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Full Length Research Paper

Farmers' brand perception toward agricultural machinery in China

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With the development of agricultural machinery industry in the modern market economy, brand variety of agricultural machinery will face an increasing strong competition in China, so a consumer-based brand research on agricultural machinery will be necessary. A questionnaire survey was conducted in this paper focusing on Chinese farmers' perception toward brands of agricultural machinery. The empirical study with tractor brands indicated that farmers showed different awareness to domestic and foreign agricultural machinery brands. National tractor brands got more attention from consumers and Dong fang hong (YTO) brand gained the most familiarity. Foreign brands, New Holland and John Deere had higher perceptive price, but Chinese brands, Dong fang hong (YTO) and Foton acquired higher perceptive value, and domestic brands, Dong fang hong (YTO) and Shi feng got more preference and purchase intention from consumers.

Key words: Brand perception, perceptive price, brand value, agricultural machinery.

INTRODUCTION

Agricultural machinery is a kind of important producer goods for farmers as it plays a significant part in agricultural production. With the development of agriculture and agricultural machinery industry, there are rapidly growing requirements for agricultural machinery from consumers, agricultural machinery corporations will face an increasing fierce competition in the market. In the modern market economy, being the main body of agricultural machinery market, farmers' attitude, perception and preference toward a brand will largely influence the sales volume of this brand, and even the survival and development of the enterprise. Therefore, a brand research based on farmers' awareness is very necessary and crucial. There was plenty of research on brand management based on consumers' perspective, such as consumers' brand experience (Bernd, 2009), brand image and consumers' purchase decision (Xiong et al., 2010), brand competition (Din, 2009) and brand satisfaction (Zen, 2009). However, few literatures focused on consumers' view to assess a brand of agricultural machine. Moreover, there were not many researchers paying close attention to the consumer-based brand research on agricultural machinery in China. Some papers were involved with the brand research on agricultural machinery in China, but mostly were qualitative research and macro-approach (Wang, 2006; Liu, 2007), few focused on empirical studies.

This paper aimed to investigate and discuss farmers' brand awareness, purchasing behavior, brand familiarity and value, brand intention toward the main brands of agricultural machinery in China based on an empirical survey. Considering the variety of agricultural machinery and the big differences between different products, tractor was taken as the subject of empirical research for its important role in agricultural production in China.

MATERIALS AND METHODS

Conceptual framework

Brand perception was considered the base of consumers' brand attitude and purchase intention (Lee and Back, 2008; Zhuang and Yu, 2010), also it was improved to be an important antecedent of brand value (Soyoung et al., 2009). Brand familiarity is one of the main concepts in brand perception, familiar brands are more noticeable and preferred by consumers (Rindfleisch, 1998; Niraj and Jing, 2009). However, consumers don't always choose the best goods actually due to their economic conditions, thus perceived price became an influence factor of consumers' behavior (Zhou et al., 2008). Afterwards, consumers formed their perceptive value

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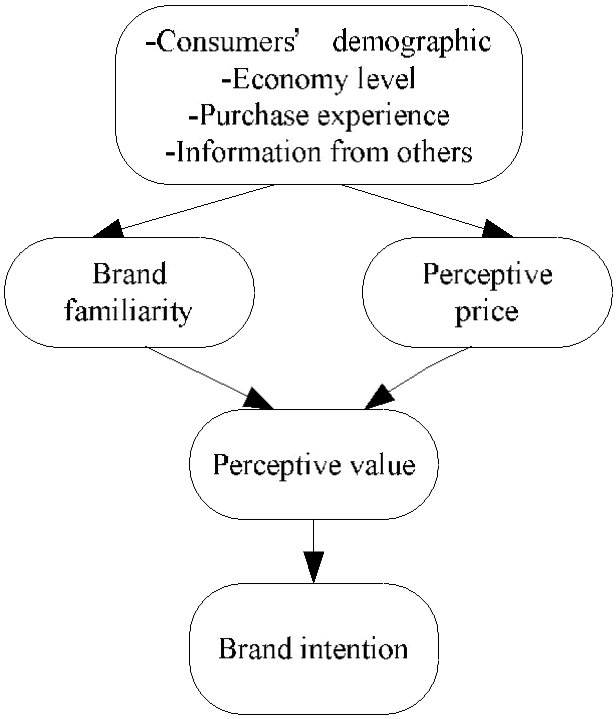

Figure 1. Conceptual framework of brand perception.

toward a brand, which will effect their brand intention and brand choice (Dodds et al., 1991; Wu and Mei, 2005). Meanwhile, consumers' personal characters, purchase experience and information acquisition are also important factors in consumer behavior (Mowen and Minor, 2003).

Consequently, a conceptual framework was set up as Figure 1 described. According to the framework, the paper conducted the investigation on farmers' perceptions toward different kinds of brands of agricultural machinery.

Questionnaire

A questionnaire about Chinese farmers' perception toward main brands of agricultural machinery was designed based on the conceptual framework. The questionnaire consisted of four sections:

Demographic information

Gender, age, education level, labor number, annual income and area (province), (Table 1).

Purchase behavior

Purchase experience, money source, information source (Table 2).

Brand perception

The 12 most well-known tractor brands in China's market were listed in the questionnaire (for example, Dong fang hong, that is, YTO, Foton, Tai shan, Qian li niu, John Deere, Shi feng, New Holland, Tie niu, Chang fa, Dong feng, Zhong yuan and Wei tuo). Question items were measured by 5-point Liket scale from very disagreed (1) to very agreed (5). Respondents were asked to show their opinions toward each statement of brands by choosing 1 to 5. Main questions are as follows:

i) I have heard of this brand many times.
ii) I am familiar with this brand of tractor.
iii) The price of this brand of tractor is too high to me.
iv) I feel this brand expensive rather than functional and practical.
v) I think this brand of tractor is valuable.
vi) This brand of tractor is worthy of purchase.
vii) I feel this brand of tractor is good value for money.

Brand intention

Questions are as follows:

i) Do you plan to buy a kind of tractor in the next 3 years?
ii) If yes, which brand do you intend to choose?
iii) If no, you don't need to answer.

Survey

The questionnaire survey was conducted in July and August 2007, and more samples were added in 2008. 38 investigators from China Agricultural University were employed and face-to-face interview was adopted in the rural survey. Farmers from Beijing, Tianjin, Inner Mongolia, Hebei, Henan, Shandong, Shanxi, Liaoning, Jilin, Zhejiang, Heilongjiang and Anhui province were chosen as the respondents. 336 questionnaires were distributed in above 12

Table 1. Demographic description of respondents.

Demographic variable	Categories	Subjects No.	Percent (%)
Gender	Male	186	87.32
	Female	27	12.68
Age	18-30	30	14.08
	31-40	38	17.84
	41-50	91	42.72
	51-60	42	19.72
	Above	12	5.64
Educational level	<Primary school	13	6.10
	PRIMARY school	27	12.68
	Junior school	138	64.79
	Senior school	21	9.86
	≥College	14	6.57
Labor number of household	<3	91	42.72
	3	38	17.84
	4	42	19.72
	5	36	16.90
	>5	6	2.82
Average annual income per household /CNY	<2,000	15	7.04
	2,001-5,000	31	14.55
	5,001-10,000	66	31.00
	10,001-15,000	69	32.39
	15,001-20,000	17	7.98
	>20,000	15	7.04
Area	12 provinces	213	100.00

Table 2. Farmers' purchase behavior of agricultural machinery.

Items	Answers	Subjects No.	Percent (%)
Purchase experience	Yes	191	89.67
	No	22	10.33
Money source of purchase	Own fund	169	79.34
	Governmental subsidy	8	3.76
	Nongovernmental borrowing	24	11.27
	Bank loan	12	5.63
Information source of brand	Local governmental service organization	43	20.19
	TV and broadcast	24	11.27
	Newspaper and magazine	18	8.45
	Friends, relatives and neighbors	74	34.74
	Internet	6	2.82
	Village committee	12	5.63
	Agricultural machinery company	36	16.90

provinces and 268 were returned. After eliminating the validity of the returned questionnaire, 53 questionnaires that were incompleted or with logical mistakes were deleted, 213 valid questionnaires were obtained; the effective response rate was 63.36%.

Table 3. Consumers' brand perception of tractor.

Brand\Index	Brand familiarity	Perceptive price	Brand value
Dong fanghong (YTO)	123	95	118
Foton	115	91	118
Tai shan	105	95	109
Qian li niu	79	83	105
John Deere	118	110	104
Shi feng	97	91	102
Tie niu	121	110	100
Dong feng	97	95	100
Zhong yuan	102	98	97
Chang fa	100	106	95
New Holland	113	117	95
Wei tuo	81	98	93

Statistical methods

Data in the questionnaire were transformed into statistics variables and then processed using SPSS software; descriptive statistics method was mainly adopted to calculate the mean with std. deviation of each variable and to examine the different levels of consumers' perception. The index values of brand familiarity in Table 3 were the ratio between familiarity value of each brand and the average value. The same calculation method was adopted in perceptive price and perceptive value of brands.

RESULTS AND DISCUSSION

Consumers' characters

The questionnaire survey gained a total of 213 valid samples. Table 1 shows the demographic characters of respondents. Samples are mostly male (87.32%), for men are the main users and operators of agricultural machinery in rural areas of China, they are more inclined to be interested in brands of agricultural machinery. The most common age group is 41 to 50; educational level assembles at junior school (64.79%). Less than 3 person's accounts for 42.72% in the labor number of household, average annul income of most households is 5,001-15,000CNY, which is a medium economic income level in China.

Purchase behavior

There were 191 samples having purchase experience of agricultural machinery among the 213 respondents, it meant that about 89.67% of the households in survey had ever bought at least one kind of agricultural machinery. Modern agricultural machinery, especially the large-scale machines are much expensive, the economy level will largely influence farmers' brand choices (Feng et al., 2008). So it is necessary to understand farmers' financing channels for purchasing agricultural machinery.

The results showed that nearly 80% of the samples purchased agricultural machinery using their own money, some consumers (11.27%) preferred nongovernmental borrowing, such as asking help from friends, relatives. Only 3.76% of the samples got purchase subsidy from the government. Information plays an important role in the process of consumer purchase. The survey displayed that farmers' main sources of brand information coming from friends, relatives and neighbors, 34.74% of the samples chose this item. It implied that farmers were convinced of people that are with close relationship. It also implied that word of mouth communication had a strong impact on consumers' brand awareness, which was in accord with the existing research (Robert et al., 2008).

Agricultural machinery corporations must attach much importance to their brand reputation so as to retain their old customers and develop new customers and then keep customers loyal on their brand.

Brand perception

In this section of questionnaire, tractor was selected as a case study to estimate farmers' brand perception. Brand familiarity is consumers' knowledge and belief about a brand; it implies how this brand is well known by consumers. Results showed the most 5 familiar brands of tractor in China were Dong fang hong (YTO), Tie niu, John Deere, Foton and New Holland, their familiarity index values were respectively 123, 121, 118, 115 and 113, obviously higher than 104, the average index value of 12 brands. Dong fang hong (YTO) had the highest familiarity. This implied farmers' highly attention to national brands. However, John Deere gained the third highest familiarity index value, demonstrated that overseas brands still put greater pressure on national brands.

Brand price perception refers to how expensive consumers feel this brand is. It is the subjective perception

Table 4. Consumers' brand intention of tractor.

Brand intention	Subjects/No.	Percent (%)
Dong fang hong	20	28.17
Shi feng	14	19.72
Dong feng	9	12.68
Hai shan	4	5.63
Tie niu	3	4.23
Wei tuo	3	4.23
Others	18	25.35

of consumer and largely influenced by the monetary price of goods. The most expensive brand of tractor that farmers perceived in questionnaire was New Holland, then John Deere and Tieniu followed. Overseas brands are more expensive than domestic ones; it is in agreement with farmers' price perception. Besides the sales price, the perceptive price is also impacted by other factors, such as consumers' economic income, purchase habit and brand preference.

Brand value means that whether consumers feel a brand worthy of purchase, and to what extent it is worth. Value is a relative concept, to consumer, the brand with higher value is worthier than others in cost-performance-ratio. Table 3 displayed farmers' value evaluation to 12 tractor brands. Dong fang hong (YTO) and Foton gained the highest value index 118, followed by Tai shan and Qian li niu. Foreign brands John Deere and New Holland got lower index values (104 and 95). It doesn't mean these two brands are not good; on the contrary, they are so famous brands globally that they are relatively costlier than many domestic brands. Therefore, most individual farmers feel these international brands are too expensive rather than practical.

Brand intention

Purchase intention is widely believed that directly interrelated with purchase behavior, it is the main basis to forecast whether consumers will purchase (Armstrong and Morwitz, 2000), so brand intention could imply the probability of whether consumer will choose a brand in the future. Among the respondents, 71 described that they have been considering purchasing a tractor in recent 3 years. Their purchase intention to different tractor brands was distinguished. Table 4 illustrated farmers' description of their brand intention of tractor in the next 3 years. Dong fang hong brand gained most farmers' purchase intention, accounted for 28.17% of the total samples, Shi feng followed with 19.72%. It's worth noting that national brands acquired more preference and intention than the famous international brands. Because of the higher sales price of overseas brands and most farmers' medium income and limited financing channels, farmers' perceptive price to those brands goes up, then the perceptive value declines and purchase intention goes down. Further analyzing about farmers' brand intention and their areal distribution, it has been found that in some provinces, farmers' brand preference displayed obvious regional characters. Among 14 samples described their brand intention of tractor in Shandong province, 13 (92.31%) preferred tractor brands of Shandong, such as Shi feng, Hai shan and Wei tuo in 8 samples of Henan province, 7 planned to purchase Henan brands, Dong fanghong, Qian li niu and Zhong yuan.

Conclusion

The research results show that farmers have different perception toward domestic and foreign brands of agricultural machinery. The information channels of brand are mainly from friends, relatives and neighbors, so word of mouth spreading is very important for a brand. The empirical study with tractor indicates that Dong fang hong (YTO) has the highest familiarity and national brands gain more attention from consumers. International brands, New Holland and John Deere get higher perceptive price, yet the Chinese brands, Dong fang hong (YTO) and Foton obtain higher perceptive value, Dong fang hong (YTO) and Shi feng acquire more preference and purchase intention. The higher perceptive price of foreign brands may reduce farmers' perceptive value and purchase intention.

In conclusion, although this paper is an empirical study based on 213 valid samples, it provides a chance to understand farmers' perception to different agricultural machinery brands in China.

A further quantitative analysis on the main factors that influence farmers' brand perception and research based on wider samples will be necessary in the future.

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