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R&D investment, business performance, and moderating role of Guanxi: Evidence from China

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Abstract

Conventional wisdom posits that a long-term orientation with important partners such as key suppliers and clients is essential for superior performance. This study critically examines this business tenet by studying the relationship between duration of partnerships with major suppliers and clients and company performance. Based on a dataset comprising over 10,000 Chinese manufacturing firms obtained through a probability sampling procedure, results show that relationship duration with major clients not only has a direct, negative effect on total income (sales), but also has a negative moderating effect on the association between research & development (R&D) and total income. However, relationship duration with major suppliers has a positive moderating effect on the association between R&D and total profits. Furthermore, relationship with government has a positive effect on total income, and it also has a negative moderating effect on the R&D-performance chain. Managerial and research implications are also discussed.

Keywords: relationship duration with major suppliers, relationship duration with major clients, relationship with government, guanxi, China

1. Introduction

Relationships with important business partners have been a vibrant research stream for years in marketing (Cannon & Perreault, 1999; Holmen, Aune, & Pedersen, 2013; Nagati & Rebolledo, 2013). An especially long-term partnership with key suppliers and distributors develops a close knit network, builds trust and commitment among each other, establishes quick response mechanisms for problem-solving, and thus leads to superior performance (Aarikka-Stenroos & Jaakkola, 2012; Badi, Wang, & Pryke, 2017; Cannon & Perreault, 1999; Cannon, Doney, Mullen, & Petersen, 2010; Morgan & Hunt, 1994).

Given the importance of business relationships in business-to-business (b2b) marketing (Berger, Herstein, Silbiger, & Barnes, 2015; Yen, Abosag, Huang, & Nguyen, 2017), more research is needed to validate and refine the theory in other cultures. For example, the concept of relationship is woven into the fabric of Chinese society, where it is a pervasive phenomenon. A particular phrase in Chinese, *guanxi*, simply refers to relationship (Dunfee & Warren, 2001). Not only do individuals in China cultivate *guanxi* to advance their well-being, but managers use it to further their organizational goals. Against this backdrop, how Chinese companies practice relationship marketing in business dealings and what role Chinese cultural elements such as *guanxi* play in the process are important questions.

The purpose of this study is four-fold. First, based on the resource-based view of firm competition, we will examine the relationship between research and development (R&D) and business performance in an emerging market, namely, China. Second, we will scrutinize whether and how relationship duration with alliances influences firm performance. Third, we will investigate whether and how relationship with the government affects performance. Finally, we

will explore the role *guanxi* (i.e., relationship duration with business partners, relationship with government) plays in moderating the impact of R&D on performance.

First, we begin with *guanxi*, while managers may reap organizational benefits from knowing important people, it takes time and consumes money to initiate *guanxi* and maintain it with a network of entities (Yang, Huang, Wang, & Feng, 2018). That is, *guanxi* is not given, thus not free; instead, it is a scarce resource that must be obtained by managers (Fung, Xu, & Zhang, 2007). Initiation of *guanxi* with business partners and governmental authorities is an investment decision as managers determine appropriate arrangements with select firms and government agencies. At the same time, they calculate expenditures necessary for the relationship and its potential returns (Fan, 2002).

Second, relationships with business partners are critical for firms to achieve their sales (Du, Gao, & Zhang, 2019) and profit goals (Dawson, Young, Murray, & Wilkinson, 2017). Particularly, a mutually-beneficial long lasting partnership with important members from both supply chain and distribution channels is highly valued and sought after (Anderson & Weitz, 1989; Cannon, Doney, Mullen, & Petersen, 2010; Dwyer, Schurr, & Oh, 1987; Xie, Liang, & Zhou, 2016). As such, a long-term orientation with strategic alliances has been considered an effective marketing policy for quite some time (Ganesan, 1994; Lee & Dawes, 2005; Polo-Redondo & Cambra-Fierro, 2008). However, more studies are needed to examine the performance impact of long-term orientation. To fill this void, we will investigate the relationship between duration of cooperation with alliances and firm performance. This research has the potential to refine the long-term orientation doctrine, which will add insights into the relationship marketing literature.

Third, as business partners are increasingly involved with firms' R&D endeavors (Potter & Lawson, 2013), we will examine how relationship duration with important partners affects the impact of R&D on performance. Similarly, we will investigate the moderating effect of relationship with government on the R&D-performance link. These possible moderating effects of *guanxi* as well as its direct effect on performance will shed light on the intricacies of this unique concept.

The organization of this paper is the following. We will first discuss the resource-based view of firm competition, which is the theoretical foundation for this study. Then, hypotheses will be proposed and subsequently tested using the data collected from China by the World Bank. Results are discussed and followed by research and managerial implications. Lastly, some concluding remarks are offered.

2. Theoretical Background

Chinese managers fully understand the importance of *guanxi* with important business partners and the government because it is a significant organizational resource. As such, the resource-based view of firm competition can be useful to guide our study.

Firms compete on the basis of unique resources and capabilities that are valuable, rare, difficult to imitate, and non-substitutable (Barney, 1991). Similarly, strategy research focuses on how firms develop and deploy these resources to create competitive advantage (Amit & Schoemaker, 1993). The resource-based view (RBV) sees the firm in terms of a bundle of such resources and capabilities, both tangible (e.g., vehicles, buildings, etc.) and intangible (e.g., capabilities, skills, information, knowledge, etc.), used to develop and implement strategies to improve efficiency and effectiveness (Barney, 1991; 1997). The central thesis of the RBV is that

possessing and uniquely combining complementary and specialized resources and capabilities may lead to value creation. In the following section, we propose a conceptual framework and advance hypotheses for subsequent testing.

2.1. *Research Framework and Hypotheses*

As a form of social capital, *guanxi* has been treated as organizational resources derived from relationships and connections that managers have with important business partners and government authorities. While relationships with the first group of entities such as suppliers and distributors are referred to as business ties, connections with the latter are considered government ties (Sheng, Zhou, & Li, 2011). Both types of ties contribute to the company's bottom line as any resources should (Li, Poppo, & Zhou, 2008; Zhang & Li, 2010). As we will discuss later, R&D investment in an emerging market such as China is risky. Does R&D spending contribute to business performance in China? More importantly, do *guanxi* networks affect performance impact of R&D? RBV is uniquely positioned to help us answer those questions. In this spirit, we propose an R&D - performance model with various types of *guanxi* as moderators, which is presented in Figure 1.

Figure 1 about here

2.1.1 R&D investment-performance Link

Conventional wisdom indicates R&D spending has deferred benefits, if any at all because expected benefits may never be realized. Not surprisingly, top management at some companies resort to paring down R&D outlays to window dress corporate earnings (Mizik, 2010; Srinivasan & Hanssens, 2009). The reason is that savings from reduced R&D are immediate and

measurable, but negative effects stemmed from underinvestment in R&D on the firm's future well-being are unknown. Thus, R&D investment is risky because its success is not guaranteed. This statement is true in China for the following reasons.

First, the macro-environment in China is fluid. There are frequent changes in government policies, and new regulations are every so often enacted (Perry & Heilmann, 2011; Tsui et al., 2004). A significant amount of uncertainty associated with unstable policies makes R&D spending overly risky. Second, in an emerging market such as China, enforcement of law and legal rights is weak as a result of institutional deficiency (Xin & Pearce, 1996). Consequently, technology safeguard and patent protection are a big problem facing companies with a large amount of R&D spending (Alam et al., 2020; Wu et al., 2016). Lack of intellectual property (IP) protections renders R&D a risky investment because competitors can easily become a copycat, reaping the benefits of any new breakthroughs without severe consequences (Hsu, Wang, & Wu, 2013; Lin, Lin, & Song, 2010).

In spite of the problems, we believe China has made progress over the years to improve its environment for businesses. First, the Chinese government centers on provincial leaders' economic performance as a crucial criterion for making promotion or termination decisions (Li & Zhou, 2005). This has greatly incentivized those high-level officials to stimulate their province's job creations and GDP growth. To attract multinational or national firms to open a branch or factory in their province, the leaders take aggressive measures in their power to make their province business friendly, which includes intellectual property (IP) protections to encourage R&D activity. In fact, as the competition for luring businesses heats up among provinces, IP protections have improved over time in China (Zhang et al., 2017). This has greatly increased firms' confidence in R&D spending. Second, R&D investment sends a strong signal to

business partners and markets that the firm is committed to the future and will be around for years to come (Spence, 1973; 1974). This signal gives credibility to companies with R&D activity and makes them standout from their peers with none or minimal research budget. Thus, firms in China are motivated to conduct R&D.

Furthermore, R&D activity helps firms with exploitative learning where employees integrate existing knowledge and streamline their production process, thereby reducing production costs (Li, Chu, & Lin, 2010; Wang et al., 2017). Additionally, a higher level of R&D will push firms to achieve exploratory learning where employees absorb cutting-edge knowledge and implement drastic changes in their daily routines and processes, thereby turning out innovative products to captivate customers, old or new alike (Atuahene-Gima & Murray, 2007; Mudambi & Swift, 2013). Thus, we hypothesize the following.

H1.: Firms' R&D spending is positively related to performance.

2.1.2 Guanxi-Performance Link

In an influential article, Porter and Miller (1985) discuss the concept of value chain, which includes upstream players such as suppliers as well as downstream ones such as distributors. Prior research has examined the performance impact of supply chain (Josh, 2009; Wuyts & Geyskens, 2005) and distribution channels (Anderson & Weitz, 1992; Frazier & Rody, 1991; Frazier & Summers, 1984). Recent studies look at the role of both supplier and distributor integration and the interplay between them in achieving operational efficiency (Chen, Liu, Wei, & Gu, 2018; Lai, Zhang, Lee, & Zhao, 2012; Zhao, Feng, & Wang, 2015). In fact, research on network has long recognized the importance of both suppliers and distributors for relationship building and management (Peng & Luo, 2000; Sheng, Zhou, & Li, 2011).

In a network of relationships, major clients are surely important for firm managers to secure and keep for years to come. With the expired era of rationing limited output under the central planned economy, Chinese companies must be able to sell their products in an increasingly market-driven economy. Hence, finding and keeping competent channels of distribution is vital for firm survival and prosperity (Dwyer, Schurr, & Oh, 1987; Hoppner & Griffith, 2011; Rosenbloom, 2013).

Given the importance of finding competent clients and distributors and building and subsequently, maintaining mutually beneficial relationships with them, Chinese managers are eager to make a concerted effort toward their goal. However, the end results may vary for several reasons. First, the skill sets differ among managers, while some managers are good at initiating and keeping productive relationships with partners, others may not be. Second, some managers have more resources at their disposal to cultivate relationships with partners than their counterparts. Third, large firms have an advantage over their small competitors in attracting competent partners because (1) they offer more business opportunity, (2) they are more established with a good prospect of long-term relationships, and (3) they are resourceful to make the relationship more efficient and thus more profitable.

Similarly, relationships with major suppliers are critical for firms to compete in a dynamic market such as China. An integrated supply chain is a complex undertaking since many entities outside the boundary of the firm are involved (Lee, Shin, Hwang, Kuper, & Kang, 2018). Thus, a well-managed supply chain is likely to be a source of competitive advantage because the web of connections makes it difficult for competitors to understand, let alone mimic (Joshi, 2009). Similar to the process of *guanxi* initiation and maintenance with major clients, Chinese

firms purposely invest resources to cultivate and preserve good relationships with their key suppliers (Giannakis, Doran, & Chen, 2012).

Previous research points out interfirm relationships evolve through different stages (Dwyer, Schurr, & Oh, 1987; Jap & Ganesan, 2000). In the beginning of the relationship lifecycle, firms get to know each other and explore different ways of cooperation through trial and error. At this phase, involved parties are cautious toward the relationship with minimal investment; they closely monitor the costs and benefits of the cooperative arrangement and assess its viability for the future. If involved parties perceive value with continued interactions, they will maintain the relationship and even possibly strengthen the commitment towards one another. If this occurs, information sharing and collaborative activities among partnering firms will likely increase as their relationship duration increases (Bensaou, 1997; Ganesan, 1994). Real-time data sharing enables suppliers to develop intimate knowledge about the firm and its customers so that the well-informed suppliers can offer tailored products and services to meet the firm's unique needs (Joshi, 2009). Additionally, clients or distributors can provide timely feedback to the firm to improve its product offerings (Frazier, Maltz, Antia, & Rindfleisch, 2009). Collaborative activities based on effective communication build trust and commitment among business partners (Chang, Wang, Chih, & Tsai, 2012; Ganesan, Brown, Mariadoss, & Ho, 2010; Morgan & Hunt, 1994; Murphy & Li, 2015), which reduces opportunistic behavior and consequently transaction costs (Barnes, Leonidou, Siu, & Leonidou, 2010; Dahlstrom & Nygaard, 1999). Hence, we propose the following hypotheses:

H2. a: Relationship duration with major clients has a positive association with
performance.

H2. b: Relationship duration with major suppliers has a positive association with performance.

Similar to business ties, government ties also contribute to business performance for the following reasons. First, the Chinese market is a hostile environment for businesses as a result of uncertainty associated with its frequent policy changes. As such, government ties help the firm gain political legitimacy (Wu, Li, Ying, & Chen, 2018). Second, this legitimacy gives the firm access to critical information, such as latest developments in policies and newly required permits for conducting certain business (Peng & Heath, 1996; Luo, 1997). Third, government ties may bring in preferential treatment for the firm in the following ways: (1) easy finance and generous credit terms by government-controlled banks (Dinc, 2005), which reduce the firm's borrowing costs, (2) favorable policies are instituted to shield the firm from harsh regulatory environments (De Soto, 1989), (3) government subsidies are even offered to the firm (Johnson & Mitton, 2003; Wu, Wu, & Rui, 2012), and (4) lowered tax rates are levied, which reduces the burden for the firm to help its cashflow (De Soto, 1989; Luo, 1997; Wu, Wu, Zhou, & Wu, 2012). Undoubtedly, all of these privileges render competitive advantages to the firm with government ties. Thus, we have the following hypothesis:

H2. c: Relationship with government has a positive association with performance.

2.1.3   Moderating Effect of Guanxi on the Association between Research and Development (R&D) and Performance

Deepened relationships between business partners develop trust and commitment toward each other, which encourages firm-specific investments (Jap & Ganesan, 2000; Shahzad, Ali, Takala,

Helo, & Zaefarian, 2018). When this happens, interfirm cooperation rises to a new level.

Research shows business partnerships play an influential role in firms' innovativeness and new

product development (Phelps, Heidl, & Wadhwa, 2012; Powell, Koput, & Smith-Doerr, 1996;

Un, Cuervo-Cazurra, & Asakawa, 2010). Companies leverage interfirm relationships in their

R&D effort. Organizations along the supply chain positively contribute to the firm's R&D

through knowledge sharing and creation, thereby helping the focal firm achieve process

innovation and improving new product/service/project success rates (Clegg, Chandler, Binder, &

Edwards, 2013; Phelps, Heidl, & Wadhwa, 2012). On the other hand, distributors and members

along the channels of distribution have a close contact and thus an intimate relationship with

clients and end-users, so they can provide real-time feedback to the firm about customers'

emerging needs and preferences as well as problems (Gemunden, Ritter, & Heydebreck, 1996;

Nickolaus, 1990). This closed-loop communication is critical for the firm to provide superior

service by quickly resolving customers' concerns and engaging in process and product

innovations for better serving their changing needs.

In fact, R&D is a bond-building activity where both suppliers and clients could be

integrated (Un, Cuervo-Cazurra, & Asakawa, 2010). As discussed above, both suppliers and

distributors/clients are likely to be involved with the focal company's R&D. Expertise and

knowledge external organizations bring to the table really can make a difference by contributing

to the company's R&D endeavors. Previous research points out the key for innovation is

information dissemination or knowledge transferring where various types of excess or

supplemental information or knowledge brought by external entities are shared (Cheung, Myers,

& Mentzer, 2011; Dyer & Hatch, 2007; Frazier, Maltz, Antia, & Rindfleisch, 2009; Ho &

Ganesan, 2013). In the beginning of the cooperative stages, a minimum amount of knowledge

sharing takes place because each entity is holding back in this "test-drive" period. As cooperation continues among the same firms, information sharing starts to ratchet up, and thus facilitates organizational learning among alliances. Therefore, cooperative alliances should enhance the focal company's R&D effectiveness as relationship duration increases. Thus, we propose the following hypotheses.

H3. a: Relationship duration with key clients will have a positive moderating effect on the association between R&D and performance.

H3. b: Relationship duration with key suppliers will have a positive moderating effect on the association between R&D and performance.

As discussed earlier, Chinese firms strive to forge a good relationship with officials at important government agencies in search for a preferential treatment, which will give them a competitive advantage. Managers with good government ties will likely have an earlier access to any possible policy change, easier obtainment of licenses or permits to embark on an emerging technology or industry, and quicker approval of financing with better terms, compared to their counterparts without those connections (Sheng, Zhou, & Li, 2011; Xin & Pearce, 1996). Any or all of these prerogatives should enhance the effect of R&D investment on performance. Hence, we propose the following hypothesis.

H3.c: Relationship with government will have a positive moderating effect on the association between R&D and performance.

3. Methodology

3.1. *Data and Survey Instrument*

The data used in this study is from the World Bank's Enterprise Analysis Unit, which surveys company owners and managers on a range of business issues from finance to performance in over 100 countries. The data collected at the firm level around the world is compiled in Enterprise Surveys (http://www.enterprisesurveys.org, the World Bank), which uses a stratified random sampling procedure where all population units are classified into homogeneous categories based on certain characteristics, and simple random samples are chosen within each group. The characteristics used in the firm selection process, also known as the strata, include company size, business sector, and geographic location within the country. The mode of data collection is face-to-face interviews. As marketing research companies and in some cases governmental agencies carry out surveys on behalf of the World Bank, fieldworkers ensure confidentiality of the information to surveyed firms and make it clear that findings of the data will help policy makers embark on evidence-based reforms to promote job creation and economic growth. Thus, non-response bias is minimized. The Enterprise Surveys China data, which has over 10,000 Chinese firms in the manufacturing sector, is appropriate for testing the research model proposed in this study.

The Enterprise Survey Unit, the data collection branch of the World Bank, first obtains the universe of eligible firms from the country's statistical office, from which the sample frame is drawn. All eligible firms are classified into three levels: 5-19 employees (small), 20-99 employees (medium), and 100 plus employees (large-sized). Within each level, firms are further classified into specific manufacturing sub-sectors for a manufacturing survey, and then within each sub-sector, firms are randomly selected based on their geographic regions within the

country that contain the majority of economic activity. Once a firm is selected to be included in a survey, face-to-face interviews will take place with both its top manager and accountant to complete the questionnaire. If a firm refuses to participate in the World Bank's survey, which rarely happens, a similar firm with respect to size, industry classification, and location will be recruited for replacement.

The companies in the Chinese sample are all in manufacturing-based industries, including the codes from 15 to 37 based on the International Standard Industrial Classification (ISIC) of all economic activities developed by the United Nations Statistical Division, such as: food, tobacco, textile, basic metals, machinery and equipment, precision instruments, furniture, and recycling. The total number of firms was 12,400, and the median number of employees was 260. The median age of the firms was 8 years at the time of the data collection, whereas the median sales were about 55 million yuan (approximately 8.20 million US dollars).

The survey instruments at Enterprise Surveys include many simple measures to obtain objective responses from the manager. For example, some questions ask founding year and location city of the company. Questions on financial statements and accounting information are answered by an accountant from the same firm. The Appendix has all relevant questions that are used in this study.

4. Result

Table 1 shows the descriptive statistics for the variables used in the study. As discussed earlier, Enterprise Surveys mostly uses simple questions to solicit objective information from company managers. Relationship with government is a subjective measure based on managers' perceptions of their firm's relationship with four governmental agencies: tax, public security,

environment, and labor and social on a scale of 1 (bad) to 5 (very good). Since Cronbach's alpha

for the four items is 0.907, which is high (Nunnally & Bernstein, 1994), a combined measure is

used in the subsequent analysis. The correlation matrix among all variables is presented in Table

2.

<center>Tables 1 and 2 are about here</center>

With total income as the dependent variable, we run two regressions, one with main

effects and control variables only, and the other includes the interaction terms. We use the

hierarchical moderator regression technique (Cohen & Cohen, 1983) to gain insights into the

interaction effect of *guanxi* on the performance impact of $R\&D_{t-1}$. We use the lagged value of

R&D to eliminate any endogeneity problem. The adjusted R square for the basic model is 0.925,

which is significant at the 1% level. The F statistic for the R square change is also significant at

the 1% level, indicating the addition of interaction terms is significant. The Durbin-Watson

statistic is 1.936, showing autocorrelation is not a problem. All the variance inflation factors

(VIFs) are well below 10, exhibiting no concern for multicollinearity (Allison, 2012; O'Brien,

2007). While the results from the main effects model are in the left column of Table 3, we report

the full model (right column of Table 3) to save space. Contracts or not with major clients (β = -

9422.348, t value = -0.332, *p* value > 0.10), contracts or not with major suppliers (β = 3939.039,

t value = 0.154, *p* value > 0.10), net fixed $assets_{t-1}$ (β = -0.169, t value = -39.029, *p* value < 0.01),

new fixed $investment_{t-1}$ (β = 0.072, t value = 5.095, *p* value < 0.01), total $employment_{t-1}$ (β

= 127.658, t value = 39.395, *p* value < 0.01), total $income_{t-1}$ (β = 1.095, t value = 252.270, *p*

value < 0.01) are included as control variables. While net fixed assets are the total amount of

fixed assets accumulated over time minus depreciation, new fixed assets investment refers to

annual investment on fixed assets, such as equipment and plants. These two variables along with

total employment are used to control for firm size (Bahadir, Bharadwaj, & Parzen, 2009; Murphy, Trailer, & Hill, 1996). The lagged value of these variables is used to avoid endogeneity problems. Additionally, the lagged value of total income is included to offset the possible misspecification errors from missing relevant variables (Jacobson, 1990).

Table 3 is about here.

While R&D$_{t-1}$ (β = 3.169, t value = 9.926, p value < 0.01) has a significant coefficient at the 1% level, relationship with government (β = 18183.878, t value = 2.336, p value < 0.05) has a significant coefficient at the 5% level. Duration with clients (β = -15218.653, t value = -2.544, p value < 0.05) has a significant negative coefficient at the 5% level, whereas duration with suppliers (β = 69.243, t value = 0.011, p value > 0.10) has a non-significant coefficient. Hence, both H1 and H2c are supported, but both H2a and H2b are not.

The variables involved with any interaction term were first mean-centered before they were multiplied to reduce multicollinearity (Aiken & West, 1991). The interaction term between relationship duration with clients and R&D$_{t-1}$ has a negative coefficient significant at the 1% level (β = -0.487, t value = -3.178, p value < 0.01). Similarly, the interaction term between relationship with government and R&D$_{t-1}$ has a negative coefficient significant at the 1% level (β = -1.003, t value = -4.318, p value < 0.01). However, the interaction term between relationship duration with suppliers and R&D$_{t-1}$ has a positive but non-significant coefficient (β = 0.254, t value = 1.445, p value > 0.10). Thus, H3a, H3b, and H3c all are not supported.

By the same token, with total profits as the dependent variable, we ran two regressions, one with main effects and control variables only, and the other includes the interaction terms. The adjusted R square for the basic model and full model is 0.587 and 0.591, respectively, which are both significant at the 1% level. The F statistic for the R square change is also significant at

the 1% level. The Durbin-Watson statistic is 2.007, indicating autocorrelation is not a problem.

All the VIFs are well below 10, showing no concern for multicollinearity. While the results from

the main effects model are in the left column of Table 4, we report the full model (right column

of Table 4) to save space. Contracts or not with major clients (β = -2313.908, t value = -0.350, p

value > 0.10), contracts or not with major suppliers (β = 4850.594, t value = 0.816, p value >

0.10), net fixed assets$_{t-1}$ (β = 0.008, t value = 8.532, p value < 0.01), new fixed assets

investment$_{t-1}$ (β = 0.017, t value = 5.185, p value < 0.01), total employment$_{t-1}$ (β = 19.863, t value

= 26.725, p value < 0.01), total profits$_{t-1}$ (β = 0.856, t value = 94.871, p value < 0.01) are

included as control variables.

 While R&D$_{t-1}$ (β = 0.347, t value = 4.737, p value < 0.01) has a significant coefficient at

the 1% level, relationship duration with clients (β = -1187.716, t value = -0.852, p value > 0.10),

duration with suppliers (β = -1062.008, t value = -0.742, p value > 0.10), and relationship with

government (β = -2366.637, t value = -1.305, p value > 0.10), all have a non-significant

coefficient. Hence, while H1 is supported, H2a, H2b, and H2c are not supported.

<div align="center">Table 4 is about here.</div>

 The interaction term between relationship duration with clients and R&D$_{t-1}$ has a non-

significant coefficient (β = -0.044, t value = -1.227, p value > 0.10). However, the interaction

term between relationship duration with suppliers and R&D$_{t-1}$ has a positive coefficient

significant at the 1% level (β = 0.130, t value = 3.162, p value < 0.01). Lastly, relationship with

government has a negative interaction term with R&D$_{t-1}$ significant at the 1% level (β = -0.563, t

value = -10.404, p value < 0.01). Thus, both H3a and H3c are not supported, but H3b is

supported.

5. Discussion

According to the doctrine of *guanxi*, Chinese managers build a mutually beneficial relationship with important business partners and governmental officials. Similarly, the commitment-trust theory of relationship marketing articulates the same tenets (Franklin & Marshall, 2019; Morgan & Hunt, 1994). Although it is not explicitly discussed, a long-term orientation is desired and sought after in a productive business relationship as a corollary of growing commitment over time. In fact, previous research has examined the determinants and importance of long-term orientation in business relationships (Ganesan, 1994; Ganesan, Brown, Mariadoss, & Ho, 2010; Lee et al., 2018).

However, existing studies investigate long-term orientation at the individual relationship level mostly from a behavioral perspective, such as the role of commitment in the process. None of the extant research has looked at relationship marketing in general and long-term orientation in particular from an organizational point of view. As such, as an organizational resource, how length of business relationships affects performance has largely been overlooked. This study fills the void by employing the resource-based view (RBV) of firm competition to explore how length of business relationships and government ties have direct effects on firms' bottom line, as well as moderating effects on the R&D – performance link.

Results show R&D spending positively affects business performance. R&D is a proxy for innovation, so it contributes to the bottom line as expected (Branstetter, Drev, & Kwon, 2019; Cooper, 2019; Gatignon & Xuereb, 1997; Han, Kim, & Srivastava, 1998; McGrath & Romen, 1994; Mudambi & Swift, 2011). However, relationship duration with major clients is negatively related to total income (not related to total profits), while duration with major suppliers is not related to either total income or total profits. This result indicates relationship duration with key

partners does not directly contribute to the bottom line. On the contrary, it hurts business performance, a finding that is unexpected. As far as relationship with government goes, it is positively related to total income, but not related to total profits.

Furthermore, relationship duration with major clients has a negative moderating effect on the R&D – total income chain, whereas relationship duration with major suppliers has a positive moderating effect on the R&D – total profits chain. Relationship with government has a negative moderating effect on the R&D – performance (total income and profits) connection.

It seems not all business relationships are created equal. Although relationship duration with major suppliers has no direct relationship with performance, it has a positive moderating effect on the performance impact of R&D. Therefore, it is a pure moderator. This result is in line with existing evidence as relationship-based product innovations derived from suppliers have been documented (Jean, Kim, & Bello, 2017). On the other hand, relationship duration with major clients not only has a direct, negative relationship with performance, but has a negative moderating effect on the association between R&D and performance. Thus, it is a quasi-moderator. Granted that researchers pointed out the dark side of business ties (Chung, Wang, Huang, & Yang, 2016; Gu, Hung, & Tse, 2008), it is still a surprising finding that long-term relationships with major clients are hurtful to business performance. One possible explanation is a long-term relationship with major clients results in over reliance on them, which exerts undue influence on the manufacturer. Over time, the manufacturer becomes customer-led (Slater & Narvar, 1998), and consequently lost its innovative effectiveness (Noordhoff et al., 2011).

In addition, relationship with government is also a quasi-moderator. On the one hand, its direct, positive relationship with performance is expected because after all this is what *guanxi* is for. On the other hand, it is puzzling that relationship with government negatively moderates the

association between R&D and performance. The reason could be the following: when firms take

full advantage of their good relationships with important government agencies, they become

complacent and feel invincible. Consequently, managers tend to over invest in their R&D to

leverage their prerogatives derived from their well-managed government ties in search for

excessive returns. The firm' distorted governance mechanism makes sub-optimal decisions,

rendering its R&D investment less effective (Alam, Uddin, & Yazdifar, 2019; Alam et al. 2020).

As the saying goes, the higher the expectations, the larger the disappointment.

5.1.   Research and Managerial Implications

A number of existing studies on relationship marketing found the effects of commitment and

trust on relationship building (Morgan & Hunt, 1994) and long-term orientation (Ganesan, 1994)

as well as subjective performance measures (Lee et al., 2018). However, studies on the effects of

basic relationship building blocks, such as commitment on objective performance (sales or

profits), are few and far between. This study is unique in the following ways. First, as

conventional wisdom posits, firms should build trust and commitment with important business

partners in search for a mutually beneficial, long-term relationship. Based on the resource-based

view (RBV) of firm competition, long-term relationships with key partners as an organizational

resource should contribute to performance. Our study is one of the first to investigate this link,

which uncovered some surprising findings.

Second, a long-term orientation is not as beneficial as was previously predicted. The effects

of relationship duration with key clients and suppliers on objective (not perceived) performance

measures are not positive as we may expect. One possible explanation is efforts to build the

relationship are not worthwhile. Time and resources spent to mobilize and sustain commitment

and trust are misplaced. For example, researchers find trust enhances commitment, but commitment erodes trust (Brown, Crosno, & Tong, 2019).

Third, while relationship duration with key suppliers enhances the performance effect of R&D, duration with key clients lessens it. As such, firms could give the benefits of the doubt for a long-term relationship with major suppliers. However, they should reexamine the necessity of long-term partnerships with major clients. To keep fresh perspectives on end-user consumers, firms may want to constantly expand their horizons to search for new major clients/distributors.

Fourth, relationship with government has a strong, negative moderating effect on the R&D – performance link, while it also has a positive, direct effect on sales, but not profits. It seems government ties are a double-edged sword. It also means Chinese firms over emphasize the importance of *guanxi* with the government by going overboard or overspending on it. Lack of *guanxi* makes it difficult for firms to do business in China. At the same time, obsession with it would adversely affect firms' bottom line. Finding a middle ground is a challenging task facing managers.

5.2.   *Limitations and Further Research*

Ideally longitudinal data should be used for testing the model. Perhaps from the very beginning of firms' founding, information on relationship with key suppliers and clients should be recorded. As companies grow over time, relationship duration with business partners increases. If such data were available, the dynamic process of relationship initiation and maintenance could be explored. However, the exorbitant costs of data collection prevent the World Bank from undertaking such an effort in a single country. Restraints with the cross-

sectional data notwithstanding, the diversity of manufacturers in the national sample in terms of their relationship duration with business partners somewhat compensates its limitations.

Prior research (Un, Cuervo-Cazurra, & Asakawa, 2010) finds partnerships with customers and suppliers have no effect on innovation performance. Our findings indicate that relationship duration with key suppliers boosts the performance impact of R&D, but duration with key clients undermines it. Why is there such a differential effect between relationship length with suppliers and length with clients? Extant research provides some hints about possible detrimental effects of long-term relationship with clients on performance as joint history between partners may bring about buyers' (clients) negative perceptions of suppliers (Clauss & Tangpong, 2018). This important issue, however, must be explored further in future research.

5.3.   *Conclusion*

Initiation and maintenance of a long-term relationship with major suppliers and clients is an important part of *guanxi* practice. Results show relationship duration with key suppliers is more productive than relationship duration with key clients. Additionally, relationship with government is a double-edge sword. This study is based on data from a national probability sample of over 10,000 Chinese firms. At least two respondents from each firm, one manager and one accountant answered the survey questions, so common method bias is excluded.

This is also one of the first studies to discover somewhat convoluted relationships between *guanxi* (i.e., relationship duration with suppliers and clients, and relationship with government) and firm performance. Our results challenge the long-term orientation doctrine. That is, not all relationships are created equal. Although the findings are from the Chinese firms, they should apply to companies elsewhere. This could be a venue for future research.

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TABLE 1
Descriptive Statistics and Data Source for the Variables

Variable	Mean	Std Dev	Source
R&D$_{t-1}$*	5302.649435	50306.50498	Accountant
Contracts or not with major clients**	1.10	.295	Manager
Contracts or not with major supplier**	1.12	.330	Manager
Length of relationship with major clients***	5.02	1.577	Manager
Length of relationship with major suppliers***	4.92	1.542	Manager
Relationship with government****	3.5321	.90199	Manager
Total employment$_{t-1}$*****	843.75	2642.929	Manager
Total income*	509582.9375	2652830	Accountant
Total income$_{t-1}$*	397332.5464	2219886.624	Accountant
Total profits*	26717.66653	264274.3476	Accountant
Total profits$_{t-1}$*	20127.75094	193519.8103	Accountant
Net fixed assets$_{t-1}$*	150839.9544	1854958.674	Accountant
New fixed assets investment$_{t-1}$*	29690.75943	538821.2311	Accountant

*Mean and standard deviation are in thousand yuan. One US dollar is roughly equal to 6.70 Chinese yuan.
**Having contracts with major clients or suppliers is 1, and no contract is 2.
***Mean and standard deviation are in numbers of years.
****Relationship with government authorities is a self-perceived measure of the firm's relationship with four governmental departments (Tax, Public Security, Environment, and Labor and Social) on a scale of 1 (bad) to 5 (very good). Cronbach's alpha for the four items is 0.907,

which is deemed very reliable (Nunnally & Bernstein, 1994). Thus, the combined scale is used in the data analysis.
*****Total employment is the number of employees.

TABLE 2
Correlation Matrix of Variables

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Duration with clients	1												
2	Contracts with client or not	-.097**	1											
3	Duration with suppliers	.672**	-.111**	1										
4	Contracts with suppliers or not	-.112**	.547**	-.137**	1									
5	Total employment(t-1)	.121**	-.057**	.148**	-.077**	1								
6	Relationship with government	.088**	-.059**	.089**	-.076**	.101**	1							
7	R&D(t-1)	.054**	-.029**	.072**	-.032**	.424**	.044**	1						
8	Net fixed assets(t-1)	.025**	-.018*	.038**	-.026**	.332**	.026**	.184**	1					
9	New fixed assets investment(t-1)	.015	-.013	.026**	-.018*	.367**	.027**	.214**	.183**	1				
10	Total income	.060**	-.042**	.087**	-.052**	.568**	.081**	.572**	.415**	.331**	1			
11	Total income(t-1)	.058**	-.039**	.080**	-.048**	.493**	.068**	.533**	.522**	.305**	.948**	1		
12	Total profits	.041**	-.031**	.055**	-.032**	.444**	.050**	.324**	.272**	.343**	.638**	.544**	1	
13	Total profits(t-1)	.041**	-.031**	.052**	-.032**	.300**	.052**	.275**	.212**	.340**	.599**	.613**	.724**	1

*Significant at the 0.05 level (2-tailed); **significant at the 0.01 level (2-tailed).

TABLE 3
Regression Results for Total Income

Variables	Total income	Total income
Main Effects		
$R\&D_{t-1}$	2.434 (14.808)***	3.169 (9.926)***
Duration with clients	-15400.632 (-2.572)**	-15218.653 (-2.544)**
Duration with suppliers	292.620 (0.048)	69.243 (0.011)
Relationship with government	18987.352 (2.438)**	18183.878 (2.336)**
Control Variables		
Contracts with clients or not	-9810.895 (-0.345)	-9422.348 (-0.332)
Contracts with suppliers or not	4495.476 (0.176)	3939.039 (0.154)
Net fixed assets$_{t-1}$	-0.168 (-38.853)***	-0.169 (-39.029)***
New fixed assets investment$_{t-1}$	0.077 (5.647)***	0.072 (5.095)***
Total employment$_{t-1}$	130.803 (41.042)***	127.658 (39.395)***
Total income$_{t-1}$	1.095 (252.179)***	1.095 (252.270)***
Moderating Effects		
$R\&D_{t-1}$ x duration with suppliers		0.254 (1.445)
$R\&D_{t-1}$ x duration with clients		-0.487 (-3.178)***
$R\&D_{t-1}$ x relationship with government		-1.003 (-4.318)***
Adjusted R square	0.925***	.925***
R square change		.000***
N (number of observations)	11,600	11,600

***Significant at the 0.01 level.
**Significant at the 0.05 level.
*Significant at the 0.10 level.
While the unstandardized coefficients are reported, the numbers in the parentheses are t-statistics.

TABLE 4
Regression Results for Total Profits

| Variables	Total profits	Total profits
Main Effects		
$R\&D_{t-1}$	0.258 (7.357)***	0.347 (4.737)***
Duration with clients	-1485.627 (-1.061)	-1187.716 (-0.852)
Duration with suppliers	-1361.070 (-0.947)	-1062.008 (-0.742)
Relationship with government	-1955.896 (-1.074)	-2366.637 (-1.305)
Control Variables		
Contracts with clients or not	-1996.863 (-0.300)	-2313.908 (-0.350)
Contracts with suppliers or not	5108.674 (0.855)	4850.594 (0.816)
Net fixed assets$_{t-1}$	0.008 (8.635)***	0.008 (8.532)***
New fixed assets investment$_{t-1}$	0.016 (4.841)***	0.017 (5.185)***
Total employment$_{t-1}$	21.243 (28.930)***	19.863 (26.725)***
Total profits$_{t-1}$	0.854 (94.886)***	0.856 (94.871)***
Moderating Effects		
$R\&D_{t-1}$ x duration with suppliers		0.130 (3.162)***
$R\&D_{t-1}$ x duration with clients		-0.044 (-1.227)
$R\&D_{t-1\ x}$ relationship with government		-0.563 (-10.404)***
Adjusted R square	0.587***	0.591***
R square change		0.004***
N (number of observations)	11,600	11,600

***Significant at the 0.01 level.
**Significant at the 0.05 level.
*Significant at the 0.10 level.
While the unstandardized coefficients are reported, the numbers in the parentheses are t-statistics.

FIGURE 1
Conceptual Model for Guanxi - Performance Relationship
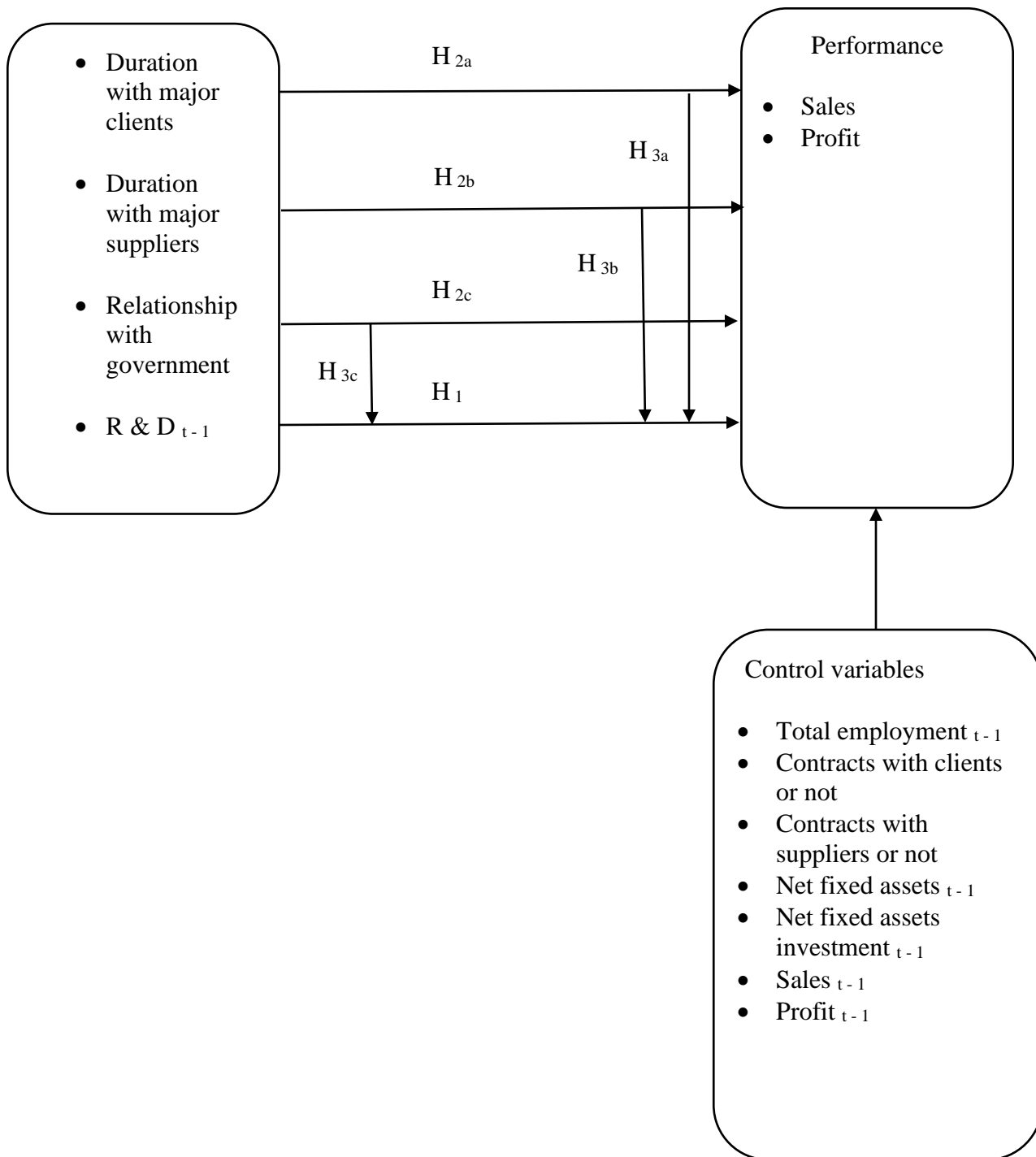
APPENDIX
Sample Questions in the Survey

Number of years of cooperation between your company and your major clients
(including wholesale and retail)
    (1) < 1 year (2) 1-2 years (3) 2-3 years
    (4) 3-4 years (5) 4-6 years (6) 6-10 years (7) > 10 years

Does your company usually sign formal contracts with the client?
    (1) Yes (2) No

Number of years of cooperation between your company and your major suppliers:
    (1) < 1 year (2) 1-2 years (3) 2-3 years
    (4) 3-4 years (5) 4-6 years (6) 6-10 years (7) > 10 years

Does your company usually sign formal contracts with the supplier?
    (1) Yes (2) No

Your company's relationship with the government department
    (1) bad (2) so-so (3) average (4) good (5) very good
Taxation   1 2 3 4 5
Public security   1 2 3 4 5
Environment   1 2 3 4 5
Labor and social 1 2 3 4 5

All the above questions were answered by the manager or owner of the company,
while other questions about expenditures or finances were answered by the
accountant.