



Design of stall supply system for vendors in scenic spots under service design thinking—A case of Shanghai Blooming Garden

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Abstract. In the context of smart city construction, this paper expounds the necessity of mobile vendors and the existing problems of service system for mobile vendor in scenic spots, and discusses how to use service design thinking to improve the vendors' stall supply system, so as to improve management efficiency and tourist experience. Based on field research and in-depth interviews, this paper uses visual service design tools such as user journey maps to analyze the core needs of multi-stakeholders. By restructuring and expanding the existing mobile vendor system, introducing digital touch points to reconstruct the vendor supply system, proposing design optimization strategies at both hardware and software levels, this study improve the vendor stall configuration and management process, and provide innovative methods for the management and service level of vendors in scenic spots, contributing to the promotion of modern urban construction.

Keywords: Service design, Experience design, Urban vendors

1 INTRODUCTION

With the continuous advancement of urbanization and industrialization, a large number of rural surplus laborers rushes to the city. However, due to their own conditions and other reasons, it is different for them to integrate into the formal employment channels. In this context, mobile vendors with “low investment, low cost and quick results” have become the means of livelihood chosen by many people. ^[1] At the same time, the employment pressure and economic instability caused by the impact of the epidemic on traditional industries have prompted people to turn to this flexible way of employment. As a relatively low-cost and low-risk entrepreneurial opportunity, mobile vendors meet the needs of individual economy and increase the income of poor groups, but also cause considerable negative impact on the environment, business order, food safety and other aspects. As a special part of urban economy, with the development of urban construction, the planning of vendors cannot simply apply the established norms of urban economy, but should fully consider its own characteristics, needs and laws. ^[2] Tourism has

been an engine of economic growth in many regions, and scenic vendors play an important role in providing tourists with a variety of goods and services in tourist destinations. They not only provide visitors with a wide range of food, souvenirs and entertainment, but also make an important contribution to the cultural diversity and economic vitality of tourist destinations. With the continuous growth of tourism and the fierce market competition, scenic vendors are facing increasing service quality requirements and management pressure. Improving service quality is crucial to attract more tourists, improve the reputation of the scenic spot and promote the sustainable development of the stallholder business. As a first-tier city, Shanghai needs to take fine management as the main line, and the standardized management of its mobile vendors is particularly important. Therefore, this paper takes Shanghai Blooming Garden as an example and applies service design thinking to innovatively rebuild the stall supply system for science area vendors in order to better satisfy the needs of stallholders and tourists and improve their experience.

2 METHODS

The rise of service design began during the transition period from industrial economy to service-oriented economy. Its core idea is to take users as the starting point and encourage multi-stakeholder cooperation to realize a comprehensive reform of service system. By considering factors such as human, environment, facilities, and information, service design aims to innovate service delivery, processes, and touch points to improve the overall service experience, quality, and value.^[3] In the service process, service providers and service recipients participate together, and individual experiences in different scenarios directly affect the design of the service system. In long-term practice, service design has gradually formed a series of research-based design methods, including user portrait, user journey map, service blueprint, storyboard, etc. In practical applications, appropriate methods and tools should be selected according to specific design objects. This study mainly uses the stakeholder and user journey map as the main methods and tools, supplemented by field interviews, to conduct a more in-depth study of the actual situation of vendors in scenic spots.

2.1 Semi-structured interview and coding

Flexible semi-structured interviews were used as most of the interviewees were elderly. Develop an interview guide or topic list to cover the key questions in the interview, then adjust and expand on the specific content based on the answers and needs of the interviewees. Respondents have more space to participate in semi-structured interviews.^[4] This approach provides insights into the background, motivations, and attitudes of the interviewee and reveals the true feelings and needs of users, thus guiding the development and improvement of products and services. Open coding is to form all the fragmented data into statements and gradually conceptualizing and classifying them. Axial coding is to find the contact points between concepts, establish the connection between concepts, and utilize this connection to express the organic relationship

between various parts of the data. Selective coding is to integrate and refine the conceptual categories that have been formed, and to dig out the "core categories" that can lead other categories from the main categories.^[5]

2.2 Stakeholder

Stakeholders in service design refer to all relevant groups that have some relationship with the service provided.^[6] People's lifestyles are significantly different from those in the past, which has further changed the needs of service providers and service recipients. Upgrading the perception of vendors as "cheap, simple and low-grade" to "cost-effective, clean and high-quality:" requires more people to participate. The concept of mobile vendor governance must keep pace with the times to adapt to the needs of the new social environment.^[7] In this transformation, understanding and effectively managing stakeholders is critical. This includes considering the needs, interests and expectations of different stakeholders to ensure that the interests of all parties are balanced in service design to promote sustainability and success.

2.3 User journey map

User Journey Map is a tool that visualizes the process by which users achieve their goals. Its basic components include user personas, timelines, touch points, user expectations, and the actual experience of the user.^[8] By constructing the user journey map, the interrelationship between the user's psychological expected experience and the actual experience at each touch point during use can be visualized. This not only helps designers to understand the overall situation of the service more comprehensively, but also provides opportunities and ideas for problem solving.

3 SHANGHAI BLOOMING GARDEN DESIGN STRATEGY OPTIMIZATION

The introduction of service design concept pays more attention to user experience than traditional methods. Understanding user needs and influencing factors of activity process is the first step to create service value for users. In the initial stage of design, in-depth investigation and analysis of service scenarios and objects must be carried out. Secondly, user behavior surveys are needed to discover the service touch points of users during the activities. The design of touch points has two forms, one is the optimization of existing touch points, and the other is the creation of new touch points. Next, optimize the service system at each touch point based on user needs. Therefore, the whole design process can be divided into five key steps: understanding users, determining service subjects, exploring user needs, service positioning and design practice. This meticulous process helps to ensure that the design is closer to the actual needs of users and improves the actual effectiveness of the service.

3.1 Field research - Identify problems

Science mobile vendors are relatively common in tourist attractions, mainly selling various kinds of snacks, self-produced fruits and vegetables, toys and other small commodities. They provide visitors with a variety of products and delicacies, adding to the cultural and tourist experience of the scenic spot. These vendors not only provide special products, but also become a cultural symbol of the scenic spot and enhance the attraction of tourists to the scenic spot. However, with the booming development of the tourism industry, the traditional vendor stalls supply system in science spots has a series of problems, which restricts the management efficiency of vendor stalls and tourist experience.

Through the field investigation of Shanghai Blooming Garden, we found that the distribution of stalls adopts the traditional queuing model, with vendors relying on a "first come, first served" approach to obtain stalls. However, this approach leads to waste and unfair distribution of resources during peak periods. In addition, vendors need to carry their own equipment, such as battery cars, benches, boxes, umbrellas, pots, etc. Due to the lack of unified parking of battery cars and tricycles are parked at will, causing road congestion, and vegetable leaves and other garbage are discarded at will, resulting in an unsightly environment in the science spot. At the same time, most of the goods sold by the vendors are similar, therefore the competition is fierce.

3.2 Interview coding - Understand the user

Conducted semi-structured interviews with 10 mobile vendors in Shanghai Blooming Garden, and conducted three-level coding on the interview results. (As shown in Table 1) By coding the interview content, it can be clearly seen that the activities of mobile vendors in scenic spots are revenue-oriented and influenced by variety factors. These factors include personal factors (such as age, physical condition), environmental factors (such as stall location and hygiene), differences in supply sources (such as differences in purchase channels and prices), and resource allocation (such as equipment, waste management).

The stall of scenic mobile vendors are random and deterministic to a certain extent, depending on the vendor's purpose, experience and personal circumstances. Vendors will prioritize the locations closest to their homes when choosing where to set up stalls. The types of sales are also relatively fixed. The Time for setting up stalls will be determined based on experience and the flow of people in the scenic spot.

These factors play an important role in determining the business strategy and timing of setting up stalls. This analysis helps to better understand the operating status and concerns of mobile vendors in the science spots, thereby providing valuable opinions for improving supply systems and the entire service process.

Table 1. Semi-structured interview coding

Secondary category (B)	Primary genus(A)	Refine the initial concept	Sample source data statement
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	A1 Visitors flow rate	The number of visitors determines the revenue	Sometimes earn no money. I didn't sell anything yesterday. The weather was bad yesterday and there were few people.
B1 Revenue dominance	A2 Features/activities	The number of tourists is affected by the characteristics of scenic spots, weather and activities	There are many tourists when there is an activity. There's an event today, more people will come. Even if the weather is fine, maybe little people
	A3 Payment	Unpaid situation	There were several people who didn't pay. Some people may not have good Internet access, so they can't pay.
	A4 Sale variety	Revenue and duration are affected by the type of item sold	The snack guy sells better than we do.
B2 Personal Factors	A5 Physical influence	Old people are not easy to carry	My legs are bad, sometimes I can't step on the tricycle. My knees have been bad, and I can't walk anymore.
B3 Certainty	A6 The location and type are fixed	Older people choose place closed Young people pursue convenience	We're too old to go anywhere else I can't go anywhere else because I have to work. I grow my own vegetables and sell them when I can't finish them.
	A7 Vendor identity difference	The purpose of a stall is different	I have a job, just make some pocket money. The economy is bad. I only sell it when I can't eat it at home. I had no financial resources.
B4 Randomness	A8 Factors affecting the time	The time of the stall doesn't necessarily depend Experience determines timing	I thought there'd be a lot of tourists, so I came. I come sometimes, not every day. There are many tourists when the flowers bloom. Tourists usually come on weekends
	A9 Transport frequency	All kinds of equipment, garbage, unsold things need to be taken out every day	We take the garbage ourselves. I'll go back as soon as I sell, When the garden closes, I'll go back and eat what's not sold.
B5 Environmental factors/resource allocation	A10 Environmental health management	The environmental hygiene of the stall is not managed	It's dirty for us to sit here. The scenic staff doesn't clean it. Every weekend one or two people may be hired to pick up the large trash
	A11 Lack of service facilities	All facilities need to be brought or simplified	Water and electricity are not convenient, we all bring our own gas and water. We brought our own chairs and tables. I'm sitting in a basket.
	A12 Traffic congestion	Many people make noise and crowding	The road is too narrow to pass. Sometimes I can't hear the customers.

B6 Supply vari- ance	A13 Differ- ences in pur- chasing channels	Ingredients need to be sourced from different places Some vendors grow their own ingredients	We buy raw material from the factory our- selves. Stock up from different places These are all homegrown dishes. These are my own chickens and ducks.
	A14 Pur- chase price	Purchase prices are not uniform	It's the same at the supermarket outside, but we pay more for it.

3.3 Stakeholders - Identify service subjects

Service design stakeholders refer to all relevant groups that have some connection with the service provided. Through the analysis of the priority of the relevant groups in the three processes of the scenic mobile vendors before, during and after operation, the stakeholder groups of the mobile vendor system are obtained. For the core stakeholders, the design opportunity points are relatively clear and easy to form a design scheme. Most of the current vendors governance policies only consider the construction of urban civilization, thus ignoring the needs of secondary and peripheral stakeholder groups.

In the existing business process, the core stakeholders include stall owners, tourists and scenic area managers. Stall owners are the core operators of the stall system in the scenic spot. They rely on the scenic spot to carry out business and responsible for the operation of stalls and service provision. They care about booth rentals, operating costs, market competition and customer satisfaction. Tourists are the main customers of scenic vendors, through which to purchase goods and enjoy services. They need convenient shopping, clean and hygienic dining experience, a variety of goods and reasonable prices. The manager of the scenic spot is responsible for the overall operation and management of the scenic spot, including stall resources management, service quality, health and safety, etc. They need to ensure the reasonable allocation and utilization of stall resources, improve the attraction and competitiveness of the scenic spot, pay attention to the income of the scenic spot, tourist experience, scenic spot image and cultural transmission.

Secondary stakeholders, including government departments and cleaning staff, are indirectly involved in the management of vendors and play an important role in the management, supervision and maintenance of vendors. Government departments are responsible for the supervision and regulation of scenic stallholders, including licensing, health standards, taxation, etc., to ensure public safety and compliance. Cleaning staff are responsible for the sanitation and cleaning work in the scenic spot, and the quality of their work is affected by the operation of the vendors.

Surrounding stakeholders include food suppliers, employment departments, design companies, hardware suppliers, etc., whose interests are affected by the stallholders' operations. Food suppliers supply goods to the vendors and their sales are influenced by the vendors' operations. The employment sector is affected by the operation of the stallholders, which creates employment opportunities and affects the local employment situation. The design company may be responsible for the visual design and experience design of the vendor stall system. The hardware supplier provide the technical equipment and infrastructure required for the system.

These stakeholders play different roles in the operation of the scenic vendor system, with different needs and expectations. Therefore, the design and management of the vendor supply system should fully consider the interests of these stakeholders to achieve the sustainability of the system.

3.4 User Journey Map - Explore requirements

Establish the user journey map of two sample groups of stall owners (As shown in Figure 1) and customers (As shown in Figure 2), find out the nodes where stakeholders directly interact with stall business, and mark the nodes that cause strong dissatisfaction with the experience, thereby obtaining the needs and pain points of different stakeholder groups regarding stall business. Through in-depth understanding of the needs and pain points of stall owners and customers in the process of service contact, stall business models can be improved in a targeted manner, enhance the service experience, and meet the expectations of different stakeholders, thereby achieving sustainable development of the system.

For stall owners, “stall setting up” and “hygiene issues” are emotional low points in the process of service contact. In the “stall setting up” stage, the pain points of the following touch points are more obvious: (1) The space where stalls can be set up is crowded. The equipment is not complete, and most of them are brought by stall owners from home, which reduces the management efficiency. (2) The average age of vendors in the scenic spot is high, the physical condition is poor. It is very inconvenient for them to carry materials and tools. (3) The stall setting time is closely related to the number of tourists in the scenic spot. Elderly users are not proficient in using the internet and cannot accurately grasp the activities in the scenic spot. The stall owner's prediction of passenger flow based on experience is not accurate enough and the efficiency is low, resulting in a waste of time and resources. (4) Lack of battery car parking area, random placement leads to road congestion and unsightly. In terms of “hygiene problems”, the pain points of the following touch points are more obvious: (1) The stall site belongs to a third party, no one to clean up. It may only be cleaned once a week, and many owners feel it is not clean. (2) Stall owners need to take away their own garbage voluntarily, there is no mandatory rule.

For customers, “waiting in line” and “feedback” are emotional low points in the process of service contact. In the “waiting in line” stage, the pain points of the following touch points are obvious: (1) Congestion and noise lead to communication errors and degrade customer experience. (2) Similar products and menus cause customers to not know how to choose, which increases the difficulty of shopping. (3) Queue waiting time is unknown. In terms of “feedback”, the pain points of the following touch points are obvious: (1) Customers cannot give feedback or receive no response after giving feedback. (2) Lack of understanding of other customers' evaluation of the product, resulting in they cannot know which product of the same type is better.

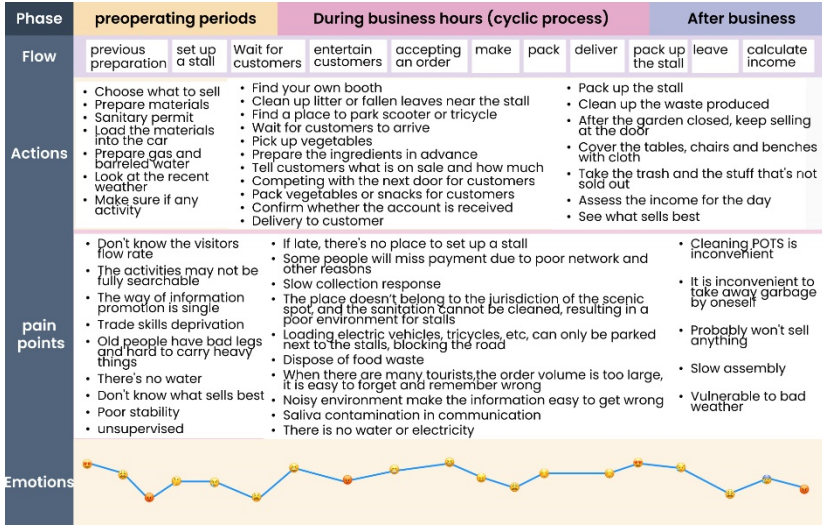


Fig. 1. Stall master journey map

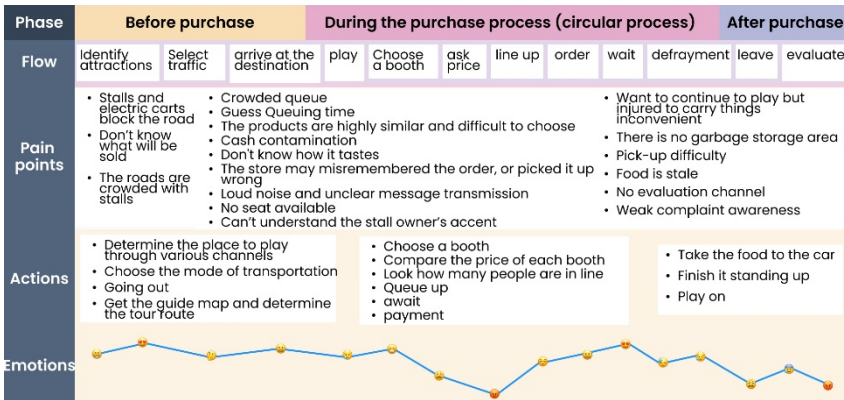


Fig. 2. Customer journey map

3.5 Service positioning - Opportunity point analysis

Service point mining requires analysis from the perspective of the full life cycle of vendors' business, with take top-level decision-making as the guiding ideology, and analysis of opportunity points from aspects such as decision-making, design, management, operation, supervision, logistics support, etc., thereby upgrade the mobile vendor service system. Through the user journey map, constructed above, the pain points of each touch point in the service process can be visually seen. Combining with user interview data, stakeholder analysis, the optimization objectives of this design are proposed from the two aspects: optimizing existing touch points and creating new touch points:

Optimize existing touch points:

(1) Optimize the hardware facilities of the stalls. Improve the existing stall premises to increase the efficiency and comfort for stall owners while promoting unified management. This can include providing fixtures, water, power sockets, trash cans, etc., to meet the needs of the stall owner.

(2) Add temporary storage area. Elderly people with limited legs, they can obtain fixed equipment or temporary storage areas by completing registration at the scenic spot, which not only facilitates stall owners, but also standardizes stalls.

(3) Time management tools. Provide stall owners with time management tools or applications, including updates on scenic area activities, weather, passenger flow, to help them manage stall usage time more scientifically and improve resource utilization.

(4) Integrate the battery car parking area. Through the integration of regional planning, the problem of random parking caused by the absence of battery car parking area is solved, and the congestion problem in the surrounding pedestrian areas is reduced.

(5) Ensure Health security. Improve hygiene maintenance and ensure the cleanliness of the stall area, including regular cleaning and garbage collection.

Create a new touch point

(1) Add digital touch point/intelligent electronic information screen and mobile app navigation. Introduction digital touch point, through the intelligent electronic information screen design and scenic mobile application, to provide guidance and interactive maps, to help visitors quickly find stalls, preview menus and queue waiting time, effectively coordinate the efficient operation of the entire service system.

(2) Health license/fruit and vegetable platform. Cooperate with the scenic spot to create a fresh fruit and vegetable supply platform, where tourists can place orders online and have express delivery within the city, which not only facilitates tourists but also increase the profits of stall owners. Efficiently integrate rural industries and create scenic spot characteristics. At the same time, the scenic spot provides vendors with unified processing of business licenses, health licenses, etc.

(3) Reservation system. Launch a reservation system to allow stall owners to book stall locations and times in advance to ensure efficient allocation of resources.

(4) User feedback system. Establish a user feedback system to allow customers to provide feedback and evaluate the stall owner service and scenic area experience. At the same time, it is convenient for other visitors to view and refer to.

(5) Data analysis tools. Introduce data analysis tools to help stall owners understand traffic trends, sales data and customer feedback to better manage their business.

3.6 Design strategy optimization

From the systematic point of view of service design, integrate the above data analysis and summarize the pain points through the user experience map, and finally determine the design opportunity points. In the context of intelligence, the introduction of mobile applications as digital touch points to improve the experience and efficiency of vendor services. The innovation of stall supply system mainly focuses on two aspects: stall design (hardware) and service system design (software).

Functional innovation at the hardware level

(1) Movable stall module//temporary storage area: The scenic spot provides modular hardware, such as washbasin, seat, awning, etc., the stall owner can choose according to demand to adapt to different passenger flows and scenarios. Or reserve a temporary storage area to place vendors' own equipment to reduce the number of times the elderly have to carry it back or forth. This can increase the flexibility and efficient use of resources, help adapt to different sites and needs, and improve the efficiency and sustainability of the stall.

(2) Digital information screen: Provide digital display equipment such as touch screen or electronic menu to display goods and prices in real time, and provide guided maps and queuing time information to improve the visibility and attractiveness of products.

(3) Integration of cultural elements: Integration of cultural elements of the scenic spot, including color, pattern, decoration and display methods. At the same time, they can also design and sell cultural theme goods, such as souvenirs, artworks, traditional handicrafts, etc., to convey the unique culture of the scenic spot, enhance the brand effect of the scenic spot, and attract more tourists.

(4) Electric vehicle parking area: Through the integration of regional planning, solve the problem of indiscriminate parking of electric vehicle, reduce the congestion of the surrounding pedestrian area, enhance the overall image of the scenic spot, and convey the information of sustainability and environmental protection.

Service system design at software level

(1) Reservation system module: The introduction of an online reservation system allows stall owners to reserve stall locations and times in advance to ensure the effective allocation of resources.

(2) Digital ordering module: On-site visitors can place orders independently on the mini program, which can not only see the queue situation but also avoid ordering errors caused by the noisy site, improving transaction efficiency. At the same time, in cooperation with scenic spots. On the official website of the scenic spot, costumer can place orders for fresh fruits and vegetable platform, which can be delivered to their homes by express delivery or intra-city express delivery .

(3) Data analysis and decision support module: Collect and analyze data of vendors, tourists, sales, etc., to help managers make wise decisions, including forecasting demand, optimizing inventory, adjusting prices and menus.

(4) Time management module: Help stall owners manage stall usage time more scientifically to cope with changes in different passenger flows and improve resource utilization.

(5) Real-time feedback and evaluation module: Allow visitors to provide real-time feedback and evaluation, helping stall owners to deal with problems in a timely manner and improve service quality, providing reference for other tourists.

(6) Information sharing module: Establish an information sharing platform to promote real-time exchange and information sharing between scenic spot managers, vendors and tourists, improve cooperation, solve problems and improve services

(7) Employee training module: Provide relevant information to help vendors choose product types. Promote food safety and hygiene and provide relevant channels for health certificates and business licenses, formalizing operations and processes.

This comprehensive innovation is expected to improve the overall efficiency of the stall supply system for vendors, create more business opportunities for scenic spots and vendors, while providing better user experience and sustainable development. This change will transform the vendors from traditional food suppliers to deeper and more diversified experience providers, thus promoting the common development of both scenic spots and vendors.

4 CONCLUSION

Service design is the dominant system design theory under the current social economic form. This study introduces service design thinking to deeply discuss the management and design of mobile vendors in scenic spots to improve service efficiency, reduce resource waste, improve information transparency, improve health standards and resource allocation. The optimized system provides more efficient and flexible services for scenic spots to a certain extent, and is also expected to promote the sustainable development of scenic spots' vendor business. However, in the process of in-depth study, there are still some shortcomings. For example, insufficient consideration of the needs of some special groups may lead to insufficient differentiation of services, which needs more in-depth research and practice to solve. In the future, the government can formulate more supportive policies for the development of mobile vendors, and provide a more convenient business environment and resource support. Society should strengthen the understanding and support for vendors in scenic spots, cultivate civilized tourism behaviors, and jointly maintain the order of scenic spots. The industry level can promote cooperation between vendors, and form a more powerful cooperation system by sharing resources and information. In terms of technological innovation, the introduction of more technological means, such as intelligent queuing systems and mobile payments, can be encouraged to improve service efficiency and better meet the needs of modern tourists.

In general, this study provides a series of optimization solutions for the management service system of mobile vendors in scenic spots, which is expected to further promote the development of the mobile vendor industry and provide certain references for subsequent research in related fields. However, we must also recognize the challenges and shortcomings that may occur in practice, which requires the joint efforts of the government, society, industry and technology, in order to achieve a more comprehensive and sustainable development of mobile vendors in scenic spots.

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