

# Effects of Brand Portfolio and Product Line Strategy on Brand Market Share Evidence from Chinese Cellphone Market

Xuenan Ju<sup>1</sup>, Zuohao Hu<sup>1</sup> & Xia Liu<sup>1</sup>

<sup>1</sup> Department of Marketing, School of Economics and Management, Tsinghua University, Beijing 100084, China

Correspondence: Xuenan Ju, Department of Marketing, School of Economics and Management, Tsinghua University, Beijing 100084, China. E-mail: juxn.10@sem.tsinghua.edu.cn

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## Abstract

This paper investigates the effects of brand portfolio and product line strategy of cellphone brands' market share in China. Based on the 15-month data of Chinese cellphone markets, the authors conducted the empirical analysis using a two-way fixed effect model. The results show that foreign cellphone brands and Chinese local cellphone brands market share response differently to price level, product line level, and geographic level variables. Increasing segment coverage and widening product line enhances both foreign and local brands' market share. However, price-level factors have opposite influence on foreign and local brands in that price negatively relates to foreign brands' market share but positively relates to local brands' market share. Similarly, price concentration shows a negative impact on foreign brands but positive impact on local brands' market share. Finally, longer brand history positively relates to foreign brands' market share but negatively relates to local brands' market share. This research provides useful guidelines and managerial implications in the context of Chinese market.

**Keywords:** Product line strategy, Cellphone markets, Market share, Brand portfolio, Herfindahl-Hirschman-Index (HHI)

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## 1. Introduction

Cellphone market has been increasingly gaining attention from marketing researchers with the prevalence of mobile and information technology in recent years. Chinese cellphone market, while sharing the similar characteristics of typical cellphone markets, also embraces many unique features that influenced by both micro- and macro-economic environments in China. The huge market potential attracts many cellphone brands from both home and abroad, hence lead to severe competition.

The launch of iPhone in 2007 changed the design and function style of the whole industry. Apple overturned the conception of smart phones in terms of user experiences as well as marketing strategy. As a matter of fact, the focuses of competition in cell phone industry were reshaped from focusing on hardware competition to operating system. In addition, it is iPhone's success catalyzed the new era of branding in cell phone industry. Manufacturers began to realize that purely compete on hardware would not lead them into continuously increasing market share. In contrary, the power of brand could play a critical role in helping cellphone manufactures survive the fierce competition (Iimi, 2005). While analyzing cellphone market share from brand perspective could provide a helpful way that could lead to market success, several problems remain to be solved before we can put them into marketing practice (Child, Chung, & Davies, 2003). Especially in Chinese cellphone market, in which complexity and diversity of competition are almost constant to its players, the relationship between branding and market share needs to be articulated properly.

Therefore, our research questions can be stated as: what are the key determinants and mechanisms influencing the

performance of a cellphone brand, particularly on transitional economies such as China? Specifically, can foreign cellphone brands outperform domestic brands because of strong competitive advantages from multinational backup? Or, on the contrary, will Chinese brands take the advantage of local resources to win the competition? Specifically, the research problems can be organized into three major categories in which consist of multiple sub questions modifying the research boundaries and articulating our research concerns. This research will adopt a modeling methodology, specifically the empirical models which describe market competition and communication. Since the research concerns interdependent activities among multiple brands, the concept of equilibrium analysis and game theory are included in research model. As for empirical analysis, we used a multilevel regression model to investigate influential determinants on cellphone brands' market share.

The remainder of this paper is organized as follows: Based on the literature review, we introduce the conceptual development our model and then explain the data and two-way fixed-effect model in section three. Empirical results are provided in section four, and further discussion and the conclusion are provided in the final section.

## 2. Literature Review

### 2.1 Market Share and Brand Performance

Market share is an important index of brand's performance, which helps managers to evaluate and design appropriate marketing strategy. Hence, the measurement of market share has been specified and studied in both academic and practical researches (Conchar & Crask, 2005; Reibstein & Farris, 1995). According to branding strategy research streams, such as resource-based view (RBV) and industrial organization (IO) theory, brand's performance is both influenced by firm's internal and external elements (Barney, 1991). As vital parts of internal influencing factors, brand portfolio as well as product line strategy are gaining more attention (Yenipazarli & Vakharia, 2015; Giachetti & Dagnino, 2014; Kekre & Srinivasan, 1990). The connection between market share and portfolio/product line strategy, however, is understudied in current branding research fields. Whether a brand can transfer its competitive capability into market share is influenced by multiple factors such as technological knowledge as well as the ability to transfer it into marketing practices. Different components of brands' competitive advantages exert different business performance (Lei, Dawar, & Lemmink, 2008). Foreign brands are more likely to use modern management strategies in building brands, whereas domestic brands usually have superior local advantages, including access to market information, local government support, and local resources (Gao, Murray, Kotabe, & Lu, 2010; Brander & Eaton, 1984).

Taken together, a firm's performance in a new market is a function of both the uniqueness of the technology being transferred and the presence of a specialized technical staff that can convey the tacit aspects of the technology and commercialize it in the local marketplace. Both the capability to transfer technological knowledge into a new local marketplace and the capability to profit from the commercialization of the transferred technology are highly specific to and owned by particular individuals within a firm (Hamel, 1991; Lyles & Salk, 1996; Isobe, Makino, & Montgomery, 2000). The population ecology model suggests that a firm can achieve its competitive edge through either the r-strategy or k-strategy (Hannan & Freeman, 1977). An investor using the r-strategy enters a new product market at an early stage, while the business population contains few other members. In contrast, a firm using the k-strategy joins later when there are more numerous businesses. Thus, the development of a new population of businesses may be viewed as a series of waves, with additional businesses appearing with each successive wave (Tsafarakis, Saridakis, Baltas & Matsatsinis, 2013; Krishnan & Ulrich, 2001; Luo, 1998).

### 2.2 City-Level Determinants (Demographic Factors)

Many studies have examined firms' market share performance in international markets (Isobe et al., 2000; Luo 1998; Pan, Li, & Tse, 1999). These studies have focused on market share performance at the firm level (Lieberman & Montgomery, 1998). Yet most firms have multiple companies and multiple brands, some of which perform better than others. Nevertheless, combining both brand-level and city-level study can offer a more precise understanding of the determinants of market share performance because it delineates the impacts of brand-level factors more precisely (Aaker 1996; Keller, Parameswaran, & Jacob, 2011). Cellphone market has its own characteristics because of huge-base of consumers and various and rapidly changing demands. This feature can be reflected clearly in terms of different levels of cities in China.

As is known to all, Chinese cities are developing in unbalancing forms, which can be stratified into more than three tiers by economic and demographic index. First-tier cities such as Beijing and Shanghai are supported by economic growth and strong purchasing power may be resemble their metropolitan counterparts worldwide but are not representative enough of the real situation of all Chinese cities (second rank cities, third rank cities, small counties,

etc.). According to market segmentation literatures (Moorthy, 1984; Reibstein & Farris, 1995), brands' market share has a significant and inverse relationship with market competition level. Therefore the market shares within- and between the brands varied substantially in different city stratifications respectively. It is more appropriate to analysis this problem in city-level and time sequence observations to obtain an ideal and prudent research conclusion. Cities with different economic growth rate and cultural backgrounds will reflect their own characteristics on brands' market share. Even the same product of a certain brand cannot exclude the possibility of various performance outcomes among different cities.

### *2.3 Brand Competitive Advantages*

According to Porter (2008), brand's competitive advantages come from cost advantage or differentiation strategy. Based on cost advantage theory, Chinese manufacturers should adopt price leadership strategy to develop global markets. The other stream holds that Chinese firms have to improve technological level constantly; so that they can enter global markets by differentiate strategies, which could provide a solid foundation for a sustainable development. From practical perspective, enterprises such as Bird aimed at emerging market to export, adopting own brand to gain better export performance. However, more firms choose OEM or ODM strategy in order to occupy market share and accumulate practical experience. At the same time, Haier break through the barrier by refrigerator, using differentiated niche strategy to win the competition.

In general, most Chinese brands tend to choose price-leadership strategy when they enter the markets in current stage. This phenomenon can be explained by 3 main reasons: firstly, environmental cost and domestic demands (Hultman, Robson, & Katsikeas, 2009); Secondly, firms believe the relatively low price is their main competitive advantage (Young, Huang & McDermott, 1996); Finally, relying on low-cost labor (Brouthers & Xu, 2002). On the other hand, some scholars challenge price-advantage strategy recently. Morgan and Rego (2009) points out that developed countries can also provide high-quality products in a low price level; while other developing countries attract customers with similar products but lower prices compared to China. Both situations above threat Chinese brands' performance that created by price-advantages.

Comparing the distinct performance and developing strategy of domestic and foreign cellphone brands, it is necessary to differentiate the brands' competitive advantages into core advantages and local advantages. According to Keller et al. (2011), brands' core advantages can be defined as superior quality, innovation, value pricing, advertising, promotions, services, etc. The specific measurements of core advantages are normally return on investment, brand quality, quality-price ratio, pace of introducing new products, capability of using market information in marketing decisions. On the other side of the coin, Child and Tse (2001) suggest that local advantages are indispensable for brands to achieve ideal market share. They defined the following items as representative standards to evaluate a brand's local advantages: break through local barriers, backed by adequate resources, win support from local government. The researchers adopt brands' ability to obtain local resources, the brands' access to local capital market, the brands' ability to obtain government approval on projects, etc. as the detailed measurements of a brand's local advantages.

The length of time in years since the market entry of the brand is an important indicator of brand's competitive advantage and strategic trend of the firm. Existing studies show that the length of brand existence, especially in the case of foreign brands on international market, shares a positive relationship with brands' market share. Firm size has long been found to be an important factor affecting firm survival and performance (Porter, 2008). As Peng and Luo (2000), Xin and Pearce (1996), and Yeung and Tung (1996) find in China, smaller firms typically need to rapidly establish ties with other organizations in order to gain legitimacy, thus combating their liability of age (Schau, Muñiz, & Arnould, 2009; Aldrich & Fiol, 1994). Smaller firms may also be more flexible and capable in constructing and improving ties than their larger, more bureaucratic counterparts. In contrast, larger firms tend to be more established, with more stable business partners and government connections and, as a result, they may not be as enthusiastic about cultivating managerial ties as their smaller competitors. Nonetheless, existing researches concerning Chinese brands' price-leadership strategies are limited. As one of the most important topics in cellphone marketing research field, studies related to the relationship between marketing strategy and market share or performance are frequently overweighed on develop countries than developed countries (Kotabe, Srinivasan, & Aulakh, 2002; Aulakh, Kotabe, & Teegen, 2000). In addition, researches aiming at the determinants and consequences of marketing strategies under the background of improving informational technology are still having great potential to explore.

### *2.4 Host country environments on brand performance in transition economies*

Transition economies refer to a group of countries that adopted planned economies in the past and are now in the process of transforming into market-based economies (Hoskisson, Eden, Lau, & Wright, 2000). China has sustained

a rapid rate of economic growth since the inauguration of its economic reform in 1979, with only short-lived interruptions. This success contrasts favorably with most other developing countries and prompts enquiry into the kind of economic organization that is facilitating such an impressive performance. China's growth has been stimulated by two main developments. The first is a shift in industrial ownership and property rights, with the state playing a diminishing role. The second is the increasing part played by market transactions, including a growing integration with the world economy (Boisot & Child, 1996).

China's rapid industrial growth has been spearheaded by managers of public firms and, to some extent, even by local government officials acting as "market-oriented agents" who compete fiercely on regional, national, and even international product markets (Walder, 1995). According to social network theory, managers with better interpersonal connections tend to earn more income, get more frequent promotions, and have better careers-in short, there is a clear micro- micro link between their ties and their rewards (Granovetter, 1985). However, the link between managerial ties and firm performance has yet to be firmly established empirically. Although there are many answers to this intriguing puzzle, a partial answer seems to lie in the interpersonal ties across organizational boundaries cultivated by managers, which serve as substitutes for formal institutional support and as access to resources in a turbulent environment (Prasad, Kalyan, & Russell, 2005; Peng & Heath, 1996). This tension between environment and managerial action as determinants of performance has been a salient feature in the development of strategy analysis (Hoskisson et al., 1999; González-Benito, Muñoz-Gallego, & Kopalle, 2005). It also manifests itself in the contemporary debate on environmental selection vs. firm adaptation (Lewin & Volberda, 1999). The contingency approach endeavors to resolve the tension by arguing that, to achieve superior performance, firms must adjust their practices to 'fit' the environment (Hultman, Robson, & Katsikeas, 2009). Hence Boisot and Child (1996) argue that in China it is the ability of foreign investors to adapt that determines business outcomes.

Chinese cellphone markets appear some unique phenomena from both market size and market share perspectives. Cellphone market experiences a fierce competition in recent years. Both the rapid updating informational technology and the intense marketing mix strategy make the competition more complex. Especially the number of cell phone brands boosted from 10 to 51 during the year of 2002 to 2006 in China. The turbulences in terms of domestic price and market share, together with the entrance and drop of various brands, add to complexity on cell phone markets. A non-dominant firm in the home market may be able to be a pioneer in emerging economies, especially in those industries that are in an embryonic or growing stage (Aribarg, 2008; Luo, 1998). It is misleading, however, to assume that emerging economies can provide opportunities for every foreign entrant at any time.

### 3. Conceptual Framework and Research Model

The conceptual framework is shown in Figure 1. Specifically, brand market share is influenced by three categories of variables: brand portfolio and product line strategy and the environmental factors that could draw impact on brand performance. Since foreign brands and local brands differ greatly in production, strategic planning and marketing programs, as well as branding characteristics, it is necessary and highly valuable to analyze the market share mechanism under this classification.

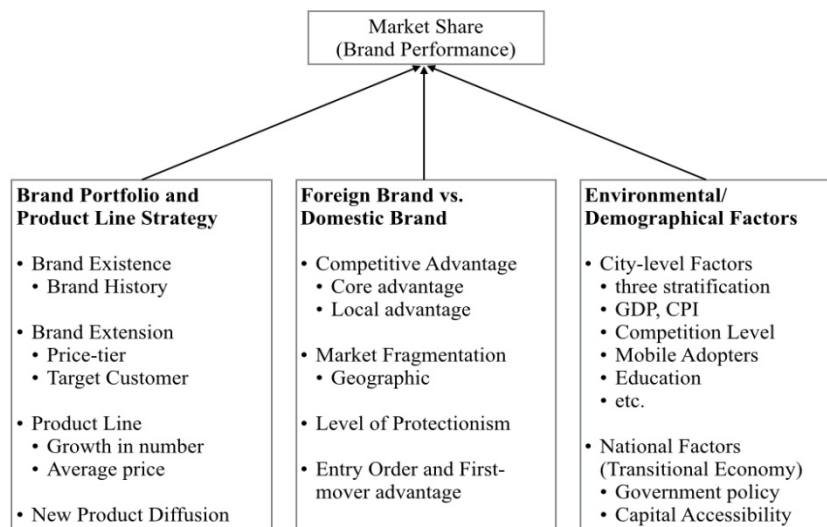


Figure 1. Conceptual Framework

This is a two-dimensional data: brand-level, city-level with time series. Therefore we choose two-way fixed effects model to fix the curve.

$$MS_{ijt} = \alpha + \beta X_{ijt} + t + u_i + \lambda_j + \varepsilon_{ijt} \tag{1}$$

The dependent variable MS is the market share of brand i in city j at time t. The independent variables are 3-folded: first are price-related variables (price, price share and HHI index). We measure the HHI index according to Nauenberg, Alkhamisi and Andrijuk (2004) and then is brand-level variables, including the breadth of product line, perceived quality and brand history; then comes the city-level variables like retail volume, cellphone adopter, internet users, service share in GDP. We control the time trend with t.

More specifically, the model can be addressed in the following way:

$$MS_{ijt} = \alpha + \beta (\text{adjprice} + \text{herfindahl}) + \gamma (\text{productline} + \text{segments} + \text{quality} + \text{brandhistory}) + \delta (\text{GDP} + \text{popgrouwth}) + t + \varepsilon_{ijt} \tag{2}$$

#### 4. Empirical Application

##### 4.1 Data and Variables

The data includes 18 cellphone brands, 8 of them are international brands including Motorola, Nokia, Samsung etc., while 10 of them are Chinese domestic brands like Bird, Haier and Lenovo. The data set covers the market share of these brands across 60 Chinese cities.

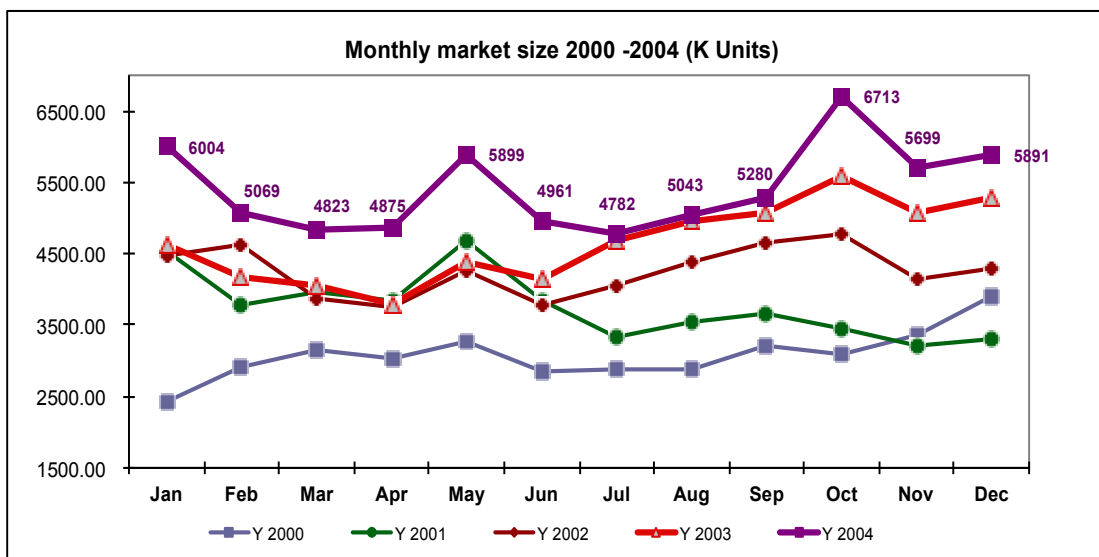


Figure 2. Monthly Market Sizes 2000-2004

Since Chinese cities are developing in unbalanced forms, which can be stratified into more than three tiers according to various economic and demographic indices. First-tier cities such as Beijing and Shanghai are supported by economic growth and strong purchasing power but are not representative enough of the real situation of all Chinese cities (second rank cities, third rank cities, small counties, etc.). Even the same product of a certain brand cannot exclude the possibility of various performance outcomes among different cities. We have 15 monthly data from March 2003 to June 2004, containing the market capacity of each city, price distribution and cellphone models of these brands. The data also contains city-level demographic variables such as per capita GDP, retail volume, education information, number of mobile adopters, etc. Table 1 shows the coefficients of variables.

Table 1. Coefficient Matrix of Variables

	<b>adjprice</b>	<b>priceshare</b>	<b>productline</b>	<b>quality</b>	<b>segments</b>	<b>herfindahl</b>	<b>Brandhistory</b>
<b>adjprice</b>	1.00	0.19	-0.45	0.16	0.09	-0.21	-0.04
<b>priceshare</b>	0.19	1.00	0.36	0.61	0.59	-0.46	0.31
<b>productline</b>	-0.45	0.36	1.00	-0.04	0.39	-0.08	0.04
<b>quality</b>	0.16	0.61	-0.04	1.00	0.53	-0.54	0.13
<b>segments</b>	0.09	0.59	0.39	0.53	1.00	-0.74	-0.11
<b>herfindahl</b>	-0.21	-0.46	-0.08	-0.54	-0.74	1.00	0.06
<b>brandhistory</b>	-0.04	0.31	0.04	0.13	-0.11	0.06	1.00

## 4.2 Parameter Estimates

Table 2. Parameter Estimates of Two-Way Fixed-Effect Model

Table 2.A: Foreign Brands

	<b>Coefficient</b>	<b>Standard Error</b>
<i>t</i>	-0.0047395***	0.0001194
<b>adjprice</b>	-0.0000245***	1.08E-06
<b>prodline</b>	0.034153***	0.0001154
<b>quality</b>	-0.0002603	0.0001813
<b>segments</b>	0.0147268***	0.0009525
<b>herfindahl</b>	-0.1369504***	0.0149138
<b>brand history</b>	0.0003955***	9.1E-06
<b>GDP</b>	1.86E-06	1.41E-06
<b>Popgrowth</b>	-0.0003089	0.000557

The market shares of foreign brands are declined during the 15-month period. Not surprisingly, when the price goes up, the market share decreases accordingly. The expansion of product line can benefit the foreign brand to achieve higher market share. The similar effect is seen on the segments variable, which means the more segments a brand covers, the higher market share will obtain. The herfindahl index shows a negative relationship with market share, indicating that if the foreign brand concentrating too much on certain part of price spectrum would hurt its market share. A longer brand history has a positive power on the growth of market share. City-level demographic variables such as GDP and population growth, however, fail to show significant impact on the market share of foreign brands.

Table 2.B: Local Brands

	<b>Coefficient</b>	<b>Standard Error</b>
<i>t</i>	-0.002716***	0.0000879
<b>adjprice</b>	7.78e-06***	2.34E-06
<b>prodline</b>	0.0020864***	0.0000556
<b>quality</b>	-0.0006018***	0.0002003
<b>segments</b>	0.0063177***	0.0004343
<b>herfindahl</b>	0.1718517***	0.0068493
<b>brand history</b>	-0.0000506***	4.7E-06
<b>GDP</b>	-2.4E-06**	9.38E-07
<b>Popgrowth</b>	0.0002896	0.0003686

The market share of local brands declines with time as well. At the same time, local brands can benefit slightly from raising their prices. Similar with foreign brands, expansion on product line and the coverage of segments will lead to better market share. Another interesting result is that perceived quality shows a negative relationship with local brands' market share. Herfindahl index has a significant positive relationship with market share, indicating that highly concentrated price distribution actually helps the local cellphone brands to improve their performance. Brand history is negatively related to market share, which means that newer brands show superior performance than the older ones. Differ from foreign brands' result, a negative relationship between GDP and market share is seen among local brands. In other words, these brands outperforms among the second and lower-ranked cities than the first-tier

cities. Growth of population fails to show significant impact on local brands' market share either.

## 5. Discussion

Table 3 summarizes the estimates of two-way fixed effects model and compares the results between foreign and local brands. Both foreign and local brands share certain characteristics in common. At the same time, interesting contrast also comes into spotlight.

Table 3. Summaries of Foreign-Local Comparisons

	Foreign	Local
<i>t</i>	-	-
<b>Segments</b>	+	+
<b>Product line</b>	+	+
<b>Price</b>	-	+
<b>HHI (herfindahl-hirschman-index)</b>	-	+
<b>Brand history</b>	+	-
<b>Quality</b>	n.s.	-
<b>GDP</b>	n.s.	-
<b>Population growth</b>	n.s.	n.s.

The market share of all brands under study declines during March 2003 to June 2004, which indicates that cell phone brands fail to maintain or expand their market share in Chinese market, due to the severe competition caused by new brands joining the competition to share the market. Another interesting common trend on both sides is that market share will increase by the expansion of product line. Meanwhile, more segments a brand will cover indicate a higher performance on cell phone market.

Besides the common effects mentioned above, there is still some other power playing different ways on foreign and local brands. Firstly, price share a negative relationship with foreign brands' market share while Chinese cellphone brands can be benefit from an increasing price trend. From the perspective of economics that price and demand are negatively related to each other. Since market share is directly related to the demand situation, it is consistent with economic theories that foreign brands' market share will shrink with an increasing price. In the case of Chinese brands, however, the market share rises with price. One of the reasonable explanation is the positioning of Chinese cell phone brands during the period 2003 to 2004. Based on the data of brand history, compared to foreign brands, Chinese cellphone brands established and entered the market in a later stage, which indicates that Chinese cell phone industry is limited by manufacture technology as well as weak brand power. As a result, many Chinese cell phone brands choose relatively lower position on the market, such as low-price product or rural market where price-quality ratio is heavily considered rather than other characteristics. In order to obtain a plausible support of our explanation, we compared the average price of foreign and local brands from the data. During the period from March 2003 to June 2004, the average price of foreign brands is 1928.5 (RMB) while Chinese brands' average price is 1488.5, indicating that foreign brands do have a higher price positioning than local brands. The result of t-test also suggests that this difference has a significant statistical implication.

In this research, we borrow the concept of Herfindahl-Hirschman-Index (HHI) but to describe a brand's concentration level of positioning on the cell phone market. Higher HHI score represents a brand focuses mainly on certain part of the market spectrum (Nauenberg, Alkhamisi, & Andrijuk, 2004). On the other hand, lower HHI score means that the brand appears to spread its product on the market from a larger scale. Foreign brands' market share is negatively related to Herfindahl-Hirschman Index, indicating that high-concentrated positioning would not help the foreign brands to achieve market success. Meantime, Chinese brands could enjoy the benefit from widespread coverage of cell phone market. Combining this result with the product line, we can see that although expanding product line could help a brand to get higher market share for both foreign and local brands, decide the direction and speed of the expansion is a more critical question. Foreign brands should focus on the existing position of the cell phone market, taking advantage of brand power and word-of-mouth effect to pursue better performance. Chinese cell phone brands, on the other hand, should target on multiple sections on the market in order to enhance the market share through higher coverage as well as cultivate the user base of their own brand.

The effect of brand history on market share also appears an interesting comparison between foreign and local cell

phone brands. As mentioned before, we adopt the establishment date of a brand to represent the length of history. Cell phone brands can be divided into two types regardless of their original countries: the comprehensive brands (e.g., Samsung, Lenovo) and the specific cell phone brands (e.g., Nokia, Bird). It is simple to use the establishment date to indicate the history of specific cell phone brands. In the case of comprehensive brands, however, we choose the establishment date of the brands rather than the date when they join the cell phone market to calculate the historical existence. The reason is two-folded: firstly, the comprehensive brands may have a long history on other industries. The refining organizational function can be used as reference when they step into a new industry; secondly, the popularity and brand image that have been cumulating over the previous years could transfer into cell phone products, indicating that comprehensive brands' historical characteristics is closely related to their cellphone performance. From this perspective, we adopt the comprehensive brands' original establishment date to depict their historical length. In the case of foreign brands, a positive relationship between brand history and market share is appeared very significantly, while on Chinese brands' side, a newer brand enjoys a better performance than the older ones. The average history of Chinese cell phone brands is 223.2 months while the average history of foreign brands is 271.5 month, with significant difference on 95% confidence interval. The fact that Chinese brands have shorter history than foreign brands in cell phone industry also suggests that they have to choose distinguish marketing strategies to survive the competition respectively.

The other interesting finding is that perceived quality is negatively related to Chinese brands' market share while it does not show significant impact on foreign brands' performance. In other words, local brands have higher quality perceived by consumers have relatively lower market share. This is the counter-intuitive part of the result. Based on the data, the average perceived quality of local brands is 69.6, but foreign brands get 75.5 scores from the investigation towards Chinese consumers. The result of t-test also proved that foreign brands actually have significant higher score on perceived quality than Chinese brands. Since Chinese brands do not have enough quality and brand advantages compared to foreign brands, consumers who are sensitive on cell phone quality may have a better choice to choose from foreign brands instead of local brands directly. This leads to a fact that high-quality products of local brands fail to occupy its market share compared to foreign brands. Finally, GDP across 60 Chinese cities has significant negative relationship with local brands' market share. However, the similar impact is not shown on foreign brands' side. This indicates that Chinese cell phone brands are aiming at lower-GDP areas such as second or third-rank cities as well as rural areas. In these districts, consumers are price-sensitive and have relatively limited budgets. The lower price indicates more competitive characteristics in these places and from this perspective; local brands' performance is increasing in lower-GDP areas. Population growth fails to show any significant impact on either foreign or local brands' market share.

## 6. Conclusion

Based on a 15-month cellphone data of Chinese market, the authors conducted a two-way fixed effect analysis in comparing the impacts of product line strategy and brand portfolio on brand performance of foreign and Chinese domestic cellphone brands. The results show that foreign and domestic cellphone brands market share both increased by widening product line and comprehensive brand portfolio. However, our empirical results also reveal intriguing comparisons between international (foreign) cellphone brands and Chinese (local) cellphone brands.

*Theoretical contributions* The current study contributes to the brand market share literature in three ways. First, we focus on emerging markets' cellphone industry and compare the differences between foreign and local cellphone brands in the context of transitional economies. Although the literature pertaining to brands' market share and its influential factors are extensive, our study provides an innovative analysis from a fresh perspective of Chinese markets and interesting comparison between established foreign brands and Chinese local cellphone brands. Second, we integrate three aspects of variables: city-level demographical data and product-level and brand-level data into the current model. This comprehensive model combines spatial analysis with brand-specific variables in a time-series data, which is original and intriguing to market share studies. Third, we introduced HHI index into current model. However, instead of measuring competition, HHI in our model represents the level of price concentration. We suggest this innovative implication of established economic instruments can also provide inspirations for market share studies.

*Managerial implications* This study offers multiple implications to marketing practices. First, our empirical results show that while increasing price would erode foreign brands' market share, domestic cellphone brands' performance show significant improvement as a result of increasing price. Similarly, foreign brands' market share decline if they adopted a concentrated pricing strategy. On contrary, domestic brands can benefit from concentrating price in a certain segment. Second, the longer brand history positively relates to foreign brands' market share. However,



established Chinese brands are not performing as well as their new competitors. Consequently, it is advisable for Chinese cellphone brands to increase market segment coverage, widen product line, and adopt a premium pricing strategy on domestic markets in order to achieve ideal market share. Finally, the negative relationship between brand history and market share also indicate that there is great potential for the growth of new brands in cellphone industry due to its rapid updates in technology, product design and user experience.

*Limitations and future study* Our study also has great potential to explore. First, the data used in the current study was between 2003-2004. However, the cellphone market changes rapidly in recent years due to the revolutionary innovations on smartphones and user-interfaces. Therefore, it is desirable to test our model in current period and explore interesting development of cellphone brands' market share. Second, we used a two-way fixed effect model to conduct the empirical analysis. Since our model incorporates both brand-level and city-level variables, we suggest testing our conceptual framework from a comprehensive perspective and using a spatial model to analyze the data in the future study. Finally, we use market share to measure the brands performance in the current study. We believe that integrating evaluations from the consumer side with market share would be an intriguing development to investigate the effects of product line strategy on brand performance in the future.

## References

- Aaker, D. A. (1996). Measuring brand equity across products and markets. *California Management Review*, 38(3), 103. <http://dx.doi.org/10.2307/41165845>
- Aldrich, H. E., & Fiol, C. M. (1994). Fools Rush in? The Institutional Context of Industry Creation. *Academy of Management Review*, 19(4), 645–670. <http://dx.doi.org/10.5465/AMR.1994.9412190214>
- Aulakh, P. S., Rotate, M., & Teegen, H. (2000). Export Strategies and Performance of Firms from Emerging Economies: Evidence from Brazil, Chile, and Mexico. *Academy of Management Journal*, 43(3), 342–361. <http://dx.doi.org/10.2307/1556399>
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99–120. <http://dx.doi.org/10.1177/014920639101700108>
- Boisot, M., & Child, J. (1996). From Fiefs to Clans and Network Capitalism: Explaining China's Emerging Economic Order. *Administrative Science Quarterly*, 41(4), 600–628. <http://dx.doi.org/10.2307/2393869>
- Brander, J. A., & Eaton, J. (1984). Product Line Rivalry. *The American Economic Review*, 74(3), 323–334.
- Brouthers, L. E., & Xu, K. (2002). Product Stereotypes, Strategy and Performance Satisfaction: The Case of Chinese Exporters. *Journal of International Business Studies*, 33(4), 657–677. <http://dx.doi.org/10.1057/palgrave.jibs.8491038>
- Child, J., Chung, L., & Davies, H. (2003). The performance of cross-border units in China: a test of natural selection, strategic choice and contingency theories. *Journal of International Business Studies*, 34(3), 242–254. <http://dx.doi.org/10.1057/palgrave.jibs.8400033>
- Child, J., & Tse, D. K. (2001). China's Transition and its Implications for International Business. *Journal of International Business Studies*, 32(1), 5–21. <http://dx.doi.org/10.1057/palgrave.jibs.8490935>
- Conchar, M. P., Crask, M. R., & Zinkhan, G. M. (2005). Market Valuation Models of the Effect of Advertising and Promotional Spending: A Review and Meta-Analysis. *Journal of the Academy of Marketing Science*, 33(4), 445–460. <http://dx.doi.org/10.1177/0092070305277693>
- Gao, G. Y., Murray, J. Y., Kotabe, M., & Lu, J. (2010). A “strategy tripod” perspective on export behaviors: Evidence from domestic and foreign firms based in an emerging economy. *Journal of International Business Studies*, 41(3), 377–396. <http://dx.doi.org/10.1057/jibs.2009.27>
- Giachetti, C., & Dagnino, G. B. (2014). Detecting the relationship between competitive intensity and firm product line length: Evidence from the worldwide mobile phone industry. *Strategic Management Journal*, 35(9), 1398–1409. <http://dx.doi.org/10.1002/smj.2154>
- González-Benito, Ó., Muñoz-Gallego, P. A., & Kopalle, P. K. (2005). Asymmetric competition in retail store formats: Evaluating inter- and intra-format spatial effects. *Journal of Retailing*, 81(1), 59–73. <http://dx.doi.org/10.1016/j.jretai.2005.01.004>
- Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology*, 91(3), 481–510. <http://dx.doi.org/10.1086/228311>

- Hamel, G. (1991). Competition for competence and interpartner learning within international strategic alliances. *Strategic Management Journal*, 12(S1), 83–103. <http://dx.doi.org/10.1002/smj.4250120908>
- Hannan, M. T., & Freeman, J. (1977). The Population Ecology of Organizations. *American Journal of Sociology*, 82(5), 929–964. <http://dx.doi.org/10.1086/226424>
- Hoskisson, R. E., Eden, L., Lau, C. M., & Wright, M. (2000). Strategy in Emerging Economies. *Academy of Management Journal*, 43(3), 249–267. <http://dx.doi.org/10.2307/1556394>
- Hultman, M., Robson, M. J., & Katsikeas, C. S. (2009). Export Product Strategy Fit and Performance: An Empirical Investigation. *Journal of International Marketing*, 17(4), 1–23. <http://dx.doi.org/10.1509/jimk.17.4.1>
- Iimi, A. (2005). Estimating demand for cellular phone services in Japan. *Telecommunications Policy*, 29(1), 3–23. <http://dx.doi.org/10.1016/j.telpol.2004.11.001>
- Isobe, T., Makino, S., & Montgomery, D. B. (2000). Resource Commitment, Entry Timing, and Market Performance of Foreign Direct Investments in Emerging Economies: The Case of Japanese International Joint Ventures in China. *Academy of Management Journal*, 43(3), 468–484. <http://dx.doi.org/10.2307/1556405>
- Kekre, S., & Srinivasan, K. (1990). Broader Product Line: A Necessity to Achieve Success? *Management Science*, 36(10), 1216–1232. <http://dx.doi.org/10.1287/mnsc.36.10.1216>
- Keller, K. L., Parameswaran, M. G., & Jacob, I. (2011). *Strategic brand management: Building, measuring, and managing brand equity*. Pearson Education India.
- Kotabe, M., Srinivasan, S. S., & Aulakh, P. S. (2002). Multinationality and Firm Performance: The Moderating Role of R&D and Marketing Capabilities. *Journal of International Business Studies*, 33(1), 79–97. <http://dx.doi.org/10.1057/palgrave.jibs.8491006>
- Krishnan, V., & Ulrich, K. T. (2001). Product Development Decisions: A Review of the Literature. *Management Science*, 47(1), 1–21. <http://dx.doi.org/10.1287/mnsc.47.1.1.10668>
- Lei, J., Dawar, N., & Lemmink, J. (2008). Negative Spillover in Brand Portfolios: Exploring the Antecedents of Asymmetric Effects. *Journal of Marketing*, 72(3), 111–123. <http://dx.doi.org/10.1509/jmkg.72.3.111>
- Lewin, A. Y., & Volberda, H. W. (1999). Prolegomena on Coevolution: A Framework for Research on Strategy and New Organizational Forms. *Organization Science*, 10(5), 519–534. <http://dx.doi.org/10.1287/orsc.10.5.519>
- Luo, Y. (1998). Timing of Investment and International Expansion Performance in China. *Journal of International Business Studies*, 29(2), 391–407. <http://dx.doi.org/10.1057/palgrave.jibs.8490042>
- Lyles, M. A., & Salk, J. E. (1996). Knowledge Acquisition from Foreign Parents in International Joint Ventures: An Empirical Examination in the Hungarian Context. *Journal of International Business Studies*, 27(5), 877–903. <http://dx.doi.org/10.1057/palgrave.jibs.8490155>
- Montgomery, D. B., & Lieberman, M. L. (1998). First-Mover (Dis)Advantages: Retrospective and Link with the Resource-Based View. *Strategic Management Journal*, 1111–1125.
- Moorthy, K. S. (1984). Market Segmentation, Self-Selection, and Product Line Design. *Marketing Science*, 3(4), 288–307. <http://dx.doi.org/10.1287/mksc.3.4.288>
- Morgan, N. A., & Rego, L. L. (2009). Brand Portfolio Strategy and Firm Performance. *Journal of Marketing*, 73(1), 59–74. <http://dx.doi.org/10.1509/jmkg.73.1.59>
- Naik, P. A., Raman, K., & Winer, R. S. (2005). Planning Marketing-Mix Strategies in the Presence of Interaction Effects. *Marketing Science*, 24(1), 25–34. <http://dx.doi.org/10.1287/mksc.1040.0083>
- Nauenberg, E., Alkhamisi, M., & Andrijuk, Y. (2004). Simulation of a Hirschman–Herfindahl index without complete market share information. *Health Economics*, 13(1), 87–94. <http://dx.doi.org/10.1002/hec.814>
- Pan, Y., Li, S., & Tse, D. K. (1999). The Impact of Order and Mode of Market Entry on Profitability and Market Share. *Journal of International Business Studies*, 30(1), 81–103. <http://dx.doi.org/10.1057/palgrave.jibs.8490061>
- Peng, M. W., & Heath, P. S. (1996). The Growth of the Firm in Planned Economies in Transition: Institutions, Organizations, and Strategic Choice. *Academy of Management Review*, 21(2), 492–528. <http://dx.doi.org/10.5465/AMR.1996.9605060220>
- Peng, M. W., & Luo, Y. (2000). Managerial Ties and Firm Performance in a Transition Economy: The Nature of a

- Micro-Macro Link. *Academy of Management Journal*, 43(3), 486–501. <http://dx.doi.org/10.2307/1556406>
- Porter, M. E. (2008). *Competitive advantage: Creating and sustaining superior performance*. Simon and Schuster.
- Reibstein, D. J., & Farris, P. W. (1995). Market Share and Distribution: A Generalization, a Speculation, and Some Implications. *Marketing Science*, 14(3\_supplement), G190–G202. <http://dx.doi.org/10.1287/mksc.14.3.G190>
- Schau, H. J., Muñiz, A. M., & Arnould, E. J. (2009). How Brand Community Practices Create Value. *Journal of Marketing*, 73(5), 30–51. <http://dx.doi.org/10.1509/jmkg.73.5.30>
- Tsafarakis, S., Saridakis, C., Baltas, G., & Matsatsinis, N. (2013). Hybrid particle swarm optimization with mutation for optimizing industrial product lines: An application to a mixed solution space considering both discrete and continuous design variables. *Industrial Marketing Management*, 42(4), 496–506. <http://dx.doi.org/10.1016/j.indmarman.2013.03.002>
- Walder, A. G. (1995). Local Governments as Industrial Firms: An Organizational Analysis of China's Transitional Economy. *American Journal of Sociology*, 101(2), 263–301. <http://dx.doi.org/10.1086/230725>
- Xin, K. K., & Pearce, J. L. (1996). Guanxi: Connections As Substitutes for Formal Institutional Support. *Academy of Management Journal*, 39(6), 1641–1658. <http://dx.doi.org/10.2307/257072>
- Yenipazarli, A., & Vakharia, A. (2015). Pricing, market coverage and capacity: Can green and brown products co-exist? *European Journal of Operational Research*, 242(1), 304–315. <http://dx.doi.org/10.1016/j.ejor.2014.09.039>
- Yeung, I. Y., & Tung, R. L. (1996). Achieving business success in Confucian societies: The importance of guanxi (connections). *Organizational Dynamics*, 25(2), 54–65. [http://dx.doi.org/10.1016/S0090-2616\(96\)90025-X](http://dx.doi.org/10.1016/S0090-2616(96)90025-X)
- Young, S., Huang, C-H, & McDermott, M. (1996). Internationalization and Competitive Catch-up Processes: Case Study Evidence on Chinese Multinational Enterprises. *MIR: Management International Review*, 36(4), 295–314.