Construction of New Agricultural Products E-commerce Platform and Analysis of Its Functional Requirements

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Abstract. Under the background of the Internet era, the deep integration of e-commerce technology with modern agriculture and dietary consumption has revolutionized the traditional living habits of urban people. The new agricultural products e-commerce platform meets the practical functional needs of modern social agricultural products supply, e-commerce platform, and consumer users, and establishes an independent, new-based agricultural e-commerce food chain based on the consumption target and data-based sales process. The KANO model is used to analyze the impact of user requirements on user satisfaction, reflecting the nonlinear relationship between product performance and user satisfaction, analyzing the number of user choices corresponding to different demand attributes, revealing the user's expectations of their functional requirements, and establishing product objective. The relationship between performance and user perception, fostering new formats and innovative public service models and promoting the transformation of the catering operation model.

1. Introduction

With the rapid development of information technology, the Internet application platform covering the daily aspects of urban community food, clothing, housing, and transportation has emerged. "Guiding Opinions of the State Council on Actively Promoting "Internet +" Actions" (Guo Fa [2015] No. 40) proposes to vigorously promote "Internet +" efficient logistics, "Internet +" modern agriculture, "Internet +" artificial intelligence, and improve Social logistics quality, efficiency and safety. [1] Based on the application of e-commerce technology, build an online commodity trading platform, accelerate the modernization of agriculture and rural areas, improve the agricultural autonomous management system, actively cooperate with rural cooperatives, the birthplace of modern agricultural industries and rural retailers, and dock the agricultural e-commerce platform. Committed to solving key problems such as agricultural and sideline product standardization, logistics efficiency, cold chain storage, and construction integration, customized agricultural product personalized service, combining e-commerce with modern agriculture, food consumption and other aspects, cultivating emerging business and innovative agricultural products e-commerce platform Promote the transformation of the catering operation model.
2. The Transformation of the E-commerce Platform for Agricultural Products

Under the background of the Internet era, e-commerce is based on information network technology, and business activities centered on commodity exchange have completely changed the way people in the city produce, work and live. Based on Internet technology, the new agricultural products e-commerce platform combines e-commerce with modern agriculture, builds a network commodity trading platform, and provides new agricultural production services through the provision of agricultural services, docking rural distribution agencies, the birthplace of modern agricultural industries, and rural retail investors. The main body, strengthen the connection between production and marketing, break away from the middlemen, and connect the fresh agricultural suppliers with the purchasers and banks to provide customers with comprehensive services such as purchasing advice, cargo information, online transactions, warehousing, and distribution, and guide agricultural production to consumption. Urban community catering service application platform for service transformation.

The new agricultural products e-commerce platform analyzes the needs of community users, docks food processing enterprises, and provides the platform for farmers' suppliers. It can not only sell agricultural products to users, but also help products to be sold to processing enterprises, and use the advantage of “Internet +” to break the tradition. Sales model, expand sales audience, increase farmers' income, promote modern agricultural development, promote the transformation of catering operation mode, and innovate public service mode. The new agricultural product e-commerce platform adopts O2O operation mode, fully grasps the consumer psychology and policy direction, excellent origin and products, perfect logistics transportation system and route planning, differentiated sales plan and consumption object, and full-scale data sales. The process forms a complete and independent dietary chain based on the new format. B. Marija (2005) believes that the flow of fresh agricultural products is similar to that of other commodities, and is realized in the form of a logistics network. It is found that the supply network of fresh agricultural products is different from other processed foods, and a supply chain network of fresh foods is constructed. [2] Ana Osvald (2008) studied the optimization of vehicle routes for fresh vegetable distribution and proposed the constraints of the time window and the influence of vegetable perishability on cost. [3] E-commerce provides a new development direction for the service industry - service-oriented marketing experience, enabling platform products suppliers, e-commerce platforms, consumer users and other three parties to achieve a win-win situation. [4]

2.1. The construction of new Agricultural Products E-commerce Platform

Under the background of the new era, based on information technology and relying on e-commerce technology, based on the comprehensive needs of all parties, we will build a new agricultural product e-commerce platform to solve the comprehensive appeal of products, platforms, and users, and adapt to modern society. Real-life needs. The e-commerce platform construction concept and expected function fully take into account the practical functional needs of community users, food selection and warehousing logistics. The main functions include the following three aspects. The detailed model is shown in Figure 1.

One is the use of features by community users. Because of people's busy work and lack of health awareness, they neglect the balance of food and health of individuals and families. The new agricultural products e-commerce platform can obtain more green and fresh food by allowing users to develop a more comprehensive, suitable and healthy diet. The e-commerce platform will collect personal BMI body quality index before each community user to understand personal taste preferences and special needs. Based on the user's feedback data, the online link to the hospital will obtain typical cases of various diseases, combined with nutrition. Learn to conduct big data analysis, cooperate with artificial intelligence algorithms to build an individual information database, and finally push recipes that meet the needs of community users and are suitable for improving physical fitness. Community users can select favorite recipes, and choose the number of people to eat, the origin of the ingredients, the delivery time, etc. according to the needs. After the community user places an order, the platform will collect the feedback and satisfaction information of the user twice, and summarize it in the information base to analyze whether the recommended recipe is welcomed by the user and is suitable for personal taste. The
e-commerce platform is further improved based on the summary information. When the user logs in to
the interface again, the recipes that are more suitable for the requirements are pushed to improve the
satisfaction of use. The new agricultural products e-commerce platform serves as a bridge connecting
online users and offline farmers. The offline farmers will receive the ingredients needed for the day or
the next day, assemble according to the process, and wait for the transportation of the logistics company.
The ingredients delivered daily will be sampled and sent for inspection. If they are qualified by the
professional food safety testing agency, they will go to the warehousing company for preliminary
cleaning and processing, and wait for the delivery to the community users. The ingredients delivered to
the user's hands can be used to understand the origin of the ingredients and the food safety report through
the attached QR code. After the daily delivery is completed, the unsold agricultural products and the
farmer's unsalable agricultural products will be used as raw materials and sent to the food processing
factory connected to the platform to avoid product deterioration and waste.

2.2. The Warehousing Logistics function
The new agricultural product e-commerce platform transmits the demand information to the
warehousing company and the logistics company. According to the needs of the community users, the
logistics company is responsible for a series of transportation of the ingredients, from collection to
aggregation to inspection and distribution. The warehousing company is responsible for the picking,
cleaning, cutting, and packaging of ingredients. At the same time, it cooperates with logistics companies
to build a cold chain storage and transportation system and distribution equipment to ensure the fresh
distribution of ingredients to community users and minimize the use of disposable equipment. In the
process of distribution, the logistics company will select the appropriate delivery time and delivery
method according to the needs of the community users, and the humanized delivery to the users.

![Figure 1. Model diagram of the construction of a new agricultural product e-commerce platform](image)

3. The KANO Model Analysis of the Functional Requirements of the New Agricultural Products
We adopt the KANO model to analyze users’ expectations for the functional requirements of the new
agricultural products e-commerce platform and make the platform's construction concept and functional
concept more advanced, scientific and grounded. The KANO model was inspired by Herzberg's two-
factor theory by Noriaki Kano, a well-known Japanese quality management expert. In 1984, a two-
dimensional cognitive model of product quality characteristics and community user satisfaction was
established. [5] The KANO model analysis method is based on analyzing the impact of community user demand on user satisfaction, reflecting the nonlinear relationship between product performance and user satisfaction, and establishing the relationship between product objective performance and user perception, and product quality. Features are divided into charismatic attributes (demand characteristics that make community users feel surprised, it will greatly improve customer satisfaction, but will not feel dissatisfied even without users), expectation attributes (when the demand characteristics meet the user satisfaction and vice versa), mandatory attributes (only when the demand characteristics are met, the user is satisfied), no difference attribute (the demand characteristics users do not pay attention, its satisfaction does not cause changes in user attitude) and reverse attributes (the demand characteristics When there is enough, the user is not satisfied, but when satisfied, it is satisfied. [7] The mining of these five types of functional requirements requires analysis using KANO questionnaires, KANO evaluation tables, KANO results tables, and data generated by SPSS results. Sun Yuling used the KANO model to classify the functional requirements of the commodity review system: consumers have a weak demand for most functions, and only perform deep mining functions for comment content and potency, such as text-based tag cloud and multidimensional. In terms of potency and other aspects, it reflects certain realities and potential needs. [7]

According to the expected functional requirements of the new agricultural products e-commerce platform, the functions are integrated and classified, the KANO model is used to design the KANO questionnaire, and then the potential community users are surveyed. Then the user's evaluation results of these functions are counted, and the KANO evaluation table is selected according to the KANO evaluation form. As the expected function of the e-commerce platform, the value of the user's choice corresponding to different demand attributes is summarized, revealing the user's expectation of its function realization. On this basis, the construction concept and expected function of the e-commerce platform are proposed, including personalization. There are 4 main functional modules, such as service, cooking teaching, food processing, and food distribution, which are divided into 8 expected functions such as personal physique evaluation, personalized recipe recommendation, and membership service.

Figure 2. KANO model diagram
3.1. **KANO questionnaire survey and inspection**

The KANO questionnaire design is based on the KANO model analysis. The first part is the basic information survey of the expected community users of the e-commerce platform, including user gender, age, occupation, education, first online shopping time, the first use of take-out software time, use of take-out software frequency, take-away point. The reason for the meal; the second part is the main part of the questionnaire. Regarding the platform expected function questionnaire, each question is set with two questions: forward and reverse. The intuitive feeling of each function of community users is divided into "dislike". Can endure the "I don't care" "take for granted" and "like" five emotional levels, the corresponding scores are 1, 2, 3, 4, 5, respectively, and according to the order of the functional classification of Table 1 to design the corresponding topics and options, see table 2. The questionnaire was taken in the form of an online survey. The questionnaire was designed using the questionnaire website. It was posted to various social networking sites in one week. A total of 224 valid questionnaires were collected. This paper uses SPSS 21.0 statistical software to analyze the expected function KANO questionnaire of the e-commerce platform. The Cronbach's α value to the problem is 0.770, and the Cronbach's α value of the reverse problem is 0.770, both of which are above 0.7, and the reliability of the questionnaire is good. In terms of factor analysis, KMO=0.820, indicating that the correlation between variables is strong and suitable for factor analysis. At the same time, the significant probability of the X2 statistic of Bartley's sphere test is 0.000, less than 0.01, indicating that the data has correlation and is more suitable for factor analysis. Using the principal component analysis method and the maximum variation method to carry out the orthogonal rotation axis, the cumulative explanatory variation of the extracted factor was 57.729%, indicating that the factor explained the variation amount to a high degree, which proved that the questionnaire has structural validity.

| Software function | problem | dislike | Can endure | Does not matter | Of course | like |
|-------------------|---------|---------|------------|----------------|-----------|------|
| Personal physique | The software provides this feature | 1 | 2 | 3 | 4 | 5 |
| Evaluation        | The software does not have this feature | 1 | 2 | 3 | 4 | 5 |

3.2. **Analysis of survey data**

Analysis of basic data of community users of the e-commerce platform. This recycling questionnaire provides a statistical analysis of the user's basic information.

Wherein, "M" indicates a mandatory attribute, "0" indicates the desired attribute, "A" indicates a charming attribute, "I" indicates a non-differential attribute, "R" indicates a reverse attribute, and "Q" indicates a questionable answer. Summary of the results of the KANO questionnaire, according to the KANO evaluation table standard of Table 4, the maximum value is taken as the basis for the demand characteristics, that is, the KANO category corresponding to a demand characteristic has the largest number of attributions, and the demand characteristic is attributed to the category. In this way, all the demand characteristics of the KANO category corresponding to the attribution can be identified, and the expected functional requirement characteristic classification table of the e-commerce platform is obtained, as shown in Table 2. In this way, it is possible to identify all the demand characteristics of the KANO category corresponding to the attribution.
Table 2. E-commerce platform function requirements characteristics classification table

| Function number Demand serial number | R | I | M | O | A | Q | total | Ownership class |
|--------------------------------------|---|---|---|---|---|---|-------|-----------------|
| 1                                    | 6 | 139 | 11 | 19 | 39 | 10 | 224 | I               |
| 2                                    | 9 | 106 | 3 | 31 | 62 | 9 | 224 | I               |
| 3                                    | 34 | 114 | 3 | 15 | 33 | 25 | 224 | I               |
| 4                                    | 9 | 91 | 4 | 21 | 78 | 21 | 224 | I               |
| 5                                    | 7 | 63 | 25 | 68 | 47 | 14 | 224 | O               |
| 6                                    | 11 | 85 | 16 | 51 | 47 | 14 | 224 | I               |
| 7                                    | 9 | 100 | 14 | 40 | 34 | 27 | 224 | I               |

Based on the preliminary judgment of the functional attribution category of Table 2, based on the maturity of the data, we use the Better-Worse coefficient to calculate the final attribute of the expected function of the e-commerce platform. This coefficient describes the extent to which a feature can increase community user satisfaction or eliminate its objection through a four-quadrant map. Better means the satisfaction factor after adding this function. Better's value is usually positive, which means that if a certain functional attribute is provided, the community user satisfaction will be greatly improved; the larger the positive value, the stronger the effect on the satisfaction of the community user satisfaction, and the faster the rise; Worse, is called the dissatisfaction coefficient after elimination. The value is usually negative, which means that if a certain functional attribute is not provided, the community user satisfaction will decrease; the more negative the value, the stronger the effect of lowering the satisfaction degree, and the faster the decline. [9] Berger C proposed the index calculation formula:

\[
\text{The increased satisfaction coefficient (Better)} = \frac{(A + O)}{(A + O + M + I)};
\]

\[
\text{Worse after elimination} = \frac{(O + M)}{(A + O + M + I)} \times (-1). [10]
\]

According to the demand characteristics of the agricultural product e-commerce platform, we will list the following: For example, after substituting the data of the function “personal physique evaluation”, the Better-Worse coefficient is as follows:

Better = \(\frac{(8.48\%+17.41\%)}{(8.48\%+17.41\%+4.91\%+62.05\%)}\) = 0.28;

Worse = \(\frac{(8.48\% + 4.91\%)}{(8.48\% + 17.41\% + 4.91\% + 62.05\%)} \times (-1)\) = -0.14.

The Better and Worse absolute values of each function are used as the ordinate and abscissa of the scatter plot. The data scatter plot is generated by SPSS 21.0 statistical software combined with Better-Worse coefficient analysis, and the scatter plot is divided into four quadrants. See Figure 3 for details.

Figure 3. Better-worse coefficient scatter plot
It can be seen from Fig. 3 that the personalized recipe recommendation, recipe tutorial and pretreatment function of the food cleaning and cutting corresponding to functions 2, 4 and 6 fall in the second quadrant charm attribute area, and the function of this part exceeds the user's expectation and becomes a product. The highlight of the product is that the personalized recipe recommendation can minimize the user's limitations on the recipe, and promote the new and can meet the physical needs at the same time. The recipe tutorial provides a solution to the students who are struggling with cooking technology and reduces cooking. The functions 5 and 8 are defined by the user as the expected attributes, and the user's satisfaction is proportional to the perfection of the product function. As the main purpose of the agricultural product e-commerce platform, the supply of fresh ingredients is the original intention of the entire e-commerce platform, and the distribution service is more It is the best force for assisting the supply of ingredients. The two functions, as expected attributes, will also evolve into essential attributes in the continuous improvement of product functions. The personal physique assessment, membership service and spice delivery functions corresponding to functions 1, 3 and 7 are reflected in the user's requirements as non-differential attributes, which means that the user's provision of these three functions does not affect their evaluation of the entire software. However, it can be seen from the figure that function 1 is a non-differential attribute of personal physique evaluation; however, as glamour attribute function 2 is the basis of personalized recipe recommendation, personal physique evaluation function needs to be an essential attribute of e-commerce platform function. Only build personalized recipe features that are attractive to users. The function of the Worse coefficient with the smallest absolute value is the member service. Combined with the Worse coefficient definition, the user is not optimistic about the enthusiasm of the member service. The reason is that the high-end service that only costs more to experience is not clear, and the part has the charm attribute. The combination of functional modules will have the potential to have the desired attributes. Although the seasoning distribution is in the third quadrant, it is close to the critical line of the charm of the second quadrant, indicating that the user has a wait-and-see attitude towards the distribution of the sauce, but if the sauce distribution service can attract the user's eye through some kind of packaging or preferential form, it can also be a fascinating attribute that users prefer.

4. Discussion and Conclusion

Based on the results of the above KANO model analysis, we will explain and discuss further from the perspective of the community user's intention to use the expected functional value orientation of the new agricultural product e-commerce platform.

First, the expected attribute is the necessary experience satisfaction of community users in the expected functions of the e-commerce platform. If this part of the demand is not met in time, the e-commerce platform will be inferior in establishing competition among similar products, and the community users will be lost. There are two functions of the expected attributes of the modern e-commerce platform. One is the function of supplying fresh ingredients, the health and safety of ingredients, the origin of food and food safety reports are available for inquiry; the second is the function of distribution service, through the time agreed with the community users. And the delivery method is humanized and delivered to the community users. This is catering to the pursuit of more and more efficient health for community users as their living standards continue to improve. Therefore, if the community user's expected attribute function is missing and the community user's demand is not met, the user traffic will be lost.

Second, the e-commerce platform has attractive attributes that make the platform's functional structure tend to be stable. The principle of glamour quality believes that product/service quality characteristics will change dynamically, that is to say, with the impact of competitive products/services, and the adaptation and requirements of community users to products/services, a quality characteristic will It evolved toward quality characteristics that are farther and farther away from the satisfaction of users. The evolution path of quality characteristics is: charm quality -> expected quality -> basic quality. [5] Following this evolutionary rule, according to the demand characteristics corresponding to the
quality, the research results of the e-commerce platform with attractive attributes of personalized recipe recommendation, recipe tutorial and pretreatment function of food cleaning and cutting will continue to expand the audience, attracting The community users, and then the conversion to the desired attributes, the functional structure of the e-commerce platform tends to be stable. The fascinating attributes of the e-commerce platform are in the process of evolving to the desired attributes, and other similar products are constrained by the lack of demand factors expected by community users.

Third, the e-commerce platform function setting can meet the actual needs of community users. The e-commerce platform involves personal physique evaluation, personalized recipe recommendation, membership service, recipe tutorial, the supply of fresh ingredients, food cleaning, pre-processing of cutting, seasoning distribution, distribution services, etc. The functions are classified into charm, expectation and no difference. Attributes, better hits of community users' demand pain points and desire to use, research conclusions have certain theoretical reference value for the platform to grasp user needs and build functions. In the case of sufficient capital and technical conditions, the degree of attention of the expected attribute should be in the first place, which directly affects the user's use behavior; secondly, after satisfying the expected attribute, the attractive attribute is improved, further improving the user's feeling of user satisfaction, and cultivating loyalty. Degrees, improve user stickiness; finally, think about improving existing and potential non-discriminatory quality, guiding users to discover and use these features, to avoid user satisfaction. Through word-of-mouth publicity, the user will rise from shallow thinking to a healthy deep experience, and the e-commerce platform will gradually become a way of life to exert its advantages and effects.

5. Conclusion
The rapid development of information technology in the new era has promoted the accelerated integration of e-commerce and the real economy. The innovative application of the O2O model is also of great significance to the reform of the public service model. We build a new agricultural product e-commerce platform, a comprehensive user needs in terms of user use, food selection, and warehousing logistics, and form a complete and independent, new business-based consumer diet chain with the consumer object and the entire process of data sales. The KANO model analysis reveals the expectations of community users for the realization of the e-commerce platform's functional requirements, making the platform's construction concept and expected function more advanced, scientific and grounded. The new agricultural products e-commerce platform can make full use of the "Internet +" thinking, effectively integrate the online shopping and the offline market, and realize the mutual benefit of the buyers and sellers and the e-commerce platform, fostering new business and innovative public service mode. Promote the transformation of the catering operation mode, lead the economic development and innovation, and advocate green development to create a harmonious future.

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