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Customer Relationship and Traders' Performance: An Empirical Evidence from 50 Agricultural Wholesale Markets in China

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Using data collected from questionnaire survey on traders, applying quantitative analysis method, the study develops a model for determinants of traders' performance and explores the effect customer relationship has on traders' performance. It's found that customer relationship has large positive effects on traders' performance. The main effect comes from regular selling relationship, while regular buying relationship has no significant effect. This paper also measures the average effect customer relationship and regular selling relationship each has on traders' performance. Based on the findings, it's recommended that traders extend and stabilize selling channels, and demand information be supplied to traders.

INTRODUCTION

Along with the reform of agricultural distribution system, wholesale markets for agricultural products emerged in the early 1980s and developed gradually since its appearance. Agricultural wholesale markets gradually take the place of former state–owned agricultural product enterprises and play an important role in agricultural distribution system. Agricultural wholesale markets perform important functions of product distribution, price discovery, information transmission and transaction payment. There are more than 4000 agricultural wholesale markets around China today. They have become an important part of agricultural marketing systems. The operation of agricultural wholesale market has fundamental influence on agricultural product' price stability, its distribution efficiency and international competitiveness. China's wholesale market system is still in the early stage of development, most of the traders on the market haven't been specialized. They provide varying combinations of market services. Some of them perform buying, bulking, crating, transporting and resale functions. They operate individually and trade freely with suppliers and buyers, making their own management decisions and taking full responsibility for their own.

During the process of trade, some traders have formed relatively steady and continuous customer relationships with their suppliers or buyers. Traders purchase from some regular suppliers and resell to regular clients. Regular suppliers often offer a lower price and the quality and quantity of the product is ensured. Similarly, traders are committed to their regular clients, offering them a lower price and stable supply of products. In such transactions, long–term steady and exclusive market relationships are preferable to short–term profit maximization.

These long–lasting reciprocal relationships are built on mutual trust, but in many cases may be further sanctioned through personal friendship, kinship or other social bonds that complement economic interaction (Finan, 1988; Wang, 2005). Customer relationships are prevalent in agrarian markets, characterized as equilibrating relationships by Plattner (1983) and *freguês* relationships by Finan (1988). Most research addresses its causes and argues that people develop long–term relationships to cope with the imperfect market conditions (Fafchamps, 1998a, b; Finan, 1988; Plattner, 1983). If traders manage to do this, customer relationship should have promoted their performance. Some research provides normative analysis on its performance implications but seldom offers empirical evidence. The lack of empirical evidence is critical, because of the imperfect market institutions in developing countries. If it's verified that customer relationships could promote traders' performance, it can be encourage as a supplement for imperfect market conditions. This paper represents an attempt to conduct empirical investigation on customer relationship's impact on agricultural traders. The research has important policy implications.

The paper is organized as follows: first, a review of previous studies on customer relationships is provided. Second, the conceptual framework and research hypotheses are presented. Introduction to data collection and measures follows, after which methodology and results are presented. Finally, the paper finishes with conclusions.

LITERATURE REVIEW

Most studies on customer relationship have revealed its causes, in other words, its benefits. Customer relationship has been treated as a measure to reduce transaction cost. Transaction costs involve all of the costs

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associated with conducting exchanges between firms and can be decomposed into ex ante transaction costs, or search and contracting costs, and ex post contracting costs, or monitoring and enforcement costs (Williamson, 1985; Henart, 1993; North, 1990). Traders engaged in long–term relationships don't have to look for suppliers or clients repeatedly and they will have regular supply and sales. Besides, expectations of relationship continuity help to economize on costs associated with complex contingent claims ex ante and enable the parties involved to adapt to unanticipated changes (Finan, 1988; Heide and Stump, 1995). Long–term relationships also facilitate contract enforcement (Minten and Fafchamps, 1999). These findings are consistent with theoretical models on trust among firms in an environment with transaction costs (Dyer and Chu, 2003).

Customer relationships also enable traders to deal with their partners in a more trustworthy and cooperative manner by granting and receiving credit, sharing risks and exchanging information. Most of the agricultural trade– sales as well as purchases – takes place without orders and without credit and are cash–and–carry transactions (Minten and Fafchamps, 1999). Formal credit market is inaccessible for agricultural traders in developing countries (Finan, 1988), but some of them can receive credit from their partners. Credit from suppliers can significantly add to their buying capacity. Traders may grant credit to their steady clients. Those who give credit to clients should similarly be better able to attract customers and compete successfully (Fafchamps and Minten, 1998c). Customer relationships also promote risk sharing between traders and their partners. Agricultural market is full of risks, characterized as perishable goods and highly variable prices. Traders engaged in customer relationships could ask steady producers to share in potential misfortunes caused by price variation, by adjusting farm prices after the wholesale transaction (Finan, 1988). Based on mutual trust, customer relationships will promote sharing of timely and meaningful information between partners. Finan (1988) finds that middlemen in northeast Brazil vegetable market often provide their regular suppliers with market advice as to consumer preferences. Agricultural Traders in Madagascar obtains information on the market situation through personal contracts with other traders, suppliers and clients (Minten and Fafchamps, 1999).

As to customer relationships' performance implications, Plattner (1983) tested the impact of middlemen's relationship with consumers. It shows that customer relationship has significant positive impact on traders' sales. Chain members have much market power relative to consumers. As wholesale markets play an important role in the supply chain, traders' bargaining power on their suppliers and clients may have different impact on traders' performance. Long–term relationships' performance implications on supply chain members are investigated in marketing literature. Relationship marketing encourages enterprises to develop and maintain long–term relationships with their suppliers and clients.

Most of the research in this field addresses it in automobile industry (Dyer and Chu, 2003; Kalwani and Narayandas, 1995; Heide and Stump 1995). There is great difference between automobile industry and farm product market, but similar research in the agricultural product supply chain is rare. The most relevant one is Duffy and Fearne (2004). This paper examines the impact of partnerships between UK retailers and fresh produce suppliers on supplier performance. The results provide support for the theory that partnerships can help a firm to improve its performance.

In this article, we will explore the impact of customer relationships on traders' profitability. Customer relationships may influence traders' profits in many ways. We will separately investigate the customer relationships with suppliers and that with clients on traders' profits.

THEORY FRAMEWORK AND HYPOTHESIS

China's agricultural wholesale markets are predominated by multifunction nonspecialized traders. They buy from farmers or assemblers and resell in the market. Most of their clients are wholesalers, retailers or restaurants. Some traders have developed customer relationships with theirs suppliers and clients. As suppliers, traders and clients are in different positions in the supply chain, we will examine relationships with suppliers and those with clients separately.

Benefits of customer relationships with suppliers

Traders will benefit from customer relationships with suppliers. Suppliers will get steady sales from the relationship and may pass on the benefits to traders in the form of price reductions. Besides, customer relationships also bring traders a steady supply. Few markets offer supply information service and traders seek suppliers by themselves. It's easy when there are enough agricultural products, but very difficult during periods of short supply. Customer relationships function as an implicit agreement between suppliers and traders. Traders purchase from several selected suppliers–even when markets are oversupplied and prices are low. In return for this loyalty, the suppliers agree always to sell to the traders even during periods of short supply and high prices when a competing buyer may offer slightly more (Finan, 1988). In this way, traders with long–term suppliers will get steady supply and save search costs and contracting costs. Apart from regularity in supply, relationships between suppliers and traders also help to reduce inspection costs. Quality and safety of agricultural products is hard to check. The checking of quality is an important cost and most of the traders check the quality themselves. When doing business with regular suppliers, however, inspection is often unnecessary, because regular suppliers will try to ensure the quality of products for the sake of future transactions. Not having to inspect allows the traders to devote more time to other activities and thus to do more business (Fafchamps and Minten, 1998b). Cash–and–carry

transactions are prevailing practices in China's agricultural markets. But suppliers may grant credit to long–term traders who have showed credibility over time. Trade credit is very helpful as formal credit is inaccessible for most traders. When they are facing financial difficulties, traders with trade credit can continue their buying and selling business, while others might fail to survive. Those who receive credit have more working capital to play with and should, other things being equal, also be more productive and expand their business (Fafchamps and Minten, 1998c). Agricultural market is full of risks, such as price variation. Customer relationships also function as a risk sharing mechanism. Finan (1988) finds that middlemen ask their steady suppliers to share in potential misfortunes caused by price variation, by adjusting farm prices after the wholesale transaction. Insurance like this will help improve traders' performance.

In sum, customer relationships with suppliers could help traders reduce search costs, contracting costs and inspections costs and thus contribute to operation cost reduction; traders also benefit from steady supply and relatively lower price; trade credit and risk sharing facilitates traders' business. These benefits will help improve traders' performance. Therefore, we propose:

Hypothesis 1: *Customer relationships with suppliers have a positive effect on traders' performance.*

Benefits of customer relationships with clients

Traders perform the functions of suppliers when they are doing business with clients. Customer relationships will benefit clients like we have discussed in the previous section. Traders themselves will benefit from the relationship in a similar way. Customer relationships with clients will bring traders a regular sale and lower search costs and contracting costs. This is very helpful especially when the market is oversupplied and products are perishable. Regular clients may demand a lower price to share the benefits and resulting in margin reduction for the traders. It's probably that traders could make up the price reduction by bargaining lower supply price from regular suppliers. Those without regular suppliers won't suffer a margin reduction either, as other benefits from the relationships will exceed the potential margin loss.

Risk sharing between suppliers and their long–term clients discussed in the previous section also function as an insurance mechanism for the suppliers. In this section, traders play the role of suppliers and will benefit from the mechanism. In the absence of formal insurance market, this informal insurance mechanism enables them to engage in high risk, high reward activities and will promote their performance.

In addition, customer relationships facilitate contract enforcement in economies characterized by poor market institutions. It thus enables traders to engage in more sophisticated ways of trading: forward ordering and granting credit (Minten and Fafchamps, 1999). Unlike wholesale markets in Japan, China's agricultural markets have little restriction on traders. Some traders

are short volatility ones. It's probably that they are nowhere to be found after transaction. Payment default is a potential risk. But regular clients are unlikely to default for the sake of future benefits from the relationship. And they have shown their credibility over time. Therefore, traders will accept regular clients' order or grant them trade credit. These measures will enhance transaction efficiency and help traders compete successfully.

Finally, customer relationships with clients can function as a cheap reliable source for information. Regular clients could provide traders timely and accurate information on the consumer market out of trust. However, it won't happen in the absence of customer relationships since the interests of traders and their suppliers and clients are contradictory. Knowing better about customer needs and preferences, traders are more likely to make right decisions and have better performance compared to their counterparts.

The discussion above suggests that:

Hypothesis 2: *Customer relationships with clients have a positive effect on traders' performance.*

Analysis in section 3 suggests that customer relationships with either suppliers or clients will help improve traders' performance. We can expect that traders engaged in customer relationships with either suppliers or clients or both will outperform those without any kind of customer relationships. This hypothesis may be stated as follows.

Hypothesis 3: *Customer relationships with suppliers or clients or both have a positive effect on traders' performance.*

DATA AND VARIABLES

Data collection

A survey of agricultural traders was conducted in China from August to September 2004, which was carried out by a project team from School of Agricultural Economics and Rural Development, Renmin University of China. The survey covers 10 provinces or municipalities directly under the central government. On average, we draw 5 wholesale markets from each province or municipality, and then 30 traders are drawn at random from each market. 701 questionnaires were returned. Wholesale markets in production area, distribution area and consumption area are included. Respondents include traders with many years of experience, as well as those just get started in trading business. In this paper, we obtain 304 valid questionnaires from the total sample, with a valid rate of 43.4%.

Measures

Customer relationships are evaluated by asking respondents whether they have regular suppliers and regular clients. Statistical results show that, out of 304 traders, 217 of them have regular suppliers or regular clients or both, taking up 71.4%. We can learn that a clear majority of traders have customer relationships. 54.93% of respondents, 167 traders, have regular suppli-

Table 1. Variables description

1. Dependent Variable	Unit		Mean	Std. Dev.
Net revenue	RMB		102117	273459.70
2. Independent Variables				
(1) Customer relationships				
Regular suppliers or sellers or both	Yes	1	71.38%	45.27%
Regular suppliers	Yes	1	54.93%	49.84%
Regular clients	Yes	1	53.95%	49.93%
(2) Capital and equipment				
Working capital	RMB		297207.60	664498.70
Value of equipment	RMB		26324.75	87677.68
(3) Labor and traders' age				
Labor force	Number		5.16	7.62
Trader's age	Years		39.37%	9.04
(4) Location				
In the east region of China	Yes	1	23.68%	42.58%
In the west region of China	Yes	1	50.33%	50.08%

ers. With a similar percentage (53.95%), 164 traders have been engaged in customer relationships with their clients. We use traders' net revenue to evaluate their performance. The data shows that the net revenue of surveyed businesses varies greatly, from 300 RMB to 3,000,000 RMB in 2003. But most of the traders only have small amounts of net revenue. They are fairly unsophisticated by modern standards, as 52 percent of respondents' net revenue is below 30,000 RMB.

Variables and descriptive statistics

We will examine the impact of customer relationships on traders' performance with two models. Traders' net revenue is dependent variable in both models, but the independent variables we are interested in–customer relationship variables – are different. In one model, we use having "regular suppliers or clients or both" as a customer relationship variable; in the other model, however, having "regular suppliers" and having "regular clients" are both used as customer relationship variables (The reason for such practice will be discussed in detail in section 5). Control variables include labor force, working capital, value of equipment, trader's age and location, and their main characteristics are summarized in Table1.

METHODOLOGY AND RESULTS

Methodology

Regression analysis is used to determine the quantitative impact of customer relationships on traders' performance. We will take the approach used in Fafchamps and Minten 1998(c) by denoting traders' production function as:

$$Q \quad F(L, K, H, R) \qquad (1) \text{ or}$$

$$Q \quad F(L, K, H, S, C) \qquad (2)$$

Where Q stands for output, L for labor, K for physical capital and H for human capital. In equation (1), customer relationships are denoted R. In equation (2), however, customer relationships with suppliers and

those with clients are denoted B and C respectively. R, S and C are corresponding to the key independent variables in Table1 respectively: "regular suppliers or sellers or both", "regular suppliers" and "regular clients". Equation (1) is meant to evaluate the effect of engaging in some kind of customer relationships on traders' performance. It will tell us, other things being equal, whether traders that have customer relationships with their suppliers, clients or both will outperform those that don't have any customer relationships. Equation (2) is developed to explore the relative impact of customer relationships with suppliers and those with clients. If R would have no effect on performance, its inclusion in the production function would lead to insignificant regression coefficients. Similar reasoning suggests if S and C would have no effect on performance, their inclusion in the function would lead to insignificant regression coefficients either.

Two corresponding specified models are developed from equation (1) and equation (2) respectively:

$$\ln Q \quad _0 \quad _1 W \quad _2 E \quad _3 \ln L \quad _4 \ln K \quad \dots \quad _i R \tag{a}$$

$$\ln Q \quad _0 \quad _1 W \quad _2 E \quad _3 \ln L \quad _4 \ln K \quad \dots \quad _i S \quad _i \quad _1 C \tag{b}$$

W stands for the variable named "in the west region of China", E for "in the east region of China" andfor error term. The functional form for regression analysis is basically a Cobb–Douglas production function and is estimated in log–log form, i.e., the dependent variable is the log of net revenue. Regressors such as labor, working capital and value of equipment are also in logs. The estimation of the two models by ordinary least squares (OLS) is presented in the first four columns of Table 2.

Results

R shows a positive regression coefficient of 0.2604, and is significant at the 10% level, which suggests that customer relationships help enhance traders' perfor-

Table 2. Impact of customer relationships on traders' performance

Variables		Model (a) Coefficient	Model (a) T value	Model (b) Coefficient	Model (b) T value	Mean	Elasticity	Net revenue
Regular suppliers, or clients or both	dummy	0.2604	1.87*			0.7138	0.1859	18984
Regular suppliers	dummy	–	–	0.1094	0.82	0.5493	0.0601	6137
Regular clients	dummy	–	–	0.2676	2.05*	0.5164	0.1381	14102
Working capital	log	0.3523	8.66***	0.3489	8.54**	–	0.3489	35629
Value of equipment	log	0.0012	0.04	−0.0003	−0.01	–	−0.0003	–
Labor force	log	0.3967	6.28***	0.3953	6.24**	–	0.3953	40367
Trader's Age	log	−0.1478	−0.57	−0.1112	−0.42	–	−0.1112	–
In the east region of China	dummy	−0.2017	−1.12	−0.2720	−1.47	0.2368	−0.0478	−4881
In the west region of China	dummy	−0.7198	−4.88***	−0.7464	−5.04**	0.5033	−0.3623	−36997
R²		0.4506		0.4552				
Adjusted R²		0.4376		0.4404				

NOTE. *p 0.1, **P 0.05, ***P 0.01

mance, hypothesis 3 is accepted. Labor force and working capital show a positive elasticity of 0.3967 and 0.3523 respectively, indicating that their effects on traders' performance are significant. Traders in relatively underdeveloped west region of China perform worse than their counterparts in other region of China. These input variables exhibit the same type of behavior with respect to experience in business, but the elasticity of the value of equipment is neither high nor significant, which is difficult to explain.

Results from model (b) reveal that labor force, working capital and dummy variable for west region are all significant at the 0.01 level of significance. These findings are consistent with those from model (a). In agreement with expectations, regular clients are associated with higher net revenue. With a partial regression coefficient of 0.2676, the variable has a large positive effect on traders' performance, hypothesis 2 is accepted. Other things being equal, traders with regular clients will have a net revenue 26.76 percent higher than that of their fellow traders on average. Regular suppliers, however, have no significant effect on traders' performance. Hypothesis 1 is rejected. One possible interpretation is that there is no longer shortage of agricultural products in China nowadays due to technical progress and structural adjustment after 20 years of reform. Very few kinds of agricultural products are in short supply. It's much easier for traders to ensure a steady supply. In this context, regular suppliers are not of much significance to traders. In addition, traders engaged in customer relationships may quit potential better suppliers and restricted themselves to current suppliers. This kind of dependence is likely to counteract the benefits of regular suppliers. As most of the wholesale markets are filled with agricultural products, traders selling products face fierce competition. Traders with regular clients will benefit from steady sales, cost reduction and efficient transactions.

On the basis of regression results, we work out the elasticity between some key regressors and traders' net revenue and further calculate the average change of traders' performance. The results are presented in the last two columns of Table 2. It's shown that, on average,

customer relationship with supplier or clients will bring traders 18,984 RMB, and that with regular clients will increase traders' profits by 14102 RMB annually. An increase of 1 percent on traders' labors will lead to an average increase of 40,367 RMB on annual net revenue. And an increase of 1 percent on traders' working capital will bring an increase of 35,629 RMB on their profits. Besides, compared with their counterparts in the middle region of China, traders in the west will suffer an average decrease of 36,997 RMB on net revenue.

CONCLUSIONS

In China's agricultural wholesale markets, customer relationships are developed by traders to cope with the imperfect market institutions. It's expected that customer relationships help to reduce transaction costs, promote information sharing and risk sharing and thus enhance traders' performance, but whether they can improve traders' performance remains untested. Using data from a survey on agricultural traders in China, this paper tentatively examines the quantitative impact of customer relationships on traders' performance.

Results document the strong positive effect that customer relationships have on the performance of agricultural traders in China. The effect mainly comes from relationships with clients, while customer relationships with suppliers have no significant effect on traders' performance. We attribute this finding to the supply and demand conditions in the agricultural market. As very few products are in short supply today, the benefits of customer relationships with supplies are not so great. In addition, among other factors affecting performance, labors and working capital both have significant positive effect on traders' performance. Finally, this paper also works out the average impact of customer relationships on traders' performance.

Based on our findings, some suggestions are provided. Agricultural traders should extend and stabilize selling channels by developing customer relationships with clients. In the case of adequate supply, it's recommended that traders select suppliers according to price and product quality, rather than overly depend on

current suppliers. If it's feasible, traders are suggested to add working capital to trading business and employ more workers to enhance performance. Demand information should be provided to traders to equilibrate supply and demand. Formal institutions should be improved to mitigate market players' dependence on informal institutions.

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