

Summer 5-25-2013

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## Recommended Citation

Yanan, Ma and Lijuan, Zhuang, "The Impact of Trust and Collaboration Pattern on Farmers' Learning Willingness and Enterprises' Knowledge Transfer Intension: Evidence of China" (2013). *WHICEB 2013 Proceedings*. 111.  
<http://aisel.aisnet.org/whiceb2013/111>

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# **The Impact of Trust and Collaboration Pattern on Farmers' Learning Willingness and Enterprises' Knowledge Transfer Intension: Evidence of China**

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**Abstract:** The purpose of this paper is to explore the impact of trust and collaboration pattern on the learning willingness of the farmers and the enterprises' knowledge transfer intension. The survey and literature research methodology are employed. 176 valid questionnaires were collected and OLS regression analysis is applied to answer whether trust and collaboration pattern have an impact on the learning willingness of the farmers and the enterprises' knowledge transfer intension. The results indicate that the trust between the farmers and enterprise affects the learning willingness of the farmers and the enterprises' knowledge transfer intension positively. The collaboration pattern affects the enterprises' knowledge transfer intension significantly. The tighter the cooperation between the farmers and enterprise, the stronger the enterprises' knowledge transfers intension is. The farmers' learning willingness has no significant difference under different collaboration patterns.

**Keywords:** Knowledge Transfer, Trust, Collaboration Pattern, Agricultural Leading Enterprise

## **1. INTRODUCTION**

With the transformation of China's economic system from the planned economy to the market economy, the government has reduced the agricultural extension investment. The efficiency of the agricultural extension organization of public sector led by the government has decreased and the speed of public benefit agricultural technology popularization has continuously slowed down<sup>[1-4]</sup>. The agricultural enterprises, as a representative of private sector, have played a more and more important role in agricultural research and agricultural diffusion<sup>[5]</sup>, and have become a vital force and channel in agricultural innovation and agricultural technology extension. Under such backgrounds, there is great practical significance in exploring the key factors which have an impact on the knowledge transfer between agricultural enterprises and farmers.

In existing research at home and abroad, research about agricultural technology diffusion most focuses on public benefit agricultural technology extension between public sector and farmers<sup>[6-7]</sup>, but few between private sector and farmers. From the perspective of knowledge management, there is much literature about knowledge transfer, but mainly focuses on intra-organization or inter-organization (between enterprises and institutions). Little existing literature concentrates on knowledge transfer between agricultural enterprises and farmers, a China's unique alliance mode consisting of an enterprise and a number of natural persons which is formed under a special social economic environment.

This paper attempts to explore the impact of trust and collaboration pattern on the learning willingness of the farmers and the enterprises' knowledge transfer intension in the process of knowledge transfer between agricultural enterprises and farmers from the perspective of knowledge management. And try to give answers to whether the learning willingness of the farmers and the enterprises' knowledge transfer intension changes under different levels of trust and different collaboration pattern, and how to promote the learning willingness of the farmers and the enterprises' knowledge transfer intension by controlling and changing trust and collaboration

pattern.

## **2. THEORETICAL BACKGROUND AND RESEARCH HYPOTHESES**

Agricultural leading enterprises refer to agricultural enterprises and groups with a solid foundation, wide radiate and powerful motive force. They have comprehensive functions, including developing market, guiding production, deepening processing and providing services. Agricultural leading enterprise plays an important role as a bridge between farmers and merchants in promoting agriculture industrialization. Farmers refers to rural residents groups who engage in agricultural planting, feeding and processing, etc, with a family as a unit. It is the basic unit of agricultural production activities. There are not only economic but also technical association between agricultural enterprises and farmers. Agricultural knowledge is continually transferred and diffused from agricultural enterprises to farmers by training and instruction, such as regularly organize concentrated technical training, print and distribute training course and material, organize farmers to exchange technique, go down to the countryside to demonstrate, provide technical advice and timely solve the extrusive problems, etc.

### **2.1 The farmers' learning willingness and the enterprises' knowledge transfer intension**

Agricultural enterprises' knowledge transfer intension refers to the degree of willingness of agricultural enterprises' to provide agricultural technical training and guidance for the farmers. Agricultural enterprise, as an economic interest body, whose willingness to transfer knowledge to farmers is mainly driven by the interest. Enterprise's interest the more related to farmers', the stronger the willingness is. In addition, due to the differences of enterprises' purposes, developmental stages, specific management styles or operational approaches, therefore the degree and ways of enterprises' knowledge transfer willingness are different.

Farmers' willingness of studying agricultural knowledge is that the degree of willingness of the cooperated farmers accepting a training and guidance from agricultural enterprises and applying in the production process. Economic interest, personality, nature, purpose and ambition play an effect on the willingness of learning.

### **2.2 The trust relationship between agriculture enterprises and farmers**

Trust has been defined as "the firm's belief that another company will perform actions that will result in positive outcomes for the firm, as well as not take unexpected actions that would result in negative outcomes for the firm<sup>[8-9]</sup>. It exists when one party has confidence in partner's reliability and integrity, when a firm believes its partner is being honest, and each will make strategic decisions from the best interests of the cooperation<sup>[10]</sup>.

Trust between agricultural enterprises and farmers are different from the traditional strategic alliances. The alliance between agricultural enterprises and farmers is the alliance of enterprises and natural persons, different from the alliance between different organizations. In such an alliance, trust building preconditions, trust process, trust content, trust way, trust type, trust period, trust degree, and trust direction are different. At the same time, the internal and external factors affecting the trust between leading enterprises and farmers are not the same.

Farmers' trust in leading enterprises includes agricultural enterprises' marketing ability, compliance rate, technology reliability, service, and risk control, etc. Generally, the longer the cooperative time, the more intimate relative cooperation, and the better understanding of each other, the higher compliance rate and the higher level of trust in leading enterprises in the process of cooperation. On the contrary, the more contradictions in the process of cooperation, the less trust between each other. Usually, farmers' trust in big enterprises and local enterprises is relatively high. The main way of farmers' trust in leading enterprises manifest as renewal of a contract.

Leading enterprises' trust in farmers depends on the control of farmers. Usually, enterprises judge controllability and reliability of farmers by personal property, whether local farmers or migrant workers, whether obey the guidance, whether has good faith. The extent and way of trust of leading enterprises in farmers manifest in the required deposit, deposits amount and relative economic benefit. If the enterprises do not trust farmers, they will directly not sign a contract with local farmers.

Mutual trust between leading enterprises and farmers builds on that the farmers understand that agricultural enterprises can bring benefits for them, enterprises believe that farmers could achieve enterprises' requirements, and work together to create economic benefit. No matter how deep the trust between agricultural enterprises and farmers is, it is still not fully trust, otherwise there will be no contract.

### **2.3 The collaboration pattern between agricultural enterprises and farmers**

The selection of collaboration pattern between Agricultural enterprises and farmers is affected by transaction characteristics and business environment, and other internal and external factors. Transaction characteristics contain the asset specificity investment, human capital specificity investment, transaction difficulty, etc. Business environment contains influence of intermediary organization and uncertainty of the environment (including uncertainty of leading enterprises' industry and market). The collaboration pattern between agricultural enterprises and farmers is various, including informal alliance, contractual alliance, contractual alliance of introducing relationship control, equity participated alliance, integrative alliance of agricultural enterprises and farmers etc. According to the difference of contract content and degree of tightness between agricultural enterprises and farmers, we can divide the above cooperation modes into three main collaboration patterns: loose, tight and integration.

Loose mode is also called "pure market contract type". Agricultural enterprises and farmers come to an agreement on commission on buying and selling. Enterprises order agricultural products or livestock products according to the market demand and sign a long-term buy contract with farmers. At the same time, enterprises provide seeds, pesticides, fertilizers and so on for farmers. Enterprises and farmers have no internal relations before and during production. Essentially, enterprises and farmers only have market transaction relationship. The only difference between pure market transaction way and loose collaboration pattern is that transaction price is confirmed in advance, but in reality, the enforcement is bad. Since the two sides have no capital investment, actual it is a kind of psychological contract. Default phenomenon often occurs during market volatility. Therefore, the rate of contract fail of agricultural order in loose mode is relatively high. This kind of cooperation is similar to service of commission on buying and selling provided by agricultural cooperative.

Tight mode is also called "quasi-market contract mode". In this mode agricultural enterprises and farmers sign order contracts. Both parties invest fixed assets and current capital. Leading enterprises buy agricultural products or livestock products at protective price from contracted farmers, and provide seeds, pesticides, fertilizers, technical guidance and quality supervision in the process of production. The essence of this collaboration pattern is that agricultural enterprises bring farmers into the vertical division of industry system to undertake the production function of planting and breeding. The enterprises fully involve in the management process of before, during and after production of farmers and provide service for farmers and regulate, guide and restrict the behavior of farmers, take scattered farmers as job shops, implement the quasi-workshop management, make them meet enterprises' requirements to form quasi-internalization and not fully marketization characteristics of division. As the company's cooperation producers, farmers are relatively independent, undertake the production cost and production risk, form the quasi-externalization that is a typical kind of intermediate organization.

The third type is integration. In this kind of cooperation mode, agricultural enterprises purchase land, put into fixed assets and circulating fund, employ farmers, pay salary according to farmers' performance of production, form the integrated management. The autotrophic enterprises in the countryside and small towns belong to this type.

### **2.4 Impact of trust on farmers' learning willingness and enterprises' knowledge transfer intension.**

Current research shows that trust dominates the performance of cooperation between organizations and affects the performance of knowledge transfer<sup>[11-13]</sup>. Trust can improve the acceptance and tolerance of each

other, and reduce conflicts. It is the most important factors to maintain good cooperative relations [14-16]. Hansen et al studied the impact of relation capital based on trust on exploration and exploitation tasks, believed that relation capital has an impact on the enterprises getting different types of knowledge [17]. Trust-based relation between enterprises and intra- enterprises, plays an important role in the process of affecting knowledge transfer and integration utilize. Trust can facilitate exchange and communication of the cooperators, promote transparency between enterprises and farmers. Certain level of trust can strengthen the will of communication of cooperators. Trust-based relation capital is an important way of affecting information acquisition and finishing a certain task [18-19]. thought that relation capital which is based on trust benefits knowledge acquisition by affecting the opportunities, motivation, willing, ability of the two parties to promote exchange and communication of both sides of knowledge transfer[20]. Lu explored the impact of interpersonal relationship on knowledge sharing within the organization, putted forward that team work and trust will affect knowledge sharing willingness and behavior through personal interest and individual efficacy feeling [21]. Zhou et al analyzed the foundation of trust relationship of staffs, and from the view of knowledge owner and knowledge distributors exposed the relationship between knowledge sharing and different categories trust, and the reasons of relationship establishment, and then putted forward the way of constructing trust relationship that promotes knowledge sharing willingness of staffs [22].

Through the in-depth interview on agricultural enterprises and farmers, we also found that in reality the trust relationship between agricultural enterprises and farmers will impact enterprises' knowledge transfer intension and farmers' learning willingness of agricultural technical knowledge. It is because that when farmers do not trust agricultural enterprises, they will turn deaf ear to the agricultural enterprises, and will not learn actively, and enterprises' knowledge transfer willingness will be weakened accordingly. While farmers trust enterprises, they are willing to accept enterprises' technical guidance, learn actively, and enterprises' knowledge transfer willingness will be enhanced accordingly. Generally, the higher level of trust between agricultural enterprises and farmers, the stronger of farmers' learning willingness and enterprises' knowledge transfer willingness are. On the contrary, the lower level of trust is, the weaker of farmers' learning willingness and enterprises' knowledge transfer willingness are.

Therefore, we put forward the following assumptions:

Hypothesis 1: The trust between agricultural enterprises and farmers affects intension of knowledge transfer of agricultural enterprises positively.

Hypothesis 2: The trust between agricultural enterprises and farmers affects farmers' learning willingness positively.

## **2.5 Impact of collaboration pattern on farmers' learning willingness and enterprises' knowledge transfer intension.**

Current research shows that alliances' cooperation mode and governance affect knowledge transfer. Kostova pointed out that the effective implementation of the knowledge transfer must introduce governance mechanism to resolve the conflicts and contradictions between members and ensure the normal operation of the organization [23]. Mowery compared the impact of governance mode of rights association and governance mode of independent contractual type on knowledge transfer system, points out that the willingness of knowledge sharing will be more stronger if the two sides of joint venture are common interest communities, joint venture is the most effective organization structure among the strategic alliances in the process of knowledge transfer[24]. From the point of view of the empirical study, Zhang and Li explored the impact of employment relationship on promoting knowledge sharing, and using the framework of psychological contract and taking research personnel as the research object, analyzed the impact of employment relationship on staffs' attitude and behavior towards knowledge sharing. The results show that the employment relationship plays an important role in shaping the

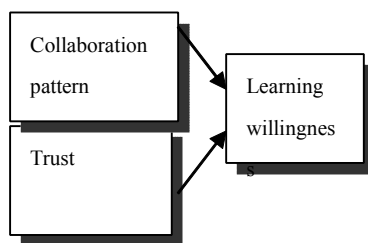
effective commitment of staffs for organization, and to a great extent, effective commitment has an impact greatly on the organizational citizenship behaviors shown by staff, and then influence staff s' attitude and behavior of knowledge sharing<sup>[25]</sup>. Through the in-depth interview on agricultural enterprises and farmers, we also found that the cooperation mode between agricultural enterprises and farmers have certain influences on enterprises' knowledge transfer intension and farmers' learning willingness. Loose, tight and integration, the three collaboration patterns between agricultural enterprises and farmers, cooperation content and input resource of both parties are different; rights and responsibility are different. In different cooperation mode, farmers' pressure and requirements of study from outside are different. Under the loose mode, pressure and supervision of study from external are low, in close and integration mode, pressure and supervision of study from external are high, and motivation of farmers is stronger. As an economic interests body, agricultural enterprises' knowledge transfer is driven by interests. When the relationship between agricultural enterprises and farmers becomes closer, the interest related is higher, and both sides become common interest communities, transfer willingness is stronger. In loose collaboration, agricultural enterprises' knowledge transfer intension is weak, and farmers usually learn technology by themselves. And in tight and integration mode, agricultural enterprises will lead the transfer of technical knowledge, leading enterprises' knowledge transfer intension is stronger, the effect of farmers' learning technical knowledge will be better.

Accordingly we put forward the following assumptions:

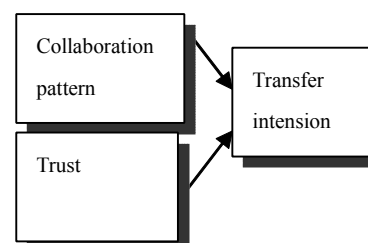
Hypothesis 3: The collaboration pattern between agricultural enterprises and farmers more closer, enterprises' knowledge transfer intension stronger is.

Hypothesis 4: The collaboration pattern between agricultural enterprises and farmers more closer, farmers' learning willingness stronger is.

The related concept models are as follow:



**Figure 1: Research model 1**



**Figure 2: Research model 2**

### 3. RESEARCH DESIGN AND METHODOLOGY

#### 3.1 Questionnaire design

The purpose of the research is to explore the impact of the collaboration pattern and trust on the agricultural enterprises' knowledge transfer intension and the farmers' learning willingness. Dependent variables are agricultural enterprises' knowledge transfer intension and the farmers' learning willingness. Independent variables include the collaboration pattern and trust. In empirical research, the concept and its measurement is the foundation of research. No clear understanding of the concept will lead to wrong measurement. No accurate measurement of the concept, survey results will have no meaning. In order to design scales of various influential factors, relevant empirical research literature at home and abroad has been analyzed, especially the scales in the literature. Questionnaire was preliminary designed after drawing on the experience of predecessors' research, combining the characteristics of specific agricultural production, the results of the in depth interviews, and farmers' actual situation and the understanding ability of the informants. Structural

questionnaire was used for the convenience to fill out the questionnaire and guarantee a high response rate. After preliminary designed, questionnaire was further modified through a series of pilot tests, including focus group discussion, a certain scale of sample pilot tests, etc. to ensure its rationality and applicability. The followings are the items to measure the related concepts and variables.

As a latent variable, level of trust between farmers and agricultural enterprises is measured by the following items: 1) when farmers and leading enterprises cooperate, both sides can trust each other; 2) believe that leading enterprises' technical knowledge can help farmers solve technical problems; 3) when cooperating with leading enterprises, farmers can exchange of views openly. Agricultural enterprises' knowledge transfer intension can be measured with the following items. 1) Agricultural enterprises are willing to impart the related agricultural technology to farmers through training, consulting, etc. 2) When farmers are experiencing technical problems, leading enterprises are always positively to give help to solve. 3) Leading enterprises are willing to provide farmers with post-technical support and services, offer technology to improve programs. Farmers' learning willingness is measured by the following items. 1) Farmers are willing to participate in the agricultural technical training provided by agricultural enterprises. 2) Farmers are willing to ask agricultural enterprises' technical personnel for consultation and advice when they encounter some practical problems during the production process. 3) Farmers are willing to read different kinds of agricultural technical materials in their spare time. In all these questions, A 6-point likert scale was used with "1" for "not suitable" and "6" for "extremely suitable". Collaboration mode between agricultural enterprises and farmers is category variable, which is divided into three categories: loose, tight and integration, shown by two dummy variables, among which integration as benchmark.

### 3.2 Sampling and data collection

A large scale survey about the technology transfer from local agriculture enterprises to farmers was held by students during the summer vacation in the rural areas in Guangdong Province. 300 questionnaires were distributed in total, out of that there were 190 returns. The response rate was about 63.33%. 176 questionnaires were valid with a usability rate of 92.63%.

According to the valid data, 29% of the farmers involved in the survey were women, 71% were men. The age of the informants ranges from 20 to 64 with an average age of 42. The age of the education year ranges from 3 to 16 with an average of 9, that is junior high school graduates. The year of engagement in agricultural production varies from 1 to 42 with an average of 8. Duration of the cooperation with agricultural enterprises ranges from 1 to 13 with an average of 8.3. The three patterns of cooperation between agricultural enterprises and farmers are the loose alliance, accounting for 28%, the tight alliance, occupied 35%, and integration cooperation, 37%. Detailed information can be shown in Table 1.

**Table 1. Profiles of farmers.**

Sex	Total	Education year	Total	Age	Total
Female	29%	< 7years	19%	20-29	11%
Male	71%	7-9 years	41%	30-39	24%
		9-12 years	33%	40-49	43%
		13-16years	7%	50-59	19%
				60-69	3%

The year of agricultural production engagement	Total	The year of the cooperation between farmers and the agricultural enterprise	Total	The cooperation patterns between farmers and agricultural enterprises	Total
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< 5 years	26%	< 1 year	5%	Loose alliance	28%
5-10 years	39%	1-3 years	68%	Close alliance	35%
10-15 years	17%	4-6 years	22%	Integration cooperation	37%
15-20 years	10%	> 6 years	5%		
20-25 years	7%				
> 25years	1%				

Prior to data collection, the content validity was supported by previous literature, in-depth interviews and pilot tests. After collecting the questionnaires, using Cronbach's Alpha to test the reliability of the construct. The result shows that the Cronbach's alpha values are above 0.8, it indicates that all constructs are reliable for this research<sup>[26]</sup>.

**Table 2. The Cronbach's alpha values.**

Construct	Number of questions	Cronbach's Alpha
Enterprises' knowledge transfer intension	3	0.816
Farmers' learning willingness	3	0.859
Trust between agricultural enterprises and farmers	3	0.815

### 3.3 Regression model construction

Based on the analysis of the relationship between the variables, the following multiple regression models are constructed to analysis the impact of trust and collaboration pattern on learning willingness of the farmers and enterprises' knowledge transfer intension. The collected data in the survey is used to estimate and test the parameter of the regression model.

$$Model(1): F = \beta_0 + \beta_1 Trust + \beta_2 Tight + \beta_3 Relax + U(1)$$

$$Model(2): E = \alpha_0 + \alpha_1 Trust + \alpha_2 Tight + \alpha_3 Relax + V(2)$$

In the above model, F represents learning willingness of the farmers, E represents enterprises' knowledge transfer intension. Trust refers to the trust relationship between agricultural enterprise and farmer. Tight is dummy variable, when its value is equal to 1, represents tight collaboration pattern, when its value is equal to 0, represents other collaboration pattern. Relax is dummy variable, when its value is equal to 1, represents loose collaboration pattern, when its value is equal to 0, represents other collaboration pattern. U and V refer to random errors in model 1 and model 2, reflect that all random factors except trust and collaboration patterns which will have an impact on the learning willingness of the farmers and enterprises' knowledge transfer intension.

## 4. ANALYSES AND RESULTS

Multiple regression analysis is used to test the research hypotheses. The estimates were generated by using SPSS 16. The results of regression model are shown in Table 3. The main conclusions of empirical studies are explained as follows:

### 4.1 The regression analysis of impact of collaboration pattern and trust on farmers' learning willingness

The coefficient of determination R<sup>2</sup> of the model 1 is 0.126. The value of the F test statistics is 8.27, which is significant at the level of 0.01. This indicates that the trust and collaboration pattern combine to have a significant effect on farmers' learning willingness. The coefficient of trust between agricultural enterprise and farmers in model 1 is 0.11, significant at 0.05 levels, indicating that each 1-unit increase in the trust increases averagely 0.11 unit of the learning willingness of the farmers. The regression coefficient of impact of the two



dummy variables, tight mode and loose mode on farmers' learning willingness is -0.09 and -0.03, but it still cannot pass the significance test at 0.1 level, indicating that in the study samples the collaboration pattern does not have significant impact on the farmers' learning willingness.

#### **4.2 The regression analysis of impact of collaboration pattern and trust on agricultural enterprises' knowledge transfer intension**

The coefficient of determination  $R^2$  of the model 1 is 0.344. The value of the F test statistics is 30.13, which is significant at the level of 0.01. This indicates that the trust and collaboration pattern combine to have a significant effect on agricultural enterprises' knowledge transfer intension. The coefficient of trust between agricultural enterprise and farmers in model 2 is 0.71, significant at 0.01 levels, indicating that each 1-unit increase in the trust increases averagely 0.71 unit of the knowledge transfer intension of the enterprise. The regression coefficient of impact of the two dummy variables, tight mode and loose mode on enterprises' knowledge transfer intension is -0.12 and -0.45, both significant at the level of 0.05. In this research the integration mode is the benchmark of the collaboration pattern. The above results indicate that when other variables remain unchanged, the knowledge transfer intension of agricultural enterprise under the tight mode is averagely lower 0.12 units than integration mode, the loose mode is 0.45 units lower than integration mode. That means among these three modes, the intension of knowledge transfer of enterprises is strongest under integration pattern, medium under tight mode and weak under the loose pattern.

Compare the result of model 1 with model 2, we can find that trust is positively relates to both the intension of knowledge transfer of enterprise and the farmers' learning willingness. Higher level of trust results in stronger knowledge communication intentions of farmers and enterprises. However, as to collaboration pattern, the two models present different results. When other variables remain unchanged, the closer cooperation pattern is, the stronger knowledge transfer intension of agricultural enterprise has. However the farmers' learning willingness has no significant difference under different collaboration patterns.

Based on the above regression results, we can draw the conclusions as below:

Hypothesis 1: "The trust between agricultural enterprises and farmers affects the intension of knowledge transfer of agricultural enterprises positively". The empirical evidence displayed in model 2 support this hypothesis.

Hypothesis 2: "The trust between agricultural enterprises and farmers affects farmers' learning willingness positively". The estimated results in model 1 suggest support hypothesis 2.

Hypothesis 3: "The collaboration pattern between agricultural enterprises and farmers more closer, enterprises' knowledge transfer intension stronger is". The empirical evidence displayed in model 2 support this hypothesis.

Hypothesis 4: "The collaboration pattern between agricultural enterprises and farmers more closer, farmers' learning willingness stronger is". The estimated results in model 1 can not support hypothesis 4.

**Table 3. Impact of collaboration pattern and trust on farmers' learning willingness and enterprises' knowledge transfer intension: OLS regression results.**

Independent Variables	Dependent Variables	
	Model 1 Farmers' learning willingness	Model 2 Enterprises' knowledge transfer intension
Constant	3.25 (.00)	.99 (.02)
Trust between agricultural enterprise and farmers	.11** (.03)	.71*** (.00)
Tight collaboration pattern	-.09 (.53)	-.12** (.02)
Loose collaboration pattern	-.07 (.60)	-.45** (.04)

R2	.126	.344
F	8.27***	30.13***
d.f.	(3,172)	(3,172)
p-value	.000	.000
n	176	176

Note: p-values for each parameter estimate are in parentheses. \*indicates estimate significant on the level of 0. 10, \*\* indicates estimate significant on the level of 0. 05, \*\*\* indicates estimate significant on the level of 0. 01.

## 5. CONCLUSIONS AND MANAGERIAL IMPLICATIONS

The purpose of this paper is to explore the impact of collaboration pattern and trust on farmers' learning willingness and enterprises' knowledge transfer intension from the perspective of knowledge management. The survey and literature research methodology are employed. Conclusions can be reached as follows.

Firstly, the trust relationship between agricultural enterprises and farmers affects the farmers' learning willingness and enterprises' knowledge transfer intension positively. The higher level of trust between agricultural enterprises and farmers, the stronger enterprises' knowledge transfer intension and farmers' learning willingness are. On the contrary, the lower level of trust, the weaker farmers' learning willingness and enterprises' knowledge transfer intension are. Enhancing both sides trust can improve enterprises' knowledge transfer intension and farmers' learning willingness, making the effect of technical knowledge transfer better.

How to enhance the level of trust between agricultural enterprises and farmers? From the perspective of the agricultural enterprises, choosing and cooperating with an honest farmer can help to improve trust of agricultural enterprises in farmers. It is helpful for improving farmers' trust in enterprises by improving operating capability of enterprises and their technical strength, setting up enterprises' brand and reputation, implementing the cooperation agreement with farmers, and bringing farmers benefits.

Secondly, the closer the cooperation mode between agricultural enterprises and farmers, the stronger enterprises' knowledge transfer willingness is. On the contrary, the looser the cooperation mode, the weaker enterprises' knowledge transfer willingness is. The reason is that as an economic interests body, knowledge transfer of agricultural enterprises is mainly driven by interests. The closer the cooperation mode, the higher degree of dependence of agricultural enterprises on farmers. Its profit depends on the realization of farmers to produce agricultural products which meet the technical quality requirements of enterprises, so enterprises' knowledge transfer willingness is stronger, expecting farmers to master technology, guarantee quality and produce agricultural products at low cost.

Thirdly, although the cooperation mode between agricultural enterprises and farmers impacts enterprises' knowledge transfer, any cooperation mode between agricultural enterprises and farmers does not have a significant impact on farmers' learning willingness. The reason may be that as agricultural producers, farmers have relative independence and farmers' learning willingness is mainly driven by the internal economic interest, not from external partner's supervision and pressure. No matter how close cooperate with enterprises, learning technology well, the effect of planting and breeding is relatively good, the cost falls, profit will corresponding increase. Therefore cooperation mode does not have a significant impact on farmers' learning willingness.

## ACKNOWLEDGEMENT

This paper was supported by Humanities and Social Sciences Fund , Chinese Ministry of Education ( Grant No: 12YJA630089 ) ; National Natural Science Foundation of China ( Grant No: 71203066 )

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