

2014

BioTechnology

An Indian Journal

FULL PAPER

BTAIJ, 10(24), 2014 [14929-14935]

The impacts of agricultural firm's power on farmers' trust and relationship commitment: Data from "a company + farmers" in China

Shaoling Fu, Yanmei Yan*, Zhiyan Sun

College of Economics and Management, South China Agricultural University,
Guangdong, (CHINA)

E-mail : fushaoling2011@126.com

ABSTRACT

The purpose of this study is to investigate the impact of agricultural firm's five types of powers on farmers' trust and relationship commitment in "a company + farmers" organization. Based on data collected from 462 farmers in "contract-farming" schemes under Chinese agricultural industrialization framework, this study proposes and examines a model of "power - trust, relationship commitment". The results show that trust has significantly positive influence on relationship commitment. Furthermore, different types of company's powers influence farmers' trust and relationship commitment differently. These findings can offer guidance for the development of agricultural industrialization in China.

KEYWORDS

"A company + farmers"; Power; Trust; Relationship commitment.



INTRODUCTION

"A company + farmers" organization, also called "contract-farming", is regarded as the leading model in Chinese agricultural industrialization. which generally refers to agricultural enterprises signed a contract with the farmers who produce agricultural products and then purchased farmers' products in accordance with the contract. However, the default rate of the model in the alliance was about 80%^[1] in practice and alliance performance was unsatisfactory, which is not good for agricultural enterprises (hereinafter referred to as company) to continue driving the farmers' income growth. Studies show that relationship quality like trust and relationship commitment has a positive influence on improvement of compliance rate and alliance performance^[2-10], so how to enhance the trust and relationship commitment between company and farmers is very important.

In China, "a company + farmers" is a typical one-to-many relationship, of which one party is an artificial person (company), and the other is a natural person (farmers, farmers refers to peasant's family, based on the kinship of farmers, which engages in agricultural production and operation). For Farmers, the agricultural products acquisition and process of the specific leading enterprises are relatively scarce, so farmers always have no more choices. Farmers' strong dependence on leading enterprises, combined with advantages of leading enterprises have in the aspects of market information, product inspection and so on make the leading enterprises in a definitely dominant position^[11]. In this situation where both company and farmers have unequal status, when company driving farmers' development, how the use of power from company to farmers influence farmers' trust and relationship commitment to the company, namely, in the use of power, how expert power, legitimate power, referent power, reward power and coercive power affect the trust and relationship commitment between company and farmers? Studies have shown that effects of using different power on trust, relationship commitment and some other relationship quality are different^[12-16]. But the research about how company's power affects farmers' trust and relationship commitment is scarce, so further empirical research is needed.

Based on data collected from 462 farmers in "contract-farming" schemes under Chinese agricultural industrialization framework, this study proposes and examines the power-trust, relationship commitment theory model. These findings can offer guidance for the development of agricultural industrialization in China.

MATERIAL AND METHODS

Research model and hypotheses

Power is the ability of one partner to influence the other's decisions in the cooperation^[13-14,17]. According to analysis framework of powers by Lusch and Brown^[18], power consists of mediated power and non-mediated power. Mediated power includes reward power, coercive power. Reward power or coercive power refers to company's ability to make reward or punishment on farmers. Non-mediated power includes expert power, referent power and legitimate power. Expert power is that the power brought from the company which has knowledge, expertise or skills in certain fields. Referent power means that farmer values identification with the company and they feel that they are a family. Legitimate power refers to the company has the ability to make legal regulation for farmers' behavior.

The non-mediated power user doesn't mean to change the behavior of target-members directly and focus on the consequences. The user merely hopes to enhance its partner's sense of identification through providing information or advice, and make their behavior altered^[13,19]. The prevailed party makes the vulnerable party feel that it is sincere, reliable and devoted to solve problems together by providing clear and reliable information and suggestions about business, which helps to form a good atmosphere of cooperation in the relationship^[20,21]. Based on the discussion above, it can be expected that the use of non-mediated power will be instrumental to the formation of the receiver's trust and relationship commitment.

Therefore, the hypotheses from farmers' perspective are posed.

H_{1a} Company's expert power is positively related to farmers' trust on the company.

H_{1b} Company's referent power is positively related to farmers' trust on the company.

H_{1c} Company's legitimate power is positively related to farmers' trust on the company.

H_{2a} Company's expert power is positively related to farmers' relationship commitment to the company.

H_{2b} Company's referent power is positively related to farmers' relationship commitment to the company.

H_{2c} Company's legitimate power is positively related to farmers' relationship commitment to the company.

When a channel member puts pressure directly on a cooperation partner to make him perform the specified behavior and emphasizes the adverse consequences of non-adherence, the member is using mediated power. If the member frequently forces its partners to do what they originally don't want to do or to gives up some favorable results, the latter will consequently feel greater pressure and frustration and indifference tense atmosphere appears in cooperation, thus causing the occurrence of continual conflicts between partners^[17,22]. Then the latter is reluctant to interact with the former in-depth or to conduct effective communication, thus decreasing the latter party's non-economic satisfaction level. What is worse, the latter one may produce resentment, which could further aggravate conflict between both sides, and lead to negative emotions. Morgan and Hunt^[12] pointed out that the use of mediated power negatively affects relationship commitment. Therefore, the hypotheses from farmers' perspective are posed.

H_{1d} Company's reward power is negatively related to farmers' trust on the company.

H_{1e} Company's coercive power is negatively related to farmers' trust on the company.

H_{2d} Company's reward power is negatively related to farmers' relationship commitment to the company.

H_{2c} Company's coercive power is negatively related to farmers' relationship commitment to the company.

Relationship commitment refers to a party's the willingness to invest financial, physical or relationship-based resources in a relationship^[23], and it is an attitude towards developing and maintaining long-term and stable relationship between cooperative members^[24-25]. This type of commitment is inside, because it is based on that one member's identification and internalization to the common norms and the other one's values^[13]. The core of relationship commitment is trust^[26]. There is a causal relationship between trust and relationship commitment, namely, trust is the precondition for the performance of the relationship commitment and relationship commitment is the result of the trust, so levels of trust will affect the quality of the relationship commitment. When the levels of trust of both parties are high, cooperation relationship will be a stable and lasting one, and thus the relationship commitment will be stronger. Many scholars have given evidence that trust positively influence the relationship commitment. For example, Lai et al.^[27] has verified that the trust has a significantly positive effect on relationship commitment, and the greater the environmental uncertainty, the higher the effect. Zhang and Chen^[28] also verified the enterprise's trust has a significantly positive effect on relationship commitment. Therefore, trust is a main determinant of relationship commitment. The following hypothesis is posed.

H_{3a} Farmers' trust on company is positively related to farmers' relationship commitment to company.

On the basis of literature research, this study puts forward a conceptual model of the relation among power, trust, relationship commitment, as shown in Figure 1.

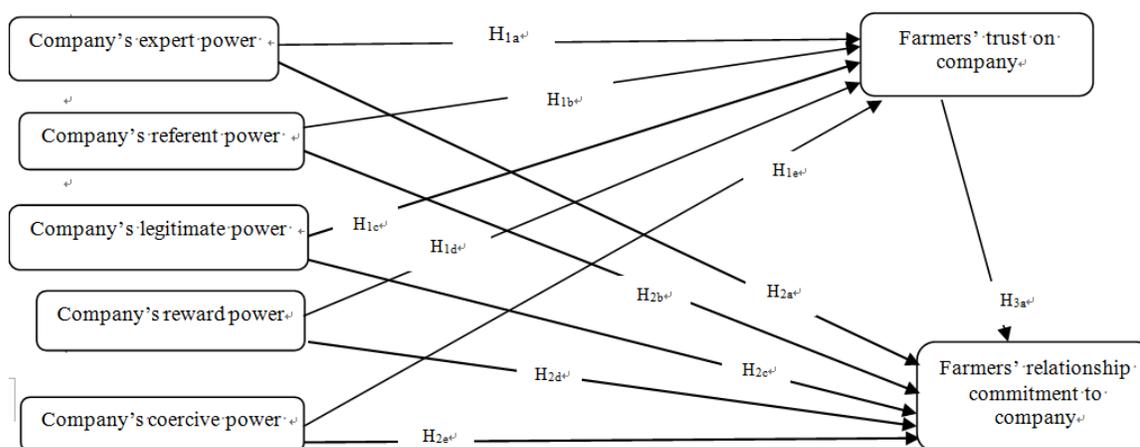


Figure 1: The Conceptual Model for company's Power, Trust on Company, and Relationship Commitment to Company

Variable design and data collection

The data of this study was obtained by questionnaires. The questionnaire mainly consists of two parts. The first part contains all the measurement items for the variables of the empirical model. A seven-point Likert scales makes respondents choose from one (strongly disagree) to seven (strongly agree). The measurement and sources of variables are shown in Table 1. Before the formal investigation, this study invited 20 respondents for a questionnaire pretest. According to their feedback, the questionnaire was modified to be more explicit. The second part involves the demographic characteristics like the stage of cooperation, the agricultural products of the cooperation, the goals of cooperation, etc.

Survey sample was farmers from Hainan Province and Guangdong Province in China. A total of 462 households, with 141 from Guangdong Province and 321 from Hainan Province. As to educational levels, 79% accept secondary or higher education. The agricultural products are mainly vegetables, poultry and livestock, which account for 29.2%, 25.8% and 19.3% respectively. The farmers cooperating with companies aim primarily to get technology and service support (62.4%), to reduce production and market risk (43.0%) as well as to obtain more revenue (41.8%). About cooperation stage, 14.4% of the farmers argue that cooperative performance is not yet stable, 54.8% of the farmers think that the mutual cooperation has reached a certain level, 23.9% of the farmers believe that the inter-sustained and long-term relationship has been established, while 2.4% of the farmers are dissatisfied with the cooperation and 4.5% farmers have begun to negotiate to end it.

RESULTS

Sample reliability and validity

In this study, Cronbach's alpha is used to test the reliability of the variables. For a questionnaire, Cronbach's alpha is 0.8 or more is preferable, 0.70 to 0.8 is still an acceptable range. For a sub-scale, Cronbach's alphas is 0.70 or more would be best, 0.60 to 0.70 is still acceptable [29]. As is shown in Table 1, the Cronbach's alpha of all factors are above 0.6, indicating high reliability of the scale.

Validity (includes content validity, convergent validity and discriminant validity) is commonly used in social science. The design and modification of questionnaire are conducted based on the existing literature, so the content validity is

guaranteed. This study mainly tests convergent validity and discriminant validity. SPSS 16.0 and PLS-Graph 3.0 software were used and the results are shown in Table 1 and Table 2.

As shown in Table 1 and Table 2, AVE of all factors are greater than 0.50, the standard loading of all factors are above 0.50 and composite reliability (CR) are greater than 0.70. From Table 2, square root of AVE of each variable is greater than its correlation coefficient that is with other variables, so discriminant validity between the factors doesn't matter^[30], indicating that the measurement model has a good convergent validity and discriminant validity.

Table 1: The reliability and convergent validity by confirmatory factor analysis

Factor	Items	Factor Load	Cronbach's alpha
Power (adapted from Zhao et al.^[23], Brown et al.^[13])			
Expert power (Ep)	The company owning business knowledge is likely to make the company propose to do right things (Ep ₁)	0.7851	0.670
	The company knows what the company is doing (Ep ₂)	0.7433	
	The farmer can usually get good advice from the company (Ep ₃)	0.7954	
Referent power (Rfp)	The company has received special training, so the company exactly know what is to be done (Rfp ₁)	0.8109	0.721
	The farmer appreciates the company's management technique, so the farmer tries to follow the company (Rfp ₂)	0.8053	
	The farmer acts in compliance with what the company think, the reason for which is that the farmer has the similar ideas with the company in aspect of management (Rfp ₃)	0.7850	
Legitimate power (Lp)	It is farmer's responsibility to comply with what the company requires (Lp ₁)	0.8403	0.744
	The farmer is responsible to act in compliance with what the company think, even though it is not a part of contract (Lp ₂)	0.8240	
	The company has the right to expect the farmer in compliance with its requirements (Lp ₃)	0.7732	
Reward Power (Rwp)	If the farmer is not in compliance with the requirements of the company, the farmer will not be treated well by the company (Rwp ₁)	0.6650	0.755
	The farmer believes that if the farmer is obedient to the company, the farmer will receive preferential treatment from the company in certain situations (Rwp ₂)	0.7787	
	Because of obedience to the company, some difficulties that the farmer faces are avoided (Rwp ₃)	0.8422	
	The company often rewards the farmer in order to make the farmer obedient to the company (Rwp ₄)	0.7384	
Coercive power (Cp)	The company will revenge in certain way if the farmer is found not in compliance with the requirements of the company (Cp ₁)	0.8420	0.880
	The company frequently implies that if the farmer does not comply with the company, it will take some actions to reduce farmer's profit (Cp ₂)	0.8894	
	The company may cancel some services to the farmer if the farmer does not obey with the company (Cp ₃)	0.7970	
	If the farmer is not agree with what the company suggests, the company will make the farmer feel awkward (Cp ₄)	0.8959	
Trust (adapted from Ganesan^[31], Kwon and Suh^[32], Moberg and Speh^[33], Coulter and Coulter^[34])			
Trust (Tr)	According to past cooperation experience, the farmer thinks that the company will abide by the agreements and its commitments (Tr ₁)	0.7430	0.842
	If the situation changes, the company will provide the farmer with most help (Tr ₂)	0.7986	
	During the transaction, the farmer can trust the company is sincere and honest (Tr ₃)	0.8210	
	The farmer believes the company will highly regard the farmer's interests (Tr ₄)	0.8207	
	The farmer believes the company will take into account the possible impact on the farmer when making major decisions (Tr ₅)	0.7387	
Relationship Commitment (adapted from Zhao et al.^[23], Brown et al.^[13])			
Relationship Commitment (Rc)	The farmer feels that the company views the farmer as "their important members of the team", not just producer (Rc ₁)	0.7145	0.770
	The farmer is proud to tell others that the farmer is a producers of the company (Rc ₂)	0.6819	
	The farmer identifies the method of management used by the company (Rc ₃)	0.7753	
	The farmer will positively continue to renew with the company in the future (Rc ₄)	0.7635	
	The farmer will not easily interrupt the cooperation with the company (Rc ₅)	0.6815	

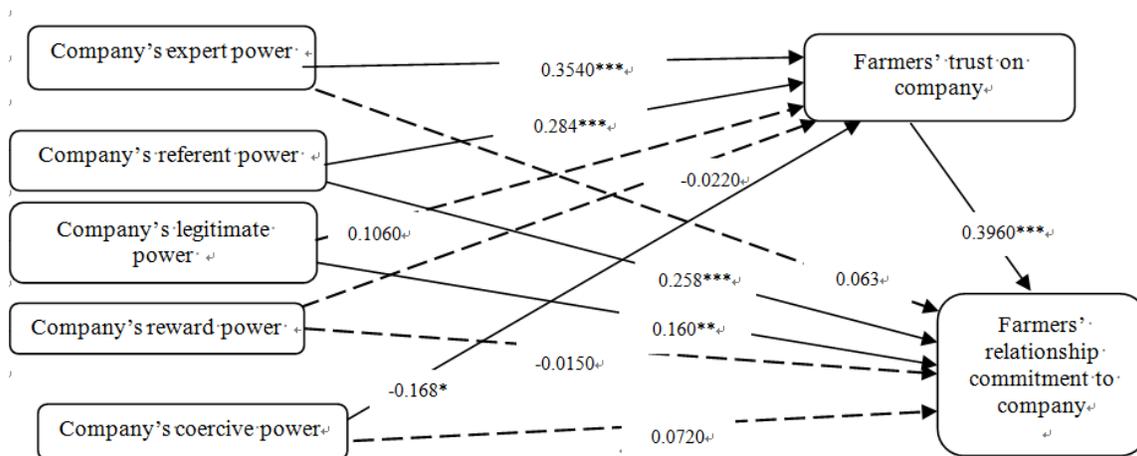
Table 2: The convergent validity and discriminant validity by confirmatory factor analysis

	AVE	CR	Ep	Rfp	Lp	Rwp	Cp	Tr	Rc
Ep	0.601	0.818	0.775						
Rfp	0.641	0.843	0.623	0.801					
Lp	0.661	0.854	0.485	0.576	0.813				
Rwp	0.576	0.844	0.211	0.384	0.494	0.759			
Cp	0.734	0.917	-0.110	-0.005	0.170	0.487	0.857		
Tr	0.617	0.889	0.596	0.558	0.402	0.133	-0.201	0.785	
Rc	0.525	0.846	0.527	0.605	0.504	0.265	0.005	0.626	0.725

Note: Expert power=Ep, Referent power=Rfp, Legitimate power=Lp, Reward power=Rwp, Coercive power=Cp, Trust=Tr, Relationship Commitment=Rc
 In the matrix, values in the triangle area underneath represent of the correlation coefficient among factors, diagonal values represent square root of the AVE.

Structural equation analysis and hypothesis testing

This study used PLS-Graph 3.0 to test whether the hypotheses contained in the conceptual model are supported or not by exploring the relationship among power, trust and relationship commitment through method of structural equation model. Each standardized path coefficients and p value of hypothesized relationships among power, trust and relationship commitment in the structural equation model are shown in Figure 2. Figure 2 shows that H_{1a}, H_{1b}, H_{1e}, H_{2b}, H_{2c}, H_{3a} are supported, whereas H_{1c}, H_{1d}, H_{2a}, H_{2d}, H_{2e} are not supported.



Note: Significant at: ***p<0.001, **p<0.01, *p<0.05

Figure 2: Path Diagram of Company's Power, Trust on Company and Relationship Commitment to Company

DISCUSSIONS

The impact of power on trust

From farmers' perspective, the empirical results show that the positive relationship between expert power and trust is significant, the positive relationship between referent power and trust is significant, which are consistent with western research. However, the positive effect that the legitimate power has on trust is not significant. During the cooperation process, using expert power and referent power will drive company and farmers to treat the relationship with an active attitude, and strengthen the sense of identification of company or farmers to the other, and they tend to solve problems together, leading to a good atmosphere of cooperation. Legitimate power is produced in formal or informal contracts signed by company and farmers. If a company requires farmers to take or not to take certain actions according to the contract, farmers think the company is unreasonable and it is a cold way to coordinate relationship, which is not conducive to cultivating trust between company and farmers. Therefore, during the cooperation process, when the company cultivates farmers' trust on companies, use of legitimate power should be avoided.

The relationships between mediated power and trust are different, that is, the negative relationship between reward power and trust is not significant, whereas the negative relationship between coercive power and trust is significant. Overuse of coercive power to farmers will increase the company's cost, decrease levels of trust, and result in more continual channel conflicts. Thus, the management thought would run counter. Therefore, in the process of cultivating farmers' trust on company, the company should try to avoid using the coercive power.

The impact of power on relationship commitment

When company uses mediated power to farmers, the correlation between mediated power and relationship commitment is not significant, and to some extent, the coercive power has positive influence on relationship commitment, which is not the same with the western research conclusions. The western research shows that there exists significantly negative correlation between mediated power and relationship commitment^[23,35,36]. The reasons why this happens is mainly because Chinese emphasis on harmony and the concept of "harmony brings wealth" in business, so farmers tend to have a higher levels of tolerance towards mediated power. For example, even if they aren't satisfied with the company, they hide the mood inside hearts instead of easily speaking out. However, this doesn't mean that farmers are identified with the behavior of agricultural company. And when this kind of dissatisfaction is accumulated to a certain extent, farmers may implement some destructive behavior to company, such as negative boycott, isolation and back to refuse and so on.

As is shown in this study from farmers' perspective, the correlation between non-mediated power and relationship commitment are different. The positive correlation between expert power and relationship commitment is not significant. The positive correlations between referent power, legitimate power and relationship commitment are significant. This is inconsistent with Zhao et al.'s^[23] and Huo et al.'s^[37] finding. Zhao et al.^[23] and Huo et al.^[37] found that expert power has positive effect on relationship commitment. In the "a company + farmers" model, the company owning expert power cannot promote farmers to have relationship commitment to company, but company's referent power and legitimate power can increase farmers' relationship commitment to company. In practice, company is more powerful than farmers, and its scale is bigger than farmers' and the level of management is higher than that of farmers. Thus, the company's referent power and legitimate power are stronger than farmers', and farmers will accept the effects from company whose influence is stronger.

The impact of trust on relationship commitment

The empirical research from farmers' perspective shows that trust has significantly positive effects on relationship commitment, which shows that trust can promote identification and internalization of partners' values and it is important to the long-term orientation of cooperation, instead of leading to calculation of outer rewards and benefits. That is, trust is a key factor to promote long-term cooperation between partners, for which company and farmers are ought to attach great importance to the establishment and cultivation of trust in their cooperation process.

CONCLUSIONS

According to the empirical analysis above, the influences of using different powers on trust and relationship commitment are different, which is not the same with the view of some scholars specialized in relationship marketing that power are negative factors and they have no positive effects on relationship. This study argues that in order to achieve cooperation and coordination between company and farmers, use of powers is quite necessary. In the cooperation between company and farmers, the agricultural company should coordinate the relationship between company and farmers with the use of mediated power and non-mediated power. By using expert power and referent power, company can promote farmers' trust on the company. By using referent power and legitimate power, company can promote farmers' relationship commitment to the company. A company should try to avoid using coercive power.

ACKNOWLEDGEMENT

This research are partially supported by the national development and reform commission project "Traceable public service platform construction of main agricultural products in Luoding city" and by the ministry of agriculture soft science project "Research of deepening reform of the rural land system "(D201437). Yan-mei Yan is the Corresponding Author.

REFERENCES

- [1] F.Q. Liu; Uncompleted contract and fulfillment barriers: contract farming as an example. *Economic Research*, (4), 22-30(2003). (in Chinese)
- [2] C. Eaton, A.W. Shepherd; Contract farming partnerships for growth. Food and Agriculture Organization, Washington, DC, (2001).
- [3] V. Beckman, S. Boger; Courts and contract enforcement in transition agriculture: theory and evidence from Poland. *Agricultural Economics*, (31), 251-263 (2004).
- [4] N. L. Tregurtha, N. Vink; Trust and supply chain relationship: a south African case study. *Proceedings of the Annual Conference on International Society for the New Institutional Economics, USA*, 27-29(2002).
- [5] J.Y. Wan, X. M. Ou; Industry chain integration, specific investment and cooperation surplus distribution: empirical study of Wens' model. *Chinese Rural Economy*, (9), 28-42(2010). (in Chinese)

- [6] J.Y. Wan, X.M. Ou; Social embedding, the differential mode of governance and the stability of contract: a case study based on Dongjin model. *Chinese Rural Economy*, (7), 13-16(2011). (in Chinese)
- [7] C. Chen, B.L. Luo, et al.; Differential relationship pattern, region expansion and governance behavior: a case study of Dongjin agriculture company. *China Rural Survey*, (4), 44-53, 96(2010). (in Chinese)
- [8] C. Chen, B.L. Luo; An empirical study of the relational governance between chinese leading agricultural enterprises and their cooperative farmers. *China Rural Survey*, (6), 46-57(2011). (in Chinese)
- [9] Z.Q. Zhou, Y.H. Tian, et al.; On the relationship between financial capital financing structure and business performance of family business. *Journal of Convergence Information Technology*, 7(13), 101-109(2012).
- [10] Y.H. Cao; The impact of supply chain collaboration relationship for supply chain performance: an empirical study based on the Yangtze river delta. *Economy and Management*, 27(2), 44-50 (2013).
- [11] C. Zhang, C.Y. Xia; Agricultural product circulation channels: power structure and the construction of organization system. *Issues in Agricultural Economy*, (7), 28-35 (2005).
- [12] R.M. Morgan, S.D. Hunt; The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20-39(1994).
- [13] J.R. Brown, R.F. Lusch, et al.; Power and relationship commitment: their impact on marketing channel member performance. *Journal of Retailing*, 71(4), 363-392 (1995).
- [14] L.E. Goodman, P.A. Dion; The determinants of commitment in the distributor-supplier relationship. *Industrial Marketing Management*, 30, 287-300(2001).
- [15] L.P. Qian, Y. Zhao; Distributor's use of power and supplier's trust. *Economic Management Journal*, 32(7), 97-103(2010). (in Chinese)
- [16] J. Long, C.M. Chen; The impact of the power dependent of service intermediate on the innovative performance of the small and medium-sized enterprises: based on the view of social network. *Science Research Management*, 34(5), 56-63, (2013)(in Chinese)
- [17] J.R. Brown, R.F. Lusch; Conflict and power-dependence relations in retailer-supplier channels. *Journal of Retailing*, 59(4), 53-80(1983).
- [18] R.F. Lusch, J.R. Brown; A modified model of power in the marketing channel. *Journal of marketing Research*, 19, 312-323 (1982).
- [19] G.L. Frazier, J.O. Summers; Interfirm influence strategies and their application within distribution channels. *Journal of Marketing*, 48, 43-55(1984).
- [20] B.A. Boyle, F.R. Dwyer; Power, bureaucracy, influence and performance: their relationships in industrial distribution channels. *Journal of Business Research*, 32, 189-200(1995).
- [21] I. Geyskens, J.B. Steenkamp, et al.; A meta-analysis of satisfaction in channel relationships. *Journal of Marketing Research*, 36, 223-238 (1999).
- [22] G.L. Frazier, R.C. Rody; The use of influence strategies in interfirm relationships in industrial product channels. *Journal of Marketing*, 55, 52-69(1991).
- [23] X.D. Zhao, B.F. Huo, et al.; The impact of power and relationship commitment on the integration between manufacturers and customers in a supply chain. *Journal of Operations Management*, 26, 368-388 (2008).
- [24] E. Aderso, B. Weitz; The use of pledge to build and sustain commitment in distribution channels. *Journal of Marketing Research*, 29(1), 18-34 (1992).
- [25] K.R. Moore; Trust and relationship commitment in logistics alliances: a buyer perspective. *International Journal of Purchasing & Materials Management*, 34(4), 24-37 (1998).
- [26] B.J. Lalonde; M.C. Cooper; Partnerships in providing customer service: a third party perspective. Oakbrook, Illinois: Council of Logistics Management, (1989).
- [27] K.H. Lai, Y. Bao, et al.; Channel relationship and business uncertainty: evidence from the Hong Kong market. *Industrial Marketing Management*, 37(6), 713-724(2008).
- [28] X.M. Zhang, W. Chen; Trust, relationship commitment and cooperative performance in supply chain: an empirical study based on the perspective of knowledge trading. *Studies in Science of Science*, 29(12), 1865-1874(2011).
- [29] M.L. Wu; SPSS statistics application: the operation and application of SPSS. Chongqing University Press, Chongqing, (2010). (in Chinese)
- [30] C. Fornell, D.F. Larcker; Evaluating structural equation models with unobserved variables and measurement error. *Journal of Marketing Research*, 18, 39-50(1981).
- [31] S. Ganesan; Determinants of long-term orientation in buyer-seller relationship. *Journal of Marketing*, 58, 1-19 (1994).
- [32] I.G. Kwon, T.Suh; Factors affecting the level of trust and commitment in supply chain relationship. *Journal of Supply Chain Management*, 40, 4-14(2004).
- [33] C.R. Moberg, T.W. Speh; Evaluating the relationship between questionable business practices and the strength of supply chain relationships. *Journal of Business Logistics*, 24, 1-19(2003).
- [34] K.S. Coulter, R.A. Coulter; Determinants of trust in a service provider: the moderating role of length of relationship. *Journal of Services Marketing*, 16, 35-50(2002).
- [35] N. Kumar, L.K. Scheer, et al.; The effects of supplier farmers on vulnerable resellers. *Journal of Marketing Research*, 23, 54-65(1995).
- [36] J.T. Simpson, D.T. Mayo; Relationship management: a call for fewer influence attempts? *Journal of Business Research*, (39), 209-218 (1997).
- [37] B.F. Huo, Z.J. Han, et al.; The impact of power and relationship commitment on the integration of supply chain. *Journal of Management*, 16(4), 33-50 (2013). (in Chinese).