A study of strategic orientation and product competitive advantage in Chinese emerging market

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Abstract: This study integrates strategic orientation and product innovation literature and proposes a model of studying product competitive advantage, its antecedents (strategic orientation: competitor orientation, customer orientation, and technological orientation) and consequence (product performance). The moderating effects of competitive uncertainty and technology uncertainty on product competitive advantage-performance are also examined. The model is tested with data collected from Chinese firms. The results show that strategic orientations generally contribute to product competitive advantage, with customer orientation’s effect being insignificant because of special conditions in the Chinese emerging market. The moderating effect of competitor uncertainty was confirmed in the study. Technological uncertainty’s moderating effect is conflicting to the hypothesis because of low technology content of the Chinese market. Implications for business managers are also discussed in this study.

Keywords: strategic orientation; new product development; competitive advantage; emerging market; China.


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1 Introduction

Companies have experienced fast shifting customer needs, extensive competitive pressure, and rapid and radical technological changes since the last decade (Slater and Mohr, 2006; Souder et al., 1997). Firms that are able to develop products faster and more efficiently than competitors may gain competitive advantage and succeed (Griffin, 1997; Swink and Song, 2007). Accompanied by this, new product development has become increasingly complex, costly, and risky, which is evidenced by a low success rate. Improving product competitive advantage becomes more prominent in this volatile market (Robertson and Gatignon, 1986).

New product development research has gained increasing attention by both academicians and practitioners (Griffin and Hauser, 1996; Souder et al., 1997). Many studies have been conducted to identify the determinants of new product success (Montoya-Weiss and Calantone, 1994). These studies demonstrate that product competitive advantage has a strong positive effect on new product success (Song and Parry, 1996). While new product development has been explored extensively within firm or industry characteristics (Cooper and Kleinschmidt, 1987; Montaya-Weiss and Calantone, 1994; Swink and Song, 2007), several recent studies suggest that product competitive advantage can also be influenced by firm strategic orientation (Gatignon and Xuereb, 1997; Han et al., 1998).

The impact of strategic orientation on product competitive advantage is consistent with the resource-based view of the firm. Product competitive advantage represents a core competence of a firm; strategic orientation thus can be the sources of this competitive advantage (Day, 1990; Day and Wensley, 1988; Kirca et al., 2005; Lau et al., 2008). Product competitive advantage is a consequence of relative superiority of skills and resources a firm deploys over time. These skills and resources reflect the patterns of activities of the entire firm to enhance product competitive advantage. The creation and sustentation of product competitive advantage are the outcomes of strategic orientation which include all the activities involving acquiring information about buyers, competitors, and technological development in the target market and disseminating it throughout the business (Gatignon and Xuereb, 1997; Narver and Slater, 1990).

Although the importance of product competitive advantage to new product performance is acknowledged in many studies, this relationship may be moderated by certain environmental factors according to the resource-based view (Barney, 1991; Collis, 1994; Day, 1994). Competitive advantage is more important for product performance under certain environmental conditions (Kirca et al., 2005; Mahoney and Pandian, 1992; Pfeffer and Salancik, 1978). It is imperative to identify the conditions under which product competitive advantage is more or less important, so the organisation can deploy their efforts accordingly.

From the literature, competitive uncertainty and technological uncertainty are identified as the important moderators of product competitive advantage-product performance relationship (Han et al., 1998; Mahoney and Pandian, 1992; Pfeffer and Salancik, 1978).

To best explore the relationship discussed above, a model is developed to study product competitive advantage, including its antecedents and consequences. The study of these relationships will provide a better understanding of product competitive advantage, firm strategic orientation, product performance, and environmental factors. The rest of the paper is organised as follows. First, the model for studying product competitive
advantage and research hypotheses are presented. Then the hypotheses are tested using data collected from Chinese manufacturers, which have started to incorporate strategic view into business operation (Li and Atuahene-Gima, 2001). A discussion is followed on how firms can develop products with superior competitive advantage in the Chinese emerging market.

2 The model and hypotheses

The conceptualisation is mainly drawn from three theoretical streams, notably marketing strategy literature (Day, 1990; Jaworski and Kohli, 1993; Kirca et al., 2005; Kohli and Jaworski, 1990; Narver and Slater, 1990; Slater and Narver, 1994), resource-based theory (Day, 1994; Collis, 1991, 1994); and new product literature (Cooper and Kleinschmidt, 1987; Song and Parry, 1996). Figure 1 is the model for studying product competitive advantage. The following key concepts underlie the rationale for this model.

Figure 1 The research framework (see online version for colours)

- Strategic importance of product competitive advantage lies in its demonstrable contribution to product performance (Amit and Schoemaker, 1993; Day, 1990; Day and Nedungadi, 1994; Day and Wensley, 1988; Lau et al., 2008). The greater the product competitive advantage, the higher the product performance.
- Firm strategic orientation (competitor orientation, customer orientation, and technological orientation) is the source of superior product competitive advantage (Amit and Schoemaker, 1993; Collis, 1991; Day and Wensley, 1988; Gilbert, 1994; Kirca et al., 2005; Lau et al., 2008). The higher the level of firm strategic orientation, the greater the product competitive advantage.
- Effects of product competitive advantage are affected by certain environmental factors (Barney, 1991; Collis, 1994; Day, 1994). Under certain circumstances, product competitive advantage can be more important for product performance (Mahoney and Padian, 1992; Pfeffer and Salancik, 1978). When environment is characterised by high competitive uncertainty and technological uncertainty, product competitive advantage is more crucial to product performance. The higher the competitive uncertainty and technology uncertainty, the stronger the relationship between product competitive advantage and product performance.
Such an approach can help in analysing how firms can develop products with superior competitive advantage, how product competitive advantage leads to high product performance, and how competitive uncertainty and technology uncertainty moderate the product competitive advantage-performance relationship.

2.1 Firm strategic orientation and product competitive advantage

A firm’s strategic orientation represents the strategic directions implemented by a firm to develop new products for the continuous superior performance of the business (Day and Wensley, 1988; Gatignon and Xuereb, 1997; Lau et al., 2008). Three major strategic orientations of the firm have been identified in past research that affect product competitive advantage, namely, competitor orientation, customer orientation, and technological orientation (Gatignon and Xuereb, 1997; Kirca et al., 2005). Competitor orientation and customer orientation are drawn from market orientation studies (Jaworski and Kohli, 1993; Kohli and Jaworski, 1990; Narver and Slater, 1990; Slater and Narver, 1994). Technological orientation is taken from recent studies on firm strategic orientation (Gatignon and Xuereb, 1997; Han et al., 1998), which is proven to be crucial for the product development. The three strategic orientations afford a firm to develop products that are of high value to customers, superiority to competitors, and have high technology content.

2.1.1 Competitor orientation

The features of competitor orientation can be understood as:

1. a set of beliefs that puts competitors first
2. the skills of organisation to generate, disseminate, and use superior information about competitors
3. application of inter-functional resources to respond to competitors (Narver and Slater, 1990; Slater and Narver, 1994).

Competitor-oriented firms are likely to develop products with superior competitive advantage among current and potential competitors (Day, 1990, 1994; Souder et al., 1997). Competitor orientation means that an organisation understands the short-term strengths and weaknesses and long-term capabilities and strategies of both the key current and key potential competitors (Day and Wensley, 1988; Kirca et al., 2005). It includes all of the activities involved in acquiring information about competitors in the target market and disseminating it throughout the business (Narver and Slater, 1990).

In competitor-oriented firms, employees from all functions share information concerning competitors (Slater and Narver, 1994). Top management frequently discusses competitors’ strategies to develop a shared perspective of threats (Day and Wensley, 1988). Firms are likely to target opportunities for competitive advantage based on competitors’ weaknesses and develop their own products that are superior among current and potential competitors (Day, 1994).

Competitor-oriented firms are based on direct management comparison with a few target competitors (Lau et al., 2008; Swink and Song, 2007). The key question is, “How do our products compare with those of competitors?” These businesses watch costs closely, quickly match the marketing initiatives of competitors, look for their sustainable
edge on technology, and reflect it in their innovation activities. Every firm can identify some products that are more valuable than other products within the firm and claims that can lead to high product performance. Unfortunately, product competitive advantage should not be an internal assessment. It should be a harsh external assessment of how they are better than competitors. If the product enables it to behave in ways that are inconsistent with a firm’s competitive situation, these product advantages cannot lead to superior product performance.

Superior product competitive advantage also implies that the products are hard for competitors to imitate. In any case, they keep competitors from developing such product advantage by responding rapidly or anticipating their actions (Day and Nedungadi, 1994). Invisible resources and capabilities such as firm culture, or trust between management and labour, cannot be traced or easily replicated by competitors since they are deeply rooted in the organisation’s history. These are often specific to a firm or to a particular industry at a given point of time. The resultant product competitive advantage is difficult for competitors to imitate and its developing time cannot be easily compressed.

Product competitive advantage in competitor-oriented firms may further exhibit complementarities. Under complementarities, the combined value of the components of product competitive advantage may be higher than that of deploying each component individually. This integrity is deeply rooted in a firm’s culture and impossible for other firms to imitate. So, the first hypothesis is:

H1 The more competitor-oriented firms are, the greater the product competitive advantage.

2.1.2 Customer orientation

Customer orientation can be defined as “a set of beliefs that puts the customer interest first” [Deshpande et al., (1993), p.27]. A customer orientation requires that a firm sufficiently understands its target buyers and is able to create superior value for them continually (Narver and Slater, 1990). In the context of new product development, a customer orientation requires that a firm not only has the ability and will to identify, analyse, and understand buyer’s needs, but also develops new products that are highly valued by customers (Kirca et al., 2005; Lau et al., 2008).

In line with this reasoning, Gatignon and Xuereb (1997) demonstrate a positive relationship between customer orientation and product advantage. Organisations committed to customers have been shown to innovate throughout their entire business system (Han et al., 1998). Ideas of enhancing customer value may come to the R&D department from each individual or department. These ideas, in turn, may be realised through the actions of the entire organisation.

A firm understands buyer’s needs in two ways: by understanding the entire value chain, not only as it is today but also as it will evolve over time (Day and Wensley, 1988; Narver and Slater, 1990), and by disseminating the information throughout the entire firm (Kohli and Jaworski, 1990). A firm can increase the benefits of buyers by creating high quality products, and decreasing buyers’ cost by innovation in the production process and administration (Lau et al., 2008; Narver and Slater, 1990). Development of new products also needs a firm to understand the cost of revenue dynamics of buyers, as well as their economic and political strains (Han et al., 1998). Only with such understanding can a
firm develop new products that fit different needs of different buyers with high competitive advantage. This leads to the hypothesis:

H2 The more customer-oriented firms are, the greater the product competitive advantage.

2.1.3 Technological orientation

Technological orientation implies a firm’s commitment to innovation activities (Gilbert, 1994). The positive relationship between technological orientation and product competitive advantage is obvious. The purpose of technological orientation is to seize opportunities in the market by creating a high level of resources and capabilities of innovation (Amit and Schoemaker, 1993). As an orientation, it encompasses all the technological activities of companies (Manu, 1992).

In technological-oriented firms, entrepreneurship is encouraged (Slater and Mohr, 2006). Employees from all functional areas share information about innovation and participate in activities concerning innovation (Manu, 1992). In this environment, firms are likely to develop products with superior competitive advantage by repeated process, product, or management innovations, manufacturing flexibility, responsiveness to market trend, and short development cycle (Amit and Schoemaker, 1993).

Technological-oriented firms devote themselves to make good products and improve them over time (Gatignon and Xuereb, 1997). Their products are often characterised by high-tech content and radical innovativeness. These are all the characteristics of high product competitive advantage. So, the hypothesis is,

H3 The more technologically-oriented firms are, the greater the product competitive advantage.

2.2 Product competitive advantage and product performance

Product competitive advantage is an important antecedent of product performance (Cooper and Kleinschmidt, 1987). Its contribution to product performance is mostly supported by empirical studies (Cooper and Kleinschmidt, 1987; Gatignon and Xuereb, 1997; Song and Parry, 1996). Literature on organisational capabilities and the performance of a firm suggests that competitive advantage can have significant positive economic value for the product (Barney, 1991; Day, 1994; Slater and Mohr, 2006). The central role of product competitive advantage lies in its high value to customers and its scarcity (Barney, 1991; Collis and Montgomery, 1995; Grant, 1991).

Products with a high competitive advantage are highly valued by buyers. This high value enables firms to conceive of or implement strategies that improve the efficiency and effectiveness of product management (Barney, 1991), resulting in high product performance. The traditional “strengths-weaknesses-opportunities-threats” model of firm performance suggests that firms are able to improve product performance only when their products are valuable to buyers.

Product competitive advantage characterised by scarcity reflects the dynamics of competition (Collis and Montgomery, 1995). A firm enjoys high product performance when it is implementing a value-creating strategy not simultaneously implemented by large numbers of other firms. If product competitive advantage is possessed by a large
number of firms, each of these firms can implement a common strategy that gives no one firm a competitive advantage.

A firm enjoys a superior product performance when its product is imperfectly imitable and imperfectly substitutable. The imperfectly imitability and substitutability imply that not all firms can develop them and have the same effects (high product performance). If they try to imitate these products, they will be at some disadvantage compared to the firm they are trying to imitate. So, the hypothesis is,

H4 The greater the product competitive advantage, the higher the product performance.

2.3 Competitive uncertainty and technology uncertainty

Previous analyses have put forward the argument that firm strategic orientation could be a source of product competitive advantage, which leads to superior product performance (Day, 1990, 1994). According to the resource-based view, however, product competitive advantage is so tenuous in certain circumstances (Mahoney and Padian, 1992; Pfeffer and Salancik, 1978). It is vulnerable to threats of erosion and substitution. The erosion of product competitive advantage occurs as a firm adapts to competitive changes. The replacement takes place as technology changes. So, the importance of product competitive advantage varies with certain environmental contexts. Stated differently, linkage between product competitive advantage and product performance depends on certain environmental characteristics of a firm. Product competitive advantage is more important in an environment characterised by competitive and technology uncertainty (Slater and Mohr, 2006).

2.3.1 Competitive uncertainty

Competitive uncertainty is the degree to which a firm cannot anticipate or accurately predict the changes in competitors’ strategies and emergence of new competitive forces in the market place. Competitive uncertainty relates to the absence of information about competitors’ resources and capabilities. The lack of knowledge about competitors’ strengths and weakness deters the development of products that are superior to the competitors (Slater et al., 2006). Firms operating in markets characterised by high competitive uncertainty are likely to have a greater need to develop products with high competitive advantage so they can sustain higher product performance than firms that are in low competitive uncertainty environments. In other words, product competitive advantage is likely to be more strongly related to performance in a high competitive uncertainty market than in a low competitive uncertainty environment. Stated formally,

H5 The greater the competitive uncertainty, the stronger the relationship between product competitive advantage and firm performance.

2.3.2 Technological uncertainty

Technology uncertainty is another factor influencing the product competitive advantage-performance relationship. Technology uncertainty can be defined as the degree to which a firm cannot accurately predict the changes in technology. Technology uncertainty relates to the absence of technological information and the lack of knowledge about technological solutions. On one hand, the absence of technological information
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constrains the development of product with high competitive advantage compared to its competitors. On the other hand, the products are likely to be replaced by better products or surpassed by a high level of products from both inside and outside the industry (Collis, 1994; Slater and Narver, 1994). Therefore, product competitive advantage is more important for firms in high technology uncertainty conditions to sustain product performance than for the firms in low technology uncertainty conditions. In other words,

H6 The greater the technology uncertainty, the stronger the relationship between product competitive advantage and firm performance.

3 Methodology

3.1 Data

The data to test the hypotheses came from a mail survey of chief engineers across a broad spectrum of Chinese industries, including mining, machinery, chemical, electronics, etc. A sample of 400 chief engineers or vice presidents who were in charge of new product development of firms was randomly drawn from the record of products applying and revising reports in the Science and Technology Committee, which administers the innovation projects of firms. Each informant was asked to evaluate the last new product introduced in the market by a strategic business unit.

Data to test the model and hypotheses were collected using a key informant technique. Key informants were chief engineers or vice presidents who had control over all the activities concerning innovation and knew the overall strategies in organisations. The use of key informants in evaluating firm activities is consistent with prior studies (Goodman et al., 1995) and should not threaten measurement validity. Nevertheless, their familiarity of the questions in the survey was asked at the end of the questionnaire. Among respondents, 92% indicated high familiarity and only 8% indicated moderate. Key informant technique was appropriate in this study.

To compute non-response bias, a two-step survey was conducted. At first step, the questionnaires and introduction letters were sent to informants. Three weeks later after the initial mailing, as the second step, a letter was sent that asked each informant to participate along with the questionnaire to non-respondents. These procedures yielded 249 usable questionnaires, for a response rate of 62.25%.

Non-response bias: non-response bias was assessed by two different procedures:

1. a comparison of sample statistics to know values of the population, such as annual sales volume, and number of employees
2. comparison of first and second wave data. Neither procedure showed significant differences.

3.2 Questionnaire development and pilot study

The survey administration was assisted by two correspondents working on the Science and Technology Committee. They were senior engineers and administered the project approval and appraisal. They were familiar with the area of the study and knew most of the presidents or chief engineers of firms.
To best adapt the questionnaire items, a series of 20 in-depth field interviews were conducted with chief engineers or vice presidents. The managers were probed regarding the important issues concerning firm strategic orientations and firm product competitive advantage, the face validity of the proposed model, and preliminary operationalisation of the constructs. These interviews, along with an extensive review of the relevant literature, were used to develop the draft of the questionnaire.

Our survey was conducted in Chinese. The questionnaire was drafted in English and translated into Chinese because there were no existing measures in Chinese. This study followed the procedure for conducting international research developed by Douglas and Craig (1983), consisting of a multi-stage combination of extensive case studies and survey research. Before its administration, the questionnaire was first translated into Chinese and then translated back into English to ensure correct meaning and cross-cultural equivalence of the measures. Two other independent bilingualists also provided checks on Chinese-English, and English-Chinese translations.

A pre-test of the questionnaire was conducted on a few chief engineers. Based on their responses, some questions were reworded. Subsequently, the questionnaire was sent to another sample of chief engineers of firms to further assess the terminology in the questionnaire. At this point, no particular problems appeared to exist with the questionnaire. Finally, the questionnaire was pre-tested in a wide range of firms (n = 35). Again, no significant problems with the validity of the scale or response format were revealed.

3.3 Measures

The Appendix contains detailed measurement items for each construct and their sources. Overall, all constructs in the model were measured with multiple-item scales. Our guideline is to use well-validated measures reported in previous research. When measures were not clearly reported in published articles, the authors were asked to provide the items that were used in their studies by writing a polite letter. When an item had to be modified or developed, Churchill (1979) with multiple-step and multi-validation methods were followed.

Competitor orientation was measured by a three-item scale ($\rho = .76$) and customer orientation was by a six-item scale ($\rho = .84$). They were all from Narver and Slater (1990), which were well validated by many studies. Technological orientation was measured by a four-item scale ($\rho = .71$), which was from Gatignon and Xureb (1997). Some modifications were made according to the field study.

A five-item scale was used to measure product competitive advantage ($\rho = .92$) from Song and Parry (1996) that was well validated by many subsequent studies (Li and Calantone, 1998). Product performance was measured by four items ($\rho = .88$), which were from Gatignon and Xureb (1997). These were perceived measures, such as the commercial performance of this product relative to competitors. Competitive uncertainty and technological uncertainty were all measured by four-item scales ($\rho = .81$ and $\rho = .71$ respectively), which were from Jaworski and Kohli (1993) and Miller (1993). The respondents indicated the degree to which they could predict the aspects of environment in which firms operated.
4 Analysis and results

4.1 Measure validation

The validity of the measures was assessed by initially examining the reliability of the constructs and conducting exploratory factor analysis (see Appendix for construct reliability and item to total correlation). After this initial analysis, the entire set of items was subject to confirmatory factor analysis using LISREL to verify unidimensionality.

A series of confirmatory factor analysis was conducted with the covariance matrix as inputs. To ensure the discriminant validity, a series of chi-square difference tests were conducted. For example, the comparison of competitive uncertainty with technological uncertainty generated \( \chi^2(1) = 37.2, p < 0.01 \), suggesting that these measures are distinct. All these tests support discriminant validity. Phi values range from 0.05 to 0.53, none of the confidence intervals contain a value of one (\( p < 0.01 \)). Table 1 presents the factor intercorrelation.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>F6</th>
<th>F7</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 Product advantage</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2 Product performance</td>
<td>.36*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F3 Competitor orientation</td>
<td>.40*</td>
<td>.31*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F4 Customer orientation</td>
<td>.53*</td>
<td>.37*</td>
<td>.32*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F5 Technological orientation</td>
<td>.38*</td>
<td>.33*</td>
<td>.25*</td>
<td>.31*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F6 Competitive uncertainty</td>
<td>.15***</td>
<td>.14***</td>
<td>.10</td>
<td>.08</td>
<td>.05</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>F7 Technological uncertainty</td>
<td>.09</td>
<td>.12***</td>
<td>.09</td>
<td>.10</td>
<td>.24*</td>
<td>.22*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Notes: *\( p < 0.01 \); **\( p < 0.05 \); ***\( p < 0.1 \)

Factor loadings of items to corresponding constructs are from 0.56 to 0.92 and all loadings are significant (\( p < 0.01 \)), indicating convergent validity. The dimensionality is also supported by examining several measures of fit. Although \( p \)-value is very small, the ratio of chi-square to degrees of freedom is 1.44. Following the guidelines of Browne and Cudeck (1993), it is seen that the point estimate of RMSEA is 0.049, the upper bond of 90% confidence interval is less than 0.08; Bentler’s comparative fit index, CFI, is 0.95, suggesting the model represents a good fit to the data.

4.2 The results of testing the main hypotheses

Having satisfied the requirement arising from the measurement issues, the structural model was tested using data from 249 Chinese firms. As shown in Table 2, the results indicate a good fit of the model: ratio of chi-square to degrees of freedom is 1.63; RMSEA = 0.050, upper bond of 90% confidence interval is lower than 0.08 (Browne and Cudeck, 1993); \( p \)-value for test of close fit (RMSEA<0.05) is .46; CFI=0.96. Examining paths from three strategic orientations to product competitive advantage, two paths are consistent hypotheses. Competitor orientation positively related to product competitive advantage (\( t = 4.56, p < 0.01 \)), supporting H1; technological orientation positively affect
product competitive advantage ($t = 4.14, p < 0.01$). This supports H3. The path from customer orientation to product competitive advantage is not significant ($t = 0.75$). This does not support H2. Consistent with H4, product competitive advantage positively affects product performance ($t = 8.23, p < 0.01$).

**Table 2** Assessment of research hypotheses by LISREL

<table>
<thead>
<tr>
<th>Paths</th>
<th>Hypotheses</th>
<th>Path coefficients (standardised)</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitor orientation – product competitive advantage</td>
<td>H1</td>
<td>.38*</td>
<td>4.56</td>
</tr>
<tr>
<td>Customer orientation – product competitive advantage</td>
<td>H2</td>
<td>.06*</td>
<td>.75</td>
</tr>
<tr>
<td>Technological orientation – product competitive advantage</td>
<td>H3</td>
<td>.33*</td>
<td>4.14</td>
</tr>
<tr>
<td>Product competitive advantage – product performance</td>
<td>H4</td>
<td>.37*</td>
<td>8.23</td>
</tr>
</tbody>
</table>

Overall model fit indices: $\chi^2(182) = 296.64$; CFI = .96; RMSEA = 0.05

<table>
<thead>
<tr>
<th>B. Test moderating effect</th>
<th>Hypotheses</th>
<th>$\beta_{21}$</th>
<th>$\chi^2$ difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive uncertainty</td>
<td>High competitive uncertainty</td>
<td>H5</td>
<td>.41*</td>
</tr>
<tr>
<td></td>
<td>Low competitive uncertainty</td>
<td>H5</td>
<td>.11***</td>
</tr>
<tr>
<td>Technological uncertainty</td>
<td>High technological uncertainty</td>
<td>H6</td>
<td>.21*</td>
</tr>
<tr>
<td></td>
<td>Low technological uncertainty</td>
<td>H6</td>
<td>.43*</td>
</tr>
</tbody>
</table>

Notes: *Significant at $p < 0.01$; **significant at $p < 0.05$; ***significant at $p < 0.1$; n.s. not significant

Our structural model explains 33% and 22%, respectively, the variance in the two endogenous theoretical constructs, product competitive advantage and performance. Standardised parameter estimates for the model are shown in Table 2. The results of tests of moderating effects of environmental factors are described subsequently.

4.3 Moderating effects of competitive uncertainty

To evaluate the moderating effect of competitive uncertainty, the sample was split into two groups based on the mean score of competitive uncertainty. The data above the mean were defined as high competitive uncertainty and data below the mean as low competitive uncertainty. Then a two-group LISREL model was performed to examine whether there were any significant differences in structural parameters ($\beta_{31}$) between high competitive uncertainty and low competitive uncertainty. The first time $\beta_{31}$ was constrained to be equal. Chi-square of the test is 551.66 with degrees of freedom 365. Second, parameter was not constrained (let $\beta_{31}$ free). Chi-square of the test is 543.51 with 364 degrees of freedom. The difference of two tests is significant with $\chi^2(1) = 8.15$, supporting the moderating effect of competitive uncertainty. The value of $\beta_{31}$ of the high uncertainty group is 0.41 ($t = 6.63, p < 0.01$) and the value of the low uncertainty group is 0.11 ($t = 1.72, p < 0.1$) (see Table 2), supporting H5.
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The moderating effect of technological innovation was tested the same way. The chi-square of the test when constrained $\beta_{21}$ to be equal is 612.06 with 365 degrees of freedom. The chi-square of the test when $\beta_{21}$ is free is 606.71 with 364 degrees of freedom. The difference of two tests is significant with $\chi^2(1) = 5.35$, indicating technological uncertainty’s significant moderating effect to the product competitive advantage-performance relationship. Surprisingly, the value of $\beta_{21}$ of the high uncertainty group is 0.21 ($t = 4.38$, $p < 0.01$) and the value of the low uncertainty group is 0.43 ($t = 5.56$, $p < 0.01$) (see Table 2). This implies that high technological uncertainty weakens the relationship between product competitive advantage and low technological uncertainty strengthens that relationship, which contradicts H6.

5 Discussion

The key objective of this study is to examine the relationship between strategic orientation and product competitive advantage. In general, the study provides some empirical evidence that firm strategic orientation facilitates product competitive advantage, which in turn positively influences product performance. These results provide more complete understanding of the role of firm strategic orientation in the new product development.

Competitor orientation is the most important factor ($\gamma_{11} = 0.38$, $p < 0.01$) contributing to product competitive advantage. This finding is in line with previous research on market orientation and the resource-based view. Product competitive advantage is firm core competence. This competitive advantage lies on fully understanding competitors’ current and potential actions. Product development based on thorough analysis of competitors’ strengths and weaknesses can have greater superior competitive advantage over competitors’.

Not surprisingly, technological orientation also affects product competitive advantage, even though its effect is less than that of competitor orientation ($\gamma_{31} = 0.33$, $p < 0.01$). Its impact on product competitive advantage is consistent with Gatingnon and Xuereb (1997). This finding is supported by the results of cross-functional integration in the new product research. Innovation is not solely the task of the R&D department. It needs the commitment from various departments in the organisation. Successful new products need the full understanding of marketing, process planning, and production planning, which encompass all the functions within firms. Technological orientation facilitates organisation-wide activities on technological development, leading to products with superior competitive advantage.

Product competitive advantage is the core of product success and positively affects product performance ($\beta_{21} = 0.37$, $p < 0.01$). This is in line with previous research on new products. Products that provide unique features or attributes superior to competitors will win customers and eventually win in the market. Customer orientation does not affect product competitive advantage. This conflicting finding could be interpreted by the special conditions in China, an emerging economy inherited from a planned economy. In a planned economy, satisfying customer needs is not a priority for firms. This lack of link between customer and product development undermines the influence of customer orientation and product competitive advantage. This also implies that development of market economy cannot be accomplished with ‘one stroke’ in nations of a planned economy. The reform requires the reorganisation of the social structure, which may take
generations to realise (Li and Atuahene-Gima, 2001). This is more important for international firms developing business in China. On one hand, bringing new market idea and changing local customers’ behaviour is prominent. On the other hand, understanding local customers and making business strategies accordingly is more important for business success.

The contingency effect of environment found in this study deserves more discussion. The Chinese market is characterised by high labour intensity and a low level of technology. Firms mainly compete on the costs, not the technology, making the moderating effect of technological uncertainty differ from the findings in the western nations. Firms perform better when technology uncertainty is low than when the technology uncertainty is high because of the low technology content of the market. When facing the high technologically turbulence environment, most firms cannot accommodate the change because of the lack of innovation experience.

6 Conclusions and managerial implications

This study advances research on new product development by presenting a model of studying firm strategic orientation, product advantage and product performance. The study validated the conceptualisation using data collected from Chinese emerging market. This study has some implications for firm managers.

1. Product competitive advantage is important for product performance in general. This competitive advantage is built on the full understanding of customer needs, competitor’s actions, and technological development. Firms without these attributes cannot expect their product developed to have high product performance. Nor can such firms expect that efforts to imitate other firms capabilities to develop successful products.

2. That the study of sources of product competitive advantage focuses on strategic orientation does not mean that managers are irrelevant in the model. In fact, managers are important in this model because they understand and describe the economic performance potential of firm resources and capabilities and deploy each accordingly. Without such management analysis, developing products with superior competitive advantage is not possible.

3. Product competitive advantage should be assessed compared with competitors. Competitor-oriented strategy is important for firms to find the resources and capabilities gap with competitors and develop their resources and capabilities accordingly.

4. Developing products with high competitive advantage depends on how to evaluate a firm’s innovation activities. Innovation orientation is the basis for firms to develop these required resources and capabilities. Only if a firm continuously focuses on innovation can it get products with high competitive advantage and high product performance.

5. Product competitive advantage is more important in a high competitive uncertainty environment. Product competitive advantage cannot sustain forever. They are vulnerable to threads of erosion and substitution. In a competitive uncertainty
environment, high product competitive advantage can deal with unexpected competitive forces, or substitutes, which is crucial for product performance.

There is also implication for firms expanding their business in the Chinese market. The Chinese market is typically influenced by the past and present planned economic system. For example, to deal with the low technology of the market, strength of international firms is to use their well-developed technology to attract local customers. Japanese electronics companies, for example, entered Chinese market with high quality and low cost products and dominated the market more than 20 years.

This study has limitations. This study focuses on firm strategic orientation and does not include other determinants of new product success. This lead to an important topic of future research, that is to integrate firm strategic orientation with other well-studied determinants of new product success to develop an overall model of new product development.

Second, the data were collected from China. This limits the generalisability of this study to other nations. Future research is needed to examine the model in countries of different economic and cultural systems. A cross-national study is appropriate in the future.

References


**Appendix**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitor orientation .76</td>
<td>• We respond slowly to competitive actions that threaten us.</td>
<td>Narver and Slater (1990)</td>
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<tr>
<td></td>
<td>• We target customers where we have an opportunity for competitive advantage.</td>
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<td></td>
<td>• Top management often discuss competitor’s strategies.</td>
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<tr>
<td>Technological orientation .71</td>
<td>• Our firm uses sophisticated technologies in its new product development.</td>
<td>Gatignon and Xuereb (1997)</td>
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<td></td>
<td>• Our new products are always at the state of the art of the technology.</td>
<td></td>
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<td></td>
<td>• Our firm is very proactive in the development of new technologies.</td>
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<tr>
<td></td>
<td>• Our firm is always the first one to use a new technology for its new product development.</td>
<td></td>
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<tr>
<td>Customer orientation .84</td>
<td>• We monitor our level of commitment and orientation to serving customers’ needs.</td>
<td>Narver and Slater (1990)</td>
</tr>
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<td></td>
<td>• Our business objectives are driven by the goal of creating greater customer value.</td>
<td></td>
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<td></td>
<td>• Our strategy for competitive advantage is based on our understanding of customer needs.</td>
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<td></td>
<td>• Our business objectives are driven by customer satisfaction.</td>
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<td></td>
<td>• We measure customer satisfaction systematically and frequently.</td>
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<td></td>
<td>• We give close attention to after-sales service.</td>
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Appendix (continued)

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
<th>Sources</th>
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</thead>
<tbody>
<tr>
<td>Product competitive advantage</td>
<td>• Compared to competitive products, this product offered some unique features or attributes to the customer.</td>
<td>Song and Parry (1996)</td>
</tr>
<tr>
<td>(.92)</td>
<td>• This product was clearly superior to competing products in terms of meeting customers’ needs.</td>
<td></td>
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<td></td>
<td>• This product permitted the customer to do a job or do something he/she could not presently do with what was available.</td>
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<td></td>
<td>• This product was higher quality than competing products – tighter specifications, stronger, last longer, or more reliable.</td>
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<tr>
<td></td>
<td>• This product had superior technical performance relative to competitive products.</td>
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<tr>
<td>Technological uncertainty</td>
<td>• The technology in the market environment was changing rapidly.</td>
<td>Jaworski and Kohli (1993)</td>
</tr>
<tr>
<td>(.71)</td>
<td>• Technological changes provide big opportunities in the industry.</td>
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<tr>
<td></td>
<td>• A large number of new product ideas have been made possible through technological breakthroughs in the industry.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• There are major technological developments in the industry.</td>
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<tr>
<td>Competitive uncertainty</td>
<td>• Changes in competitor’s prices.</td>
<td>Miller (1993)</td>
</tr>
<tr>
<td>(.81)</td>
<td>• Changes in the markets served by competitors.</td>
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<tr>
<td></td>
<td>• Changes in competitors’ strategies.</td>
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<tr>
<td></td>
<td>• Entry of new firms into the market.</td>
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<tr>
<td>Product performance</td>
<td>• This new product has succeeded in achieving its main objectives.</td>
<td>Gatignon and Xuereb (1997)</td>
</tr>
<tr>
<td>(.88)</td>
<td>• Relative to our competitors’ products, this one has a better market share.</td>
<td></td>
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<tr>
<td></td>
<td>• Relative to our competitors’ products, this one has a better return on investment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Relative to our competitors’ products, this one has succeeded in terms of sales.</td>
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