Brand Marketing Strategy of Characteristic Agricultural Products at the Background of "Internet Plus" Based on The Game Model

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Abstract

At present, the brand marketing channel of agricultural products in China is unstable and the circulation efficiency is low. Under the background of "Internet plus", it's necessary for brand marketing of characteristic agricultural products to change the previous operation mode and expand the brand effect. This paper dissects the shortcomings of the current brand marketing of characteristic agricultural products and empirically analyzes its influencing factors. The result shows that expanding the operation scale of farming households with characteristic agricultural products and stabilizing the market prices of characteristic agricultural products can effectively promote the brand marketing of characteristic agricultural products. Finally, in-order-to promote the brand development of characteristic agricultural products and rapidly develop the agricultural economy in China, the optimization strategy of brand marketing on characteristic agricultural products under the background of "Internet plus" is put forward.

Keywords: Perspective of Evolutionary Game, "Internet Plus", Characteristic Agricultural Products, Brand Marketing.

1. BACKGROUND OF RESEARCH

1.1 Literature review

In the agricultural market with a high competition, a good brand can enhance consumers' trust and popularity on products, increase the added value of products and promote the overall strength of enterprises who owned the brand. In recent years, Chinese scholars have made a great deal of research on brand marketing of agricultural products. Liu and Wei think that in view of the shortcomings in the marketing of agricultural products, the government should strengthen information exchange and sharing among various agricultural sectors and timely deliver the relevant supply and demand information to market participants to help them reduce the information asymmetry (Liu and Wei, 2015). People, such as Deng Zhihui et al., think that there are problems in the marketing of agricultural products, like the competition is fiercer and fiercer with serious homogeneity; the market is urgent to be standardized when financialization starts; and there are many intermediate links and lengthy marketing channels. They think that the marketing of agricultural products should be promoted in terms of popularizing deep processing, realizing rational allocation of resources, optimizing marketing channels and promoting information exchange and sharing (Deng et al., 2017). Zhou and Li think that in addition to continuously strengthening the regulatory system, the government should also establish a safety credit system for agricultural products online shopping to provide consumers with safe and secure agricultural products (Zhou and Li, 2016). Xu Yanqin believes that to stimulate the development of agricultural product logistics, the government should improve the investment in Internet construction and transportation facilities and promote the traffic convenience and information network development in rural areas by increasing the investment in infrastructure and supporting facilities. In the meantime, maintenance on infrastructure to ensure its high efficiency should be constantly continued (Xu, 2016).

1.2 Purposes of research

Brand agriculture means that the operators can improve market awareness and obtain a good reputation and high economic benefits in the community by getting access to relevant quality certification and corresponding trademark rights. Under the background of "Internet plus", traditional industries make their business offline to go online and integrate Internet technology into the production, management, sales and service with the help of the Internet (Li, 2016). Brand marketing of agricultural products is greeting a new development opportunity at the
background of "Internet plus". Therefore, this paper is mainly going to explore the brand marketing strategy of characteristic agricultural products under the background of "Internet plus". There are a series of drawbacks in traditional brand marketing of characteristic agricultural products such as backward brand building, lack of brand marketing innovation, backwardness in cold-chain logistics system used by fresh-type agricultural products and so on. Brand marketing of characteristic agricultural products urgently needs the help of Internet to improve marketing strategy.

2. EXISTING DEFICIENCIES IN CURRENT BRAND MARKETING OF CHARACTERISTIC AGRICULTURAL PRODUCTS

2.1 backward brand building

In China, the brand awareness of characteristic agricultural products is relatively shallow, the brand marketing is badly lag behind and there is no obvious brand advantage in the whole country. The specific reasons are as follows: First, the operators of characteristic agricultural product hold a relatively shallow brand awareness with little concern for brand building and less investment (Guo, 2017). Second, there is no enough brand publicity. At present, more and more brands of characteristic agricultural products in our country are in disorder. Many brands of characteristic agricultural products are not standardized, resulting in the products have no advantage in occupying market share. Third, it is the lack of technical support for characteristic agricultural products and backwardness in brand packaging. Technical equipment cannot meet the needs of deep processing due to the lack of input in agricultural research funds. Scientific and technological content is not high with the shortage of technical guidance and quality supervision in all production, processing, packaging, marketing aspects of the agricultural products. All above are holding back the promotion of the quality and not conducive to brand packaging in characteristic agricultural products.

2.2 The lack of innovation in brand marketing

A shortage of innovative and the existing vicious competition in the marketing of characteristic agricultural products in our country have created a situation in which the characteristic agricultural products companies are struggling on the edge of small profits by lower prices within the same trade. In addition, although network marketing is the key to brand marketing of characteristic agricultural products at the present stage, relevant operators are short of creativity with a single means in network marketing (Li, 2016). The needs of network marketing cannot be met because of the slow construction and the inconvenience to use of network in some rural areas. Although strong support from the government has established a number of websites for characteristic agricultural products marketing, the application scope is narrow and inefficient, which cannot provide efficient and convenient online trading platform for farmers and is not conducive to farmers' brand marketing of agricultural products through the Internet.

2.3 The backwardness in cold-chain logistics system used by fresh-type agricultural products

At the present stage, there are very few companies that can provide cold chain logistics and diversified services throughout the logistics in China. What's even worse is the lack of optimal integration of resources which hinders the logistics development of fresh-type agricultural products. Though there are a lot of participants in the market of fresh-type produce, there is not perfect logistics network system in the whole fresh produce market because of lack of organization and scale development, which leads to waste of logistics resources (Zhang, 2017). It can be seen that backward e-commerce logistics system in fresh-type agricultural products has hindered the sustainable development of brand marketing of characteristic agricultural products.

3. EMPIRICAL ANALYSIS ON BRAND MARKETING OF CHARACTERISTIC AGRICULTURAL PRODUCTS

3.1 Influence factors in brand marketing of characteristic agricultural products

Under the background of "Internet plus", there are mainly the following factors that have a greater impact on brand marketing of characteristic agricultural products combined with the current status of characteristic agricultural products industry in China.

3.1.1. The scale of peasant households producing characteristic agricultural products
The sales share of characteristic agricultural products is directly affected by the size of the farmers. A smaller scale causing a profits ratio closer to 1 will make the profit of farmers tend to be smaller and not conducive to the expansion of marketing scale.

Suppose the peasant households producing characteristic agricultural products be \( n \), the price of produce be \( p_n \), quantity of produce be \( q_n \) and the cost of it be \( C(q_n) \). Assuming the output of the whole industry of the characteristic agricultural product is \( Q \) and the market share of the farmers who produce characteristic agricultural products \( n \) is: \( b_n = q_n/Q \). According to the definition of the price elasticity of demand for agricultural products, the formula (1) can be obtained:

\[
\frac{b_n}{-E} = \frac{p_n - MC_n}{p_n} (E < 0)
\]

It can be seen that the market share of peasant households producing characteristic agricultural products is in direct proportion to the peasant household's size. When the smaller the \( b_n \) is, the smaller the gap between sales price and marginal cost and production cost is, which makes the proportion of the profit sharing moving towards to 1, leads to polarization of profits and causes a poor state of marketing. On this basis, it is assumed that the larger the scale of farmers, the larger the sales scale of characteristic agricultural products.

3.1.2. The price fluctuations of characteristic agricultural products

The larger the price fluctuations are, the smaller the sales scale of characteristic agricultural products is. The main reason for the price fluctuation of characteristic agricultural products lies in the fact that one party of the channel alliance has breached the contract during the transaction. Suppose the contract price is \( p^* \), the market price is \( p = p^* + \varepsilon \), \( \varepsilon \)-\( N (0, \sigma^2) \) and the density function is \( f(x) \). In the second phase, when the difference between the market price and the contract price of characteristic agricultural products is greater than the \( \varepsilon \), farmers who produce characteristic agricultural products may default. So, the default probability of farmers is:

\[
p(\varepsilon > \varepsilon^*) = 1 - p(\varepsilon \leq \varepsilon^*) = 1 - F(\varepsilon^*)
\]

Because \( \varepsilon \) obeys the normal distribution, so there is \( F(\varepsilon^*) = \Phi \left( \frac{\varepsilon^*}{\sigma} \right) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\varepsilon^*} e^{-\frac{t^2}{2}} dt \), and \( \sigma^2 \) is inversely proportional to \( F(\varepsilon^*) \). Then \( \frac{\partial F(\varepsilon^*)}{\partial \beta} < 0 \) can be obtained by (5) and so there is \( \frac{\partial F(\varepsilon^*)}{\partial \beta^2} = \frac{\partial F(\varepsilon^*)}{\partial \sigma^2} \), that is \( \beta \) has an reverse connection with \( \sigma^2 \). Based on this, it is assumed that the larger the market price fluctuations of characteristic agricultural products is, the greater the probability of the price deviates from the stipulated price of the contract is and the greater the probability of the farmers’ default is which causes the sales more unstable.

3.2 Model building

Assuming that the total revenue generated by brand marketing of agricultural products is \( R = R_c(t_c) + R_f(t_f) + \varepsilon \), among which the \( \varepsilon \) is exogenous random variables that are not controlled by the leading agricultural enterprises and peasant households. And \( \mu_c, \mu_f \) are the average value respectively estimated by the leading agricultural enterprises and peasant households.

According to the Stackelberg game theory, the general model for brand marketing of characteristic agricultural product can be described as follows:

\[
\max E[(R - C_d(t_c)) - S] \tag{3}
\]

\[
\text{S.t.} E[U(S - C_f(t_f))] \geq U(w_0) \tag{4}
\]

\[
\max E[U(S - C_f(t_f))] \tag{5}
\]

Considering the risk factors and if the utility function of farmers producing characteristic agricultural products has the same absolute risk aversion characteristics, the risk cost of farmers producing characteristic agricultural products is:
\[ C_F^{risk}(w) = \frac{1}{2} \rho \beta^2 Var(S) = \frac{1}{2} \rho \beta^2 \sigma^2 \]  \hspace{1cm} (6)

The \( \rho \) is the risk aversion coefficient for farmers with characteristic agricultural products.

So, the equivalent form of above general model is:

\[
\max[(1-\beta)(R_G(t_G))+R_F(t_F)+\mu_G] - C_G(t_G) - S_0 \tag{7}
\]

\[ S.t. S_0 + \beta[R_G(t_G) + R_F(t_F)] - \frac{1}{2} \rho \beta^2 \sigma^2 - C_F(t_F) \geq W_0 \tag{8} \]

\[ t_F \in \arg \max[S_0 + \beta(R_G(t_G) + R_F(t_F) + \mu_G) - \frac{1}{2} \rho \beta^2 \sigma^2 - C_F(t_G)] \tag{9} \]

Under the condition of asymmetric information, since the effort level of farmer households \( t_F \) cannot be observed, the extreme value of formula (7) \( t_F \) is obtained:

\[ \beta R_F(t_F) = C_F(t_F) \tag{10} \]

Taking the derivative of \( \beta \), it comes to \( \beta = \frac{R_F(t_F) \frac{\partial \beta}{\partial \beta} + \mu_G - \mu_G}{\rho \sigma^2 + R_F(t_F) \frac{\partial \beta}{\partial \beta}} \).

From the above, we can see that if there is no influence of psychological expectation factors, the marketing coefficient of characteristic agricultural products \( \beta \) is directly related to the efforts of farmers \( t_F \) and the marginal contribution of farmers to marketing \( R_F(t_F) \) and is negatively correlated with the risk aversion \( \rho \) as well as the market risk of farmers \( \sigma^2 \). These factors can be seen as a rigid mechanism that affects the marketing of characteristic agricultural products.

### 3.3 Results analysis

According to the above analysis, it can be known that under the condition of asymmetric information, the psychological expectation of both parties to the objective natural state also affects marketing apart from the scale of farmer households producing special agricultural products, the price of characteristic agricultural products, the marginal contribution of farmers to marketing \( R_F(t_F) \) and the extent of risk aversion which directly affect the marketing result. It should be noted that if the more dispersed farmers are, the smaller the size of a household is then the smaller the share of a single farmer is in the entire industry, which will be detrimental to brand marketing. Besides, if the profit is divided into the extreme, the sales profit is easily taken away by leading enterprises and the marketing alliance will become more and more unstable which is bad for brand marketing.

### 4. BRAND MARKETING STRATEGY OF CHARACTERISTIC AGRICULTURAL PRODUCTS AT THE BACKGROUND OF "INTERNET PLUS"

#### 4.1 Establish a comprehensive e-commerce marketing website for characteristic agricultural products to increase brand publicity.

Under the background of "Internet plus", a comprehensive e-commerce marketing website that integrates systematization, specialization and informatization for characteristic agricultural products can be established in China. On the one hand, it is necessary to vigorously promote the aggregation and scale-up of agricultural production and organize individual farmers together to form a specialized cooperative management system for peasants in order to improve their anti-risk ability (Zhang, 2016). On the other hand, based on agglomeration management, it is necessary to establish an e-commerce information website featuring multi-channels of networks, telephone hotlines, cell phone text messages, coloring cell phone ring tones and TV stations. This website not only covers the trading patterns of characteristic agricultural products such as network marketing, television marketing, radio marketing, telemarketing and advertising marketing, but also provides services of product promotion, supply and demand information, agricultural technology, financing information, policy and law, expert consultation, education and training for operators of characteristic agricultural products.
4.2 Build traceable platform of quality and safety to ensure the quality of circulation

Under the background of "Internet plus", government departments should build a traceable platform of quality and safety, provide financial support and increase investment for platform development by cooperating with relevant enterprise. After constructing a network information platform of quality and safety traceability for agricultural products, the production and sales information of characteristic agricultural products collected can be input into the online platform and timely released (Yin, 2017). Gradually improving the system of querying the quality information for characteristic agricultural products can facilitate the production base and consumers' access to related information and achieve the traceability of information so as to enhance the competitive power of characteristic agricultural products. In order to facilitate the information inquiry for characteristic agricultural products, the consumers can know about the characteristic agricultural products from the production, processing, logistics, warehousing, sales and other information of the whole process through online inquiry, smart phone scanning two-dimensional code and bar code according to the standard of "one product one code" so as to choose products at ease.

4.3 Promote large-scale development and improve brand recognition of characteristic agricultural products.

Against the background of "Internet plus", the government should encourage the main part of agricultural production and circulation to expand and reduce the circulation cost by realizing economy of scale. These large-scale supply chains of characteristic agricultural products can be built by agriculture-related enterprises themselves. For example, in order to expand the market scale, enterprises can build a global sourcing center for agricultural and sideline products so that they can further expand their scale. It can also be built by co-investment from local governments, institutions and enterprises. Jointly invest in the construction. The investors build the market, share risks and revenue in accordance with the proportion of investment (Wang, 2015). Moreover, the government can also become a shareholder in the mature wholesale market by way of shareholding and expand the circulation entity of characteristic agricultural products by taking advantage of government's power (An, 2017). In addition, the supply chain of characteristic agricultural products can strive to cultivate multinational agribusiness groups and enhance the efficiency of the supply chain of characteristic agricultural products to create a worldwide distribution channel for agricultural products relying on the "One Belt and One Road" strategy and the strategy of "agriculture going out".

4.4 Strengthen the supervision system of characteristic agricultural products and promote brand credibility

Quality and safety of agricultural products also need to be controlled by the system. It is necessary to establish a comprehensive and operable agricultural standards system by taking advantage of Internet technology and to comprehensively promote the popularity and using of this standard. The quality and safety guarantee mechanism for characteristic agricultural products should be established by quality assurance system with the permit of getting out from the origin place, market access, quality traceability and joint prevention and control. At the same time, we must also strengthen the supervision of agricultural inputs and strictly control the qualification of chemical fertilizers and pesticide manufacturers. Lastly, there should be contingency plans for unexpected emergencies of quality and safety of agricultural products. Once an incident of quality and safety occurs, we should ensure timely detection, effective control and immediate solution for the incidents of characteristic agricultural products.

5. CONCLUSION

At present, the further improvement of marketing for characteristic agricultural products in China is hindered due to the low degree of organized marketing and the imperfect mechanism of interest connections among the main channels. At the background of "Internet plus", brand marketing of characteristic agricultural products depends on the consistency of the common interests among the members of the supply chain and the stability of cooperative relations. Meanwhile, expanding the operation scale of farming households with characteristic agricultural products and stabilizing the market prices of agricultural products can effectively promote the brand marketing of characteristic agricultural products. Therefore, in view of the dominant factors affecting the brand marketing of characteristic agricultural products, some suggestions that are helpful to promote the brand marketing of characteristic agricultural products and can better realize the growth of rural economy are put forward.
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