

Webcasting and the Development of E-Commerce of Fresh Agricultural Products: Driving Mechanism and Empirical Test

-- Taking Hefei as an Example

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Abstract

In recent years, incidents of "sell hard to buy expensive" fresh agricultural products have occurred frequently, and both farmers and citizens have been damaged. Analyzing the reasons and exploring rescue strategies are of great importance to break the upward plight of agricultural products, increase farmers' income, and improve people's livelihood significance. As my country gradually enters the era of digital economy, the supply chain of fresh agricultural products is gradually transforming to a digital model. At present, the development of agricultural products is no longer limited to a single production field, but to expand the scope of sales, so that more people are interested in online sales of agricultural products. In this context, this project explores the impact of network digitization on the development of fresh agricultural product sales by studying the driving mechanism and empirical test of the development of fresh agricultural product e-commerce, using supply and demand models, comparative static analysis, empirical analysis, production and cost function models, etc. Impact. The results show that webcasting can give full play to its advantages, and drive the development of fresh agricultural products e-commerce through stimulating effects, digital transmission, and real-time characteristics. Among them, female anchors, 30-39-year-old anchors, and rural household registration anchors have a more significant promotion effect on fresh agricultural product e-commerce than male anchors, anchors under 30, 40 and above, and urban household registration anchors.

Keywords

Fresh Agricultural Products; E-commerce of Agricultural Products; Live Broadcast of Online E-commerce; Driving Force.

1. Introduction

China has a vast territory, a large population, and a large demand for fresh agricultural products. It is recognized as a large agricultural country. With the development of the industrial science and technology revolution and the emergence of new types of agriculture, there are various sales channels for fresh agricultural products. The whole country has initially formed a network covering urban and rural areas with wholesale markets and agricultural product sellers as the core and retail terminals such as bazaars and supermarkets as the basis. Agricultural product circulation system. However, the situation of "hard to sell and expensive to buy" fresh agricultural products is still very serious. The seasonality and regionality of fresh agricultural products, the immediacy of sales, the perishability in circulation and the high frequency of sales make farmers unable to obtain income. protection, the needs of residents are not met. Targeted use of live webcast technology to expand sales channels for fresh agricultural products, expand residents' choices of fresh agricultural products, improve the production and distribution chain

of fresh agricultural products, solve the problem of "hard to buy and expensive" fresh agricultural products, and improve the quality of life for the people. Life has a positive meaning. With the continuous improvement of people's living standards, consumption concepts are also constantly changing, and people's requirements for fresh agricultural products are also constantly increasing. Fresh agricultural products need not only good quality, but also variety and high nutritional value. These new consumption requirements require the production chain of fresh agricultural products to reach a fairly complete level, which is also a major problem for us to study live e-commerce and the supply of fresh agricultural products.

Hefei has a flat terrain, dense population, superior water and fertilizer sources, a high level of agricultural production, and abundant resources of fresh agricultural products, but sales are difficult. This article takes Hefei as an example to introduce the relationship between webcasting and e-commerce of fresh agricultural products. development, and put forward solutions to the difficulties in the sale of agricultural products.

At present, the relatively mature e-commerce of fresh agricultural products in my country includes "Meituan Best", "Jingdong Daojia", "Yonghui Life", etc. Since the establishment of Yiguo E-commerce Co., Ltd. The e-commerce of fresh agricultural products has developed initially, and its models are also diverse. "Meituan Youyou" adopts the "pre-order + pick-up" model to provide users with products, while "Yonghui Life" relies on the global direct procurement supply chain, providing 30-minute delivery of fresh food to the residents within three kilometers. [1] The e-commerce platforms above all focus on transportation services, which are a supplement and improvement to farmers' markets and specialty stores of agricultural products.

Foreign fresh food e-commerce has developed rapidly, and e-commerce research started much earlier than in China, which once led the development trend of agricultural product e-commerce research. The degree of commercialization of foreign fresh food e-commerce is high. Taking the United Kingdom as an example, in terms of the promotion and use of farmers, the network penetration rate of farms has achieved 100%, and the rate of farmers joining agricultural product e-commerce has also increased from 76% in 2013 to 2020. 96% of the year. According to the current development status of fresh food e-commerce at home and abroad, the sales link still needs to be developed and improved. [2] If the sales of fresh agricultural products are combined with today's emerging online live streaming, it will expand the user's choice of fresh agricultural products, and it will also help the sales of fresh agricultural products in remote and backward areas, realizing the harmony between producers and consumers. Mutual benefit and win-win.

From the analysis of the existing literature, it is not difficult to see that the research on the development of e-commerce for fresh agricultural products is still not comprehensive enough and needs further research. The innovation of this article lies in: At present, there are many types of live broadcast in my country, including both male and female anchors; there are live broadcasts with rural household registration and urban household registration. Which kind of anchor or live broadcast is more able to drive fresh agricultural products? The development of e-commerce? How to choose the e-commerce of fresh agricultural products? This research is based on the current situation of the development of fresh agricultural products in Hefei. Taking the questionnaire survey data as an example to conduct empirical research is of great significance for guiding the development of e-commerce of fresh agricultural products.

2. Mechanism Analysis of Webcast Driving the Development of E-Commerce of Fresh Agricultural Products

Fresh agricultural product e-commerce refers to the introduction of modern information technology and e-commerce and other commercial means into the production and operation of

fresh agricultural products, combined with fresh agricultural products and other cold chain logistics and online e-commerce, to form an efficient marketing system for fresh agricultural products suitable for the network economy. With the popularization of the Internet, more and more fresh agricultural products are delivered to consumers through e-commerce. This paper believes that compared with the traditional sales of fresh agricultural products, online live broadcast marketing has the characteristics of fast transmission speed, wide audience range and high information quality, which can effectively solve the problems of information blockage and limited publicity in the sales of fresh agricultural products.

First, the webcast drives the healthy development of fresh agricultural products through the stimulating effect. Live webcasting makes e-commerce develop rapidly, and e-commerce can break through geographical restrictions, enabling producers and consumers to reach deals without leaving home. However, due to the spatial gap between the two parties and the rapid development of e-commerce for fresh agricultural products, the competition for products is very fierce. First of all, low-price competition is currently a way for e-commerce platforms to attract customers, and this has also become the main reason why bad money drives out good money. A large number of low-quality agricultural products are selling well, and high-quality fresh products are forced to be unsalable. As a result, the sources of agricultural product e-commerce platforms are concentrated in cheap and low-quality agricultural products, blocking high-quality products from the door of e-commerce.

Second, webcast drives the development of e-commerce for fresh agricultural products through digital transmission. As the needs of consumers in the market continue to upgrade, the value propositions in different models also change, from producer-oriented to consumer-oriented. The integration of internal technologies and changes in external value propositions jointly drive the supply of fresh agricultural products to continuously transform and upgrade to digital. The background data obtained from the webcast enables e-commerce companies to understand the needs of consumers of different ages and regions for fresh agricultural products, and helps to build a digital supply chain for fresh agricultural products. The live webcast perceives consumption habits through the Internet and Internet of Things technology, guides the upstream procurement and operation links of the supply chain, realizes remote intelligent management and service links through information technology, and provides consumers with complete product pre-sales experience, after-sales claims settlement and data integration services. The digital development of webcasting has made the development of e-commerce of fresh agricultural products more orderly and complete.

Third, webcasting has real-time characteristics. Today's digital live transmission has greatly reduced the occurrence of this situation. Some merchants who try to mix unqualified agricultural products into fresh agricultural products cannot make fakes on digital live broadcasts, and cannot carry out post-beautification of pictures and false excessive publicity. Real-time communication in the 5G era makes people truly feel the freshness and green advantages of fresh agricultural products, making the information disseminated to buyers more authentic, reliable and effective. Seeing is believing, hearing is believing, and the all-round display without dead ends makes buyers visually pleasing to the eye and psychologically more trusting in the quality of fresh agricultural products. Under the background of the epidemic, the development of real industries has been hindered. E-commerce live broadcasts have quickly penetrated into consumers' daily lives through online celebrity delivery and cross-border live broadcasts. The real and affordable live broadcast environment of fresh agricultural products has stimulated consumers' desire to buy, thereby stimulating and leading The growth of traffic in the sales industry has enabled the healthy development of the fresh agricultural product industry.

3. Empirical Test of Webcast Driving the Development of E-Commerce of Fresh Agricultural Products

3.1. Variables and Models

First, the explained variable is the development level of fresh produce e-commerce. my country's fresh food e-commerce industry has a long industrial chain, generally including upstream consumption and supply; midstream fresh food e-commerce; and downstream consumers. In the middle, it also needs multiple supports such as cold chain logistics, warehousing, and third-party support. Due to the characteristics of fresh products that are difficult to store and easy to perish, the lengthy supply chain reduces the circulation efficiency of commodities and increases their loss, which has become a major pain point in the industry. Generally speaking, the current e-commerce industry is still progressing steadily. With the continuous improvement of Internet technology, all major e-commerce service providers are committed to providing more professional services to platform users, reducing the transaction process to the greatest extent. capital. In addition, due to the epidemic in recent years, more and more offline companies have chosen to transform and develop, and actively embarked on the road of e-commerce development. Although my country's e-commerce industry is still developing steadily, looking at the development trend in recent years, the growth rate has slowed down, which means that the competition in the e-commerce industry will become more intense. Therefore, how to shorten the supply chain and improve logistics efficiency is the key to reducing the cost of fresh food e-commerce. With the advent of the new wholesale boom, innovative forms such as direct procurement from the origin, direct sales from farms, and front warehouses have emerged, providing diverse ideas for shortening the supply chain and reducing costs. Furthermore, with the gradual improvement of the domestic policy, economy, society, and technological environment, domestic fresh food e-commerce will usher in greater opportunities for development. In the questionnaire, I asked, "Is there a big difference in the benefits before and after adopting e-commerce live broadcasting? A. The difference is small, B. The difference is small, C. There is no difference, D. The difference is large, and D. The difference is very large." In the specific demonstration process, let them be assigned values of -2, -1, 0, 1 and 2 respectively.

Secondly, the core explanatory variable, that is, the selection of Hefei fresh agricultural product e-commerce in the webcast environment. On the first day of 2017, the Douyin platform launched a live broadcast function. At first, the anchor got income through rewards. Later, the e-commerce platform was combined with the live broadcast. Merchants, taking advantage of factors such as fast sales and convenient delivery of webcasts, also joined the ranks of webcasts. In the questionnaire, the question related to the choice of online live broadcasting by Hefei fresh agricultural products e-commerce is "According to the current sales situation of Hefei fresh agricultural products, in the process of selling agricultural products through the Internet, have you ever chosen to use webcasting as a marketing method?" ? A. No, B. Yes". In the specific demonstration process, let them be assigned the values of 0 and 1 respectively.

Finally, other control variables, that is, other factors that affect the development of e-commerce for fresh agricultural products. Generally speaking, the development situation of e-commerce for fresh agricultural products depends on three categories: the influence of personal cultural differences, the influence of regional environment, and the influence of information asymmetry. Personal cultural differences are the decisive factors affecting the development of fresh agricultural products e-commerce. With the rapid development of the digital age, individuals have different acceptance of e-commerce, which affects the development of e-commerce for fresh agricultural products. The control variables designed at the level of personal cultural differences include gender, age, marital status, household registration status, education, political affiliation, and acceptance of e-commerce. The regional environment is a necessary

factor affecting the development of e-commerce of fresh agricultural products. The reason why the regional environment is an important factor is because the regional environment will lead to whether the logistics is restricted, and the logistics situation plays a major role in the development of fresh agricultural products e-commerce. The control variables designed at the level of regional environment include cooperation with logistics companies, logistics service outlets, and popularization of laws. Information asymmetry is a historical factor affecting the development of fresh agricultural products e-commerce. Restricted by the internal confidentiality of the intermediary platform, information asymmetry can only be made as close as possible to equality, and it is impossible to completely become information equality, which will always exist in the development of e-commerce. The control variables designed at the level of information asymmetry include the status of township informatization, the degree of service differentiation, and the degree of cooperation risk.

3.2. Data Source Description

Taking Hefei City as an example, in 2022, Hefei will vigorously promote the high-quality development of rural e-commerce, promote the cultivation of rural e-commerce entities, and promote the sales of rural products. The city's online sales of rural products will reach 17.843 billion yuan, a year-on-year increase of 39%. Among them, Hefei Sanshigang watermelon will be included in the National List of Famous, Special and Excellent New Agricultural Products in 2020. As one of the typical fresh agricultural products in Hefei, Sanshigang watermelon is undoubtedly suitable as the selection sample standard for this article. The sample research area of this paper is Hefei City, Anhui Province (including Changfeng County, Feidong County, Feixi County, and Lujiang County). Aiming at the fresh produce vendors who sell thirty hills of watermelon, from December 2022 to January 2023, the research team randomly distributed 100 questionnaires in different counties of Hefei City, with a total of 400 questionnaires distributed, excluding 57 invalid questionnaires, a total of 343 questionnaires, the effective rate of 85.75%. Table 1 shows the statistical results of variable assignments and their mean and standard deviations in the above questionnaires.

Table 1. Variable assignment and descriptive statistical analysis results

| variable | specific indicators | Assignment | Mean (accurate to four decimal places) | Standard deviation (accurate to four decimal places) |
|---------------------------------------|----------------------------|---|---|--|
| individual cultural differences | gender | female=0, male=1 | 0.5015 | 0.0963 |
| | Year | 30 years old and below=1, 30-39 years old=2, 40 years old and above=3 | 0.8983 | 0.1026 |
| | marital status | Unmarried=1, Married without a spouse=2, Married with a spouse=3 | 2.1612 | 0.1216 |
| | Household status | Rural hukou=0, urban hukou=1 | 0.4325 | 0.0026 |
| | academic qualifications | Elementary school and below = 1, junior high school = 2, high school and above = 3 | 2.2811 | 0.0031 |

| | | | | |
|--|---|---|--------|--------|
| | political status | Crowd=1, League member=2, Party member=3 | 1.3342 | 0.0021 |
| | Acceptance of e-commerce (10-point scale) | 3 points and below = 1, 3 points - 7 points = 2, 8 points and above = 3 | 2.7835 | 0.9563 |
| Regional environmental characteristics | Cooperation with logistics companies | Very dissatisfied=-2, dissatisfied=-1, fair=0, satisfied=1, very satisfied=2 | 1.2379 | 0.1439 |
| | Logistics service outlets | Very dissatisfied=-2, dissatisfied=-1, fair=0, satisfied=1, very satisfied=2 | 1.4577 | 0.1415 |
| | Popularity of law | Not extensive=-1, Moderate=0, Very extensive=1 | 0.5211 | 0.1127 |
| information asymmetry | Township Informatization Status | Very dissatisfied=-2, dissatisfied=-1, fair=0, satisfied=1, very satisfied=2 | 1.8921 | 0.1537 |
| | service differentiation | Small difference=-2, small difference=-1, no difference=0, big difference=1, big difference=2 | 0.1988 | 0.3542 |
| | Cooperation risk level | Little risk=-2, little risk=-1, no risk=0, big risk=1, big risk=2 | 1.2991 | 0.2133 |
| instrumental variable | Investment in digital transformation of e-commerce stores for fresh agricultural products | Never=-2, Occasionally=-1, Usually=0, Often=1, Always=2 | 1.1129 | 0.1019 |

3.3. Heterogeneity Test

Test 1: The heterogeneity of the driving force of the different genders of anchors on the development of e-commerce of fresh agricultural products. In order to understand the impact of anchors of different genders on the development of fresh agricultural product e-commerce, in the questionnaire, the following related questions were asked: "Whether the fresh agricultural product live broadcasts you have seen are mostly male anchors or female anchors" A. Male anchors, B. female anchor". In the specific empirical process, this paper assigns a value of 0 to "male anchor" and 1 to "female anchor". Based on the above, we can see that the mean value is 0.4873 and the variance is 0.0862. It can be seen from the survey that women The webcast of anchors can drive the development of e-commerce of fresh agricultural products. In the live broadcast of fresh agricultural products, most of the customer groups are women, and

female anchors often understand the real needs of the live broadcasting customer group better. Female anchors can use their own unique expression methods to comprehensively demonstrating the advantages of fresh agricultural products can better arouse customers' empathy, increase the sales of agricultural products e-commerce stores, and drive the development of fresh agricultural products e-commerce. For example, some female anchors with good image and good temperament attract customers' attention, At the same time, it can be said that Sangang watermelon is rich in various nutrients, clears away heat and diuresis, is beneficial to relieve muscle soreness, and is beneficial to physical health.

Test 2: The different ages of anchors drive the heterogeneity of the development of fresh agricultural products e-commerce. As the entry threshold for webcasting becomes lower and lower, more and more people choose to become an anchor, an Internet celebrity, which also enriches the age group of the entire anchor. Do web anchors of different ages have an impact on the sales of fresh produce e-commerce? The relevant question in the questionnaire is "From the perspective of age, in which age group do you think the anchor has a more significant driving effect on the development of e-commerce stores? A. 30 years old and below, B. 30 years old to 39 years old, C. 40 years and older". In the specific demonstration and statistics, this article assigns a value of 1 to "30 years old and below", assigns a value of 2 to "30 years old to 39 years old", and assigns a value of 3 to "40 years old and above". From the statistical data, it is found that in the whole age group, anchors aged 30 to 39 are more able to drive the development of e-commerce stores for fresh agricultural products. With the comprehensive development of online live broadcasting, they range from 90-year-olds to just adults Young people, everyone has entered the era of national live broadcast. Among them, the anchors aged 30 to 39 will not feel inexperienced to consumers because they are too young, nor will they be too old to be familiar with webcasting. Moreover, fresh agricultural products belong to the food consumption for the public. The anchor needs to convince people of all ages of the products sold, so there is no need for too fancy marketing methods, just let consumers understand fresh agricultural products in all aspects, and Guaranteeing thoughtful after-sales service naturally promotes the development of e-commerce for fresh agricultural products.

Test 3: The heterogeneity of the anchor's household registration on the development of e-commerce for fresh agricultural products. With the continuous development of the Internet, many people have devoted themselves to the theme of "Agricultural E-commerce" as the theme of the webcast. From the past when farmers acted as anchors to grow and sell themselves, now farmers grow themselves and middlemen sell them. Is this phenomenon a major improvement in the driving force of fresh agricultural product e-commerce or has it played a negligible role? In other words, is the anchor with urban household registration or the anchor with rural household registration more significant driving force for the development of fresh agricultural product e-commerce? Based on this question, it was also involved in the questionnaire—"Which one do you think is more conducive to the development of your own e-commerce, the urban household registration anchor or the rural household registration anchor? A. Rural household registration, B. Urban household registration". In the specific experimental verification process, this paper assigns a value of 0 to "rural household registration" and a value of 1 to "urban household registration". Based on the above, it can be seen that the mean is approximately equal to 0.4258, and the standard deviation is approximately equal to 0.0031. From the above information, it can be seen that compared with urban household registration anchors, rural household registration anchors have a greater drive for the development of fresh agricultural product e-commerce. In the online world, consumers are most afraid of being deceived. When the host does not know enough about a product, consumers often regard this behavior as deceitful. However, rural household registration anchors are often born and raised locally, and they are not familiar with the product. Obviously, the understanding is much more than that of urban household registration anchors. Therefore, when consumers describe

anchors with two different identities, they will be more inclined to anchors with rural household registration.

4. Research Conclusion and Countermeasures

Aiming at whether webcasting can drive the development of e-commerce for fresh agricultural products, this paper conducts research from two aspects: mechanism analysis and empirical testing. The research results show that the rise and gradual improvement of live webcasting is a new opportunity and challenge for every fresh produce merchant. The huge number of daily active users on the live broadcast platform has brought merchants an online sales environment beyond space and promoted the development of fresh agricultural products. Among them, network anchors of different genders, ages, and household registrations have heterogeneous influences on the development of fresh agricultural products. Female anchors, anchors aged 30-39, and anchors with rural household registrations are more popular with consumers and can promote fresh produce. development of agricultural products. However, problems such as frequent false publicity, uneven product quality, and poor after-sales service in live webcast delivery still bring challenges to the development of fresh agricultural products. In-depth research shows that the cost of online live broadcasting is lower than that of ordinary e-commerce. Vigorously promote online live broadcasting, increase the live broadcast rate of fresh agricultural products e-commerce, and cultivate e-commerce stores' own brands to drive the development of fresh agricultural product e-commerce.

Based on the above research conclusions, in order to give full play to the role of webcasting in promoting fresh agricultural products, efforts must be made in the following aspects: First, the advantages of large traffic, wide audience range, and good publicity effects of webcasting must be fully utilized. Make improvements in the hardware and software of the webcast to ensure that the network is smooth and the voice is clear during the live broadcast of the merchants, and ensure that the web anchor has a good performance ability, can introduce products in detail, and attract traffic. Second, to put honesty first, we must put an end to false propaganda, ensure the quality of our products, and refrain from doing things that harm consumers and the market. In the process of e-commerce business expansion, it is necessary to raise awareness of food safety and steadily implement the concept of ecological and environmental protection. It is also necessary to ensure thoughtful after-sales service, help consumers with reasonable questions, discover problems in consumption in a timely manner and solve them in a timely manner, and guide e-commerce store owners to adjust their own development strategies according to changes in consumer consumption concepts, which is convenient, green and healthy. , The change of high-quality consumption concepts, the live broadcast of e-commerce without leaving home is not the excessive consumption of fresh agricultural products, but to try to meet the needs of the contemporary people for the development of a better life. Third, in the process of e-commerce business expansion, we must raise awareness of food safety and steadily implement the concept of eco-environmental protection. To establish and improve the public brand awareness of fresh agricultural product e-commerce, we must seize the opportunity of the promulgation of the "Civil Code of the People's Republic of China", strengthen the effectiveness of rural laws and regulations, and consolidate the legal environment for the development of fresh agricultural product e-commerce. Fourth, improve the live broadcast environment of fresh agricultural products e-commerce. Focus on creating a professional area, encourage existing enterprises in the fresh food industry to actively integrate into the e-commerce live broadcast industry chain; build a live e-commerce logistics service website, build a smart logistics platform; develop fresh agricultural products e-commerce brands, and actively cultivate a group of capable and capable Quality live broadcast bloggers of fresh

agricultural products attract college students and more fresh agricultural product operators to start live broadcast e-commerce businesses.

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