

Qualitative Analysis of the Key Influencing Factors of Farmers Participate in Agricultural Products E-Commerce to Help Rural Revitalization

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Abstract: At present, China is in a new stage of development, and agricultural e-commerce has become an important starting point to realize the rural revitalization strategy. As an indispensable market subject of agricultural e-commerce ecosystem, it is particularly critical to analyze the impact factors of farmers' participation in the development of agricultural e-commerce. The purpose of this study is to study the key influence factors of farmers' participation in the development of e-commerce, understand farmers' perception of online sales of agricultural products, and analyze the positive and negative factors of farmers' participation in the development of e-commerce. This paper collected data by interviewing three farmers in three different villages in the Qinling Mountains of China. ATLAS.ti software performed the analysis. The research results show that the effective participation of farmers in the development of e-commerce depends not only on the influence of a certain factor, but on the influence of a combination of multiple factors, that is, family income increase and government services are positive factors, and development opportunities and comprehensive e-commerce services are negative factors. Through analysis, we found that the following countermeasures and suggestions were proposed for farmers participating in agricultural products e-commerce to help rural revitalization. First, we need to improve rural human capital, second, we will support the diversified construction of e-commerce service stations and the optimization and upgrading of service functions, accelerate the formation of a modern agricultural products circulation system, and fourth, strengthen the construction and integrated application of new infrastructure. Due to limited collection time, the regional distribution of samples in this study was concentrated and the number of respondents was small. The sample size cannot represent all Chinese farmers participating in e-commerce.

Keywords: Agricultural products e-commerce, Rural revitalization, Impact factors, Qualitative analysis

1. Introduction

1.1. Background of the study

In recent years, China attaches great importance to the development of agricultural products e-commerce. So far, Chinese Central government for eight consecutive years has taken promoting the development of agricultural products e-commerce as a major strategic measure to activate the rural economy. The Ministry of Finance, the Ministry of Commerce, the State Council poverty alleviation and development office (now rural revitalization bureau) in order to implement the central government deployment, vigorously promote e-commerce into rural areas, help poverty engines and rural revitalization, since 2014, continuous joint "e-commerce into rural comprehensive demonstration" project, and remarkable results since the implementation of the project.

1.2. Background of industry

According to public data from the Ministry of Commerce, the national online retail sales of agricultural products reached 288.41 billion yuan, up 4.3% year on year. By the end of 2020, there were 1,407 comprehensive demonstration counties in rural areas, of which 832 state-level online retail sales of poverty-stricken counties had reached 68.48 billion yuan. Especially under the impact of the epidemic, rural e-commerce has become an important circulation channel to promote the upward trend of agricultural products and industrial products downward. Many migrant workers, college students and

cities who are unable to return to school in time have used e-commerce to achieve local businesses and employment. By the end of 2020, the total number of national level overcome poverty county online businesses had reached 3.065 million, up 13.7% year on year, and the number of workers employed was more than 9 million. On April 20, 2020, Chinese leader visited the live broadcast platform in Jimi Village, Shaanxi Province, and stressed that "e-commerce can not only promote agricultural and sideline products, help people get rid of poverty and become rich, but also promote rural revitalization"(Yong & Hongbin, 2020)[1]. In an important window period of consolidating and expanding and effectively connecting the achievements of poverty alleviation with rural revitalization, Through a combination of market mechanisms and policy guidance, It is of great practical significance to encourage rural households to deeply integrate into the agricultural e-commerce industry chain for promoting rural revitalization in China.

1.3. Problem statement

Question 1: How do farmers feel of selling agricultural products online?

Question 2: What are the positive factors for farmers to be satisfied with participating in the development of e-commerce?

Question 3: What is the factor that farmers are not satisfied with participating in the development of e-commerce?

1.4. Purpose of the study

By studying the key impact factors of farmers' participation in the development of e-commerce, we can understand farmers' perception of online sales of agricultural products, and analyze the positive factors and unsatisfactory negative factors of farmers' satisfaction in the development of e-commerce, so as to put forward constructive suggestions and enlightenment to promote farmers' participation in the development of e-commerce.

1.5. Research questions and Research objectives

This paper focuses around the following three questions, how about farmers' perception of online sales of agricultural products? What are the positive factors for farmers to participate in the development of e-commerce? What is the unsatisfactory news factor of farmers participating in the development of e-commerce? Find out the key factors affecting farmers' participation in the development of e-commerce.

1.6. Scope of the study

The scope of the study is Chinese farmers participating in agricultural e-commerce, and sampled from three overcome poverty villages in the Qinling Mountains.

1.7. Significance of the study

Agricultural products e-commerce effectively improve the farmers' information and sales channels are not smooth, expand the farmers' product sales scope and sales, reduce the transaction costs, reduce the farmers' dependence on traditional channels and realize the return of farmers order control, thus significantly reduce costs, improve circulation efficiency, realize the farmers' profit and sales income, promote the farmers' income (Tianshi, H.&Tiexin, F, 2005) [2]. There is no doubt that agricultural products e-commerce is an important realization mechanism to realize the general requirements of rural revitalization strategic industry prosperity and life prosperity. Farmers are not only the decisive force to promote the development of agricultural products e-commerce, but also the ultimate beneficiary group targeted by the rural revitalization strategy (Kanyu, et al, 2018) [3]. Therefore, it is of great practical significance to study the relevant factors of farmers participating in agricultural products e-commerce under the background of China's rural revitalization strategy. At the same time, it also provides advanced experience for the world to get rid of poverty and realize rural revitalization.

1.8. Limitations of the study

Due to limited collection time, the regional distribution of samples in this study was concentrated and the number of respondents was small. The sample size cannot not represent all Chinese farmers

participating in e-commerce.

1.9. Definition of terms

Poverty alleviation: The Chinese government has led the people to continue to declare war on poverty. Through its efforts since the reform and opening up, it has successfully blazed a path of poverty alleviation and development with Chinese characteristics, making more than 700 million rural poor people successfully lifted out of poverty.

Rural revitalization: adhere to the priority development of agriculture and rural areas, according to the industry prosperity, ecological livable, local custom civilization, effective governance, rich general requirements, accelerate the modernization of rural governance system and governance ability, accelerate the modernization of agricultural and rural areas, let agriculture become a look forward industry, let farmers become attractive career, let rural become a beautiful home to live and work in peace and contentment.

2. Literature Review

2.1. Preamble

The enthusiasm of farmers to participate can not only measure the effectiveness of agricultural reform [4], but also directly determine the enthusiasm of farmers to participate in agricultural reform [5]. Therefore, the key influence factors affecting farmers' participation has always been a hot spot and key issue for scholars at home and abroad.

2.2. Research Paradigm

This paper uses the social behavior paradigm to study the key influence factors affecting farmers' participation in agricultural product e-commerce. The social behavior paradigm, represented by the methodology of behavior science, emphasizes the objective and accurate analysis of individual social behavior. Through the empirical observation and interviews of farmers' external behavior, we can understand the causal relationship of farmers' participation, and then explain them scientifically.

2.3. Theory related to the study

This paper mainly uses behavior theory and exchange theory to study, take it as the theoretical basis of farmers' behavior selection, and then analyze, qualitative and explain the key factors affecting farmers' participation in agricultural e-commerce.

2.4. Relevant past to current studies

The research of the influence factors on farmer participation in development mainly involves strategic planning, industrial organization, industrial system and agricultural technology.

For example, the e-commerce Poverty Alleviation E-commerce poverty alleviation (EPA) is a supportive policy to alleviate poverty (Xiong et al, 2017) [6]. In the context of EPA, e-commerce is seen as an innovative solution to poverty alleviation and shifting from market behavior to government guidance (Tingting, F., 2022) [7]. The government plays a guiding role, and e-commerce platforms are actively cooperating in the context of EPA (Li et al., 2019) [8]. (Xiaohan et al, 2019) Thinking that the enthusiasm of farmers to participate in specialized farmer cooperatives, thinking that the degree of education, per capita family income and family contracted land area positively affect the enthusiasm of farmers to participate in cooperatives, put forward policy suggestions such as increasing investment in educational resources in rural areas, improving the income distribution system of cooperatives and encouraging land circulation [9]. (Cao, et al. 2015) Study believes that farmers' satisfaction with cooperatives is mainly significantly and positively affected by financial openness, democratic management and training times, etc. Therefore, departmental interests and capital interests should be strictly standardized and restrained to ensure the service quality of cooperatives [10]. (Prasertsang & Routrary. J. K, et al. 2020) Taking a sample of 290 Thai horticultural cooperatives as members, the study found that farmers' enthusiasm to participate in Thai horticultural cooperatives was significantly affected by the participation of members, trust of members, suitability and location, etc. It was proposed that the

government should encourage members to participate in cooperative activities and enhance the transparency of cooperative activities [11]. (Rosyad & Satriani, et al.2019) Taking 30 milk farmers as the survey found that on the one hand, farmers rely on the services provided by cooperatives to expand their sales channels, on the other hand, they are dissatisfied with the sales price of milk, which greatly reduces the production enthusiasm of milk farmers [12]. (Rohani, et al.2019) To study the positive degree of farmers' participation in the chicken company partnership, the results show that the production facilities services provided by chicken companies, cultivating technical services are significantly positive, and enhance farmers' loyalty to the chicken company partnership [13]. (Davoud & Masoud, et al.2021) The results indicate that perceived value, perceived image, and "hard" and "human" qualities are key factors influencing the positive use of drip irrigation technology by Iranian farmers [14]. (Saralopus, et al.2017) The results suggest that governance actions (preventing flow decline over time, e. g., maintaining infrastructure to reduce leakage) can significantly ostensibly increase farmers' enthusiasm for the use of small irrigation systems [15]. (Junhui&Degui, et al. 2017) pointed out that farmers' participation in agricultural e-commerce policy awareness, participation and benefit is positively related to their enthusiasm to participate, so formulate and implement policies to "farmers know, need, participation, satisfaction" as the starting point and the basis of work results, to protect farmers' right to know, right to participate, benefit and evaluation right, in order to continue to improve poverty alleviation to consolidate the results [16].

Combing the research literature on the influence factor of farmer participation found that there are many literature based on the influence factor of participation in farmers, which provides a solid foundation for the construction of the influence factor system in this paper. However, there is a lack of direct research on the influence factors of farmers participating in the agricultural product e-commerce situation [17]. Qualitative research on the key impact factors of farmers' participation in agricultural e-commerce is conducive to improving the development mechanism of agricultural e-commerce, promoting the sustainable development of e-commerce of agricultural products e-commerce, and then maximize the use of agricultural e-commerce as the starting point function to realize rural revitalization [18]. Therefore, this study has great theoretical and practical value.

3. Research Methodology

3.1. Preamble

This study mainly uses interpretative philosophy, social behavior research paradigm and behavior theory and exchange theory, for observation and interviews, and uses Atlas. The ti software performed the analysis.

3.2. Research design

The research philosophy applied in this paper is interpretivism. Because, applying interpretivism applies to data collection based on observation and interview, while consistent with the application of social behavior paradigm and behavior theory, exchange theory. This study mainly focused on small sample sizes, with the main data collected by means of observation and interview.

This study is mainly aimed at analyzing and explaining the key impact factors of farmers participating in the e-commerce sales of agricultural products. Farmers based on three different villages were the sample size. The aim is to study the impact of these farmers' experience in producing, operating and selling agricultural products on participating in e-commerce. Therefore, the study design of this paper requires the use of phenomenology.

3.3. Participant and setting – 3 participants

In this study, three representative farmers from poverty-alleviation villages deep in the mountains of Qinling Mountains were selected. Since the researchers have been engaged in poverty alleviation work for a long time, it was more convenient in time and place, and the interview questions were determined in advance. At the same time, the researchers and respectively established mutual interpersonal relations with three farmers, which greatly improved the reliability and credibility of interviews and observations. Researchers can truly obtain the feelings and opinions of participants, avoid bias, and collect, analyze and present data with a clear thinking and open mind.

3.4. Data collection

This study collected primary data by preset six open-ended questions for individual interviews using a structured questionnaire. highly personalized information was obtained from farmers by interviewing participants. In this study, Due to the time constraints, Non-probabilistic sampling was used, Three representative farmers were selected for the interview. No ethical problems were encountered during the data collection. The collection of secondary data was made mainly in the investigator's observation of the participants, and other researchers on farmers participating in agricultural products e-commerce sales related topics. In the sampling method, the non-probabilistic convenient sampling method has certain limitations and can not represent all farmers.

3.5. Data analysis

3.5.1. Data organization

This paper mainly the qualitative research method and data will be organized by analyzing the interview records. Review of the data, form it into different categories and assign code, Grouthe code. Through the above organizational data program, the author can analyze and discuss data.

3.5.2. Coding process, theme constructing and translation of data

The following table 1 shows the organization of the data.

Table 1: Developing the categories and properties from codes

Category	Codes	Properties
Benefits of farmers participating in agricultural products e-commerce	Increase incomes	Advantages
	cost saving	
	expansion of sales channels	
	Government support	
	Increase of efficiency	
Farmers to participate in agricultural products e-commerce challenges	Not familiar with use	Disadvantages
	Product quality difference	
	Logistics situation	
The feeling of the change in the sales mode of farmers' agricultural products	Training is required	Positive feeling
	Would like to use E-commerce	Positive feeling
	The service is not good	Negative feeling
Preference	Participation in e-commerce is more convenient	e-commerce mode
	Participating in e-commerce can increase its income	
	validity	
	intention	
	attractive force	
	Group studies	

Table 1 shows the following 4 aspects:

Benefits of farmers participating in agricultural products e-commerce: Since e-commerce sales are wider, low cost, high efficiency and faster income increase than traditional sales channels, they can improve efficiency and be supported by the government.

Because the way of agricultural products e-commerce is different and the traditional sales methods, so there are also challenges: Due to being unfamiliar with the use, differences in the quality and price of selling agricultural products on e-commerce platforms, increased competition and logistics, farmers face certain challenges in adapting to selling agricultural products on e-commerce platforms.

Farmers' feeling of changes in the way of selling agricultural products: Due to the convenience of e-commerce, farmers are willing to participate in agricultural products e-commerce. However, because they are not familiar with the use, e-commerce service platforms due to the lack of service, also let them feel lack of motivation.

Preference: Farmers are active in agricultural e-commerce, because they think it can bring benefits to them.

3.5.3. CAQDAS

This article uses the Atlas. ti software performed the study analysis, Cross tabulation, producing quotes, and networks will be done using the software. keeping these record will help the researcher in maintaining the validity and reliability of the study, as shown in Table 2, Figure 1 and Figure 2.

Table 2: cross tabulation of research objectives groups

	5: P1 12	6: P2 15	7: P3 10	Totals
Benefits of farmers participating in agricultural products e-commerce	5	6	6	17
Farmers to participate in agricultural products e-commerce challenges	1	4	2	7
The feeling of the change in the sales mode of farmers' agricultural products	6	5	2	13
Totals	12	15	10	37

Creating quotations helps researcher to refer back-and-forth with important notes and related codes.

Active:23Quotations

6-codes-Local filters:Show codes in group Benefits of farmers participating in agricultural products e-commerce

1 codes:● cost saving

2 Quotations:

5:13 P1,e-commerce sales, as long as no matter how far away you need to buy agricultural products, you can see and buy my products on your mobile phones.

2 codes:● expansion of sales channels

6 Quotations:

5:1 P1,I think e-commerce sales can broaden the sales channels for our farmers.

3 codes:● Government support

3 Quotations:

7:5 P3,The development of e-commerce should also rely on the support

4 codes:● Increase incomes

4 Quotations:

6:5 P2,increase my income.

5 codes:● Increase of efficiency

3 Quotations:

5:2 P1,Traditional sales can't tell a lot of people in a very short time that I have produce for sale.

6 codes:● Would like to use E-commerce

5 Quotations:

6:15 P2,I will not use the e-commerce platform. If someone can help me, I am still willing to participate, after all, I am selling agricultural products and increase my income.

7:9 P3,spent less time and sells high, which two appealed to me.

Figure 1: Quotations with labels

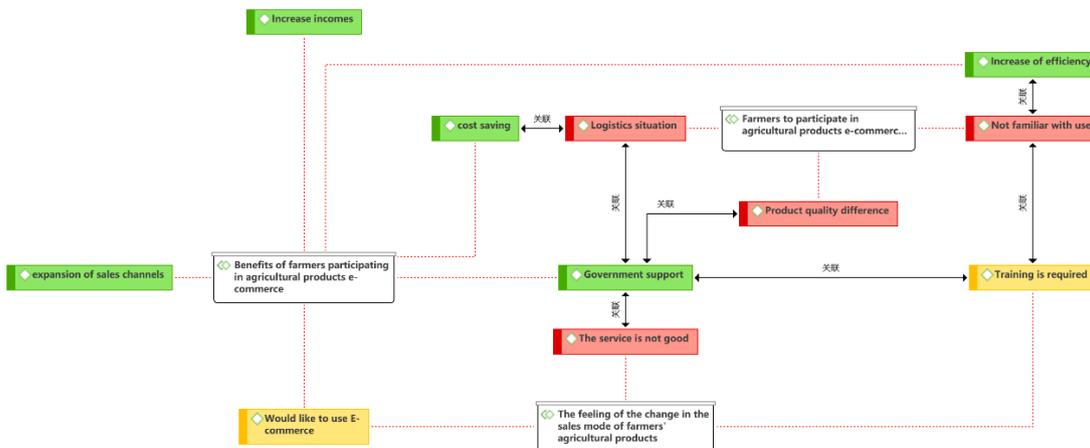


Figure 2: A network of codes of codes around the code groups

4. Findings And Discussion

4.1. Preamble

The aim of this study is to study the key impact factors of farmers participating in the development of e-commerce, Understand farmers' perception of selling agricultural products online, Analyze the positive and negative factors of farmers participating in the development of e-commerce. Here are the findings drawn from the interview transcript.

4.2. Findings – Participants' details, emerging themes and codes

Q1-What do you think differently about e-commerce platforms selling agricultural products and selling traditional methods?

P1: e-commerce sales are very different from traditional sales. I think e-commerce sales can broaden the sales channels for our farmers. Traditional sales can't tell a lot of people in a very short time that I have produce for sale.

P2: traditional agricultural products sales channels are too little to obtain the comprehensive news of the market, and we farmers are in a passive position in the process of bargaining. To not let the produce rot, we sell at very low prices or even at a loss. E-commerce is different, there are many sales channels, fast, efficient, will not let us sell at a very low price.

P3: traditional sales We are all sold to wholesalers, e-commerce can be sold directly to consumers using agricultural products.

As can be seen from the above, all three participants believe that agricultural products e-commerce is better than the traditional sales methods.

Q2-Would you like to participate in e-commerce platforms to sell your own agricultural products?

P1: e-commerce platform is a new thing, I have only come to in recent years. If the service of the e-commerce service platform in the village is slightly more thoughtful, my participation enthusiasm can be improved, or train us, and let us learn how to use the e-commerce platform.

P2: I will not use the e-commerce platform. If someone can help me, I am still willing to participate, after all, I am selling agricultural products and increase my income.

P3: If you participate in the e-commerce sales of agricultural products, you can give me some subsidies.

When asked if you are willing to participate in agricultural products e-commerce, all three participants showed more positive, However, there are still problems such as no use and the need for subsidies and support.

Q3-What are the factors for why e-commerce sells agricultural products?

P1: e-commerce sales, as long as no matter how far away you need to buy agricultural products, you can see and buy my products on your mobile phones.

P2: e-commerce sells agricultural products, which will reduce our labor costs and operating costs.

P3: spent less time and sells high, which two appealed to me.

Three participants thought that the factors to attract participation were: Increase incomes、cost saving、expansion of sales channels、Government support、Increase of efficiency.

Q4-Have you have a bad experience in the process of e-commerce sales of agricultural products?

P1: The e-commerce service platform service still needs to be further improved, and they have too few staff.

P2: sometimes the other side has placed an order, but the delivery to pick up goods, so we can not deliver goods in time.

P3: I feel that the cost of network broadband is a little high, in addition, some farmers sell products that are not as good as my quality, and also sell the same price as me, but my price increases, sales go down, customers can not directly see my products, so it is difficult to improve the price of good quality agricultural products.

When it comes to the bad aspects, three participants considered poor service attitude, poor logistics,

and price differences in product quality as negative factors.

Q5-What is your advice on e-commerce for selling agricultural products?

P1: I think it's more important for someone to teach us how to better run the e-commerce platform and how to find more customers to buy our products.

P2: logistics also needs to be strengthened, it is best to deliver goods every day, if the logistics costs can be reduced some, so that we can mail agricultural products to customers in time, so that customers can have a good impression on our service, and will buy my products next time.

P3: had better have an agency to identify the quality of our agricultural products so that you can sell good quality agricultural products at a better price.

When asked about advice and requirements, The three participants believed that it was more important to strengthen training, improve services, and identify the quality of agricultural products.

Q6-What do you think of the development of e-commerce selling agricultural products?

P1: The development of e-commerce is a trend, but everyone does e-commerce, whether the competition will be big, so that our profits will become smaller.

P2: In my opinion, if e-commerce wants to develop well, our agricultural products must have quantity and quality. E-commerce is a platform. Only by developing the agricultural industry can we talk about the development of e-commerce.

P3: The development of e-commerce should also rely on the support and help of the government, and we should give full play to the functions of village-level e-commerce service stations, so as to have better development.

When asked about the future development, three participants think that agricultural products e-commerce may increase competition and need government support to achieve good development.

4.3. Discussion

The findings suggest that the effective participation of farmers in the development of e-commerce does not only depend on the impact of a certain factor, it is the effect of the combination composed by multiple factors, that is, increase incomes, cost saving, expansion of sales channels, Government support, increase of efficiency is a positive factor, development opportunities and comprehensive e-commerce integrated services are negative factors, and there are also some needs.

5. Conclusion, Implication And Recommendation

5.1. Preamble

Through research and analysis, we put forward countermeasures and suggestions for farmers participating in agricultural products e-commerce to help rural revitalization, and pointed out the impact of this research on the industry and the step of the next research suggestions.

5.2. Conclusion & suggestions

First, we will accelerate the deep integration of e-commerce and agriculture, Realize the fundamental change of production mode and supply chain model, E-commerce-driven agricultural products circulation channels are flat and production and sales connection, However, it has not fundamentally solved the problems of unstable yield and quality and low efficiency and efficiency in the supply of traditional agricultural products, Therefore, there is no long-term mechanism for farmers to continuously increase their income. In the long run, based on the factors of farmers' participation, the high-quality development of agricultural products e-commerce must reverse realize the fundamental change of production mode and supply chain mode. First, we will promote the deep integration of e-commerce with the rural tertiary industry. Second, with e-commerce to force the change of agricultural production mode, We will promote farmers to apply new tools, new technologies and new channels, We will promote the organic linkage between small farmers and modern agriculture.

Second, improve the e-commerce ecosystem of agricultural products, We will build a rural industrial

community. First, to develop industrial clusters based on e-commerce, we will guide leading enterprises, specialized farmer cooperatives, family farms, network business enterprises, and logistics enterprises to achieve interconnected development. Promote the horizontal scale and vertical integration of the industry, to build an industrial group integrating production, supply and marketing. Second, we will improve the three-level e-commerce service system of "county, town and village", We will strengthen overall planning and systematic progress.

Third, we will promote rural innovation and entrepreneurship led by e-commerce, and promote the revitalization of rural talents. First, to improve the perceived ease of use of rural e-commerce, we will improve the rural e-commerce training system, we will vigorously foster rural revitalization of e-commerce entities, Enhance farmers' awareness of rural e-commerce. Actively improve the relevant facilities for the development of rural e-commerce, Such as basic logistics, supply chain construction, regional brand building, etc.

5.3. Implications to knowledge and industry

In an important window period of consolidating and expanding and effectively connecting the achievements of poverty alleviation with rural revitalization, Conclusions and implications from this study, it can further combine the market mechanism with policy guidance, encourage farmers to deeply integrate into the agricultural products e-commerce industrial chain, it has the influence of knowledge and business theoretical research on promoting China's rural revitalization.

5.4. Recommendations- future research

As the sample size selected in this study was small, and the distribution was relatively concentrated. Future researchers can expand the sample size and distribution, It can also be studied in a combination of quantitative modeling and qualitative methods, Make its research results more objective and more influential.

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