance conjointly. Based on the above discussion, the study expects to find a positive effect of internationalization on innovation, thus hypothesizing that:

H3: Internationalization is positively related to brand innovation, in the industrial services sector.

2.4 Effects of Brand Innovation on Market Performance

Scholars posit that brand innovations have the power to shift or introduce entirely new technological and performance trajectories by transforming existing markets or creating new markets. However, it is often difficult to evaluate exactly when such radical innovation exists (Dahlin & Behrens, 2005; Gatignon et al., 2002). This is due to the complexities and issues of relativity, that is, what may be perceived as radical in one situation is not in another. To solve this methodological problem, researchers develop the concept of ‘radicalness’, referring to the extent to which innovation is based on a substantially new technology, relative to what already exists in the industry (Aiman-Smith & Green, 2002; Marvel & Lumpkin, 2007). It is often used to classify innovations according to how radical they are, compared to existing products or services (Freeman & Soete, 1997). This study adopts and utilizes this notion of radical innovation in relation to market performance, and hypothesizes that firms’ performance increases as a result of brand innovation. That is, by identifying new market segments and developing more radical innovations, firms’ market performance increases. Accordingly, the study posits that:

H4: Brand innovation is positively related to market performance, in the industrial services sector.

2.5 The Mediating Effects of Innovation

Lastly, the study explores the mediating effects of innovation, and posits brand innovation as a mediator between (a) organizational learning and market performance, (b) market orientation and market performance, and (c) internationalization and market performance.

The learning-oriented strategic behavior brings market knowledge into the organization, influencing brand innovation and market performance (Christenson & Bower, 1996; Nguyen et al., 2015). For brands emphasizing organizational learning, there is an opportunity to recognize both the expressed and latent market need (Atuahene-Gima et al., 2005). Part of the learning process, involves pursuing ‘customer oriented projects’ and ‘achieving business objectives’ (Covin & Slevin, 1989). These are best achieved by implementing a strong market orientation with a responsive backchannel within the organization.

We expect that organizational learning, market orientation, and internationalization lead to increased market performance due to brand innovation (Tan, 2001). As more innovation requires commitment to strong technology capabilities and high resource investments, which influence brands’ survival and development in competitive markets, brand innovation also requires greater market orientation and internationalization propensities. Increased internationalization carries a degree of inefficiency associated with a focus on unfamiliar information and knowledge (Lu et al., 2010); however, with increased organizational learning and market orientation, such inefficiency may be reduced. Thus, the study posits that the association between organizational learning, market orientation, and internationalization to market performance is mediated by brand innovation, arguing that the complex mediating relationships are stronger under conditions of brand innovation. Accordingly, the study states the following hypotheses:

H5a: Brand innovation mediates the relationship between organizational learning and market performance, in the industrial services sector.

H5b: Brand innovation mediates the relationship between market orientation and market performance, in the industrial services sector.

H5c: Brand innovation mediates the relationship between internationalization and market performance, in the industrial services sector.

Based on the theoretical review and previously stated hypotheses, the conceptual framework is shown in Figure 1.

Figure 1 here.

3. Data Collection

Using a survey approach, we conducted our research in the context of industrial high-tech service firms in China. To gain access to these firms, we contacted Zhangjiang Innovation Park's administrative officer to obtain a list of Chinese high-tech firms. High-tech firms deploy sophisticated and frequent innovative practices, allowing us to explore the influence of both innovation and export practices (internationalization) in detail. Once initial contact was established, we collected the data through on-site interviews. We interviewed top managers who were directly involved in the firms' strategic decision making. Being present on-site allowed us to ensure the respondents' replies for the study. It also offered respondents an opportunity to ask for clarifications about the issues under study. All respondents were assured confidentiality. To encourage participation, we also offered to provide a summary of the study results to each respondent.

We obtained data from 182 firms, with an effective participation rate of 36.4%. As shown in Table 1, all the firms mainly operate in services, with the information communication technology (ICT) sector accounting for 59.34% of the total sample; other industry coverage includes pharmaceutical and biotechnology sectors (13.19%), energy and materials sector (7.69%) and integrated optical sector (3.85%). Most of the firms (69.78%) had been in

business for at least three years and 14.84% of the firms for at least six years. The majority of the firms were small and medium-sized enterprises with between 20 and 200 employees (76.93%). Most of the firms (63.74%) are privately owned companies.

Table 1 here.

3.1 Measures

Our study employed seven-point Likert scales for all measures, ranging from “strongly disagree” to “strongly agree” (see Appendix A). We adapted previously validated measures to fit the current research setting and changed the orientation for the item measures from general to context specific (Hair et al., 2006).

Internationalization was conceptualized as the firms’ foreign market servicing strategy (Sapienza et al., 2005). Based on Fischer and Reuber (1997) and Sullivan (1994), we measured internationalization with 3 items through a multidimensional approach that included the sub-factors, international experience, degree of internationalization, and export, to address limitations typical to internationalization measures (Ramaswamy et al., 1996).

Market orientation (MO) was measured based on Cadogan et al. (2001), conceptualized by Narver and Slater (1990). We adapted a 4-item scale rooted in the mainstream MO studies with the sub-dimensions, competitor, inter-functional, and customer orientations, which were previously showed to be reliable and valid in the Chinese context (Murray et al., 2007).

We defined *organizational learning* as the extent to which an organization values proactive learning among its employees and encourages the incorporation of fresh ideas emerging from its learning processes (Nasution et al., 2011). We adopted a 5-item scale, which reflected the commitment to learning, focusing on the Chinese (Liu et al., 2002) and internationalization context (Emden et al., 2005).

Previous research operationalized *innovation* as the number of each firms’ innovation input or output (e.g., Kylaheiko et al., 2011). We adopted a 5-item radical innovation scale,

covering the scope and depth of a firm's brand innovation through the exploratory and exploitative orientations of organizational innovation (He & Wong, 2004).

Market performance focuses on two aspects: financial performance and customer performance (Homburg & Pflesser, 2000; Lee et al., 2008). We adapted a 5-item scale of international performance that covers both customer and financial performance (Homburg & Pflesser, 2000; Lee et al., 2008; Lu et al., 2010; O'Cass & Ngo, 2007). Specifically, we utilized market growth, market share, return on investment, and profitability as financial performance indicators. For customer performance, we adapted customer satisfaction, which has been widely used in the literature (e.g., Lee et al., 2008). All five items were averaged into one measure (see Zhang & Li, 2010), as previously advocated by Homburg and Pflesser (2000) and Lee et al. (2008).

4. Data Analysis

4.1 Tests for Unidimensionability of Constructs

We carried out a rigorous process to purify and validate the measurement scale items, following Gerbing and Anderson (1988) and Hair et al. (2006). Our EFA for internationalization, organizational learning, market orientation, brand innovation, environmental uncertainty (control), and market performance, resulted in an acceptable factor solution. Table 2 presents the EFA results. All items have loadings greater than 0.7 on their factors, with no substantial cross-loadings, except for item 5 (innovation) with a factor loading of 0.596. This is still within the acceptable range (Hair et al., 2006).

Table 2 here.

Next, we conducted CFA, evaluated using DELTA2 index, the relative noncentrality index (RNI), the comparative fit index (CFI) (Gerbing and Anderson, 1992), Tucker-Lewis index (TLI), and the root mean square error of approximation index (RMSEA) (Hu and

Bentler, 1999; Slater, Olson and Hult, 2006). Using these series of fit indices, the CFA resulted in $\chi^2 = 442.852$ d.f. = 259, DELTA2=0.944, RNI=0.944, CFI=0.944, TLI=0.935, and RMSEA=0.063. Our results, thus, confirmed the unidimensionality of each construct in our model as the measurement structure of six factors and 25 items produced acceptable fit statistics. To complement the results, we calculated the composite reliability. Results showed that the composite reliabilities for the six scales ranged from 0.82 to 0.95, higher than the minimum threshold of 0.7 (Hair et al., 2006).

4.2 Convergent and Discriminant Validity

To assess convergent validity, we used two methods: (1) First, within the CFA setting, we calculated average variances extracted (AVE) using the Fornell and Larcker (1981) procedures. The AVEs for the six scales ranged from 62 to 91 percent, greater than the recommended minimum threshold of 50 percent (Fornell and Larcker, 1981). (2) Second, we observed that convergent validity was evident as the factors loadings from the latent constructs to their corresponding manifest indicators were statistically significant (i.e., $t > 2.0$, $p < 0.001$) (Anderson & Gerbing, 1988). All items loaded significantly on their corresponding latent construct, with the lowest t-value at 8.54, providing evidence of convergent validity.

To assess discriminant validity, we used two methods: (1) First, we analyzed all possible pairs of constructs in a series of two-factor CFA models using AMOS 19.0 (e.g., Slater, Olson, & Hult, 2006). Each model was run twice: once constraining the ϕ coefficient to unity and once freeing this parameter. We performed a χ^2 -difference test on the nested models to assess whether the χ^2 was significantly lower for the unconstrained models (Anderson & Gerbing, 1988). The critical value ($\chi^2_{(d.f.=1)} > 3.84$) was exceeded in all cases. (2) Second, we calculated the shared variance between pairs of constructs and verified that it was lower than the average variances extracted (AVE) for the individual constructs (Fornell & Larcker,

1981). In all cases, the AVEs were higher than the associated shared variance, thus supporting the discriminant validity of the constructs. Taken together, these results indicated that the measurement model fits the data adequately and possesses both convergent and discriminant validity (p-values <0.01).

4.3 Common Method Variance

Following Podsakoff et al. (2003) and Zhang and Li (2010), the study integrated both procedural methods and statistical techniques to reduce the potential for common method variance. With the procedural methods, the respondents were assured that their answers were confidential and that there were no right or wrong answers to the questions in the survey (Podsakoff et al., 2003). These procedures reduced the respondents' evaluation apprehension and made them less likely to edit their responses to be more compliant with how they think the researcher wants them to respond (Podsakoff et al. 2003). In addition, as common method bias is more problematic at the item level than at the construct level, the study used multiple-item constructs (Harrison, McLaughlin, & Coalter, 1996). With the statistical techniques, Harman's single-factor test was conducted (Podsakoff & Organ, 1986). The EFA for all of the multiple-item constructs resulted in the expected factor solution, which accounted for 76.16% of the total variance, with the first factor only accounting for 15.33%. Because a single-factor solution did not emerge and the first factor did not explain most of the variance, common method bias was not a serious concern in this study.

5. Findings

5.1 Tests of Hypotheses

Table 3 presents the means, standard deviations, and bivariate correlations for the variables.

Table 3 here.

To assess our model, we employed a series of hierarchical linear regression to test all the hypotheses. Each construct's composite scores were used in our analysis, that is, the items used in the analysis were averaged to represent all the constructs according to Hair et al. (2006). Table 4 shows detailed results of the models for the dependent variables of brand innovation (H1, H2 and H3) and market performance (H4), respectively. **The hierarchical approach is particularly appropriate when analyzing potentially correlated independent variables (Cohen et al., 2003).**

Table 4 here.

In Models 1 and 2 of Table 4, the dependent variable is innovation. The base model (including the control variables only) explained a significant amount of the variance in innovation ($R^2 = 0.175$, $p < 0.001$). The next step of the analysis addressed the universal influence of internationalization, market orientation, and organizational learning on innovation over and above the base model. As displayed in Model 2 ($R^2 = 0.553$, $p < 0.001$), the addition of these three variables accounted for 37.8% of the variance in innovation over and above the base model. We concluded the following: The results indicated a significant, positive relationship between organizational learning and innovation ($\beta = 0.609$, $p < 0.001$), thereby providing support for H1. The results indicated a significant, positive relationship between market orientation and innovation ($\beta = 0.136$, $p < 0.05$). This finding provides support for H2. The relationship between internationalization and innovation was shown to be negative and non-significant ($\beta = -0.040$, $p > 0.05$); thus, hypothesis 3 is not supported.

In Models 3, 4 and 5 of Table 4, the dependent variable is market performance. There are three models in this set: (1) the base model (including the control variables only), (2) the main-effects-only model (includes the control variables and the independent variables), and (3) the full model (including the controls, the independent variables, and the mediator). The

base model (Model 3) explained a significant amount of the variance in market performance ($R^2 = 0.121$, $p < 0.001$). The main-effects-only model (Model 4) also explained a significant amount of variance in market performance ($R^2 = 0.444$, $p < 0.001$) and a significant amount of variance over and above the base model ($\Delta R^2 = 0.323$, $p < 0.001$). Additionally, the full model (Model 5) explained a significant amount of the variance in market performance ($R^2 = 0.478$, $p < 0.001$) and a significant amount of variance over and above the main-effects-only model ($\Delta R^2 = 0.034$, $p < 0.001$). Thus, the results revealed a significant, positive relationship between brand innovation and market performance ($\beta = 0.275$, $p < 0.001$), which provides supports for H4.

5.2 Mediating Role of Innovation

We followed Zhao, Lynch Jr., & Chen (2010) recommendations to examine the mediating effect (H5a, H5b, and H5c). As shown in Model 4 (Table 4), there are positive and significant relationships between organizational learning ($\beta = 0.302$, $p < 0.001$), market orientation ($\beta = 0.176$, $p < 0.001$), internationalization ($\beta = 0.378$, $p < 0.001$), and market performance. However, when the brand innovation variable was added in Model 5, the coefficients of organizational learning and market orientation became non-significant ($\beta = 0.135$, $p > 0.05$; $\beta = 0.139$, $p > 0.05$), the coefficient of internationalization was increased and remained significant ($\beta = 0.389$, $p < 0.001$). Moreover, the results of Model 2 (Table 2) revealed that there were positive and significant relationships between organizational learning ($\beta = 0.609$, $p < 0.001$), market orientation ($\beta = 0.136$, $p < 0.05$), and innovation. Together, these results supported H5a and H5b. Because the model 2 results (Table 2) indicated a non-significant relationship between internationalization and innovation ($\beta = -0.040$, $p > 0.05$), H5c was not supported. Although not hypothesized in the model, we observed that the internationalization affect market performance directly ($\beta = 0.389$, $p < 0.001$) as shown in Model 5 (Table 4).

6. Discussion

Although marketing research provides an understanding of the critical success factors for increased performance (O’Cass & Ngo, 2007), few empirical studies have investigated the way in which firm-level brands’ strategic orientations contribute towards brand innovation and subsequent performance in industrial services (Johansson, Dimofte, & Mazvancheryl, 2012). The present study examines both organizational elements and market response characteristics systematically, and develops a critical brand innovation factor (CBIF) model. In addition, the study investigates the mediating role of innovation, often not considered in branding, in order to understand its impact on market performance.

The results indicate that brand innovation and market performance are influenced by a variety of knowledge-focused factors, revealing some interesting findings. Judging by the path coefficients, the construct of organizational learning appears to have the strongest effect on brand innovation ($\beta = 0.609$, $p \leq 0.001$), followed by market orientation ($\beta = 0.136$, $p \leq 0.5$). Prior studies have predominantly suggested that market opportunities need to be acted upon to benefit the organization (Weerawardena et al., 2006), and the pervasive belief emphasize that building successful brands depend on the ability to innovate and develop unique ways of delivering superior value to customers (Kindström et al., 2013). The present study demonstrates that to achieve brand innovation, firms must first ensure that a learning-oriented framework is in existence, before engaging in a more customer-focused strategy. This finding makes sense, as high-tech service firms often need to prioritize on the organizational learning systems, such as database and knowledge management, prior to focusing on a market-orientated strategy due to the technical emphasis on research and development.

In addition, the findings indicate that internationalization has the strongest effect on market performance ($\beta = 0.378$, $p \leq 0.001$), followed by learning ($\beta = 0.302$, $p \leq 0.001$), and market orientation ($\beta = 0.176$, $p \leq 0.01$). These results reinforce the importance of acquiring

knowledge from internationalization, learning to use this knowledge inside the organization, and develop appropriate market response orientations to understand the customers (e.g., Ngo and O’Cass, 2013; Weerawardena et al., 2006). Based on our brand-innovation framework, we now discuss our contributions and the implications of these findings in more detail. Using the resource based theory as the theoretical underpinning of our framework, we made three sets of theoretical arguments: (1) First, organizational learning, market orientation, and internationalization help to enhance the innovation of high-tech service firms. (2) Second, brand innovation affects the market performance. (3) Third, organizational learning, market orientation, and internationalization affect market performance through brand innovation. Our findings largely support these theoretical arguments and provide theoretical contributions to brand management and innovation research (Johansson et al., 2012).

6.1 Theoretical Contributions

Our main contribution comes from examining innovation’s role within a services marketing and branding framework, consisting of both organizational elements and market response characteristics. The contribution arises from our empirical support of several results: (1) First, we contribute and deepen our understanding of the link between market orientation and innovation by confirming that high-tech service firms’ vary in their organizational innovation, as explained by their degree of market orientation. We note that market orientation as an antecedent of organization performance has been investigated in various contexts (Rodriguez Cano, Carrillat, & Jaramillo, 2004), however, studies on market orientation and innovation are less common in branding despite its strategic importance and the high failure rates of innovation (Gotteland & Boulé, 2006). Moreover, we recognize that all studies do not lead to a conclusive link (Subramanian & Gopalakrishna, 2001). For example, some studies show a positive impact of market orientation on innovation, whereas

no significant link is found by others (Han et al., 1998). Our study provides empirical support for positive link between market orientation and innovation in a high-tech industrial services context. We demonstrate that for high-tech service firms, market orientation is a critical factor, necessary to create an optimal environment for brand innovation and for facilitating a firm's innovativeness.

(2) Second, we did not find a significant relationship between internationalization and innovation. Despite previous arguments that internationalization facilitates knowledge transfer and acquisition from foreign customers and firms, enhancing firms' innovation capabilities, we did not find supporting evidence. We consider that high-tech service firms in China do not have enough capacity or capability to absorb new knowledge provided by internationalization (Kylaheiko et al., 2011). The lack of such capability is particularly likely for new firms, which are still in their early stages of development and internationalization (Jones & Coviello, 2005). For example, firms with adhoc export sales, no regular export, or export through agents may not have the procedures to facilitate and absorb new innovation from internationalization. This finding reflects our sampling profile well and we recommend future research to explore a more fine-grained investigation of the link between internationalization and innovation by considering the moderating effect of absorptive capacity or internationalization stage.

(3) Third, using a multidimensional market performance approach has provided a better picture of the firm's key performing characteristics. That is, our measurement of market performance reveals important characteristics, influenced by both sub-dimensions and antecedents (O'Cass & Ngo, 2007). Our findings thus suggest that for high-tech service firms, a superior market performance requires not only information on customers, but also, to proactively implement innovative activities such as organizational learning, orientation

towards markets, and internationalization efforts. Our framework may reveal underperforming areas and identify customized critical brand innovation factors.

(4) Finally, we contribute and extend services marketing and brand management theory by confirming the mediating effects of brand innovation, namely, between organizational learning, market orientation, and market performance. We demonstrate two aspects: (a) First, we show that organizational learning fully influences market performance when firms facilitate brand innovation, consistent with previous theoretical and empirical studies (Baker & Sinkula, 2007; Jiménez-Jiménez & Sanz-Valle, 2011); (b) Second, our findings on market orientation leading to higher market performance, previously shown inconclusive, prompts that brand innovation is the crucial link (Weerawardena et al., 2006). That is, with brand innovation, a market-oriented firm increases their performance and that without, the effects vanishes. By contributing to this existing debate, we conclude that a firm's market orientation enables it to develop brand innovation, which, in turn, increases superior market performance.

6.2 Managerial Implications

We propose several managerial implications arising from our study: (1) First, to be more innovative, high-tech service firms must emphasize upon (a) increasing their learning from both internal and external information, that is, information generated and interpreted from the company's actions and information collected or received about the market, thus (b) ensuring that subsequent actions taken by the organization are proactively and reactively oriented to the needs of the market. (2) Second, high-tech service firms, aiming to build superior brands, should not merely depend on customers' knowledge, but also on proactive market orientation, that is, focus on addressing customers' latent needs. (3) Third, high-tech firms in China should enhance their capability to absorb new knowledge in order to utilize the knowledge acquired from internationalization and export activities. These firms should be sensitive to

this specific type of knowledge acquired from their internationalization and export related activities, as improving such capability to absorb and use information can improve performance of a brand. (4) Finally, our findings will be useful for managers of service firms aiming to internationalize into foreign markets with or without innovative products, especially with efficient use of information for developing superior market performance. Focusing on internationalization to different target segments that exist in foreign markets and considering the role of improving performance of a brand in an international market, involve the anticipation that different types of needs and different target segments should be studied to match with different types of innovations. Accordingly, it will be possible to identify what type of innovation is more suited for success in which target segment. We hope that, as future marketing researchers investigate these topics further, managerial implications arising from our framework will be more established.

6.3 Limitations and Future Research

We acknowledge some limitations. First, our sample of industrial high-tech service firms in China may limit broader generalizations to other industries and countries. **Second, as the study aimed to develop a parsimonious model, the operationalization of the constructs combined multiple sub-dimensions. Future studies are recommended to provide a more nuanced examination of the study's constructs, for instance, by separating the market performance construct in two dimensions.** In addition, future studies should examine whether the quality of the innovation (incremental or radical) has any influence on the market performance. As incremental and radical innovations require different resources, core competencies, and organizational learning activities, they may be appropriate to investigate each of the two innovation types separately. **Finally, while the study develops a mediation**

model, future studies are encouraged to develop a moderation model that includes other interesting variables. The CBIF model may provide the foundation for these future studies.

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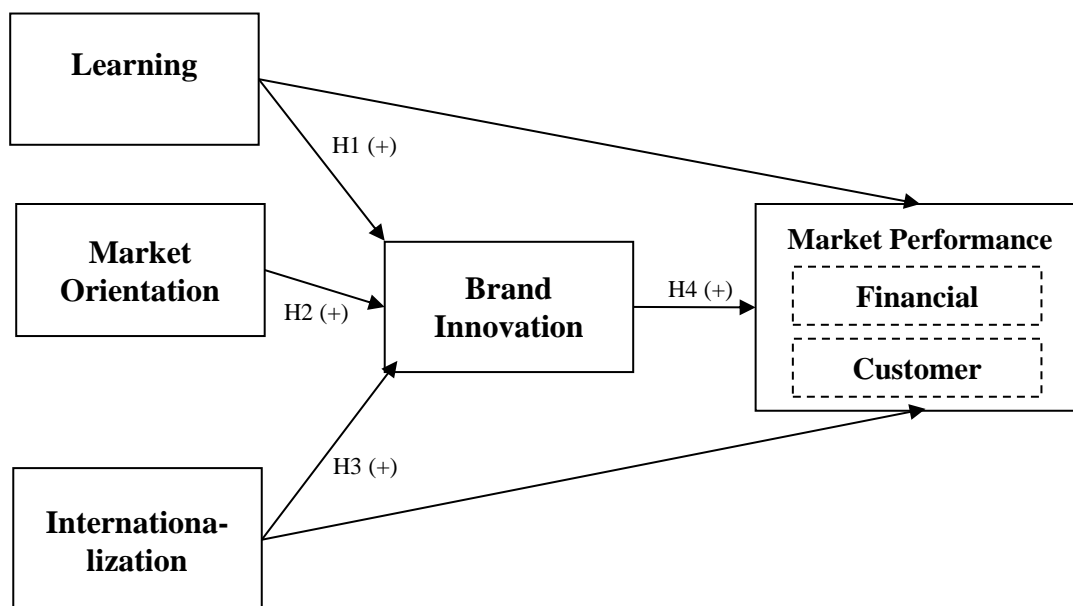
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Figure 1 Conceptual Model – Mediating Effects of Brand Innovation**Table 1 Sample Profile (N=182)**

	N	%		N	%
Industry type			Age of firm		
Information communication technology (ICT)	108	59.34%	0 to 2 years	28	15.38%
Energy and materials	14	7.69%	3 to 5 years	127	69.78%
Pharmaceutical and biotechnology	24	13.19%	6 to 8 years	27	14.84%
Integrated optical	7	3.85%			
Others (e.g., scientific instruments and aerospace)	29	15.93%			
Number of employees			Ownership		
Less than 20	21	11.54%	State/collectively owned	25	13.74%
20 to 50	97	53.30%	Joint share	31	17.03%
51 to 200	43	23.63%	Privately owned	116	63.74%
Over 200	21	11.54%	Foreign invested company	10	5.49%
Total	182	100%		182	100%

Table 2 Factor Structure for the Study's Variables

Item	F1	F2	F3	F4	F5	F6	Explained Variance %
MO 1				.814			12.178
MO 2				.798			
MO 3				.747			
MO 4				.752			
OL 1			.744				14.034
OL 2			.755				
OL 3			.764				
OL 4			.788				
OL 5			.711				
INNO 1		.830					14.538
INNO 2		.853					
INNO 3		.838					
INNO 4		.835					
INNO 5		.596					
MP 1	.809						15.328
MP 2	.839						
MP 3	.862						
MP 4	.795						
MP 5	.756						
EU 1						.822	8.919
EU 2						.764	
EU 3						.745	
INT 1					.927		11.165
INT 2					.928		
INT 3					.963		

Note: MO = Market Orientation, OL = Organizational Learning, INNO = Innovation, INT = Internationalization, EU = Environmental Uncertainty, and MP = Market Performance
 Accumulate Explained Variance = 76.162%; KMO = 0.871; Bartlett $\chi^2=3396.205$ (Sig. = .000)

Table 3 Means, Standard Deviations, and Correlations

	Mean	S.D.	1.	2.	3.	4.	5.	6.	7.	8.
1. Market performance	5.009	1.256	1.000							
2. Firm age	3.560	1.250	.182*	1.000						
3. Firm size	4.324	0.986	.120	.107	1.000					
4. Environmental uncertainty	5.510	1.075	.287**	.055	-.004	1.000				
5. Internationalization	0.000	1.000	.424**	-.008	-.117	.068	1.000			
6. Market orientation	5.662	0.824	.447**	-.027	.034	.462**	.126*	1.000		
7. Organizational learning	5.523	1.021	.508**	.115	.041	.457**	.126*	.683**	1.000	
8. Brand innovation	5.973	0.788	.510**	.166*	.092	.384**	.050	.565**	.728**	1.000

Note: Control variables: environmental uncertainty, firm age, and firm size.

*** p<.001; ** p<.01; * p<.05 (two-tailed)

Table 4 Hypothesis Testing

<i>Controls</i>	Brand innovation		Market performance		
	Model 1	Model 2	Model 3	Model 4	Model 5
Firm size	.137*	.092	.155*	.139*	.114*
Firm age	.079	.048	.104	.131*	.118*
Environmental uncertainty	.377***	.040	.279***	.035	.024
<i>Independent Variables</i>					
Internationalization		-.040		.378***	.389***
Market orientation		.136*		.176**	.139
Organizational learning		.609***		.302***	.135
<i>Mediator</i>					
Innovation					.275***
R-square	.175	.553	.121	.444	.478
Adjusted R-square	.161	.538	.106	.425	.457
F	12.571***	36.138***	8.174***	23.278***	22.731***

*** p<.001; ** p<.01; * p<.05.

Appendix A - Measurement Items and Validity Assessment

Item description summary	Standardized loading	t-value
<i>Internationalization</i> (CA=.949; CR=.9541; AVE= .9123)		
1. The ratio of exports to total sales has increased in our company.	1.00 ^a	
2. Our company's engaging in international activities, such as exporting has increased.	.97	10.71
3. The number of markets to which our company exports has increased.	.94	22.51
<i>Market Orientation</i> (CA=.883; CR=.8883; AVE=.6658)		
1. We frequently collect information on our competitors to help direct our marketing plans.	1.00 ^a	
2. Market information is shared with all functions.	.81	13.08
3. Our strategies are driven by the need to create customer value.	.76	11.83
4. We seek to anticipate future customer needs.	.82	13.33
<i>Organizational Learning</i> (CA=.888; CR=.8901; AVE=.6185)		
1. Our organization's ability to learn is considered as a key competitive advantage.	1.00 ^a	
2. Our organization values learning as a key to improvement.	.82	11.90
3. Our organization believes that employee learning is an investment, not an expense.	.76	10.75
4. Learning in our organization is seen as a key to guarantee organizational survival.	.80	11.55
5. The collective wisdom in our organization is that once we stop learning, we endanger our future.	.76	10.78
<i>Brand Innovation</i> (CA=.901; CR=.9067; AVE=.6641)		
1. Our innovation has introduced a new generation of brands.	1.00 ^a	
2. Our innovation of brands has extended current product ranges.	.87	13.85
3. Our brand innovation has opened up new markets.	.88	14.14
4. Our brand innovation has improved existing product quality.	.87	13.86
5. Our brand innovation has reduced production costs.	.60	8.54
<i>Market Performance</i> (CA=.909; CR=.9117; AVE=.6745)		
1. Our organization has attained a desired growth in overseas markets.	1.00 ^a	
2. Our organization has secured desired market shares in overseas markets.	.82	12.19
3. Our organization has increased its profitability from overseas expansion.	.89	13.63
4. Our organization has increased its return on investment through sales.	.84	12.66
5. Our organization has achieved customers' satisfaction.	.75	10.92
<i>Environmental Uncertainty (control variable)</i> (CA=.809; CR=.8187; AVE= .6027)		
1. It was difficult to forecast the sales quotas of products in overseas markets.	1.00 ^a	
2. The product exported was greatly influenced by changes in the trade policies of overseas markets.	.87	10.37
3. It was difficult to forecast the competitor's advantage of their products in overseas markets.	.72	9.08
Model fit: $\chi(259) = 442.852$, $p = 0.000$; DELTA2 = 0.944; RNI = 0.944; CFI = 0.944; TLI = 0.935; RMSEA=.063		

^a Fixed factor loading. Notes: CA = Cronbach's Alpha, CR = Composite Reliability, AVE = Average Variance Extracted.