

## Service System Design for New Retailing Beef under the Background of Food Safety Traceability

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**Abstract:** Under severe situation of food safety, this paper takes the beef industry in Yangxin County of Shandong Province as an example to explore the bottlenecks in its development as well as innovative strategies. Using the thinking modes and methods of product service system design, this paper analyzes users and stakeholders, and designs a service system to express the touch points. The service system, which shows four touch points of brand image, online APP, offline experience center and food safety traceability machine is constructed. Using the perspectives and methods of product service system design, the paper builds a new beef retail service system which integrates online and offline platforms. Through the interaction of contact points, the system can enhance consumer experiences and strengthen the safety supervision and traceability of the food.

### 1. Introduction

Food safety is closely related to people's lives and health. Although the international community has taken a variety of measures to prevent food safety problems, the situation is still serious due to various reasons. Food safety risks are frequent.

### 2. Overview of the Development and Current Situation of New Retail

The concept of “new retail” is a hot topic in academic and business circles recently. With the development of recent years, new retail has been widely recognized by the industry. It can promote the cross-border cooperation of online, offline and other platforms, so as to realize creation. The goal of “new retail” is actually the integration of online, offline and logistics, so as to break the original boundary, constantly expand existing marketing channels, and create a consumption scenario in which consumers can go shopping more conveniently and have good psychological association, so as to meet the communication and emotional needs of consumers; the virtuous cycle of repeated purchase can be formed through this mode. <sup>[1]</sup>

### 3. Overview of Service Design Research

At present, research on the service design is popular, but there is no clear definition or boundary of the concept of service design. The study is still in the initial stage of exploration. But in the fields of management, business and design, there are many scholars who have researched and practiced for a long time. Some scholars think that the service design is a way of thinking and a methodology to systematically define and solve problems. <sup>[2]</sup> It integrates cross domain knowledge, combines different methods and tools in many professional fields, and provides designers with new methods to solve problems. <sup>[3]</sup> According to the UK Design Council, the service design can provide customers with more effective and efficient services which better meet the needs of users. <sup>[3]</sup> Live Work believes that, the service design means to apply the existing design process and skills to the project of establishing services. It is a practical approach to improve existing services; it also creates new services at the same time. <sup>[3]</sup> In the field of business, at the beginning of the 20th century, IBM first proposed the concept of service science, advocating the combination of service, science, management and engineering. Its core theme is service innovation. <sup>[6]</sup> In the field of management, in

the 1980s, G. Lynn Shostack first proposed the concept of service design at the management and marketing level in his papers *How to Design a Service* (1982) and *Designing Services that Deliver* (1984).<sup>[5]</sup> The publication of *Total Design* written by Bill Hollins in 1991 marked the formal presentation of the concept of service design in the field of design.<sup>[5]</sup> In 1991, Dr. Michael Erlhoff first promoted “service design” as a professional discipline at the Köln International School of Design (KISD) in Germany.<sup>[2]</sup> Since 1992, Carnegie Mellon University has set up the core contents for the interactive design postgraduate course system: “activities and organized services”.<sup>[5]</sup> Around 2000, 31volts Service Design, Live/work, Engine, IDEO and other design consulting companies incorporated the concept of service design into their business scope. In 2004, Professor Birgit Mager of Köln International School of Design in Germany launched The Service Design Network, which was formally established in 2008 and became an important platform for service design research.

Copenhagen Institute of Interaction Design believes that the purpose of service design is to create complete and meticulous service experience through the integration of tangible and intangible media; it can create many advantages when being applied to industries such as retailing, banking, transportation and health care.<sup>[3]</sup> In the development of new retail industry, food safety is still a serious problem, so it is of social significance to study food safety from the perspective of service design.

## **4. Case Study of “Shandong Yangxin Beef”**

### **4.1 The Study of Context**

Yangxin County of Shandong Province is located in the center of the Yellow River Delta. It is rich in livestock breeds and forage resources, and is the main production area of Luxi yellow cattle and Bohai black cattle. In terms of beef food safety, Yangxin County has established the county level animal quarantine and supervision center, the animal product quality supervision center and 10 inspection points; the authority has stationed quarantine officers for each slaughtering and processing enterprise to implement quarantine before slaughter and inspection after slaughter, in order to ensure the quality and safety of beef products on the market.<sup>[6]</sup> The user's expectation has expanded from basic demands of variety and taste to the purchase process as well as subsequent experience and feedback. How to make Yangxin County keep up with the times and meet the needs of more users, especially the needs of beef food safety in the trend of new retailing, is an issue worth thinking and studying.

### **4.2 The Study of Users**

Target consumers of the new retailing Yangxin beef are young people lived in the first, second and third tier cities. Through the investigation and analysis of users in the early stage, the main needs of users are found. First, they have high demands on food safety, as well as the freshness and quality of the beef. Second, they need convenient purchase channels, and can accept new shopping modes combining offline and online. Third, in case of food safety incidents, it is necessary for them to trace the source of the food.

Through the analysis of stakeholder and user journey map, it can be found that the core demands of target users include the need for high-standard beef quality control, new shopping experience and traceable food source. The core demand of beef breeders is to increase the added value of beef to obtain higher profits. The core demands of the quarantine department include, to strengthen the quarantine of beef and to trace the food source quickly when encountering safety problems. The core demands of the government include, to spot check the beef breeding and production process online at any time, and to increase the added value of local beef breeding and producing industry through various channels, in order to promote local economic development.

### **4.3 Strategies of Service System Construction**

To build the new beef retail service system under the background of food safety, we need to

establish an online food safety supervision mechanism, and combine crowd funding information with offline product purchase to break down the communication barriers between online and offline platforms. First, we need to build a retail model which integrates online crowd funding and offline experience. Second, we need to refine the crowd funding process as well as the food safety supervision system for users. Third, we need to tap local resources on the beef industry to build the brand. Through the construction of the service system, users' consumption experience can be upgraded; stakeholders' awareness of the food safety of beef can be continuously improved; the beef safety regulatory system can also be continuously improved.

#### **4.3.1 Retailing Mode Integrating Online Crowd Funding and Offline Experience**

The online crowd funding platform guides several participants in the “group purchase + purchase in advance” consumption. Participants can display the scenes of breeding, slaughtering, processing and transportation on the Internet platform. Through the online crowd funding platform, users can place orders and purchase. These crowd funding users can see different stages of beef production, which can win the trust of consumers. At the same time, the method of crowd funding can also collect the information of crowd funding users, which is convenient for continuous and accurate promotion and marketing.

#### **4.3.2 Process of Crowd Funding and Food Safety Supervision System**

The user information collected through crowd funding can help to build the food safety supervision system. The service system of new beef retail can establish a unified beef safety certification mechanism. Departments related to animal quarantine can also participate in the design of the new retail service system. They should strengthen inspection, develop and improve relevant certification systems, and take multiple quarantine and inspection measures in the new retail process.

#### **4.3.3 Tapping Local Resources for Brand Building**

Through the investigation of local resources on animal husbandry, history culture, national culture and other aspects, we can shape the brand of Yangxin beef, and provide cultural values for the beef industry. These measures can make the new retail process more interesting, and impress users with emotional design.

### **5. Design Innovation**

#### **5.1 Service System Construction**

##### **5.1.1 Beef Breeder Online Platform**

Breeders register basic information in the application, including information about beef cattle and animal quarantine certificate, and publish information to users in the APP after being approved by the manager. This link can solve the problem of not transparent feeding process and qualified quarantine.

##### **5.1.2 Beef Breeder - Online Platform - Users**

Breeders introduce their beef products to users through the online APP. When users are satisfied, they act as initiators to start the crowd funding for other users through the APP.

##### **5.1.3 Beef Breeder - Animal Quarantine Department - Offline Platform**

The offline platform includes slaughterhouses and experience centers. When crowd funders of the online platform reach a certain number, the slaughterhouse will purchase beef cattle from the breeder after meeting the slaughtering conditions. After the quarantine of animal quarantine department, the beef can be slaughtered, and then the beef will be sent to the experience center for subsequent processing.

### 5.1.4 Online Platform - Users - Offline Platform

Users can learn about all aspects of quarantine, slaughtering, processing and transportation through online and offline interactive experience according to their own needs, and can also query the food source through the online platform. The offline experience store has a 24-hour self-service pick-up area, as well as processing, catering, accountability and leisure functions. It can solve the problems of difficulties in handling disputes and limited pick-up time.

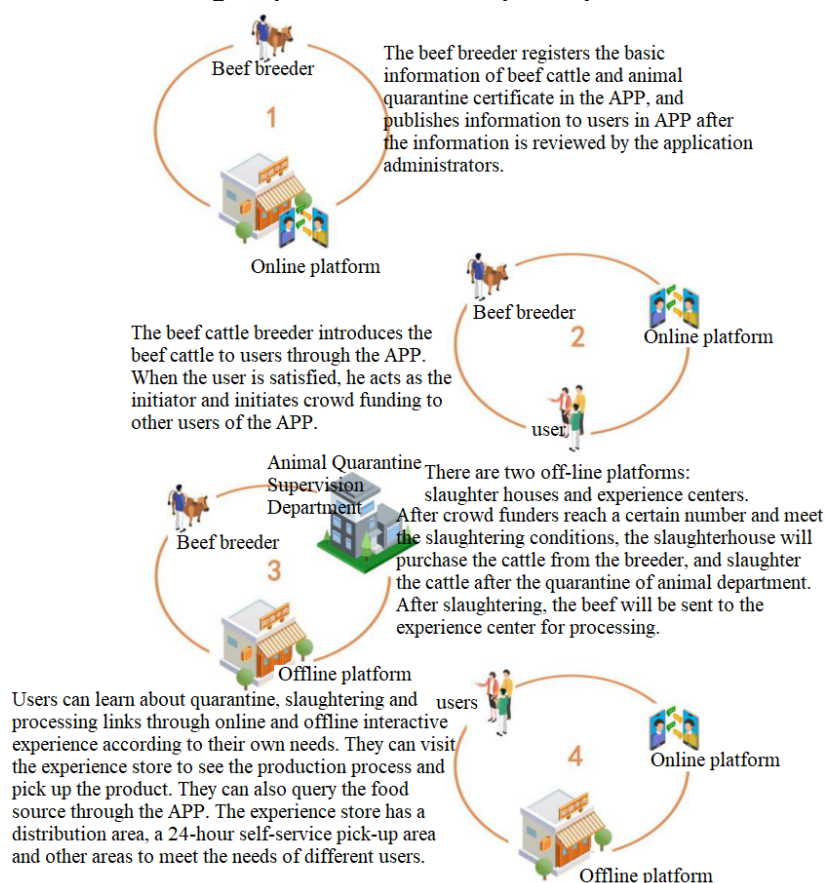


Fig.1 The Service System.

## 5.2 Contact Point Design

### 5.2.1 Brand Building for Yangxin Beef

In order to create a unified corporate image for Yangxin beef, we design the brand which combines local cultural characteristics of Yangxin County. The color of typical Luxi cattle in Yangxin County is taken as the basic theme color; the famous pear flower in Yangxin County is selected as the basic element and the auxiliary figure.



Fig.3 Logo and Its Application.

### 5.2.2 Online Application Platform

The online app platform takes users as the center. It deeply excavates the requirements of users and experiences contact points. Firstly we design the framework of the interactive information, and then design the interactive interface according to the framework. The online application platform mainly includes crowd funding, reservation, purchase, sharing, accountability and other processes. The elements, relations and layout of the interface are unified into a consistent whole, reducing users' cognitive costs and increasing brand recognition.

### 5.2.3 Offline Platform Experience Center

The display layout of Yangxin beef experience center is designed according to different functional areas. It integrates the functions of processing, picking up, catering and leisure. The experience center has a 24-hour self-service pick-up area. After the processing, users can take their own products at the store at any time.

### 5.2.4 Food Safety Traceability Query Machine

The digital terminal of Yangxin beef food safety traceability inquiry system is an inquiry machine, which is located at the delivery desk and the dining table of the experience center. It provides traceability and inquiry service for users who come to eat and take the food.



Fig.3 Machine for the Query of Food Safety Traceability.

## 6. Multiple Guarantees on Food Safety

### 6.1 The First Quarantine

The new retail platform of Yangxin beef is a third party. Before the information is released, beef breeders register the basic information of cattle and the formal animal quarantine certificate on the third party on-line platform. After the professional review of the third party, the online platform application releases the information to users.

### 6.2 The Second Quarantine

After the successful crowd funding of Yangxin beef on the online platform, the offline platform slaughterhouse will invite animal quarantine personnel to carry out the quarantine before slaughter, and send the beef to the experience center after the slaughter. The two times of quarantine can effectively avoid illegal behaviors of the sponsor of crowd funding and the beef breeder.

### 6.3 Food Safety Traceability Query

The online and offline Yangxin beef new retail platforms not only provide users with the shopping experience of visiting the whole beef food production process in the experience center, but also provide a query channel to understand the quarantine, slaughtering, processing and transportation links, namely the food safety traceability query system. With the help of the Internet, big data, artificial intelligence and other advanced technologies, users can query the source of the beef as well as food safety information through the online platform application, and call to account

on food safety issues.

## **7. Conclusion**

The era of experience driven by consumption has passed. The trend of consumption driven by experience is coming. In this study, the new beef retailing service system composed of the food safety traceability system, the experience center as well as online and offline platforms can effectively guarantee the quality and safety of the beef, and help users get good consumer experience.

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