"Innovation and selection of family farms' marketing channels in Henan Province under the "Internet+" environment"

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BUSINESS PERSPECTIVES

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INNOVATION AND SELECTION OF FAMILY FARMS' MARKETING CHANNELS IN HENAN PROVINCE UNDER THE "INTERNET+" ENVIRONMENT

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Abstract

With the continuous improvement of China's market economy and the intensification of global integration trends, the relationship between the supply and demand of China's agricultural products has also undergone significant changes. From the previous short supply to the current oversupply, the sales of agricultural products have become a key factor restricting the development of the Chinese rural economy. Solving the problem of agricultural sales has become the internal driving force to promote the steady development of family farms, which is also the fundamental purpose of this paper. Therefore, this paper makes an empirical analysis of the factors influencing the choice of agricultural products' sales channels among 170 family farms in Henan Province using a logistic regression model. The results show that selling agricultural products from family farms to consumers, enterprises, and large sales households are the main sales channels, accounting for 17.3%, 15.3%, and 15.2% respectively. The proportion of Internet sales ranks seventh among the eight channels, which has not been widely recognized. The regression results and assumptions are verified. The brand and certification of family farms' agricultural products, business form of a farm, and understanding of the Internet have a significant impact on the choice of sales channels. According to the weight of influencing factors, the paper puts forward four suggestions for the selection and innovation in sales channels of family farms' agricultural products.

Keywords	family farms, sales channel, agricultural products, "Internet+", China, proposals, factors
JEL Classification	M31, Q13

INTRODUCTION

In the process of the rapid development of modern agriculture, innovating agricultural management mechanisms and cultivating family farms play a key role in improving China's agricultural efficiency and economic benefits. As an effective way to promote agricultural modernization and rural urbanization, a family farm has become the focus of government and society. Through practical research, family farms are suitable for the correct development path of China's agriculture. The steady development of family farms has very important practical significance for increasing farmers' income and the healthy development of agriculture. In recent years, with the advent of the "Internet+" era, the improvement of networks and electronic platforms has provided more choices and introduced innovations to the sales channels of farm products for China's family farms. The slogan "Internet+" was put forward in 2012, mainly referring to the integration of all industries by using the Internet, especially traditional industries and agriculture. In 2018, the No. 1 central document also pointed out that China should enhance the development of rural electric business, pro-

mote the modern action of "Internet+" agriculture, support the construction of agricultural product e-commerce platforms and rural e-commerce service stations, and thoroughly implement e-commerce in rural areas.

Henan Province is a strong agricultural province in China, and the construction of agricultural informatization has always been at the leading level in China. The development of family farms has also made some achievements. However, with the progress of science and technology and the intensification of global integration, the output of family farms' agricultural products has increased. A large number of foreign agricultural products have poured in, which makes the market competition for Henan agricultural products industry more intense. Due to the accelerated marketization process, the sales channels of agricultural products have changed from a single and traditional marketing channel in the past to a diversified and multi-level marketing model. Not only small farmers, processing enterprises, wholesalers, and retailers rely on the traditional production, supply, and marketing system formed by the production and sales at the market. There are also modern supply chains driven by new retail industries such as supermarkets. At the same time, the prosperity of the Internet provides a new way for the marketing of agricultural products. Facing many sales channels, family farms are difficult to cope with the ever-changing conditions on the agricultural markets. In many cases, farmers choose the marketing channels of agricultural products only from the perspective of their interests, and the factors are not comprehensive enough. In this way, the expected effect may not be achieved. The selection of sales channels is very important to ensure a steady development of family farms.

Given the above reasons, through field investigations and interviews, this paper collected data, analyzed marketing knowledge, and found influencing factors. The study gives conclusions and marketing strategies, which aim to provide the basis for the selection and innovation of agricultural products' sales channels by family farms. Such a selection plays an important role and significance in promoting the circulation of agricultural products, steady development of family farms, and enhancing the process of agricultural modernization.

1. LITERATURE REVIEW

At the beginning of the last century, an in-depth study was made on the production and sales of agricultural products in the United States. Analyzing agricultural marketing, the whole circulation and marketing processes of agricultural products after leaving the producer was studied. Participants of the marketing channels, the transportation process of agricultural products, and the trading links of agricultural products were deeply expounded.

Researching the impact of agricultural product sales, Bailey and Hunnicutt (2002) investigated the owners of beef cattle family farms and sales farms in Utah. The study showed that the adequacy of information and the openness of the market have a significant impact on the direct sales of family farms. The degree of market competition, product unsalable risks, and transportation losses have a significant impact on farmers' choice of online sales mode. Berdegue et al. (2006) analyzed

pomegranate farmers in Mexico by using a tobit model. The geographical conditions and the number of fixed assets of farmers have a significant impact on whether their pomegranates can enter supermarkets, large enterprises, and other sales channels. Shiimi and Jordan (2011) investigated the sales channels of beef cattle in Namibia and used a probit model to show that transportation, information technology, and market information have a significant impact on the sales mode. It was believed that the restrictive factors of agricultural marketing mainly include the quality and safety of agricultural products and after-sales service of agricultural products. Hu (2021) believed that China's traditional marketing channels of agricultural products are changing to modern marketing channels.

Investigating the selection of agricultural products' marketing channels is a complex process as there are different factors (e.g. characteristics of family farms and products), and thus there

are many methods that can be used. Chen et al. (2014) proposed an analysis and decision-making framework for multi-channel evaluation, which can convert expert opinions into the weight of key criteria according to interaction, and deduce the ranking of marketing channel candidate schemes. Akdoğan et al. (2011) generated a C5.0 decision tree (DT) model through data collection and analysis of marketing data to extract decision rules. Chang and Zhang (2016) used an endogenous switching probability model to deal with the potential of members in evaluating the determinants of marketing channel selection. Negi et al. (2018) evaluated the impact of transportation and communication networks on Indian farmers' choice of rice and wheat market channels.

Due to different national conditions, Chinese scholars have also conducted corresponding studies on the sales channels of China's agricultural products. Wu (2009) made an empirical analysis on the factors influencing farmers' choice of fruit sales channels. It was pointed out that at present, modern procurement channels such as enterprises, supermarkets, and professional cooperatives show a significant growth trend. However, traditional channels still occupy the main part of farmers' fruit sales; traditional channels and modern channels can coexist in the market. Yang (2011) concluded that "family farm + fruit supermarket + consumer" is the most ideal grape circulation channel from the perspective of circulation cost and farmers' profit. From the perspective of circulation efficiency, "family farm + agent + wholesale market + daily retailer + consumer" is the most ideal grape circulation channel. Zhang (2014) used an econometric model to analyze the impact of the "company + farmer" model of aquatic family farms in Henan Province on farmers' income from freshwater fish farming. According to the effects of different farming models, he believed that the "company + farmer" model can enable farmers to obtain better and more comprehensive production technology services and higher economic benefits. Chen (2013) found that compared with the wholesale market, the sales income of farmers through cooperatives or self-production and self-marketing increased significantly by analyzing the impact of different production and marketing docking methods on the sales income of tea growers.

With the advent of the information age and the high popularity of the Internet, the marketing channels of agricultural products have become wider. Afuall and Tucci (2001) proposed that all parts of the Internet system should be coordinated and work together, which can bring new opportunities for the development of enterprise marketing. Coe et al. (2004) believe that the Internet provides e-commerce applications for farmers, making it easier for farmers to obtain information and shop online to promote their products. Kiang et al. (2000) believe that based on the Internet, the complexity of product customization, supply, logistics, and transaction is considered to be an important way to improve network marketing. Zhu et al. (2015) believed that enterprises conduct product marketing on the Internet, and Internet products are becoming more and more popular. Li (2012) believed that the online marketing of agricultural products is inseparable from the branding strategy, and further an offline and online agricultural market should be established to finally achieve the purpose of improving the sales channel of agricultural products.

2. HYPOTHESES

To sum up the literature review, previous studies provided suggestions for further perspectives, research ideas, and research methods, and laid a theoretical foundation for this study. However, it can also be seen that most of the previous studies start from a macro perspective and do not elaborate on the specific factors of sales channels' selection. Many factors are affecting the channel selection. Choosing the correct sales channel can increase the income and promote the development of family farms. Therefore, this study has certain innovative significance and developed the following hypotheses:

H1: *Older farmers are willing to choose enterprises and markets as their sales channels, and have stable, reliable, and convenient sales channels.*

H2: *With high education and strong ability, farmers prefer to sell their products on markets.*

H3: *If farmers understand Internet sales (e.g. ways to save transaction costs and dissemi-*

nate product information), they will use online electronic platforms to sell their products, and they are relatively unlikely to choose other channels.

H4: *The sales area of agricultural products is large and there are great risks. To avoid risks, farmers will choose cooperative organizations as the main sales channel.*

H5: *Family farms have formed own brands, which are more competitive on the market and can better meet the needs of consumers. Therefore, they are more willing to sell their products directly to consumers.*

H6: *The certification of agricultural products can ensure product quality and win the trust of consumers. It is more likely for family farms to choose direct sales.*

H7: *Corporate and partnership family farms with a good economic foundation and more resources are more likely to choose enterprises and markets as their sales channels, and can obtain higher income.*

H8: *Individual industrial and commercial households and sole proprietorship enterprises with large business risks and lack of funds are more willing to sell their products to large sales households.*

3. RESEARCH METHODS

The paper used a logistic regression analysis (a generalized linear regression analysis model). At present, such an analysis has been widely used in many fields such as statistics, economics, chemistry, etc. The study first put forward the research hypotheses and assigned their value; second, the paper constructed the binary logistic model, brought the variables into the model for evaluation, evaluated the model through SPSS 22.0 measurement software, and got the regression results. The influence coefficient of family farms' channel selection factors is obtained, which is further discussed and verified. Through logistic regression analysis, the study assessed the weight of variables to understand which factors affect family farms in their

choice of sales channels, ways to correctly select the sales channels of agricultural products, and provided suggestions for the expansion and innovation of agricultural products' sales channels.

Firstly, through combing the existing literature on agricultural sales channels and field interviews, this paper summarized and put forward the factors affecting family farms in their selection of sales channels. These factors mainly include farmers' characteristics, agricultural products' characteristics, and family farms' characteristics. Farmers' characteristics include age, education, and understanding of Internet sales. The characteristics of agricultural products include agricultural product sales area, brand, and certification. The characteristics of family farms include the operation form and the operating income.

Secondly, the factors influencing the choice of the sales channel are modeled. In this paper, the binary logistic model is used to analyze the selection of agricultural sales channels by family farms. The probability of sales channel selection is expressed by

$$\log_{it}(P) = O_0 + \beta_1 X_1 \ldots + \beta_p X_p. \qquad (1)$$

where X is a multi-classification variable, and it is inappropriate to fit only one regression coefficient by logistic regression. Therefore, the original multi-classification variable X_p is transformed into multiple dummy variables, and each dummy variable only represents the difference between several levels. In this paper, dummy variables are brought in when estimating the model. The set value of a channel selection in this range is 1, and the value of no channel selection in this range is 0. Each analysis process only deals with one group to estimate whether the impact result is significant in more detail. The specific classification of variables' codes is shown in Table 1.

The data used in this paper are from the survey of 170 family farmers in Henan Province in 2020. A total of 173 questionnaires were distributed and 170 were obtained, including 162 effective questionnaires. The questionnaire response rate is 98.27% and the effective rate is 95.29%. According to the statistical data, most farmers are between 40-49 years old, accounting for 58.9%. Most farmers have the education level of junior middle school

Table 1. Classification of variables' codes

Index	Item	Frequency	Parameter coding				
			(1)	(2)	(3)	(4)	(5)
Age	30-39 years old	52	1	0	0	0	
	40-49 years old	82	0	1	0	0	
	50-59 years old	26	0	0	1	0	
	Above 60 years old	2	0	0	0	1	
Education level	Junior high school or below	28	1	0	0	0	0
	High school or technical secondary school	46	0	1	0	0	0
	Junior college	44	0	0	1	0	0
	Undergraduate college	42	0	0	0	1	0
	Bachelor's degree or above	2	0	0	0	0	1
Sales area	Periphery	44	1	0	0	0	
	Inside the city	38	0	1	0	0	
	In the Province	36	0	0	1	0	
	Outside the Province	44	0	0	0	1	
Brand	Yes	106	1	0			
	No	56	0	1			
Product certification	Pollution-free certification	60	1	0	0	0	
	Green food certification	62	0	1	0	0	
	Organic food certification	14	0	0	1	0	
	No certification	26	0	0	0	1	
Business form	Individual industrial and commercial household	54	1	0	0	0	
	Sole proprietorship	60	0	1	0	0	
	Partnership	24	0	0	1	0	
	Company system	24	0	0	0	1	
Operating income	Downturn	8	1	0	0	0	0
	Remain unchanged	36	0	1	0	0	0
	Steady growth	88	0	0	1	0	0
	Rapid growth	26	0	0	0	1	0
	Irregular change	4	0	0	0	0	1

Note: Green food in China refers to safe and high-quality edible agricultural products and products produced in an excellent ecological environment per the highest food standards.

or below. 50.3% of farmers know about Internet sales. 40.9% of agricultural products are sold in the surrounding areas. 51.2% of family farms have their agricultural product brands. Among the agricultural product certification, 47.5% have a pollution-free certification, 27% – green food certification, and 3.2% – organic food certification. 42.1% of family farms are self-employed business-es, and 34.3% are sole proprietorship enterprises. The income of 46.1% of family farms increases steadily. The statistical results of variables are shown in Table 2.

Finally, the logistic model is regressed by SPSS 22.0 measurement software. The regression results are obtained.

Table 2. Statistical analysis of variables

Variable		Number of farms	Proportion, %
Age	30-39 years old	32	19.5
	40-49 years old	96	58.9
	50-59 years old	30	18.1
	Above 60 years old	6	3.4
Education level	Junior high school or below	78	47.9
	High school or technical secondary school	58	35.4
	Junior college	22	13.6
	Undergraduate college	4	2.1
	Bachelor's degree or above	2	1.0

Table 2 (cont.). Statistical analysis of variables

	Variable	Number of farms	Proportion, %
Understanding of Internet sales	Do not understand	72	44.6
	Good understanding	82	50.3
	Excellent understanding	8	5.1
Sales area	Periphery	66	40.9
	Inside the city	40	25.0
	In the Province	26	16.6
	Outside the Province	28	17.5
Brand of agricultural products	Yes	82	51.2
	No	78	48.8
Product certification	Pollution-free certification	76	47.5
	Green food certification	44	27.0
	Organic food certification	6	3.2
	No certification	36	22.3
Business form	Individual industrial and commercial household	68	42.1
	Sole proprietorship	56	34.3
	Partnership	26	15.6
	Company system	12	8.0
Operating income	Downturn	16	9.9
	Remain unchanged	60	37.5
	Steady growth	74	46.1
	Rapid growth	10	5.7
	Irregular change	2	0.7

4. RESULTS

According to the survey and statistics, the family farms' sales channels mainly include enterprises, online electronic platforms, fair markets, cooperative organizations, professional markets, sales companies, large sales households, and consumers. Among them, consumers, enterprises, and large sales households are the main sales channels. The sales to consumers account for the largest proportion, 17.3%, mainly because family farms can sell agricultural products in the surrounding areas using their own human and material resources, with flexible sales and large benefits for farmers, avoiding the expenses spent for middlemen and retailers. The second channel (direct sales to enterprises) accounts for 15.3%. Enterprises usually cooperate with family farms in the form of orders, the price and demand are stable, and uncertain factors are reduced. 15.2% of family farms choose to sell their products to large sales households, mainly because this sales method has strong adaptability (can be adapted to various agricultural products) and is stable. The higher the sales of agricultural products, the better the farm income, which can mobilize the enthusiasm of farmers.

In recent years, with the development of Internet technologies, online electronic platforms, as an emerging sales method, have developed rapidly. However, few family farms in Henan Province choose this channel, accounting for 9.30%, ranking seventh among all sales channels. This result is due to the low popularity of network knowledge among family farmers and poor understanding of Internet sales. There is no deep excavation of the potential of Internet sales (Table 3).

Table 3. Selection of sales channels by family farms

Sales channel type	Number of farms	Proportion (%)
Enterprises	41	15.30
Online electronic platforms	25	9.30
Markets	36	13.20
Cooperative organizations	25	9.40
Professional markets	35	12.90
Sales enterprise	20	7.50
Big sellers	41	15.20
Consumers	47	17.30
Total	270	100.00

Note: A family farm does not necessarily have only one sales channel.

Using SPSS 22.0 measurement software, the logistic model was estimated. According to the model results, the fitting and explanatory variables pass the statistical test. Some variables have a significant impact on the selection of sales channels for family farms. The specific impact mode, impact degree, and regression results are shown in Table 4.

The results show that the main sales channels for family farms are consumers, enterprises, and large sales households, accounting for 17.3%, 15.3%, and 15.2% respectively. The brand and business form of family farms have a significant impact on the choice of most sales channels. The farmers' age, education, understanding of Internet sales, the sales area of agricultural products, product certification, and other factors have a general impact on the choice of sales channels.

5. DISCUSSION

According to the regression results of the logistic model by SPSS 22.0 measurement software, the hypotheses are discussed and verified.

Considering *H1*, older farmers tend to choose enterprises and markets as the main sales channels, which is consistent with the theoretical assumptions. Among the 170 family farms surveyed, 82 chose enterprises. The main reason is that enterprises offer guarantees and the income is stable. Therefore, the older the farmer, the stronger the dependence on this channel. The farm and the enterprise have formed a certain degree of cooperation and trust relationship based on the transaction, which is consistent with the assumptions. The fair market enables farmers to face the mar-

Table 4. Regression results

Variable		Sales enterprise	Online electronic platforms	Market	Cooperative organizations	Big sellers	Consumers
Business form	Company system	−2.13	−1.21	0.62	3.22	2.11	0.31
	Individual industrial and commercial household	−3.47	−1.46	2.77	−9.38**	3.54*	−2.52
	Sole proprietorship	−6.21**	−0.60	0.81	−1.91	3.33*	−4.16
	Partnership	−1.22	−1.78	4.29*	−5.35	2.45	−6.2*
Age	Above 60 years old	21,12	18.21	13.86	−23.65	−13.43	−19.52
	30-39 years old	28.21	15.89	21.02	−30.05	−17.20	−21.45
	40-49 years old	29.42	17.15	19.94	−27.81	−18.65	−21.755
	50-59 years old	21.18	17.21	15.08	−26.94	−20.11	−20.67
Sales area	Outside the Province	5.36	3.65	−5.68	2.43	−3.56	0.12
	Periphery	2.85	1.65	−2.56	1.10	−2.44	0.60
	Inside the city	4.80*	2.19	−0.58	8.98**	−1.32	0.79
	In the Province	−0.65	−1.66	−1.94	−1.55	−3.28	3.50
Understanding of Internet sales	Understand	−3.31*	0.74	−2.48*	−9.23**	−1.72	−0.71
Education level	Bachelor's degree or higher	18.62	−21.21	14.32	−23.76	−21.21	−10.12
	Junior high school or below	15.83	−23.96	14.06	−40.64	−26.18	−15.33
	High school	14.29	−22.87	17.89	−35.02	−26.07	−15.82
	Junior college	19.75	−22.98	15.87	−37.53	−26.47	−12.65
	Undergraduate college	17.59	−23.34	17.30	−30.25	−26.55	−17.96
Brand	Yes	−3.01**	1.96*	−0.75	−6.43**	−1.49*	2.57**
Product certification	No certification	1.26	0.21	6.58	4.32	1.12	9.52
	Pollution-free certification	5.95**	6.56	−3.16**	0.84	1.55	−0.92
	Green food certification	9.20**	7.99	−4.18**	5.31**	−1.02	−0.15
	Organic food certification	2.24	9.99	−8.05*	−0.84	1.11	3.19
Operating income	Irregular change	21.32	−1.32	2.11	11.65	12.34	1.75
	Slide downward	32.05	−15.96	1.10	−3.56	18.75	−1.73
	Remain unchanged	26.42	0.62	−2.19	10.65	20.15	−2.29
	Steady growth	23.73	1.58	−1.29	18.22	20.51	−2.75
	Rapid growth	25.46	4.41	−0.02	13.35	22.94	−4.16

Note: * and * * indicate passing the significance test with the level of 10% and 5% respectively.

ket directly, understand market information, and better guide their production, which is also a sales channel recognized by older farmers.

Considering *H2*, the farmers' education level did not pass the significance test, and thus has no impact on the channel selection, mainly because the sample investigated in this paper could not test the impact of this variable on the channel. Through the study of the existing relevant literature, it is found that farmers with high education levels tend to choose markets.

Considering *H3*, farmers' understanding of Internet sales has a certain impact on the choice of enterprises, fair market, and cooperative organizations as main sales channels. The regression coefficients of the three items are negative. It shows that the more farmers know about the Internet sales, the less likely they are to choose enterprises, fair markets, and cooperative organizations as sales channels, which is consistent with the theoretical assumptions. The reason is that if farmers know about Internet sales, they will be more willing to choose the internet-based online electronic platforms for sales to strengthen the scope of publicity, transmit more product information, reduce agency fees at all levels, and save costs.

Considering *H4*, the sales area of agricultural products has the most significant impact on the choice of enterprises and cooperative organizations as main sales channels. The regression coefficients of both variables are positive, indicating that the farther the sales area of agricultural products is, the more inclined it is to choose cooperative organizations, which is consistent with the theoretical assumptions. This is mainly because cooperative organizations are conducive to solving the contradiction between "small farmers" and "big market", reducing risks, centralizing scattered agricultural products, and making it possible to reprocess and realize value-added agricultural products. If farmers want to sell agricultural products further and radiate a wider range, a cooperative organization is a better choice. Farms selling agricultural products in the city will also choose enterprises, which can help to avoid risks effectively.

Considering *H5*, agricultural brands have no significant impact on the market channel and have

a certain impact on other channels. Among them, the regression coefficients of enterprises, cooperative organizations, and large sales households are negative, and the regression coefficients of online electronic platforms and consumers are positive. It shows that farms with branded agricultural products are more likely to sell to consumers on online electronic platforms, and are less likely to choose other sales channels, which is consistent with the theoretical assumptions. Establishing a brand for a family farm is the extension of the quality of agricultural products and their intangible benefits. It plays a very important role in the development of family farms and product sales. Therefore, selling branded agricultural products through online electronic platforms can improve the popularity of the farm and expand its market share. Brands can better convey information to consumers, establish their uniqueness in the eyes of consumers, and better meet their needs. Branded agricultural products can also obtain greater benefits through direct sales.

Considering *H6*, product certification has an impact on enterprises, markets, and cooperative organizations. The regression coefficients of enterprises and cooperative organizations are positive, and the regression coefficient of the market is negative. This shows that farms with certified agricultural products are more willing to choose enterprises and cooperative organizations, which contradicts the theoretical assumptions. This is mainly because enterprises and cooperative organizations pay more attention to the quality and value of medium-sized agricultural products. Farms will be more willing to cooperate with enterprises and cooperative organizations, which is conducive to product sales.

Considering *H7*, family farms operating in the form of a company system tend to be more popular for enterprises and markets that purchase their products and sell to consumers. Since a company is a legal entity, it can obtain more resources and will choose channels with stable and high income. The partnership family farm will choose to sell in the market rather than directly to consumers, which is consistent with the theoretical assumptions.

Considering *H8*, individual industrial and commercial households are more likely to choose large

sales households, but less likely to choose cooperative organizations. The reason is that large sales households can sell different agricultural products offering good stability. Family farms of sole proprietorship enterprises are generally small in scale, with loose establishment conditions and flexible access to or exit from the market, so they are more willing to sell to large sales households.

In terms of family farmers' characteristics, the age of family farmers has an impact on the choice of enterprises and markets; the older the farmer, the greater the impact on the choice of these channels. In terms of farms' characteristics, the business form has no great impact on the online electronic platforms and has a significant impact on the choice of enterprises, fair markets, cooperative organizations, large sales households, and consumers. The regression coefficients of enterprises, cooperative organizations, and consumers are negative, while others are positive. The operating income of family farms has no significant impact on the choice of agricultural sales channels. A description is not the main influencing factor.

Based on the obtained results and analysis of reasons, several suggestions are put forward for the innovation and selection of agricultural sales channels.

First, it is necessary to improve the cultural quality of farmers and carry out special training. At present, family farmers in China are mainly people with a low average level of education, lack of theoretical knowledge on operation and management, who rely more on experience. Improving farmers' cultural quality is an objective requirement for promoting agricultural industrialization and developing modern agriculture. There is an urgent need for farmers to obtain new agricultural knowledge and skills as an effective measure to adjust the agricultural structure and promote production and income. To use the Internet sales, family farmers must master certain skills in Internet-related fields and be able to use the Internet to manage the production and operation activities. Governments at all levels attach great importance to the training of new professional farmers, innovation of working ideas, and introduction of effective measures. Therefore, it is vital

to improve farmers' academic qualifications, so as to continuously improve the level and systematization of farmers' education and training.

Secondly, family farms should strengthen brand development in multiple directions. A brand is not only the main symbol that distinguishes some products from other competitive products but also a value concept and spiritual symbol, as well as an important embodiment of the core value of products. Under the current background of agricultural industrialization, the competition for agricultural products is intense. If family farms want to stabilize and stand out in the completely competitive market of agricultural products, the most effective way is to build their brands. Family farms should mainly establish brand awareness, fully realize the important role of brand building in market competition, actively learn and understand the knowledge related to brand building, improve their own products' quality, and actively seek help from the government or relevant professionals. As for the advantages and characteristics of branded products, farmers need to select the appropriate target market and determine a brand positioning that not only meets the consumer demand but also has its unique characteristics. At the same time, a good job in the publicity and promotion of agricultural brands is required, additionally to the expansion of the brand influence through direct sales, network marketing, agricultural products exhibition, and other channels.

Thirdly, family farms should expand their sales channels and use the "Internet+" to achieve higher performance and better marketing through mobile e-commerce. In recent years, the new modern marketing format has gradually set foot in the field of agricultural product sales and launched a fierce competition with the traditional direct sales, which makes family farms face great challenges. Farmers lack the right to speak in the market competition and can not effectively resist the reality of market risks. Family farms can take advantage of the Internet, cooperate with e-commerce, sign agreements with logistics enterprises and payment platforms, and create a new model of online direct sales of agricultural products. By using the "Internet+", the information can be transmitted quickly and directly between the two sides, eliminating unnecessary intermediate links, improving

the efficiency of network marketing, reducing the marketing cost, and improving the circulation efficiency of agricultural products. It can not only guarantee the quality of agricultural products but also make the two sides of the supply and demand get tangible benefits.

Finally, agricultural modernization needs a lot of financial support. Government should increase agricultural subsidies and tilt special funds to family farms. They should speed up the improvement of the new agricultural social service system, timely release agricultural production information to family farmers through Internet platforms, and regularly train farmers to effectively improve their business activities and ability to apply Internet technologies. In addition, the government should give full play to its role, strengthen the brand construction and publicity of agricultural products, actively promote projects such as "docking between farmers and supermarkets" and rural e-commerce, innovate the sales channels of agricultural products, and promote the sales of such products.

CONCLUSION

Under the background of "Internet+", there are many choices of the sales channels to distribute agricultural products of Henan family farms. Therefore, this paper assessed the current situation with the sales channels among Henan family farms, collated and analyzed the data through SPSS 22.0 measurement software evaluating the logistic model and verifying the hypotheses. It is concluded that certification, brand, and business form of family farms have an obvious impact on their sales channels. According to statistical data, among the agricultural products' marketing channels of Henan family farm, the traditional spot trading channel is still the mainstream channel. Among all eight sales channels, the Internet channel accounts for 9.40%, ranking seventh.

Given the above results, this paper argues that under the background of "Internet+", the selection and innovation of sales channels by family farms in Henan is not perfect enough. Especially it concerns network platforms as possible sales channels due to the factors of consciousness, poor facilities, and environment; thus, there is no perfect ability to tap the potential of the Internet. At the same time, with the abundance of materials, people have gradually changed from "full eating" to "good eating" and "healthy eating". Agricultural products became trendy, building their brands and obtaining certifications, and occupy a great advantage in sales. Family farms still need to make efforts to strengthen their brand creation and certification of agricultural products.

However, the paper has some limitations. Due to China's vast territory, it is not possible to conduct interviews throughout the whole country. Future studies can expand the scope of the investigation to identify problems and deficiencies in China's agricultural sales channels, conduct in-depth analysis on optimizing agricultural marketing channels at the macro and micro levels. In addition, further studies can build a scientifically perfect research theoretical system, so that the sales channel system, channel structure, and main organization of agricultural products can achieve innovation and breakthroughs.

AUTHOR CONTRIBUTIONS

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