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FINANCIAL ECONOMICS | RESEARCH ARTICLE

Research on the relationship between relational capital and relational rent

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Abstract: *Background:* With the development of world economic globalization and the advent of the sharing economy era, the competition is not existed between individual enterprises any more, while upgraded to be the competition and cooperation among partners. It is difficult for enterprises to obtain excessive profits only by internal resources and their own management. Therefore, they need to break through the limitation of internal resources and abilities to create new forms of excessive profits with their partners. *Purpose:* The purpose of this research, under theoretical frameworks of social capital and relational view, is to study the relationship between relational capital, which is an intangible resource, and relational rent as to find more theoretical basis for the cooperative enterprises. *Research design, data, and methodology:* Based on the analysis of the relevant literature, this research comes up with the idea that the formation of relational capital (including the approaches of trust and commitment) is via capital rent (involving Relational-specific Assets, Knowledge sharing Routines, Complementary Resources, Effective Governance) and then further puts forward the hypothesis and conceptual model of “relational capital” affecting “relational rent”. The current study selected Chinese manufacture industry as a sample frame and collected data from 304 respondents.



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PUBLIC INTEREST STATEMENT

Under economic globalization and sharing economy, competitions among enterprises are often reflected in the competition or cooperation between them and their partners. It is difficult for enterprises to obtain excessive profits only by internal resources and their own management. Therefore, they need to break through the limitation of internal resources and abilities to create new forms of excessive profits with their partners. The purposes of this research are to explore the relationship between relational capital, and relational rent, and to build more theoretical basis for enterprises to cooperate with. Based on the data of 304 respondents in Chinese manufacture industry, it was found that relational capital has some effects on relational rent. In other words, both trust and commitment among partners have significant effects on knowledge sharing, complementary resources or co-governance, but no remarkable effect on the relationship-specific investment. The results provide theoretical support for the relationship management in the cooperation among enterprises in China.

Data were analyzed using structural equation model to test the hypotheses. *Results:* Through empirical study, it was found that trust and commitment have significant effects on knowledge sharing, complementary resources and co-governance, and there is no remarkable effect on the relationship-specific investment.

Subject: Marketing Management; Relationship Marketing; Manufacturing Industries

Keywords: relational rents; competition; information sharing; supply chain; relational capital

1. Introduction

Under economic globalization and sharing economy, competitions among enterprises are often reflected in the competition or cooperation between them and their partners (Ketikidis et al., 2008; Lee et al., 2014; Martins et al., 2017). It is difficult for enterprises to obtain excessive profits only by their internal resources or their own management. Therefore, they need to break through the limitation of their internal resources and abilities to create new forms of excessive profits with their partners (Dyer & Singh, 1998). There are tangible and intangible resources in an enterprise, while relational capital is a sort of intangible resources. The relational capital can bring more excessive benefits to enterprises (Doney & Cannon, 1997; Priscila et al., 2014), which is conducive to enhance long-term performance of enterprises (Kalwani & Narayandas, 1995). For example, knowledge sharing networks and modular production are important sources of competitive advantage and relational rent in TOYOTA Corporation (Dyer & Singh, 1998; Nyaga et al., 2010). Taiwan Semiconductor Manufacturing Company (TSMC), builds up the connection of inter-enterprises in terms of work procedures and supply system, which makes the company win a leading position above the United Microelectronics Corporation (Bovet & Martha, 2000). Therefore, through the establishment of inter-organization relational resources, an enterprise seeks opportunities to build up mutually cooperative and beneficial relationships with their partners, which form relational rent to gain advantages in the competitive environment (Wisner & Tan, 2000). Relational rent is a kind of excessive profits generated by the relationships, with special partners. Through the strategic cooperation, enterprise could acquire unique partnership resources, which are the relational capital, and then gets the relational rent (Brüning & Bendul, 2017; Cao & Zhang, 2013; Dyer & Singh, 1998).

An asset, achieved through the creation and use of relationships is called relational capital (Nahapiet & Ghoshal, 1998), which makes the relationship as a resource for individual and collective goals, and builds mutual trust, friendship, commitment, etc. at the individual or organizational level (Kale et al., 2000). Relational capital is sum of partnership resources (Qu & Lu, 2013). Enterprises in the competitive environment pay more attentions on how to communicate and cooperate with each other in the long run, to form mutual trust, to generate commitment, to drive positive and cooperative behaviors, and then to promote the formation, maintenance and appreciation of the relational capital (Nahapiet & Ghoshal, 1997). Therefore, enterprises can gain the excessive benefits of relational rent to form unique competitive advantages and capabilities to improve cooperative performance (Dyer & Singh, 1998). The relational capital has been beyond the boundaries of the enterprise in the cooperation as intangible resources (Gulati & Gargiulo, 1999).

Many scholars found that there is a positive relationship between relational rent and performance of an enterprise in the case of partnership information sharing (Carey et al., 2011; Cousins et al., 2006; Lee et al., 2008; Nooteboom et al., 1997; Sambasivan et al., 2012; Takahashi, 2000). Although there are some theoretical discussions on the relationship between relational capital and relational rent between partnership, but further empirical researches are needed, especially in the context of social capital and relational theory. The relational capital from intangible assets with information sharing among partner form relational rent, which is scarce and uneasily imitated, and which could create excessive profits for cooperative enterprises (Dyer & Singh, 1998; Lee et al., 2014; Thoo et al., 2017). Partnership with relational capital (i.e. trust and promise) shapes relational rent (including

relation-specific assets, complementary resources, knowledge sharing practices, effective governance) (Dyer & Singh, 1998), which needs further verification. With the relationship between supply and demand, relational capital plays different roles in the various regions, departments, and organizations (Cho, 2015). In different countries and regions, the relational capital may have different forms and performance (Capello & Faggian, 2005), particularly Chinese enterprises with a strong Eastern culture. The applicability of the theory on relation capital needs to be confirmed. Therefore, a thorough study of the theory and application of relational capital require further progressing. Based on the Chinese-specific economic and cultural background, the integrated theory frame of the relational capital is would be established in this study.

Through this empirical study, we would test and find whether trust and commitment have significant effects on knowledge sharing, complementary resources, co-governance, or relationship-specific investment. The results could provide theoretical supports for the relationship management in the cooperation among enterprises in China.

2. Literature review and hypotheses

2.1. Relational rents

Relational rents consist of four dimensions: relation-specific assets among organizations, the knowledge sharing routines, the complementary resources and effective governance (Miguel & Brito, 2011; Dyer & Singh, 1998; Thoo et al., 2017). Relational rent is defined as supernormal profits, which are jointly generated in an exchange relationship and that cannot be produced by firm itself and can only be created through mutual contributions of the specific alliance partners. In the process of establishing a specific relationship, those organizations which have access to key resources, are also deeply embedded in their resources and mutually cooperate to ensure the generation of relational rents, through exchange, integration or investment in relation-specific assets, knowledge and resources or capabilities, and through the use of effective governance mechanism to reduce transaction costs. Relational rent derived from relational theory, is a powerful joint income, which is not from individual enterprise itself. With the characteristics of partners, relational rent can be produced by a combination of exchange (Lee et al., 2014). The critical resources may across enterprises' boundaries and enter in routine practices and procedures among enterprises, resulting in the creation of relational rent. These complicated interconnections under long-term cooperation create scarcity of resources privacy and develop the imitation barrier of relational rent (Sweeney & Park, 2010).

2.1.1. Relation-specific assets

Relation-specific assets refer to the extent to which the assets are specialized in conjunction with the assets of an alliance partner (Dyer & Singh, 1998). Asset specialization is a necessary condition for rent and strategic assets by their very nature are specialized (Morris et al., 2005; Schoemaker, 1993). Furthermore, inter-firm specific assets are co-specialized in that the value of one's asset is significantly decreased without the other (Clemons & Row, 1991). Highly specific assets to an inter-firm relationship are the strategic core of the alliance, which justify the existence of the relationship. The relationship of exclusive assets is a necessary condition for the generation of relational rents (Schoemaker, 1993). Investment in relation to specific assets affects the relationship in supply chain from many aspects (Kim & Song, 2013). Madhok and Tallman (1998) pointed out that the relationship between proprietary assets is the key to achieve synergies. In recent years, the viewpoint of value creation has become an important tool in the study of cooperative relationship, and many scholars have begun to pay attention to the value creation function of relation-specific assets. Dyer and Singh (1998) indicated that the relational-specific investment could produce relational rents to create value in the aspects of the human resource, location, and equipment. Madhok and Tallman (1998) discussed the potential synergy effect of relation-specific assets on inducing and realizing cooperation. Under different governance models, the degree and manner of the relationship between the parties would be different. According to the definition, the supply chain manufacturers must carry out certain activities to develop competitive advantage, through investment in relation-specific assets. If a manufacturer chooses an alliance to form a partnership, it could create assets

and find an advantage. The manufacturer-specific investment can also allow both sides to have the expectation of cooperation, which can enhance the commitment to the relationship between the seller and the supplier. At the same time, the extent to exchange in inter-firm transactions also has an impact on the formation of relational rents.

2.1.2. Knowledge sharing routines

There are four aspects of effective knowledge sharing routines: knowledge, access, engagement, and safety (Cross et al., 2001). Most knowledge sharing routines studied from relational perspectives focused on the promotion and obstruction of organizational knowledge sharing routines in the informal relationship (Baban et al., 2005). If an organization is aware of the problem-solving knowledge in a member of a supply chain, while this company is not willing to share the knowledge, then the problem of that member cannot be solved. Because the formal organizational structure cannot reflect the nature of social relations and the dynamic and interdependent relationship between employees, the formal structure of the organization often affects and hinders the flow of knowledge (Allen et al., 2007). Lack of interpersonal relationship is one of the reasons why employees do not want to share information (O'Dell & Grayson, 1998). Relationships can help companies get information, solve problems, and learn how to do a good job (Cross et al., 2001).

In addition to the formal knowledge sharing network, mentoring, enterprise database and knowledge forum and other formal channels, informal channels, such as social or informal discussions, are widely used by employees. The exchange and transfer of knowledge include explicit and tacit knowledge. Explicit knowledge has obvious boundaries, which is implementation through the form of the property rights. Without permission, no one can legally use these resources. These resources make use of patents, contracts and contracts as “isolation”, so that non-owners cannot easily imitate and occupy these resources. Because of the ambiguity of the border, the tacit knowledge is lack of clear scope and boundary, or clear methods to express and to legally protect. Tacit knowledge needs to be studied in a team or in practice. Because implicit knowledge exists in the brain (Fahey & Prusak, 1998), the sharing of this implicit knowledge must be done through the inter-personal network (Cross et al., 2001). The knowledge to be shared is useful, and the effective creation of knowledge must be based on the interaction between members of the organization, with the aim of creating new ideas and constructive problem solving methods (Zupan & Kaše, 2007). Indirect interpersonal mutual exchange links can promote knowledge transfer (Hansen, 1999; Tsai, 2001). On the one hand, in order to transfer and share knowledge resources effectively, the supply chain should establish the mechanism of trust exchange, so as to ensure the tacit knowledge resources sharing in the supply chain and to improve the operation efficiency of the supply chain. On the other hand, each enterprise in the supply chain needs to prevent the loss of their tacit knowledge resources. At the same time, it is necessary to restrain the opportunism motivation of enterprises to acquire the knowledge resources of other participants.

2.1.3. Complementary resources

Complementary resources are defined as distinctive resources of partners that collectively generate greater rents than those obtained from endowments of each partner individually (Dyer & Singh, 1998). The enterprises will depend on the strength of the external enterprises to overcome the weak links of strategic resources. Namely, enterprises use the integration with their own advantages and strategic resources from the enterprise to achieve complementary resources and to gain greater competitive advantage instead of using their most advantageous strategic resources to make up for the weakest ones. The complementary resources among the partner members of the enterprise improve the efficient utilization to provide a broader space for the survival and development of the enterprises. The resources of the members can be combined to form a comprehensive performance, which is more valuable, scarcer, and more difficult to imitate than before. As a result, member enterprise will have a stronger competitive advantage than they do when doing their own business. Based on that, we can create the value of relational rents. There must be a good integration channel and combination mechanism between partner members. In order to realize a synergistic combination of complementary resources, however, firms need to cooperate more fully, thus exposing the

firms to the risks of opportunism (Madhok & Tallman, 1998). Trust both reduces the risks associated with the disclosure of proprietary information concerning the buyer and seller's complementary resources (Wang et al., 2008). When the member enterprise has more experience, and more ability to discern the other enterprise information, and more compatibility in the two sides of the organizational system, rules and cultural aspects, it is stronger to create the relational rents. Resource complementarities among partners facilitate cooperation to obtain mutual benefits for both parties (Klein & Rai, 2009).

2.1.4. *Effective governance*

Effective governance structures refer to the structures, processes, and associated arrangements. An appropriate effective governance structure can regulate opportunistic behavior by supply chain partners because the structure allows monitoring of any party's improper behavior (Lee et al., 2014). In order to ensure the interests of all parties, the cooperative enterprises should take some incentive, restraint, and control mechanisms to prevent opportunistic behavior of individual enterprises caused by the failure of partners. Because the opportunistic behavior of the partner enterprise affects the transaction cost and the cooperative willingness, eroding the basis for bilateral cooperation and effective governance is a means to control the opportunism behavior. It can affect the transaction cost and the willingness to engage in value-added activities, and plays an important role in the establishment of relational rents. Effective governance can reduce the transaction costs, promote knowledge transfer among enterprises, especially tacit knowledge transfer, and increase the value creation of alliance partners. Corporate governance mechanism is divided into Third-party Enforcement of Agreement and Self-enforcing Agreement. The former requires the third parties (such as the court) to resolve disputes. The latter emphasizes self-discipline, trust mechanism, and reputation. Because the market transaction exists moral hazard and the opportunism behavior, easy to make the members of enterprise have selfish motives, such as free ride, the problem of embezzlement. In contrast, self-restricting mechanism can save transaction costs such as contract signing and supervision costs. According to the dynamic market environment, the parties are flexible to change strategy to reduce the adaptive costs of various complexities. The continuation of the transaction depends on mutual trust, tacit agreement, understanding and expectation, and the self-restricting mechanism to generate the relational rents. No one will deceive the immoral behaviors of member firms' damage its credibility and the depreciation of intangible assets, impairment of future earnings. The act of deception of any member of enterprise will undermine its credibility and devalue its intangible assets and the damage of future earnings.

2.2. *Relational capital*

Relational capital refers to the degree of mutual trust, commitment, respect, and friendship with each other under the close interaction of the partners (Kale et al., 2000). It is a mutually beneficial relationship between independent enterprises (Dyer et al., 2004), embedded in the social network to form trust, delivery of information and solutions of problems together (Uzzi, 1997), which relates to the promise and the desire for reciprocity (Zucker & Darby, 2005). The establishment of mutual respect and the close interaction of trust (Cousins et al., 2006), to a certain extent, is an exchange, which involves trust, social interaction, and common standards or goals (De Clercq & Sapienza, 2006). Relational capital is the sum of the resources of trust, friendship, respect, and mutual understanding, which is based on the organizational level (Qu & Lu, 2013). It created by the company and its partners reflect the excess value by the business relationship (Kale et al., 2000).

Over the past 10 years, relational capital has been widely discussed in the context of competitive cooperation and exchange theory (Chang & Gotcher, 2007; Chen et al., 2009; Kohtamäki et al., 2012; Liu et al., 2010). Relationship capital lies in the long-term cooperation between enterprises (Lenart-Gansiniec, 2016), not related to the type of administrative governance. It has been regarded as an important obstacle to the development of enterprises, but the benefits can be created for both sides by the acquisition of key resources (Kale et al., 2000) or knowledge of partners (Liu et al., 2010). In this way, the two sides can easily overcome the obstacles in the outsiders' relationship (Miocevic, 2016). As an intangible asset, the relational capital is an inter-firm relationship that is produced with

mutual trust, respect, reciprocity, intimacy, commitment (Miocevic, 2016; Thuy & Quang, 2005), and it is also difficult to replicate for competitors. Enterprises will pay more attention to the management of the complexity of the relational capital to build their own competitive advantages and expand their market share (Dyer & Singh, 1998; Kohtamäki et al., 2013).

Although not the only aspects of relationship capital, most researchers consider trust and commitment as the major forms (Hosmer, 1995; Rousseau et al., 1998). Other types of relationship capital include, for example, norms of reciprocity, information exchange, and cultural sensitivity. However, trust and commitment are the essential threads in the social fabric of any relationship partner (Gligor & Holcomb, 2013). Managers from both failed and successful strategic partner recognize the importance of building mutual trust and commitment among partners. This paper studies the relationship capital from two dimensions of trust and commitment (Cullen et al., 2000).

2.2.1. Trust

Trust is defined as a willingness to rely on an exchange partner in whom one has confidence (Moorman et al., 1992; Rotter, 1967). It has also been looked at as the belief that a partner's word or promise is reliable and a party will fulfill his/her obligations in a relationship (Shurr & Ozanne, 1985). The definition of trust shows the concept of trust and the importance of trust partners. Trust is the main component of the relational model, which is included in the more relational research articles (Özen et al., 2016; Wilson et al., 1995). The degree of credit between the supplier and the manufacturer will determine the degree of intimacy (Li et al., 2015).

Other definitions of trust generally focus on outcomes. For example, the research of Anderson and Narus (1984) indicates that trust is a belief in a partner, is the action taken by the other partner to lead to positive results, instead of taking action to cause negative results. In the partnership, trust can reduce the probability of tension. In other cases, trust can prevent unscrupulous behavior among partners (Longenecker et al., 2006). The establishment of trust can bring positive consequences for cooperative enterprises (Brashear et al., 2003). It is an important concept in relationship exchange, because the relationship characterized by trust will be highly valued by the enterprise so that both sides hope to be able to maintain this relationship (Hrebiniak, 1974).

2.2.2. Commitment

Commitment is defined as a future orientation based on relational view theory, including a desire and utility to maintain a lasting relationship between partners (Anderson & Weitz, 1989). Commitment is an important concept in the measurement of loyalty and the prediction of future purchase frequency (Morgan & Hunt, 1994). Commitment has the persistence to maintain value relationships (Moorman et al., 1992). In order to satisfy and benefit each other, it is necessary to have a high level of responsibility (Morgan & Hunt, 1994). We believe that the interdependence between partners gets an increase, and the need for management conflict is also increasing, which require greater trust and commitment between them (Kumar et al., 1995).

Commitment is an enduring desire to maintain a valued relationship. It can involve trusting the suppliers with proprietary information and other sensitive information. It incorporates each party's intention and expectation of continuity of the relationship, and willingness to invest resources (Mentzer et al., 2000). It is obvious that cooperative members with similar organizational cultures should be more willing to trust their partners. Without a foundation of effective inter-organizational relationship, any effort to manage the flow of the information or materials across is likely to be unsuccessful. Commitment to the establishment of long-term cooperative relations, and form a relationship between the partners rent (Li & Lin, 2006; Spekman et al., 1998; Tan et al., 1998).

2.3. Hypotheses

2.3.1. Relational capital and relation-specific assets

The relation-specific assets are formed through the allocation of assets with the partners, and trust and commitment are promise to the common asset allocation. Partners must carry out certain activities to develop the competitive advantage, and the relational capital plays a role in the effectiveness of relation-specific assets through trust and commitment. Trust is a way for manufacturers to create assets and find out the advantages to choose partners. The manufacturer makes the expectation of cooperation through a specific investment to enhance the commitment to the relationship with partners. Based on the relational capital or the interests of the future, the two sides may provide preferential benefits and expect cooperation behavior can be rewarded (Lee et al., 2008). The research of strategic partners suggests that mutual trust can enhance the special preferential policies to form a relational relation-specific asset that is difficult to replicate (Nooteboom et al., 1997). Therefore, the confidence and commitment formed by relational capital make it possible for enterprises to provide mutual benefits (Blonska et al., 2013). At the same time, the volume of exchange between enterprises also has the impact on the relational rent. The greater the volume of exchange is, the longer the protection mechanism to prevent opportunistic behavior among enterprises and the stronger the ability to create relational rent through relation-specific assets has.

H1a: Trust has a positive impact on relation-specific assets.

H2a: Commitment has a positive impact on relation-specific assets.

2.3.2. Relational capital and knowledge sharing routines

Social capital contributes to the coordination and cooperation among members of the common interest (Putnam, 1995), and long-term relationships are more willing to and able to exchange information and know-how among each other, and more efficiently to exchange information (Bouty, 2000). In the aspect of value strengthening mechanism, relational capital helps to stimulate and mobilize the sharing consciousness among the partners (Carey et al., 2011). A more intimate social interaction can increase the depth, breadth, and efficiency of mutual knowledge exchange (Lane & Lubatkin, 1998). In business relationships, trust and commitment can provide a strong link and help cross-border knowledge sharing (Mäkelä, 2007). The trust mechanism and cooperative relationship between members are easier to form and maintain (Coleman, 1988). With the increase in mutual trust among the members, the increased frequency of knowledge spreading among organizations can generate effective knowledge transmission rules to promote the transmission and sharing of tactic knowledge, which can make the enterprise gain the competitive advantage that the external competitors are difficult to imitate and use. Trust reduces the risk of buyer's risk associated with proprietary information disclosure and encourages investment in the knowledge sharing routines (Wang et al., 2008). A large number of knowledge resources are tacit knowledge, which is non-verbal, vague, deeply embedded in the organization. Only under the premise of mutual trust and commitment, close cooperation can be shared to form the scale effect to create knowledge rent for partners. The greater of the intensity of the enterprise investment in knowledge sharing regulation among the members of the enterprise is, the stronger the ability to create the rent can be. In addition, knowledge sharing routines can also encourage enterprises to maintain information transparency and mutual interaction, and inhibit the various free riding. The more perfect the regulatory arrangements are, the greater the potential for creating relational rents would be. Members of the organization with a lot of social capital contribute to mission dedication and organize public welfares to influence knowledge sharing. Therefore, based on the above conclusions, this study put forward four hypotheses from the perspective of the relationship between partners.

H1b: Trust has a positive influence on knowledge sharing.

H2b: Commitment has a positive influence on knowledge sharing.

2.3.3. *Relational capital and complementary resources*

Relational capital is valuable, scarce, and difficult to imitate and can be used by the cooperative enterprise, which can produce a sustainable competitive advantage for the partners (Barney, 2001). Although one of the partners in the development plan is an effective resource, it needs to cooperate with both sides to accept each other's value. Relational capital reflects the consensus of reducing heterogeneous beliefs (Blonska et al., 2013), forming complementary cooperation. Because mutual trust and commitment between partners can better customize products to meet those unique needs (Rogers et al., 2007). Relational capital can help suppliers obtain buyers' information to better serve the buyers (Tuli et al., 2013) and generate common values (Takahashi, 2000). Such cooperation will be more likely to cooperate with each other, with each other's advantages of resources to form complementary resources to achieve the goal of excessive profits (Heide & John, 1990; Wang et al., 2013). Based on the above literature, we make the following assumptions:

H1c: Trust has a positive effect on complementary resources (capability).

H2c: Commitment has a positive effect on complementary resources (capability).

2.3.4. *Relational capital and effective governance*

The relationship between the enterprise and the customer is an important asset of the enterprise. Through the cooperation with customers, we can obtain the customer's thought, experience, and improve the marginal profit of the enterprise (Anderson & Narus, 1991). Mutual trust is the cornerstone of the establishment of bilateral relations (Morgan & Hunt, 1994). Trust referring to mutual loyalty and reliability of each other can reduce the probability of violating the formal contract (Cummings & Bromiley, 1996). If there is a lack of trust between the two parties, it is difficult to establish a stable and reliable relationship. Mutual commitment means the two parties of the transaction believe that the establishment of a stable relationship is extremely important. In order to maintain this relationship, the two parties are willing to commit to the greatest efforts (Morgan & Hunt, 1994). The partners can realize the governance of the relationship through the informal implementation of the agreement. Informal agreement can rely on trust (direct experience) or reputation (indirect experience) as a governance mechanism. Informal security (e.g. good faith) is the most effective and costly maintenance of professional investment and promotes complex means of exchange (Uzzi, 1997). Studies have shown that manufacturers can increase the export of their products through the relationship with foreign distributors (Zhang et al., 2003). Relational governance is influenced by many factors. Trust and commitment of the inter-firm are important determinants of relational governance. The information provided by enterprises plays an important role in the choice of relational governance. Relational governance is a complex organizational arrangement, which has a significant impact on the growth rate and transaction satisfaction (Claro et al., 2003).

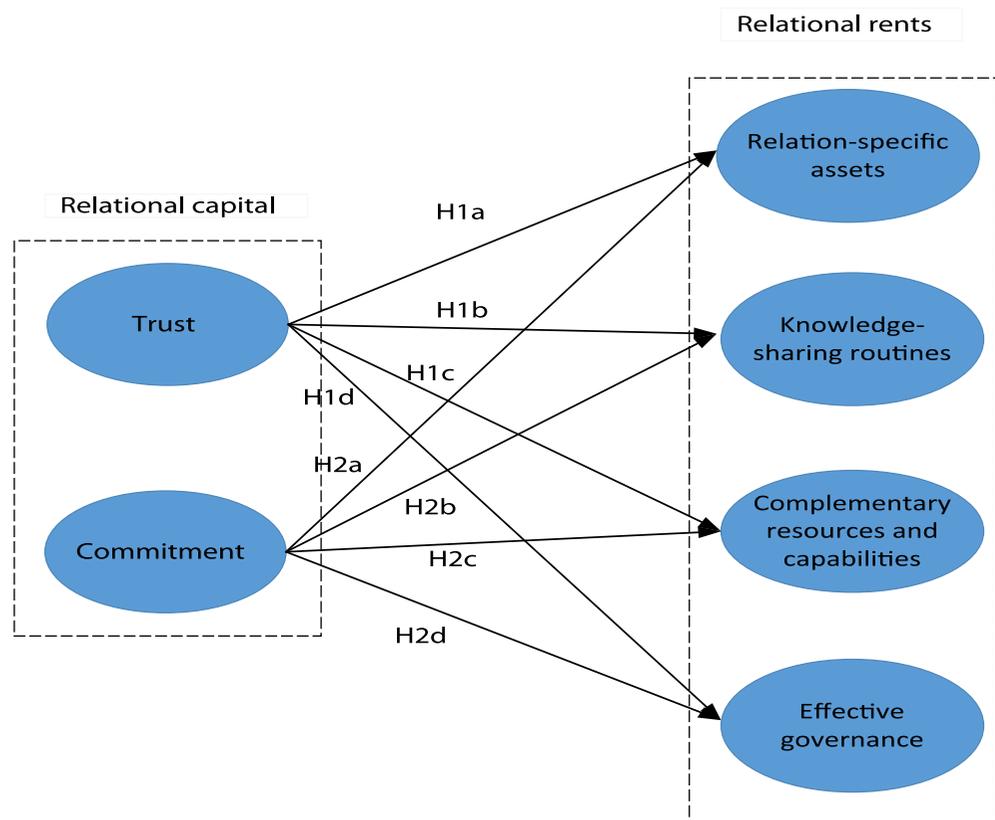
Therefore, based on the relevant literature and the elements of joint governance, we make the following assumptions.

H1d: Trust has a positive effect on effective governance.

H2d: Commitment has a positive effect on effective governance.

Figure 1 presents a framework displaying the factors impacting relational rents in industry and summarizes the factors influencing relational rent. It should be pointed out that the antecedents of relational rents identified in this paper cannot be considered complete. Other factors, such as firm size, order size, and industry type may affect relational rents. Though these factors are of great interest, they are not included due to the length of the survey and the concerns regarding the parsimony of this research.

Figure 1. Conceptual model.



3. Methodology

3.1. Measurements

Six variables are measured in this study: Trust, Commitment (relational capital), Relation-specific assets, Knowledge sharing routines, Complementary resources, Effective governance (relational rents). These variables are abbreviated for T, C, SA, KS, CR, EG. Most of instruments to measure the constructs in this paper come from previous literature in order to ensure contents validity. But we develop them for adapting to China manufacturing enterprises of relational capital and relational rents.

We measure the relational capital between the supply chain partners from two dimensions which are trust and commitment (Cullen et al., 2000; Liu et al., 2008; Nahapiet & Ghoshal, 1998). Trust measures the relational capital between the manufacturing firm and its major supplier with five items adapted from Wang et al. (2008). But we develop them for adapting to China manufacturing enterprises from four items of trust. Commitment is considered that the company is willing to do its utmost to maintain the value of both sides in supply chain cooperation. This paper presents the measurement scale of commitment with four items source from Li and Lin (2006). The measurement of relational rents is measured in four dimensions which are proposed from Dyer and Singh (1998). These four dimensions conclude relation-specific assets, knowledge sharing routines, complementary resources, and effective governance. Relation-specific assets have been measured from three items (Handfield & Bechtel, 2002). Knowledge sharing routines have been measured from three items (Wang et al., 2008). Complementary resources have been measured from three items (Lee et al., 2014; Lunnan & Haugland, 2008). Effective governance from eight items (Lee et al., 2014). But we develop them for adapting to China manufacturing enterprises from four items of effective governance.

To ensure the validity and reliability of the survey instrument, items for each construct is first collected through a comprehensive literature review. Items adapted from previous studies and written in English are translated and back-translated by two academics. This translation work is subsequently checked by the third academic to ensure conceptual equivalence. A pilot test is employed, using in-depth managerial interviews in manufacturing firms in China. Based on the feedback received from the managers, slight wording modifications were made to clarify meanings and to tailor previously tested items to Chinese management practices. We collected feedback from survey respondents and revised the questions based on their suggestions. Each statement requires responses based on a seven-point Likert scale. All the items are measured on a seven-point Likert scale with anchors ranging from “strongly disagree” to “strongly agree”.

3.2. Data collection

We randomly selected manufacturing enterprises from china. We explain the research background and target to the respondent, requirements of manufacturing enterprises and cooperative enterprise cooperation for more than a year, respondents with partner communication time in more than a year, the cooperation policy is “Understanding” or “Completely understanding”, answer people participate in cooperative enterprises “Basic involvement” or “Completely involvement”. We ensure that the most appropriate answer questionnaires.

It is mainly collected from national entrepreneurs’ forum. With the help of business groups, questionnaires are collected on the spot during the meeting. Once getting in touch with the chambers of commerce in the manufacturing sector, questionnaires would be issued and collected by them. We have distributed and collected the questionnaires on the scene by visiting some enterprises. After having a full understanding of the questionnaire, it would be issued and collected on the spot. We chose the larger manufacturing industry with larger scale of employment where our students have been to practice. We get the chance to ask corporate executives for answering the questionnaire face to face when visiting partners of the school-enterprise cooperation.

We sent out 500 questionnaires and received 402 responses. The response rate was 80.4%. There were 98 questionnaires deleted because they were incomplete. Finally, 304 valid questionnaires were useful, representing an effective response rate of 24.38 percent. The respondents were “Understanding” or “Completely understanding” of the respondents, the respondents were “Basic involvement” or “Completely involvement”. There was no statistically significant difference by testing for no response bias (Armstrong & Overton, 1977). No statistically significant differences were identified at $p < 0.05$.

Approximately 90% of the companies surveyed were established for more than 3 years. About a third of them were from manufacturers of supply chain enterprises, more than 60% were from top management, half of the employees had more than 500 employees, half these are men, aged 31–45 years of age accounted for half, and two-thirds of the respondents were educated in undergraduate. Descriptive statistics of respondent characteristics are presented in Table 1. The results of ANOVA showed that there was no significant difference in the establishment time and scale of the enterprises, gender, age, and academic record of the respondents.

3.3. Psychometric properties

Our approach for testing the structural equation model was adapted by estimating the model’s reliability and validity. Descriptive statistics demonstrate basic information for each item and factor. Before the analysis, an exploratory factor analysis was performed with the principal axis extraction method to pretest the appropriateness of each item. The results are $KMO = 0.82 > 0.5$, Bartlett $p = 0.000$ ($p < 0.001$). The data are adapted through the use of factor analysis and principal components. After several rounds of deletion, a five-factor solution was derived. The five factors explain a substantial amount of variance: 86.073%. Ten distinguishing dimensions can be found in the rotated factor matrix without any cross-loadings (see Table 2).

Table 1. Descriptive statistics of respondent characteristics

Variable	Item	Count	%
Gender	Male	163	53.62
	Female	141	46.38
Age	19–30	53	17.43
	31–45	159	52.31
	46–60	84	27.63
	>61	8	2.63
Education background	≤High school	21	6.91
	College	65	21.38
	Bachelor	126	41.45
	≥Master's degree	92	30.26
Role in supply chain	Supplier	75	24.67
	Manufacturer	99	32.57
	Middlemen	69	22.7
	Retailer	61	20.06
Position	Senior manager	184	60.53
	Middle manager	83	27.3
	Department manager	37	12.17
Year of establishment	1–2	33	10.86
	3–5	94	30.92
	6–10	124	40.79
	>10	53	17.43

Table 2. EFA

	T	C	SA	KS	CR	EG
T1	0.735	0.117	-0.114	0.014	0.153	0.191
T2	0.899	0.193	0.055	0.050	0.078	0.129
T3	0.750	0.038	0.018	0.209	0.083	0.114
T4	0.898	0.188	0.051	0.050	0.081	0.132
C1	0.155	0.904	-0.029	0.100	0.076	0.220
C2	0.244	0.723	0.026	0.170	0.302	0.199
C3	0.137	0.649	-0.046	0.160	0.108	0.323
C4	0.139	0.843	-0.052	0.115	0.092	0.294
SA1	0.012	0.008	0.922	0.003	-0.086	0.017
SA2	0.041	-0.053	0.854	-0.037	-0.021	0.006
SA3	-0.048	-0.033	0.885	0.031	-0.063	0.009
KS1	0.050	0.182	-0.003	0.915	0.153	0.113
KS3	0.289	0.115	0.005	0.780	0.181	0.157
KS4	0.075	0.182	-0.005	0.919	0.126	0.102
CR1	0.092	0.143	-0.077	0.132	0.843	0.022
CR2	0.129	0.125	-0.054	0.172	0.805	0.156
CR3	0.178	0.143	-0.053	0.098	0.742	0.106
EG1	0.146	0.222	0.006	0.092	0.065	0.947
EG2	0.156	0.227	0.018	0.089	0.094	0.938
EG3	0.159	0.203	0.018	0.079	0.070	0.945
EG4	0.159	0.217	0.006	0.089	0.075	0.942

3.4. Reliability analysis

Composite reliability assesses the inter-item consistency using Cronbach’s alpha. In this study, the Cronbach’s alpha values for every construct exceeded 0.70 with the exception of C3 (0.649). The Cronbach alpha of the construct is 0.883. These results therefore indicate that the theoretical constructs demonstrate adequate psychometric properties.

3.5. Construct validity

Construct validity is the extent to which the items on a scale measure the abstract or theoretical construct it is meant to represent. The testing of construct validity focuses not only on whether an item loads significantly on the factor being measured (i.e. convergent validity), but also on ensuring that the construct measures no other factors (i.e. discriminant validity). One aspect of construct validity is convergent validity, which exists if a group of indicators measure one common factor. Convergent validity is demonstrated by the statistical significance of the loadings at a given alpha (e.g. $p = 0.05$). A standardized loading of 0.7 indicates that approximately one half of the item’s variance (the squared loading) can be attributed to the construct; thus, 0.7 is the suggested minimum level for item loadings on established scales (Fornell & Larcker, 1981). The loading values of the 21 items in the various scales are close to or exceed this threshold, implying statistically significant relationships between the constructs and the reliability of individual items.

Discriminant validity is the degree to which measures of different latent constructs are unique enough to be distinguished from other constructs, which is demonstrated if the average variance extracted for each construct is greater than the squared correlations between constructs (Hatcher, 1994). It is assessed by comparing the average variance extracted and the square of the correlation between the constructs (Fornell & Larcker, 1981). Tables 3–4 illustrates that all the constructs are

Table 3. Convergent validity constructs

Factor	Item	Standardized loading	CR	Cronbach alpha	AVE
T	T1	0.735	0.894	0.877	0.679
	T2	0.899			
	T3	0.750			
	T4	0.898			
C	C1	0.904	0.864	0.887	0.618
	C2	0.723			
	C3	0.649			
	C4	0.843			
SA	SA1	0.922	0.917	0.870	0.788
	SA2	0.854			
	SA3	0.885			
KS	KS1	0.915	0.906	0.910	0.763
	KS3	0.780			
	KS4	0.919			
CR	CR1	0.843	0.840	0.791	0.636
	CR2	0.805			
	CR3	0.742			
EG	EG1	0.947	0.970	0.992	0.890
	EG2	0.938			
	EG3	0.945			
	EG4	0.942			

Table 4. Correlation coefficient matrix

	T	C	SA	KS	CR	EG
T	1.00					
C	0.31*	1.00				
SA	0.11*	0.02*	1.00			
KS	0.14*	0.29*	0.01*	1.00		
CR	0.23*	0.23*	0.16*	0.29*	1.00	
EG	0.32*	0.45*	0.02*	0.25*	0.14*	1.00

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

near or exceed the value (0.70) that is recommended for composite reliability. All of the average variance extracted measures exceed 0.50, which is sufficient according to Bollen (1991). The correlations are presented and by comparison. The roots of average variance extracted exceeded the correlations, indicating discrimination among the latent variables that are defined in the conceptual scheme of this paper. Therefore, there are no limitations to the study associated with measurement (Table 4).

4. Results and discussion

4.1. Results

This study estimates the hypothesized relationships using structural equation modeling, and estimated the structural model described in Table 5 and Figure 2 using Amos21 with maximum likelihood estimation method. The results show that $\chi^2 = 646.077$, $df = 180$, $p < 0.001$, IFI = 0.936 > 0.9, CFI = 0.936 > 0.9, GFI = 0.952 > 0.9, AGFI = 0.843 > 0.8, NFI = 0.913 > 0.9, SRMR = 0.084 < 0.1 (Hu & Bentler, 1999), RMSEA = 0.092. Thus, the overall goodness of fit statistics shows that the structural model fits the data well except RMSEA. The root mean square error of approximation (RMSEA) is 0.110. In general, to satisfy the criteria for a good model, the RMSEA should be less than 0.08 (Jarvenpaa et al., 1999). Actually, the main cause is that $\chi^2/df = 3.589 > 3$, and the standard from Hayduk (1987) is less than 3, but Bollen (1991) and Hair et al. (1998) indicate that $\chi^2/df < 5$ is feasible. Therefore, the RMSEA for this construct was generously acceptable considering the large number of items and factors (Byrne, 2009).

The statistical results lend support for H1b, H2b, H1c, H2c, H1d, and H2d: the trust and commitment dimensions of relational capital are positively correlated with the three dimensions of the complementary resources, knowledge sharing routines, and effective governance. H1a and H2a are not support: trust and commitment dimensions of relational capital are rejected related to the specific assets.

4.2. Discussion

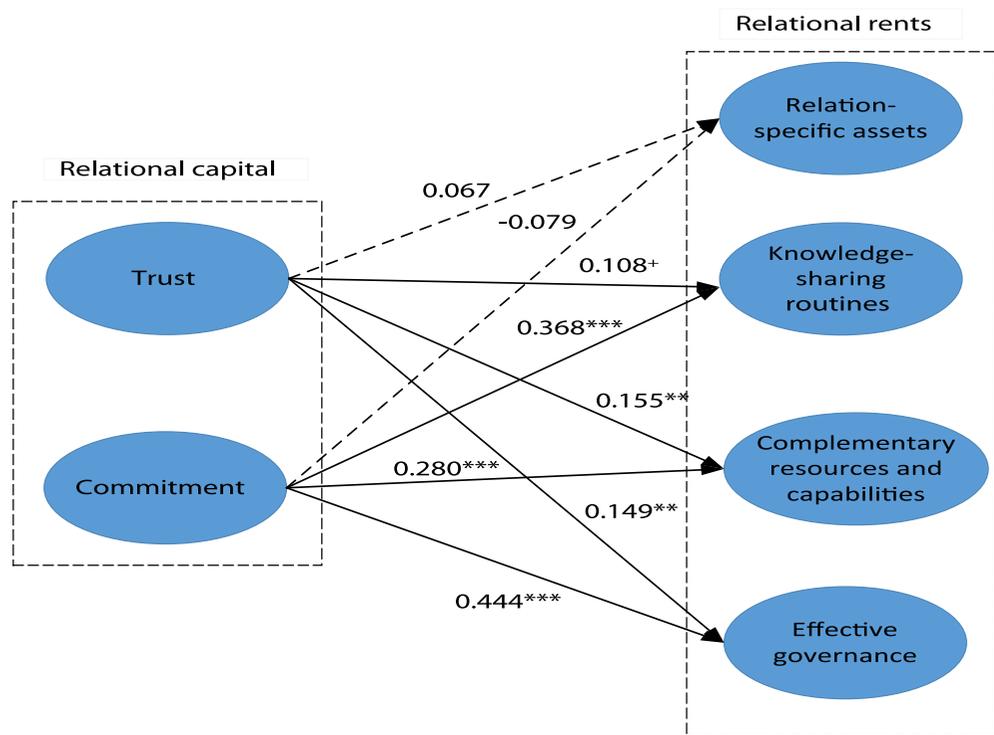
Trust and commitment have no significant effect on the relation-specific assets. Under the premise of distrust or no trust, low trust, cooperative enterprises will invest more in the relation-specific assets, and let the specific assets play a role among the enterprises. When the enterprise reached a certain degree of trust between each other, the reduction of the investment of the relation-specific assets will reduce the utility of them. When companies try to build coalitions, the two sides of cooperation without commitment will try them best to invest relation-specific assets, and prevent cooperative problems. When partners are committed to each other and able to perform well, the use of relation-specific assets will also reduce, or the investment in them will reduce.

Trust has marginal significant effect on knowledge sharing at 0.1. Knowledge sharing is related to the enterprise's business secrets or technology, if the two sides do not have mutual trust and risk sharing, causing unnecessary losses. As a result, trust between enterprises that has significant

Table 5. Results of hypotheses tests

Hypothesis		Result
H1a	Trust has a positive impact on relation-specific assets	Rejected
H2a	Commitment has a positive impact on relation-specific assets	Rejected
H1b	Trust has a positive influence on knowledge sharing	Supported
H2b	Commitment has a positive influence on knowledge sharing	Supported
H1c	Trust has a positive effect on complementary resources (capability)	Supported
H2c	Commitment has a positive effect on complementary resources (capability)	Supported
H1d	Trust has a positive effect on effective governance	Supported
H2d	Commitment has a positive effect on effective governance	Supported

Figure 2. SEM results.



impact on knowledge sharing is realistic. Trust has significant effect on complementary resources at 0.01. Complementary resources earn from other’s strong points to make up one’s deficiencies in the process of cooperation, very beneficial to the common development of the cooperative enterprise. However, if the two sides do not trust each other, the other side will not give advantage of their resources to the other side. Co-governance is some management works in which both parties have participated, involving trade secrets and management effectiveness. The influence of trust on it is inevitable.

Commitment to knowledge sharing, complementary resources and co-governance is significant at the 0.001 level. The two parties make a commitment to each other according to the actual situation. The more commitment and the better performance have, the more satisfied the other party is. The other side will own management experience, technology, resources, and other advantages to share with partners, the higher the probability of use to put some of their own affairs by the parties or other management. The results show that the commitment with a significant impact on

cooperation is as important as trust. This also shows that enterprises must fulfill their commitment in the process of cooperation; otherwise, the cooperation can only be formal and invalid.

5. Conclusions

Through the study and verification of the relationship between relational capital and relational rents in the process of enterprise cooperation, we find that the former has a positive influence on the latter. According to the relational capital and relational rents, the enterprise, especially the manufacturing enterprises in China should pay attention to the relationship between the two parties in the process of cooperation.

First, in the process of inter-firm cooperation, a low degree of trust between the two sides or less commitment increases the level of investment in specific assets. On the contrary, if the two sides have achieved a better trust or commitment, the investment in relation-specific assets of two parties can be reduced correspondingly. It is easy to grasp for manufacturing enterprises in China business. The degree of trust can be reflected in the level of familiarity between leaders, the credibility of the enterprise, development prospects, financial strength, industry development prospects, the future of the industry and bilateral cooperation time, and so on.

Second, the degree of trust is higher or inter-firm commitment is more, enterprise knowledge sharing is relatively large, which shows that the cooperation between enterprises should be effective in knowledge sharing to do a good job of trust and commitment. Especially for the high level of confidentiality of technology, market and other information, in the absence of the investment in the relational capital, the enterprise should do a good job of risk prevention in the process of cooperation. However, in order to achieve better results in cooperation, knowledge sharing has made great progress and the two sides need to invest in the relational capital.

Third, the relational capital (trust and commitment) is also the protection of the resources of both sides. To learn from each other is one of the important goals of enterprise cooperation. In the process of cooperation, it can greatly reduce the operating costs and obtain the relative competitive advantage. However, this resource complementary is not to acquire randomly. The results show that if the two sides cooperate effectively, it is necessary to have a good relationship between the two sides, which means that the investment of relational capital is the basis of cooperation between the two sides of the complementary resources.

Fourth, cooperative enterprises need to make efforts on co-governance. The basic premise of good governance is the degree of trust between enterprises and the fulfillment of commitments. That co-governance is as important as knowledge sharing related to corporate secrets, at the same time affect the governance, which is consistent with the objectives of cooperation between the two sides. How to be more comprehensive and no worries about co-governance is the problem that the cooperation of both sides wants to get and to worry about. The results show that the relational capital has a significant impact on co-governance, if the two sides achieve results in common governance, also need the investment in the relational capital.

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