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Market Orientation, Alliance Governance, and Innovation

Yu Li, Xi'an Jiaotong University, Xi'an, China
Yao Chen, University of Manchester, Manchester, UK
Yuan Li, Shanghai Jiaotong University, Shanghai, China
Christopher P. Holland, Loughborough University, Leicestershire, UK

ABSTRACT

Relying on resource dependence theory and transaction cost economics, this article discusses the important role of alliance governance as a mediating mechanism in the relationship between market orientation and innovation, and compares the differences between the influences of different dimensions. The article aims to reveal the influence mechanism of different types of alliance governance on the relationship between market orientation and innovation. Based on a sample of 122 Chinese manufacturing enterprises, the article finds that: (1) contractual governance will increase when customer orientation and competitor orientation become higher, and contractual governance will affect radical innovation in a U-shaped way; (2) trust governance will increase when inter-functional coordination become higher, and trust governance has a positive impact on both radical innovation and incremental innovation (II).

KEYWORDS

Alliance Governance, Incremental Innovation, Market Orientation, Radical Innovation

1. INTRODUCTION

Market orientation is defined as organization generation of market intelligence pertaining to current and future customer needs, dissemination of intelligence across departments, and organizationwide responsiveness to it (Kohli & Jaworski, 1990). In recent years, the impact of market orientation on innovation has attracted the sustained interest and attention of scholars (Im & Workman, 2004; Zhou, Yim & Tse, 2005; Morgan, Vorhies & Mason, 2009). However, there are different views on this topic that are grouped into three schools of thought. The early research claims that market orientation has a direct impact on innovation, because market orientation as an organizational culture helps companies better understand customer needs and competitors and thus promotes innovation (Narver & Slater, 1993; Jaworski & Kohli, 1990). A second viewpoint is that market-oriented companies are too concerned about the current customer needs to fulfill real innovations (Christensen & Bower, 1996; Voss & Voss, 2000). This group of researchers argues that innovation will not be influenced directly by market orientation as organizational culture, but through some middle mechanisms such as organizational learning and creativity (Zhou, Yim & Tse, 2005, Li & Atuahene-Gima, 2001). Specifically, they find that under different levels of learning orientation, market growth or entrepreneurial orientation, market orientation will lead to different innovative performance (Gatignon & Xuereb, 1997; Hurley & Hult, 1998; Matsuno, Mentzer, & Özsomer, 2002). The most recent

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thinking advocates a view of market orientation and innovation as multidimensional concepts, which means that the divergent findings in previous research can be explained by the differential effects of multiple dimensions on innovation (Atuahene-Gima & Ko, 2001; Zhou et al., 2007).

The dilemma exists in the managerial practices as well. Nokia, founded in 1865, used to be the NO. 1 brand from 1990 to 2003 in the mobile phone market. However, the market share of Nokia reduced from 39% in 2008 to 25% in 2011, and it was surpassed by the Apple and Samsung in the smart phone market. The paradox is that Nokia always paid large attention to meet customer needs and invested huge money in R&D projects. As its annual report stated, Nokia invested about € 5.8 billion in R&D in 2010, which is more than 4 times of that in its competitor Apple. Many professors in this industry claim that Nokia's failure is rooted in deficiency of transforming advanced techniques into real innovations creating customer values. Then the question emerges: why a market-oriented firm like Nokia cannot achieve innovations that customers buy?

Based upon the academic studies and managerial practices, we argue that three important gaps exist in the literature. First, the prior research focuses more on the direct impact of market orientation on innovation, and not enough attention is paid to the middle mechanisms between market orientation as a type of organizational cognition and innovation as an organizational behavior. In a manufacturing context, it is often difficult to acquire accurate information about end customer needs and competitors' activities in a timely manner in order to support their market-oriented corporate culture due to intermediaries in the supply chain, which create organizational distance between the manufacturer and the end customer. Therefore, in manufacturing, governance mechanisms with distributors that give manufacturers access to the market may be an important middle factor in innovation. Second, although research has gradually viewed market orientation and innovation as multidimensional concepts, the differential effects of different dimensions of market orientation have not yet been effectively verified. Third, most of the existing research is rooted in Western countries and studies of Chinese firms that operate in a very different economic environment are relatively scarce. China is currently in a period of transition from a state controlled to a market economy, in which the legal system and contracts become much more important. Chinese enterprises therefore particularly value relational governance in an alliance relationship (Gao, Wang & Chen, 2012). In this context, it is important to conduct research that can be used to guide the practices of Chinese firms in this area.

We rely on resource dependence theory (RDT) and transaction cost economics (TCE) to provide an overview of the research framework. This study suggests that seeking effective alliance governance is an important mechanism to enhance innovations for market-oriented manufacturing firms. In particular, we should treat market orientation as a multidimensional concept. Customer orientation, competitor orientation and interfunctional coordination are likely to lead to differences in alliance governance, either as contractual governance or trust governance. Moreover, different governance patterns may help firms get different kinds of market information, resulting in different types of innovation (incremental innovation or radical innovation). In this study, we identify the important middle role of alliance governance in the relationship between market orientation and innovation. The differential impacts of the three types of market orientation on two alliance governance patterns are considered, and we explore the influence of contractual governance and trust governance on radical and incremental innovation.

2. LITERATURE REVIEW

2.1. Market Orientation and Innovation

Market-oriented firms pay close attention to customer needs and competitors' activities, and response rapidly in order to enhance their competitive advantages. Differing from traditional product-driven marketing that focuses on pushing products into markets by promoting quality and lowering prices, market orientation concentrates on continuously detecting customer needs and quickly filling them

(Chen & Ching, 2004). In the literature, the two main perspectives of market orientation are the culture view and the behavior view. Narver & Slater (1990) point out that market orientation is a type of organizational culture. The culture view believes that market orientation includes the following three dimensions: (1) customer orientation; (2) competitor orientation; and (3) interfunctional coordination. Jaworski & Kohli (1993) argue that market orientation is an organizational behavior, which includes three aspects: (1) market information collection; (2) dissemination of market information; (3) response to market information. We adopt an integrated perspective of these two views of market orientation in this study because we believe they are complementary rather than incompatible concepts. In fact, Narver & Slater's (1990) cultural construct of market orientation is antecedent to Jaworski & Kohli's (1993) behavioral construct, which in turn provides practicality to the culture view of market orientation (Matsuno, Mentzer & Rentz, 2005).

Innovation is a set of activities that a firm implements to achieve commercial success by exploiting improvements in production factors or techniques based upon technical innovations and creations (Li, 1994). According to the degree of technological change in the innovation process, innovation is usually classified into radical innovation and incremental innovation (Dosi, 1982; Munson & Pelz, 1979). Radical innovation is an innovation that can lead to significant or even radical changes in inputs, outputs or processes (Hage, 1980). In contrast with radical innovation, incremental innovation refers to the gradual and continuous innovation caused by small improvement in existing technologies (Munson & Pelz, 1979). The major difference between incremental and radical innovations is the degree of explicit and tacit knowledge embedded in the innovation (Li et al., 2008). Therefore, the complexity, cost, and risk of incremental innovation and radical innovation are different. Incremental innovation is easier to achieve and less risky than radical innovation.

There has been substantial interest in the effect of market orientation on innovation (Kohli & Jaworski, 1990; Narver & Slater, 1990; Slater & Narver, 1995; Im & Workman, 2004; Zhou, Yim & Tse, 2005; Morgan, Vorhies & Mason, 2009). Many scholars articulate that the three dimensions of market orientation have divergent effects on different types of innovation. In terms of firms' innovative behaviors, customer orientation can be defined as the will and capability to identify, analyze, understand, and answer customers' needs (Gatignon & Xuereb, 1997). Competitor orientation can be defined as the will and capability to identify, analyze, and respond to competitors' actions (Narver & Slater, 1990). Interfunctional coordination can be defined as the interaction and communication in and between the organizations (Grinstein, 2008; Im & Workman, 2004). Customer orientation focuses on customers' needs and competitor orientation on competitors' actions, while interfunctional coordination emphasizes on communication. Different focal points will bring divergent impacts on innovation. Gatignon & Xuereb (1997) demonstrate that competitor orientation boosts innovation in high-growth and lowly uncertain markets, while customer orientation facilitates innovation in highly uncertain markets. Paying attention to the association between dimensions of market orientation and categories of innovations, Lukas (2000) finds that customer orientation contributes to the launching of new-to-the-world products but decreases the introduction of me-too products, while competitor orientation positively affects performance of me-too products. More generally, Frambach, Prabhu & Verhallen (2003) find that customer orientation positively influences new product activity while competitor orientation negatively influences. Im & Workman (2004) show that customer orientation has a positive impact on NP meaningfulness but no significant influence on NP novelty. Competitor orientation enhances NP novelty but not NP meaningfulness. In addition, Brettel, Heinemann, Engelen & Neubauer (2011) find that different types of interfunctional coordination will result in different innovation. The numerous empirical evidences show that customer and competitor orientations, and interfunctional coordination play very distinctive roles on innovation.

To demonstrate the underlying mechanism of the relationship between market orientation and innovation, some scholars argue that market orientation has an indirect effect on innovation. They find several types of middle mechanisms to depict this kind of indirect influence, i.e., organization learning, knowledge, creativity. Slater & Narver (1995) indicate that organization learning mediates

the relationship between market orientation and new product success. Consistent with this research, Zhou, Yim & Tse (2005) find that organizational learning plays a role as mediator in the market-orientation breakthrough innovations association. Other researchers argue that knowledge is a mediator in MO-Innovation relationship (Slater & Narver, 1995). Following Day & Wensley's (1988) source-position-performance framework, Im & Workman (2004) test the mediating effect of NP creativity on the relationship between customer orientation and NP meaningfulness and get empirical support for their model. The mediator stream of research contributes greatly in the understanding of the influence mechanism of market orientation on innovation.

2.2. Alliance Governance as a Middle Mechanism

Existing studies suggest that there are two types of alliances: technology alliances and marketing alliances (Azriel & Small, 2003). In this study, the alliances between manufacturers and their distributors are categorized as marketing alliances because they are primarily about sales and distribution activities. In order to achieve innovations that can meet customer needs and outperform competitors, market-oriented firms hanker for acquiring information and knowledge from the market (Lichtenthaler, 2016; Lyu & Zhang, 2016). For a market-oriented manufacturer that is one or more stages in the supply chain away from the end customer, it is difficult and expensive to gain access to detailed and meaningful market information about customers and competitors. Distributors therefore play an important role in giving manufacturers access to valuable market information, which makes the marketing aspect of the alliance governance very important.

There are two alliance governance patterns in the existing research: contractual governance (also known as "formal governance") and trust governance (also known as "relational governance"; Dekker, 2004; Martinez & Jarillo, 1989). They are two independent components of the overall alliance and therefore need to be considered separately (Macneil, 2000; Mellewigt, Madhok & Weibel, 2007). Whilst contractual governance relies mainly on economic interests and fulfillment of contracts (Ferguson, Paulin & Bergeron, 2005), trust governance depends on relational mechanisms that can promote information sharing, trust and cooperation between alliance partners (Eisenhardt, 1985; Hoetker & Mellewigt, 2009). Through signing formal contracts, alliance members may regulate the members' responsibilities and obligations in detail, and conversely offer their partners powers to protect their own interests from speculative behaviors of partners through enforcement of contract law in the courts (Dyer, 1997). In contrast, Uzzi (1997) points out strategic alliances depending on trust governance are featured as a high level of mutual trust, and integrated information exchanges. Therefore, trust governance is more suitable for alliances with complex contents (Larson, 1992; Dyer, 1997).

Innovation is a highly knowledge-intensive activity embedded in networks that span organizational boundaries (Cao & Zhang, 2010; Wang, Yeung & Zhang, 2011). In order to response to customer needs and competitive changes, market-oriented firms think highly of knowledge acquisition especially for innovation (Grinstein, 2008). Alliances are important sources of innovative ideas and critical technologies (Bonaccorsi & Lipparini, 1994; Karniouchina et al., 2006). According to resource dependence theory (RDT), the uncertaity of alliance partners' activities will harm firms' benefits because market-oriented firms depend on distributors' information heavily to develop new products (Pfeffer & Salancik, 1978). However, opportunistic behaviors, including lying, cheating, violating implicit agreements, and offering proprietary information to competitors, exist commonly in alliances (Blumberg, 2001; Rindfleisch & Heide, 1997). Thus, transaction cost economics (TCE) suggest firms establish effective governance mechanisms to reduce opportunism and eventually lead to successful innovations (Das & Teng, 1998). Many studies have found alliance governance as an important middle mechanism to safeguard innovation (Cambra-Fierro, Florin, Perez & Whitelock, 2011; Ju, Murray, Kotabe & Gao, 2011; Li et al. 2008; Panayides & Lun, 2009).

3. HYPOTHESES

Based on resource dependence theory (RDT) and transaction cost economics (TCE), this research proposes that alliance governance is a middle mechanism in the relationship between market orientation and innovation. That is, market orientation influences alliance governance, which finally leads to different types of innovation. The conceptual framework of this study and the details of how the variables are related to each other are shown in Figure 1.

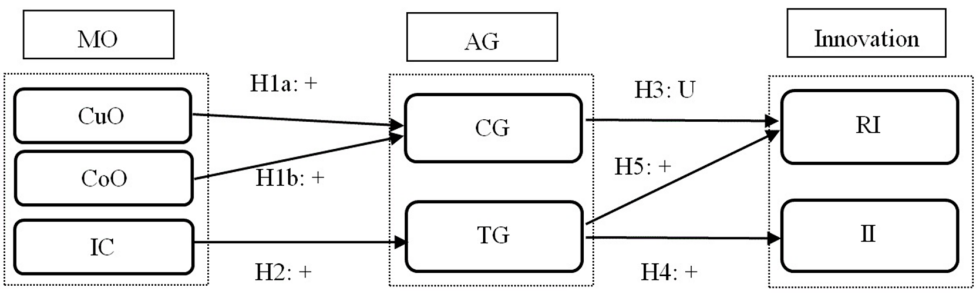
3.1. Market Orientation and Alliance Governance

Customer orientation, competitor orientation and interfunctional coordination are three dimensions of market orientation, which operate in different ways. Customer orientation and competitor orientation require companies to obtain market information on customer needs and competitors' activities respectively (Narver & Slater, 1990). The market information help firms develop appropriate tactics to respond rapidly. Interfunctional coordination emphasizes more on internal coordination and participation among various functional departments, which enhances the information sharing among them, and thus creates greater value for customers (Narver & Slater, 1990). Tyler & Gnyawali (2009) find that customer orientation and competitor orientation are more important than interfunctional coordination in achieving innovation. Therefore, customer and competitor orientations and interfunctional coordination have different importance in acquiring knowledge which is critical for innovation.

Customer orientation and competitor orientation require firms to collect, disseminate and share information about customer needs and competitors' creativities (Tyler & Gnyawali, 2009). In a manufacturer – distributor – customer context, the distributor has good access to customer information and is usually willing to share it with manufacturers. In this way, manufacturing firms can obtain basic market information from alliance partners though a conventional contractual governance arrangement, in which distributors receive a financial incentive and other clearly defined rights and obligations in exchange for the customer and competitor information (Argyres & Mayer, 2007). Contracts explicitly prescribe roles and obligations, determine the content of the exchanges and the division of outcomes, and specify penalties for violating contractual specifications (Poppo & Zenger, 2002; Dyer, 1997). A well-defined contract can also make sure firms' knowledge acquisition by reducing distributors' opportunistic behaviors according to TCE (Williamson, 1985; Zhang & Zhou, 2013). Hence, we have:

H1a: Contractual governance (CG) will increase when customer orientation (CuO) becomes higher.
H1b: Contractual governance (CG) will increase when competitor orientation (CoO) becomes higher.

Figure 1. The conceptual framework (Notes: MO=Market Orientation; CuO=Customer Orientation; CoO=Competitor Orientation; IC=Interfunctional Coordination; AG=Alliance Governance; CG=Contract Governance; TG=Trust Governance; RI=Radical Innovation; II=Incremental Innovation)



Compared with customer orientation and competitor orientation, interfunctional coordination requires more in-depth market information (Brettel et al., 2011). As Morgan & Hunt (1994) point out, trust develops when the alliance members consider the relationship important. Manufacturers' high-level interfunctional coordination will send a strong message to the distributors that manufacturers possess the willingness and credibility to develop long-term and reciprocal relationship (Shiau & Luo, 2012; Zhao & Cavusgil, 2006). Therefore, firms emphasizing more on interfunctional coordination may take trust governance to promote trust, cooperation and information sharing between alliance members, and thus obtain deep-level market information from distributors rather than just basic information on consumer needs and competitors. According to resource dependence theory (RDT) and transaction cost economics (TCE), firms more dependent on resources and abilities of alliance partners to meet their own development needs are more willing to pay best efforts and costs to maintain and enhance the interdependent and cooperative status (Uzzi, 1997). It is therefore reasonable to assert that firms emphasizing interfunctional coordination are more likely to prefer trust governance to contractual governance. Thus, we hypothesize:

H2: Trust governance (TG) will increase when interfunctional coordination (IC) becomes higher.

3.2. Alliance Governance and Innovation

Contractual governance is a formal incentive mechanism that it is based on financial interests and contracts (Mellewigt, Madhok & Weibel, 2007; Ryall & Samspson, 2008). Firms adopting contractual governance do not trust in their alliance partners enough, and thus the initiatives and cooperation intentions of distributors reduce (Hao, 2005). Distributors may feel anxious and distrusted and thus are not likely to cooperate fully when manufacturing firms adopt contractual governance only, and they may retain important market information to improve their bargaining position with manufacturers (Dyer & Singh, 1998).

This study proposes that the effect of contractual governance on innovation may be U-shaped. Contractual governance within a certain limit will reduce the enthusiasm of distributors to cooperate, and thereby reduce their participation in alliance relationship and manufacturers' operation (Mahnke & Özcan, 2006). A low level of contractual governance may ensure that distributors dutifully provide basic market information, but cannot encourage them to share more valuable and private market information that are required by radical innovations urgently. Radical innovation only occurs when technologies or processes experience essential changes that have to be based upon a large amount of valuable information (Kurt & Ding, 2005). With contractual governance grows high, contractual renegotiations frequently would increase the transaction cost in interorganizational tacit knowledge acquisition, which may cause the dissolution of alliance (Reuer & Arino, 2002; Li, Liu, Li & Wu, 2008).

However, when contractual governance goes up to a high level, distributors may be encouraged to share more private market information due to clear and detailed provisions of rights and obligations in contracts. The clear-claimed contracts, reducing the anxieties of distributors in the alliance relationship, may increase their willingness to cooperate (Ryall & Samspson, 2008). Since the role of private market information as bargaining chips to protect distributors' interests and maintain alliance relationship is no longer necessary, distributors are likely to share the information as long as firms provide them with satisfying financial interests. Moreover, according to transaction cost economics (TCE), a very high level of contractual governance will reduce the opportunism of distributors and eventually safeguard firms' tacit knowledge acquisition (Li et al., 2008; Poppo & Zenger, 2002). Thus, a high degree of contractual governance will enable radical innovation. Based on the discussions above, we propose the hypothesis:

H3: Contractual governance has a U-shaped effect on radical innovation.

Trust governance is based on the relationship between alliance partners and full confidence in partners (Poppo & Zenger, 2002; Lee & Cavusgil, 2006). Firms adopting trust governance are more likely to trust in and cooperate with their distributors, which may improve distributors' initiatives and cooperation intentions (Poppo & Zenger, 2002). Many studies claim that trust governance will improve distributors' participation, reduce the uncertainty of innovation, and eventually improve the environment for innovation (Mahnke & Özcan, 2006).

We suggest that trust governance is positively related to incremental innovation. trust governance is considered as the most potential governance to generate relational rents and lower the transaction costs (Dyer & Singh, 1998). Trust governance will encourage distributors to provide firms with market information about customer needs and competitors' activities more conscientiously, which helps firms achieve incremental innovation. Trust governance allows deeper mutual-cooperation, making distributors more involved in the innovation process of manufacturers (Poppo & Zenger, 2002). As distributors are closer to the end customer, whether this is a consumer or a business user, and may act as an agent for a variety of competing products, distributors will understand competitors better than manufacturers and can therefore provide relevant market information to manufacturers. Liu, Zhao & Li (2010) argue that trust governance will contribute to knowledge acquisition in alliances. Therefore, we believe that trust governance will promote incremental innovation. Hence:

H4: Trust governance positively influences incremental innovation.

Additionally, trust governance also makes distributors more willing to share valuable information at a deeper level than basic market information with manufacturers to carry out full cooperation, which may help firms achieve radical innovations. Distributors are usually able to access valuable private information, and the sharing of private information may be more likely to promote essential improvements in core technologies or processes, which produce radical innovation, when distributors participate fully in the innovation process. To accomplish radical innovation, firms and their distributors need participate actively in the relevant organizational processes in which the tacit knowledge is embedded (Li et al., 2008). This knowledge acquiring process, which is preparation for radical innovation, will rely heavily on joint decision-making and frequent communication (Li et al., 2008). According to Dyer (1997), trust governance can also permit flexibility and adaptability which is critical in this process. Therefore, we assume that:

H5: Trust governance positively influences radical innovation.

4. METHODS

4.1. Data Collection

The source of data is a survey of the Chinese tire industry in the period of 2012-2013. The sample was based on a standard industry database, which was provided by the tire branch of the Chinese Rubber Association. The sample covered 13 provinces in Eastern, Western, Southern, Northern and central China areas, i.e., Shandong, Beijing, Guangdong, Guangxi, Henan, Hebei, Sichuan, Shanxi, Liaoning, Jiangsu, Zhejiang, Shanghai and Xinjiang.

The theoretical constructs used in the questionnaire are derived from standard measurement frameworks in the marketing literature. Two professional translators translated the original scales from English to Chinese. The translators were also familiar with the research and we are confident that the Chinese version of the questionnaire has the same meaning as the original measurement frameworks. A further check on the translation consistency was conducted by translating the Chinese version back into English. A comparison was then made between the original questions and the translated version.

Our subjects were general managers of the sample firms. In order to overcome potential common method bias, we divided the questionnaire into two parts that contained measurements of independent and dependent variables respectively and then invited two top managers of each firm to answer the two parts respectively. This method has been widely used in the literature to control CMV problem (Gao, Xie & Zhou, 2015; Korschun, Bhattacharya, & Swain, 2014). The survey investigated a total of 208 firms and recovered 135 questionnaires. With the removal of unqualified questionnaires, we achieved 122 valid questionnaires, which is a very high response rate of 59%. To assess nonresponse bias, we compared early and late respondent (Armstrong & Overton, 1977). The first 90 (74%) of the responses were classified as "early respondents". The last 32 of them were considered as "late respondents" and were deemed as representative of firms that did not respond to the survey (Li & Calantone, 1998; Wu, Yeniyurt, Kim & Cavusgil, 2006). The t-tests reveal that there is no significant difference on key variables between the two groups. Moreover, we run t-test on key characteristics such as firm age, firm size, performance of response and nonresponse firms to control the potential nonresponse problem. The result shows that the response and nonresponse firms are not statistically different in terms of key variables. Thus, nonresponse problem will not be a concern in this study.

4.2. Measurement

The scales in this study are all developed from prior studies (see Table 1 in Appendix A). All latent variables are measured by 7-point Likert scales, where 1 means the condition of the focal firm is completely inconsistent with the descriptions, and seven represents the condition conforms to the descriptions exactly.

The measure of alliance governance includes measures of contractual governance and trust governance. The scale of contractual governance is derived from Li et al. (2010) and Li, Poppo & Zhou (2010), consisting of 5 items. The scale of trust governance is derived from Johnsen & Ford (2006) and Li, Poppo & Zhou (2010), consisting of 6 items. The measure of innovation includes measures of radical and incremental innovations. The scale of radical innovation is developed from Li, Liu, Li & Wu (2008), consisting of 4 items. The scale of incremental innovation is developed from Li et al. (2008), consisting of 7 items. Market orientation is measured by customer orientation, competitor orientation, and interfunctional coordination. These three scales are all derived from Li, Wei & Liu (2010), consisting of 6, 4, and 5 items respectively.

According to the conclusions of previous studies, we also control the models by adding eight control variables: firm size, firm type, industry category, firm age, resource environment, product advantage, production advantage, and marketing advantage. Firm size is measured by the number of employees. Firm type is coded as following: 1 = state-owned or state-held; 2 = foreign (wholly-owned or joint venture); 3 = private or individual; 4 = collective. Industry category is coded: 1 = high-tech industry; 2 = non-tech industry. Firm age represents the amount of years since the foundation to 2013. The scale of resource environment is developed from Desarbo et al. (2005) and Voss, Sirdeshmukh & Voss (2008), consisting of 6 items. The scales of product advantage, production advantage, and marketing advantages are all derived from Russo & Fouts (1997), consisting of 1 item respectively. The item measuring product advantage is: in the past 3 years, our advantages lie in the launch speed of new products. The item measuring production advantage is: in the past 3 years, our advantages lie in efficiency of production and organization. The item measuring marketing advantage is: in the past 3 years, our advantages lie in sales growth.

4.3. Reliability and Validity

Results of reliability and convergent validity of the scales are shown in Table 1. In this study, Cronbach's α of all scales are more than the 0.7 benchmark, indicating good reliability. Most factor loadings of the factors are greater than 0.7, indicating that these items are reliable. In addition, the average variance extracted (AVE) of all variables is much larger than the 0.5 threshold (Chin, 2010; Hair et al. 2006), and composite reliability (C.R.) is greater than 0.8, indicating that these measures

are valid. Therefore, the convergent validity of the scales is good. In terms of discriminant validity, as shown in Table 2 in Appendix A, the square roots of AVE of all variables are all larger than the correlation coefficients in its own row and column respectively, which shows that the scales of this study meet the requirements of discriminant validity.

5. RESULTS

The results of descriptive statistical analysis and correlation coefficients are shown in Table 2 in Appendix A. To test the hypotheses, we used multivariate OLS regression analyses in SPSS. Models 1-4 justify the impacts of market orientation on alliance governance, which are described as hypotheses H1a, H1b, and H2. Models 5-9 test the effects of alliance governance on innovation, which are described as hypotheses H3, H4, and H5. In order to avoid possible multicollinearity problems, we mean-centered all variables prior to regression analyses. Table 3 in Appendix A shows the results of regression analyses. The maximum VIF of all models is 3.499, indicating that multicollinearity does not constitute a serious problem. All models are significant at $p < 0.001$, with adjusted R^2 from 0.183 to 0.578.

Model 2 shows that the effect of customer orientation on contractual governance ($\beta = 0.387$, $p < 0.01$) and the effect of competitor orientation on contractual governance ($\beta = 0.247$, $p < 0.05$) are both significant, supporting H1a and H1b. Model 4 shows that the impact of interfunctional coordination on trust governance ($\beta = 0.288$, $p < 0.05$) is significant, supporting H2. Model 7 shows trust governance has a significant positive effect on radical innovation ($\beta = 0.367$, $p < 0.01$), supporting H5. Model 7 shows the square of contractual governance is positively related to radical innovation ($\beta = 0.222$, $p < 0.01$), suggesting that contractual governance affects radical innovation in a U-shaped way, supporting H3. Model 9 shows trust governance has a significant positive effect on incremental innovation ($\beta = 0.289$, $p < 0.05$), supporting H4.

6. DISCUSSION

This study has explored the relationships between market orientation, alliance governance and innovation in marketing alliances formed by manufacturing firms and distributors in China. We have identified and tested the middle role of alliance governance as a mechanism to explain the relationship between market orientation and innovation. Two conclusions are drawn from the results. (1) High levels of customer orientation and competitor orientation lead to increases in contractual governance, and contractual governance will affect radical innovation in a U-shaped way. Existing research only demonstrates the promoting effect of market orientation on alliance governance (Liu, Zhao & Li, 2010), but does not explore the effects of the three dimensions of market orientation on alliance governance. This research goes further and finds more instructive results. In addition, Liu, Zhao & Li (2010) propose that contractual governance is a mediator in the link between market orientation and knowledge acquisition, but do not analyze the middle mechanism of contractual governance in the relationship between market orientation and innovation further. This study analyses the specific effect of contractual governance on a particular type of innovation, i.e. radical innovation. (2) A high level of interfunctional coordination will increase trust governance, which then leads to an increase in both radical and incremental innovation.

This study, based on the comparison of different effects of dimensions of market orientation on alliance governance, further clarifies the positive role of trust governance on innovation, which confirms our result that alliance governance is a middle variable and the mechanism by which market orientation influences innovation. These results suggest that firms committed to radical innovations should adopt strong contractual governance or trust governance. Firms that focus on customer orientation and competitor orientation are likely to adopt strong contractual governance, while those focusing more on interfunctional coordination are more likely to develop trust based governance.

Firms that wish to develop incremental innovations only should adopt strong trust governance, and incremental innovation is also likely to result in those firms that actively pursue an interfunctional coordination.

In the context of innovative practices of firms in China, market orientation is always an important strategy to achieve innovations regardless of alliance governance patterns and type of innovation. However, the results and framework shown in Figure 1 demonstrate that there are important differences in how best to achieve innovation in terms of the type of market orientation adopted and the choice of type of alliance governance.

This study makes some important contributions to theory and practice, and it is based on a large empirical sample. However, there are some limitations that should be explained: (1) there are two separate organizations involved in an alliance and data were only collected from the manufacturer perspective. The results may therefore be biased by respondents' subjective judgments from the manufacturer perspective only. Further research may draw more reliable conclusions if data are obtained from both manufacturers and distributors. (2) This study identifies barely that alliance governance is a middle mechanism in the relationship between market orientation and innovation, but it does not demonstrate the mediating effect of alliance governance. Further research may explore the strength of mediating effect of alliance governance. If the results show that alliance governance will not fully mediate the relationship between market orientation and innovation, then business practices will be further guided when other mediators are identified.

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APPENDIX A

Table 1. Scales and results of reliability and validity analyses

Variables	Items	Cronbach's α	Factor loading	AVE	C.R.
Customer orientation	1) Our business objectives are driven primarily by customer satisfaction.	0.928	0.783	0.740	0.945
	2) Our strategy for competitive advantage is based on our understanding of customers' needs.		0.860		
	3) We measure customer satisfaction systematically and frequently.		0.896		
	4) We give close attention to after-sales service.		0.894		
	5) We often look for measurements to increase customer value or decrease product cost.		0.850		
	6) We give close attention to the evaluation of customer on our product.		0.873		
Competitor orientation	1) Managers in this firm regularly share information about current and future competitors within the company.	0.858	0.882	0.707	0.906
	2) Respond rapidly to competitors' actions.		0.805		
	3) We regularly collect and integrate information about the advantage and strategies of our competitors.		0.875		
	4) Compared with competitors, we have higher advantage in target markets.		0.798		
Interfunctional coordination	1) We freely communicate information about our successful and unsuccessful customer experiences across all business functions.	0.869	0.837	0.665	0.908
	2) All of our business functions (e.g. marketing/sales, manufacturing, R&D, finance/accounting, etc.) are integrated in serving the needs of our target markets.		0.821		
	3) All of our managers understand how everyone in our business can contribute to creating customer value.		0.808		
	4) Everyone knows the market information in our firm.		0.841		
	5) Employees from marketing department widely participate in new product development projects.		0.767		
Contractual governance	1) The contract precisely defines the role/responsibilities of the partner and our firm.	0.913	0.878	0.742	0.935
	2) We have customized agreements that detail the obligations of both parties.		0.903		
	3) We have specific, well-detailed agreements with this distributor.		0.852		
	4) The contract precisely states how each party is to perform in cooperation.		0.883		
	5) Generally, the contract is a primary mechanism to regulate the behavior of the partner in cooperation.		0.786		
Trust governance	1) This distributor is trustworthy.	0.900	0.812	0.692	0.931
	2) This distributor has always been evenhanded in its negotiations with us.		0.862		
	3) We are not hesitant to transact with this distributor when the specifications are vague.		0.771		
	4) This distributor never uses opportunities that arise to profit at our expense.		0.835		
	5) We believe that this distributor will provide help we need.		0.859		
	6) We believe that this distributor will finish the promise in time.		0.848		
Radical innovation	1) In recent 3 years, we created radical new products.	0.887	0.888	0.749	0.923
	2) In recent 3 years, we introduced radical new concepts.		0.902		
	3) In recent 3 years, we developed new technologies.		0.788		
	4) In recent 3 years, we created new techniques.		0.880		
Incremental innovation	1) In recent 3 years, we exploited existing technologies.	0.853	0.736	0.545	0.893
	2) In recent 3 years, we improved existing process.		0.822		
	3) In recent 3 years, we used existing materials to produce.		0.665		
	4) In recent 3 years, we improved existing products.		0.764		
	5) In recent 3 years, we improved existing product services.		0.777		
	6) In recent 3 years, we improved after-sales services.		0.707		
	7) In recent 3 years, we improved services to sell products.		0.686		

Table 2. Descriptive statistics and results of discriminant validity

Variables	Mean	S. D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1. Firm age	31.754	163.189	**1**														
2. Firm size	1175.260	1625.223	-0.033	**1**													
3. Firm type	2.610	0.764	0.026	-0.289**	**1**												
4. Industry category	1.730	0.446	0.040	-0.480**	0.284**	**1**											
5. Resource environment	2.799	1.094	-0.126	-0.219*	0.018	0.159	**1**										
6. Product advantage	3.807	0.786	-0.039	0.074	0.092	0.074	0.262**	**1**									
7. Production advantage	3.971	0.742	-0.074	-0.034	0.308**	0.114	0.240**	0.536**	**1**								
8. Market advantage	3.861	0.725	0.006	0.106	0.227*	0.010	0.147	0.601**	0.572**	**1**							
9. CuO	4.378	0.560	0.023	0.054	0.216*	0.148	0.187*	0.415**	0.519**	0.442**	**0.860**						
10. CoO	3.899	0.614	-0.031	-0.008	0.277**	0.201*	0.350**	0.504**	0.469**	0.552**	0.628**	**0.841**					
11. IC	3.967	0.609	0.014	0.020	0.285**	0.232*	0.254**	0.534**	0.512**	0.581**	0.710**	0.772**	**0.815**				
12. TG	4.109	0.541	-0.054	0.006	0.350**	0.246**	0.300**	0.444**	0.501**	0.441**	0.630**	0.677**	0.700**	**0.832**			
13. CG	3.993	0.572	-0.087	-0.013	0.093	0.138	0.303**	0.343**	0.359**	0.305**	0.611**	0.584**	0.568**	0.634**	**0.861**		
14. RI	3.826	0.677	-0.021	0.070	0.156	-0.006	0.339**	0.403**	0.454**	0.538**	0.353**	0.579**	0.574**	0.539**	0.407**	**0.865**	
15. II	4.177	0.627	0.068	0.022	0.148	0.206*	0.113	0.407**	0.368**	0.386**	0.503**	0.371**	0.536**	0.490**	0.368**	0.345**	**0.738**

*$p < 0.05$; **$p < 0.01$; N = 122; The numbers in bold on the diagonal of correlation coefficient matrix are square roots of AVE

Table 3. Results of regression analyses

Variables	CG		TG		RI			II	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Control variables									
Firm size	0.046	-0.091	0.196*	0.085	0.093	0.020	0.067	0.151	0.088
Firm type	-0.013	-0.104	0.230**	0.149*	0.058	-0.024	-0.020	0.021	-0.044
Industry category	0.086	-0.073	0.219*	0.086	-0.076	-0.158	-0.126	0.291**	0.215*
Firm age	-0.041	-0.084	-0.010	-0.041	0.035	0.041	0.056	0.079	0.088
Resource environment	0.215*	0.076	0.201*	0.088	0.285**	0.204*	0.240**	0.036	-0.053
Product advantage	0.124	0.007	0.158	0.054	-0.005	-0.066	-0.076	0.208	0.145
Production advantage	0.252*	0.016	0.262**	0.105	0.186	0.081	0.111	0.047	-0.064
Marketing advantage	0.049	-0.115	0.108	-0.044	0.374**	0.333**	0.290**	0.196	0.158
Independent variables									
CuO		0.387**		0.176					
CoO		0.247*		0.197					
IC		0.209		0.288*					
CG						0.041	0.113		0.139
TG						0.359**	0.367**		0.291*
CG^2							0.222**		-0.043
F value	4.071***	8.722***	11.369***	14.722***	8.564***	9.268***	9.709***	4.512***	5.319***
Adjusted R^2	0.183	0.436	0.430	0.578	0.355	0.429	0.466	0.203	0.282
△Adjusted R^2		0.253		0.148		0.074	0.111		0.079

*p < 0.05; **p < 0.01; ***p < 0.001; N = 122.

Yu Li is a PhD candidate at the School of Management of Xi'an Jiaotong University in China. Her research interests are strategic alliances and innovation management. Her research has been published in journals such as the International Business Review, Asia Pacific Journal of Management, and Chinese Management Studies.

Yao Chen is a DBA candidate of the joint program conducted by the University of Manchester and Shanghai Jiaotong University. His research interests are innovation and strategic alliances management.

Yuan Li is a Professor of Shanghai Jiaotong University. His research area covers management science & engineering, technology economy, including the technology innovation and entrepreneur competitiveness analysis. He teaches the courses including strategic management, technology innovation, entrepreneur & entrepreneurship and project management. Since 2005, Prof. Li has published over 60 papers in international journals, including Journal of management studies, Journal of operations management, ETP, MOR, etc.

Christopher is Professor of Information Systems at Manchester Business School, University of Manchester. His research interests include strategy, legacy information systems, electronic commerce, enterprise and supply chain management systems, financial services and implementation. He has published papers in these areas in Strategic Management Journal, Sloan Management Review, Organization Science, Journal of Strategic Information Systems, Communications of the ACM, IEEE Software and Communications of the AIS. Professor Holland has lectured in the US, Holland, Switzerland, South Africa, Germany, Ireland and France to academic and business audiences. He consults with a wide variety of companies in the areas of strategic implementation of systems and the evaluation of large-scale IT projects. He is a regular presenter at international business and academic conferences and is on the editorial boards of several international journals.