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Evaluation of Community Commercial Space Design Experience and Optimization Strategy Based on KANO Model

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Abstract: This paper takes a community commercial space as the research object, analyzes the demand preferences of community consumers and adopts the KANO model as the analysis framework to obtain the satisfaction and importance indexes of different demands of community residents. According to the content and characteristics of varying levels of the request, we propose ideas and suggestions for the optimization of community commercial spaces. The study found that consumers pay more attention to the need for service facilities category. The diversity of business types and the comfort of space are important factors affecting satisfaction with community commercial spaces. Finally, two optimization proposals are made for the space environment, such as optimizing the physical environment of retail spaces and improving support facilities. Two optimization proposals are made for space services, such as the product of "warm" community services and the product of diversified and intelligent business formats. Ultimately, this provides a reference for improving the quality of residents' consumption experience and perfecting the optimal design of community commercial spaces.

Keywords: KANO model; community commercial space; experience evaluation; optimization strategy

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1. Introduction

"According to the National Bureau of Statistics, from 2016–2020, the national e-commerce transaction volume grew from 26.10 trillion yuan to 37.21 trillion yuan, with an annual growth rate of 9.3%. The world's largest and most dynamic online retail market for many years in a row" [1]. In the face of the impact of online consumption patterns, traditional physical commerce has been put to an unprecedented test. In order to attract and retain a large number of consumers, brick-and-mortar businesses must give priority to being "consumer-centric". From the internal product, businesses must focus on the service and experience of the commercial subject, upgrade them and iterate [2]. Community commercial service facilities are one of the most closely related to the daily consumption of residents in the community [3]. With the change in residents' consumption concepts and behaviors, the community business ecology, which is the "last kilometer" of the system, is particularly prominent in the retail and social value of the new consumption [4]. Community businesses mainly serve residents within 10 to 15 min of walking distance from the community. Community business is based on practical functions, allowing residents tired of going to large shopping centers to spend money close to home, efficiently solving residents' needs and reducing the inconvenience caused by traveling long distances to make purchases. Among the ten hot spots in the field of commerce and circulation economy under the current situation proposed by the China Business Economics Association, community business is one of the hot spots, and the association believes that community business is in urgent need of a quality upgrade [5]. However, at present, all kinds of commercial spaces in the community have a single business combination, mainly "department

store + residential ground floor". Most of the old community retail outlets are farmers' markets, grocery stores, fast-food stores and small beauty salons with outdated service facilities, low-grade products, scattered distribution, incomplete categories and even a dirty and messy environment (Figure 1). Therefore, in the face of the strong impact of online consumption on community physical commerce caused by the rapid development of the digital economy, how to improve the shopping and experience advantages of offline physical stores has become an urgent topic of research. Based on consumers' experience and evaluation of community commercial spaces, this paper explores the key factors affecting the satisfaction of community residents' shopping needs. It proposes optimization strategies to improve the residents' experience in community commercial spaces to provide a satisfactory consumption experience for community residents. It also promotes the further development of community commercial spaces. In addition, community business is not only a commercial activity but also an essential guarantee of residents' happiness. However, due to the local characteristics of community businesses, the scale of the customer base is relatively fixed, and the threshold of competition is low. Whether it is reconstruction or new construction, the government's support and promotion are needed to make full use of the comprehensive operating ability of the government, enterprises and the market [6].

Figure 1. Problems with community commercial space (filmed by the authors).

2. Literature Review

2.1. About Community Commercial Space

Community business is a fundamental component of urban society, a kind of local business that provides daily necessities and services to the residents of the community as its service target "to build for the people and the benefit of the people, to meet the comprehensive consumption of the residents in the community" [7]. It is characterized by its livelihood, profitability and public welfare. As a "doorstep economy", it plays a dual role in safeguarding people's livelihood and business operations, stabilizing people's confidence and developing markets [8]. For example, Samyan Mitrtown in Thailand is positioned as a 24 h friendly community business with daily traffic of at least 25,000 to 30,000 people, with "City Life Library", "Food Library" and "Learning Library." The three concepts of "City Life Library", "Food Library" and "Learning Library" provide different activities for consumers. In recent years, "the Development and Reform Commission", the Ministry of Housing and Construction and the Ministry of Commerce have issued some policy documents on community commerce, aiming to develop various types of community commercial businesses vigorously. Many well-known developers have begun

to focus on the branding and commercialization of community businesses, such as Poly, Vanke and Goodwill, all of which have created their brands [9]. However, at this stage, the development of most community businesses is often still at the concept stage. Landings are yet to be improved, and marketing gimmicks are packaged to be more than they actually are, more often than not paving the way for residential, office or commercial sales. In addition, the convenience of online consumption for residents also reduces the time spent outdoors to a certain extent, resulting in the loss of the "soul" of traditional commercial centers and a high time cost. With the advent of the experience economy, consumer consumption has changed; people are paying more attention to the sense of experience.

2.2. Community Business Research Status

Foreign research on community commercial complexes mainly comes from the "community centers" in Europe and America. The core concept of its community center is to bring together better community residents and provide them with quality and convenient services. Kamel El Hedhli (2013) introduces consumer behavior and psychological research, summarizes six indicators that affect consumer happiness in shopping—function, convenience, leisure, safety, environment and self-identity—through visits to consumer groups and community research and proposes strategies and methods to improve the community business environment [10]. Local Shopping Streets in Global Cities, edited by Sharon Zorkin, Philip Kasinitz and Xiangming Chen, takes six globalized cities with different urban styles as the research objects, and through the study of specific relationships such as commercial interactions among residents of surrounding communities, relationships among neighbors and the spiritual ownership of places, they point out that community commercial spaces are spaces for commercial production activities and also spaces for community public activities that promote interactions among community residents [11]. Mandiberg and Warner believe that in the process of community business development, it is essential to have explicit knowledge and understanding of the actual characteristics and needs of the community and be committed to providing convenient, efficient and quality services to the community, as well as actively building a rapid response system for new community service needs [12]. In her study, Simma found a high correlation between travel and the number of services in the vicinity of a residential area, with residents being more likely to walk to services where there are a large number of services in the vicinity and where the quality of services is high [13]. Western community business research emphasizes a multidisciplinary research approach, and its research focus has evolved from the initial study of community business space entities, exploring the functional layout of community businesses, to the study of consumer behavioral characteristics and the evolution of retail formats, constantly providing new ideas to promote community business construction.

The CNKI database was searched to analyze community commercial space research in China over the past five years. Among them, scholars Wu Danxian and Zhou Suhong interpret the relationship between residential and retail spaces at the community scale by looking at the daily shopping behavior of residents, which is closely related to their survival needs and quality of life. The study used questionnaires and POI data on commercial facilities to construct multiple regression models to test institutional and structural elements and examine four main factors, including the supply of retail facilities around the community. The authors studied four factors, the supply of commercial facilities around the community, residents' preference for shopping destinations and personal and household socio-economic characteristics, and put forward some targeted recommendations for improvement [14]. Scholars Hua Chen and Zhou Xuewen studied the quantitative and accessibility attributes of 1729 residential and community commercial facilities in three districts of Shaoxing City. In response to the problems of uneven regional distribution of community commercial facilities, apparent differences in business patterns and inadequate road facilities, the article proposes to optimize the coverage of community commercial facilities, strengthen the construction of urban transport networks and vigorously develop community commercial facilities to facilitate the lives of the masses [15]. In the context

of a design project for a community retail space in Shanghai, academic Jianxia Chen summarizes the practical methods and critical points of humanistic and emotional design in retail spaces in terms of functional movement, spatial levels, spatial details, color and lighting and the use of environmental technology [16]. In her article, scholar Lu Hongyan gives policy recommendations to promote the development of community business in cities: she recommended, firstly, strengthening the top-level design of community business development and improving the governance mechanism of community business, and, secondly, strengthening the control of land for community business and improving the policy system for promoting community business [17]. Ran Longnan believes that with the rise of new consumer groups, such as those born post-1980s and post-1990s, they are no longer satisfied with low prices but pay more attention to the quality of products and shopping experience [18]. Song Xuwei and Wang Guoyen classify experiential and retail commercial facilities in terms of different consumption purposes and consumption patterns and visualize the spatial characteristics of experiential and retail commercial facilities based on kernel density analysis, using the Wuhan metropolitan area as an example. The study shows that retail-oriented commercial facilities have a low-density homogeneous distribution with high-density clustering in a few locations, indicating a flat hierarchical structure. In contrast, experience-oriented commercial facilities are more evenly distributed, showing a multi-level structure. The article concludes with an analysis of the mechanisms underlying this characteristic and the factors influencing it [19]. Based on the available research on community commercial spaces in China, more research has been conducted from the perspective of community commercial spaces, and there is a lack of attention to the consumer experience. This study attempts to focus on community commercial spaces and conduct research and analysis with the actual consumption experience of community residents in mind, combining questionnaires and interviews to obtain data to uncover the critical demand deficiencies in residents' consumption experience and suggest further optimization strategies to improve consumer satisfaction.

2.3. About the KANO Model Concept

The KANO model was developed by Noriaki Kano, a professor at the Tokyo Institute of Technology and a world-renowned quality management guru, and is primarily used to demonstrate the relationship between a product or service and customer satisfaction. It is a theory and tool for classifying and prioritizing user needs [20]. The KANO model can, therefore, assist designers in providing an effective method for designing products and services that satisfy customers. The KANO model is currently used in many fields and is commonly used in user needs research and product design. It is also widely used in the Internet, service design and product and quality management research centers. Due to the extensive use of the KANO model in requirements research, it is also applicable to the study of consumer needs in community business.

The KANO model is based on the analysis of the impact of user requirements on user satisfaction and is able to represent the non-linear relationship between product performance and user satisfaction. "The KANO model classifies needs into five categories: Essential, Desired, Charismatic, Undifferentiated and Reversed needs" [21]. The KANO model of essential needs is the most basic need, and if the object of design lacks essential needs, the consumer's satisfaction is reduced; desired needs are the most desired needs of the consumer and can increase experience satisfaction when the desired needs of the design object are high and decrease when they are not; and attractive needs refer to the features that exceed expectations. When the attractive needs of the design object are high, the satisfaction of the consumer is improved; undifferentiated needs indicate that provision or non-provision does not result in a change in the fulfillment of the person experiencing it; and reverse need is a need that can cause the subject of the experience to have a demand that elicits antipathy. Therefore, when meeting customer needs according to the KANO model, priority should be given to basic needs, followed by aspirational and charismatic needs, avoiding the provision of undifferentiated needs and reverse needs. (Figure 2).
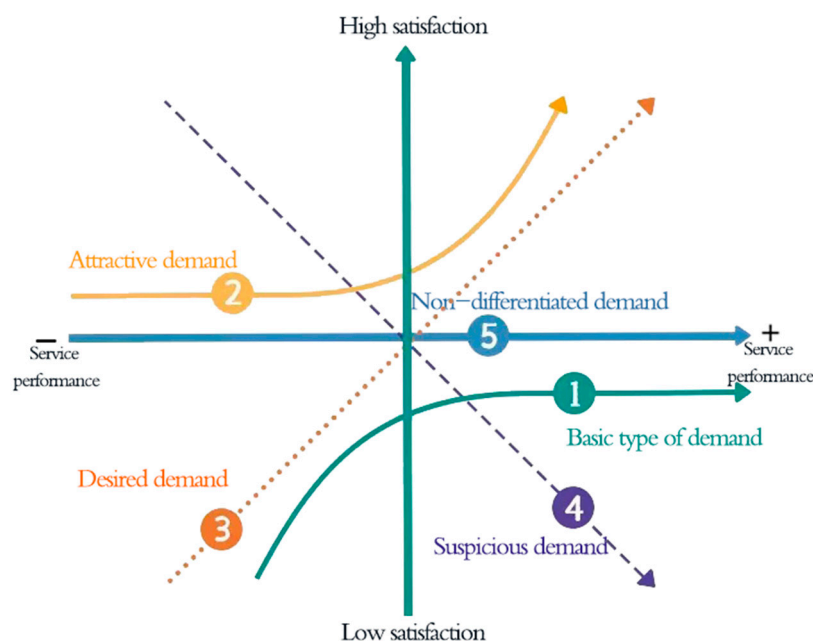
Figure 2. Diagram of the KANO model (Drawn by the authors).

The requirements analysis process of the KANO model starts with collecting the user requirements to summarize, organize and analyze the KANO category of user requirements. The next step is to calculate the combined weights of the user requirements and rank them for subsequent design reference.

Applying the two-dimensional model in KANO theory and two-factor theory to the commercial space environment, a community commercial space status quo can be set as the horizontal axis and shopping experience satisfaction as the vertical axis of the KANO model, and the attribute classification of each three-level indicator in the KANO model (charm, necessary, no difference, expectation and reverse attribute) can be confirmed.

In this study, the KANO evaluation table will be explicitly utilized to relate to the meaning of each type of need. The KANO evaluation table is a criterion for analyzing the final attribute categorization of each tertiary indicator (Table 1):

Table 1. Comparison table of KANO model evaluation results classification.

Functions/Services		Negative Questions				
		Dislike (1 Point)	Tolerable (2 Point)	Doesn't Matter (3 Point)	As It Should Be (4 Point)	Like (5 Point)
Positive Questions	Dislike (1 point)	Q	R	R	R	R
	Tolerable (2 point)	M	I	I	I	R
	Doesn't matter (3 point)	M	I	I	I	R
	As it should be (4 point)	M	I	I	I	R
	Like (5 point)	O	A	A	A	Q

A: Charming Attributes; O: Desired Attributes; M: Required Attribute; I: Indifference attribute; R: Reverse Attributes; Q: Suspicious attributes.

M—basic type of demand: When this indicator has a low degree and does not easily meet the shopping needs of residents, the shopping experience of residents is reduced. In contrast, when this indicator has a high degree and meets the shopping needs, the shopping experience of residents is good.

O—desired demand: When the level of this indicator is low, the shopping experience is very abysmal. If this indicator is optimized to a higher degree, the shopping experience of residents significantly improves.

A—attractive demand: when these indicators are available to a low degree, residents' shopping experience is not affected, while when these indicators are available to a high degree, residents' shopping experience increases significantly.

I—undifferentiated demand: whether this indicator is available to a high or low degree, it does not have an excessive impact on residents' shopping experience.

Q—suspicious demand: When the degree of this indicator is high or low, the residents said they liked this or said they could not accept it. When there are too many suspicious demands in the same questionnaire, it can be considered invalid.

R—reverse demand: when the indicator is low, the shopping experience of residents is high. In contrast, when it is high, the shopping experience of residents is low.

2.4. Relationship between KANO Model and Community Business

The KANO model is often used in product design to optimize development by investigating user needs and their satisfaction with various aspects of the product. The content provided by the community commercial space includes both 'service' and 'experience' attributes. The experience is a 'post-use evaluation' that influences the activity and provides feedback on the content of the experience. Environmental expertise is a product of the user's perceived understanding of the environment, which is judged according to their individual needs. This paper applies the KANO model to the design and evaluation of community commercial space environments to better understand the differences in the needs of different residents around community commercial spaces, such as convenient shopping methods and comfortable shopping experiences, to capture the differing needs of neighboring residents and create a shopping experience that brings customers more convenience and comfort.

3. Research Methodology

This paper begins with field research and interviews to obtain indicators of residents' satisfaction with their experience of community commercial spaces. Second, a questionnaire was distributed to community residents to obtain their evaluation of their understanding of the community commercial space. Third, the KANO model is used to identify attributes of the resident shopping experience and analyze the evaluation importance matrix data. Finally, according to the data, the existing insufficient factors in the community commercial space were excavated. We also explored the critical needs of residents. Finally, we put forward suggestions and strategies for improving the design to provide guidance for the optimization of existing community commerce, enhance the quality of community commercial services so that they can better serve the residents and provide a reference for the future design of new commercial space.

3.1. Field Research

In the process of this research, we visited several community businesses in Guangzhou. Finally, we selected the two most representative communities: the Huangpu District Kangnan community and the Yuexiu District Ou Zhuang community. The communities are surrounded by three main types of businesses: community-based commercial centers, neighborhood businesses and neighborhood-based community businesses. According to site visits and surveys, the function of commercial formats is not perfect in general, and there is severe homogenization of commercial formats along the streets, which coincides with the current widespread problem of community commercial spaces.

3.2. Evaluation Index Construction

Community commercial spaces should meet the diverse needs and behaviors of residents of different ages, genders and types. The fundamental reason for the various behaviors of residents is human needs. With the development of time and society, human needs also gradually expanded from the basic needs of life to more advanced needs such as social interaction. "The starting point of environmental behavior science is to study the

interaction between the spatial environment and people" [22]. Maslow divided human needs into five levels: physiological needs, security needs, social needs, respect needs and self-actualization needs. Among them, primary physiological and security needs are the basic material needs. Residents' demand for community commercial spaces that carry daily shopping needs first comes from the need to reach their shopping space quickly and smoothly in time and space to meet their shopping needs, i.e., "accessibility needs" and "security needs" that facilitate the use of public service facilities. The "safety" of commercial spaces is an important guarantee for residents' shopping behavior, including lighting and accessibility facilities to ensure the safety of residents' bodies and properties and "convenience demand", which refers to the convenience of finding the target store or bathroom in the community commercial space. When the primary needs are satisfied, middle- and high-level spiritual needs arise [23]. Comfort, diversity and pleasure needs are satisfied based on "accessibility", "safety" and "convenience needs". Based on "accessibility", "safety" and "convenience", a clean commercial environment, a variety of commercial formats, improved leisure and public facilities, appropriate light and color and a harmonious cultural atmosphere can enhance human comfort and meet the spiritual needs of residents. A beautiful and rich spatial environment is one of the driving forces for residents to carry out community shopping activities. Material and spiritual needs exist simultaneously; spiritual needs do not occur only when material needs are met. Therefore, residents' demand for leisure behavioral activities in public spaces includes both material and spiritual needs, which are divided explicitly into six evaluation dimensions and sixteen influencing factors (Table 2). At the same time, ten relevant experts, including teachers and masters in relevant disciplines, were invited to conduct interviews as well as a questionnaire survey of community residents to understand through the data their comments on the rationality of the demand indicators extracted within the initial scale and whether it influenced the users of the community commercial space. The results of the survey were combined to arrive at the final demand scale.

Table 2. Framework for evaluating the shopping experience of community residents.

Crowd Demand Level	Objective Evaluation	Influencing Factors
Material demand	Accessibility	Spatial scale
		Streamline setting
		Transportation convenience
	Security	Barrier-free facilities
		Security facilities
		Firefighting facilities
	Convenience	Guidance system
		Type of business
		Public facilities
Spiritual demand	Comfortability	Spatial physical environment
		Resting space comfort
		Green landscape
	Abundance	Brand awareness
		Service type
		Types of leisure activities
	Pleasure	Space culture atmosphere
		Service level
		Interactive experience facilities

3.3. Questionnaire Design

Through literature searches, field research and expert interviews to determine the framework for evaluating community residents' shopping experiences, we constructed the evaluation framework of residents' shopping experience, and a questionnaire was designed using the three levels of indicators in the measurement framework as the core questions. The questionnaire focuses on evaluating community commercial spaces, including residents' satisfaction with the current state of public service facilities, road traffic, commercial formats and service quality. A questionnaire is divided into three sections, the first of which provides an overview of the current state of the community commercial space and the spending habits of residents. The second section is the KANO Attributes of Community Commercial Experience Questionnaire, which investigates residents' perceptions of whether a community commercial space has a certain characteristic and asks positive and negative questions (see Appendix A for Table A1). Each question has five options, and from the user's answers, the attributes of the demand can be extracted. The third part is a general information questionnaire that includes the respondent's age, education level and occupation.

4. Questionnaire Distribution and Analysis of Results

The questionnaires were distributed to the Kangnan community in Huangpu District, Guangzhou City, Guangdong Province, and the District OuZhuang community in Yuexiu District, Guangzhou City, Guangdong Province. Questionnaires were distributed to residents of OuZhuang District Community, East Huan Shi Road Compound, and Jia Zhaoye City Plaza Community in Kangnan Community. The questionnaire was distributed in a combination of online and offline formats, with online being the main focus. The offline questionnaires were distributed on weekends between 11:00 and 13:00 and between 16:00 and 19:00, when residents were shopping and eating out and there were more shoppers. We went into the commercial areas of the communities studied and randomly selected residents to distribute questionnaires. The online questionnaires were mainly distributed to the WeChat owner group in the research community to ensure the sample size and authenticity of the data. June to August 2022 is the period for distributing this questionnaire. A total of 350 questionnaires were distributed online and offline, and 330 were collected, including 218 online and 112 offline, with 282 valid questionnaires collected after removing invalid ones. The effective recall rate of the questionnaire was 85.4%.

4.1. Questionnaire Reliability and Validity Analysis

The reliability and validity of the KANO questionnaire were tested by using SPSS. Reliability analysis is mainly used for quantitative data, especially for the reliability of responses to attitude scale questions. The alpha coefficient is first analyzed, and if this value is between 0.7 and 0.8, the reliability is good. Based on the reliability test, it could be interpreted that the positive and negative reliability coefficients of indicators and full scale of public service facilities, road traffic, commercial business and service quality of community business were greater than 0.7, thus indicating good quality of questionnaire design.

Validity means that the data measured by the questionnaire reflect the actual situation. The validity of a questionnaire can only be determined after its validity has been analyzed. According to the validity test, the mean KMO value for each factor of consumer experience satisfaction was 0.79 with a range of 0.7–0.8. The p-value of Bartlett's spherical test was 0.000 with a p-value less than 0.05. This indicates that the validity of the questionnaire is good, and the research data are suitable for extracting information.

4.2. Analysis of the Basic Needs of Community Residents

Based on interviews with community residents and consumers, residents' views on various elements of the business situation in the community were understood. Judging from the results of the questionnaire (Figure 3), more residents prefer to choose commercial space 0.5–2 km away from the community, and have more needs for offline shopping; most

residents prefer good service quality and interesting and comfortable space environment in their commercial space consumption experience; in addition to the purchase of basic necessities, residents also need to consume clothing, home and other categories offline. At the same time, book bars and cafés are also the types of businesses concerned by community residents.
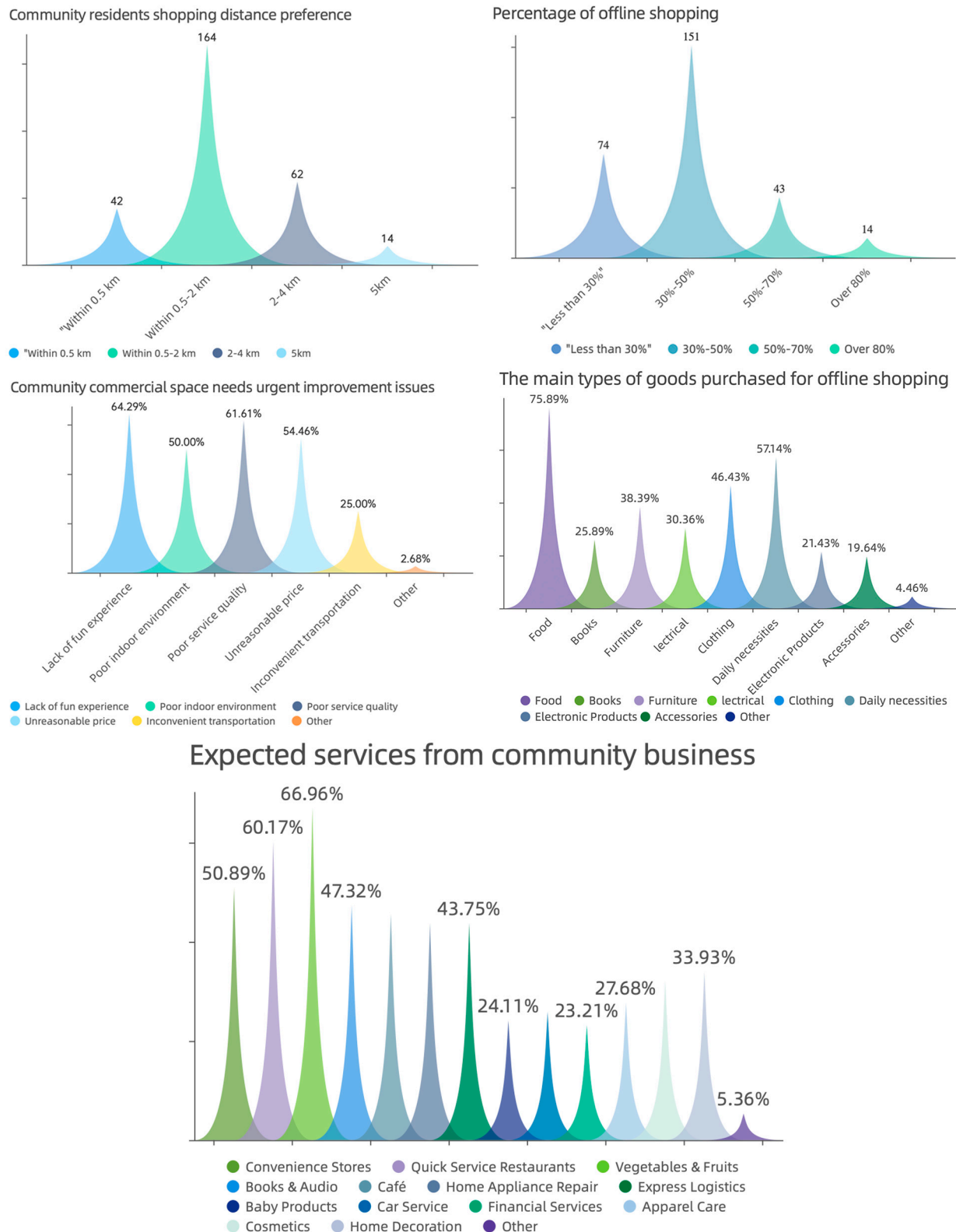

Figure 3. Community business status and residents' consumption preferences.

4.3. KANO Attribute Classification of User Needs

After compiling the questionnaire data, the 18 user demand indicators were classified and numbered according to the KANO attributes, and the Better–Worse coefficients were calculated, as shown in Table 3. The calculation formula is:

$$\text{Better} = (A + 0)/(A + O + M + I)$$

$$\text{Worse} = (O + M)/(A + O + M + I) \times (-1)$$

Table 3. Classification of KANO attributes of user requirement indicators.

		User Demand Indicators	Percentage/%					KANO Properties	Better Factor	Worse Factor
			M	O	A	I	R			
Material demand	Accessibility	Spatial scale	0.10	0.14	0.33	0.40	0.09	I	0.49	−0.25
		Streamline setting	0.14	0.19	0.29	0.38	0.00	I	0.48	−0.33
		Transportation convenience	0.17	0.32	0.21	0.29	0.00	O	0.53	−0.50
	Security	Barrier-free facilities	0.15	0.19	0.31	0.33	0.00	I	0.51	−0.35
		Security facilities	0.21	0.28	0.26	0.25	0.00	O	0.55	−0.49
		Firefighting facilities	0.17	0.30	0.23	0.29	0.00	O	0.53	−0.48
	Convenience	Guidance system	0.11	0.25	0.31	0.33	0.00	A	0.56	−0.36
		Type of business	0.10	0.19	0.38	0.31	0.00	A	0.58	−0.30
		Public facilities	0.15	0.32	0.31	0.22	0.00	O	0.63	−0.47
Spiritual demand	Comfortability	Spatial physical environment	0.15	0.26	0.30	0.28	0.00	A	0.57	−0.41
		Resting space comfort	0.21	0.29	0.31	0.18	0.00	A	0.60	−0.50
		Green landscape	0.12	0.20	0.27	0.38	0.00	I	0.48	−0.32
	Abundance	Brand awareness	0.09	0.16	0.37	0.36	0.00	A	0.54	−0.26
		Service type	0.18	0.26	0.28	0.27	0.00	A	0.54	−0.44
		Types of leisure activities	0.10	0.17	0.39	0.32	0.00	A	0.56	−0.28
	Pleasure	Space culture atmosphere	0.10	0.25	0.32	0.31	0.00	A	0.58	−0.36
		Service level	0.10	0.36	0.28	0.24	0.00	O	0.65	−0.47
		Interactive experience facilities	0.13	0.19	0.31	0.38	0.00	I	0.50	−0.32

According to the statistics, there were five undifferentiated (I) demands, five desired (O) demands and eight attractive (A) attributes, while there were 0 basic (M) and reverse (R) attributes.

4.4. Prioritization of User Requirements Metrics

According to the data, to determine the priority of consumer needs and propose optimization strategies, combined with the four-quadrant chart, the data graphically represented the demand indicators (Figure 4). The x-coordinate represents the absolute value of worse coefficient, and the y-coordinate represents the better coefficient. The scatter plot is divided into four quadrants, the first quadrant represents the expected demand; the second quadrant represents the need for charm; the third quadrant represents undifferentiated needs and the fourth quadrant represents essential needs.

Firstly, the expectation factor should be improved, which is a factor that consumers expect to be satisfied and is positively related to consumer satisfaction. Secondly, the charm factor should be managed, as the charm factor reflects the potential demand of tourists. The third task is to sublimate the undifferentiated aspect, which needs to be avoided as much as possible. The priority order is M > O > A > I to improve the community commercial space, and we propose the following to enhance the satisfaction of residents and consumers. Table 3 can be initially judged in the order of desired demand (A3, A5, A6, A9, B8) > charm demand (A7, A8, B1, B2, B4, B5, B6, B7) > undifferentiated demand (A1, A2, A4, B3, B9).

Better–Worse Analysis of coefficients

Figure 4. Scatterplot of residents' satisfaction coefficients.

4.5. Analysis of Commercial Space Demand of Community Residents

According to the analysis of the results, community residents have a higher demand for the convenience, comfort and richness of community commerce. Residents are expected to solve a variety of direct consumer needs in community commercial space, and the demand for the scale and circulation of space is weak. By comprehensively considering the needs of residents' consumption experience, we try to propose the optimization and renewal strategy of community commercial spaces.

According to the data results in Table 3, the expectation-type needs (O) are traffic convenience, security facilities, public facilities and service level. Community residents expect more convenient and reasonable routes to community businesses, better public facilities such as perfect seating and restroom settings, quality service level and the guarantee of expecting a sense of security.

Attractive needs (A) are a guidance system, business type, the physical environment, the comfort of a resting space, brand awareness, service type, leisure activities and a cultural atmosphere of freedom. Diversified types of businesses and complete services are more attractive to community residents, and more residents expect to have "one-stop" shopping nearby due to their busy daily work and traffic congestion caused by urban development. Secondly, improving the physical environment of the space and creating the cultural atmosphere of the area will also give residents a consumption experience that meets their spiritual needs.

The undifferentiated requirements (I) include indicators such as the spatial scale, flow setting, barrier-free facilities, a green landscape and an interactive experience. According to the results of the questionnaire and interview, it was found that community residents did not care about the needs of the space design scale, streamlined barrier-free facilities, a green landscape and an interactive experience. At present, residents generally do not place high importance on spatial scale, rational route setting, barrier-free facilities and interactive experience facilities. For example, the lack of ethical understanding in barrier-free design has caused many inconveniences to disabled people in society, and the phenomenon of the

middle end of the yellow blind road being suddenly cut off by a large tree is common in many cities. However, with the increasingly severe problem of social aging, all parts of the population have begun to pay attention to "barrier-free design". Therefore, in the process of personalized services, future community commercial spaces need to follow the principles of free, flexible and convenient use. It is necessary to pay attention to the rationality of design but also to grasp the psychological feelings of consumers, reasonably allocate each space and strive to create a comfortable and cordial experience space. It is necessary to improve residents' shopping experience and improve people's quality of life.

5. Optimization Strategy to Improve the Commercial Space Experience of Community Residents

5.1. Optimization Strategy of Community Business Environment

5.1.1. Optimize the Physical Environment of Commercial Space and Improve the Accessibility of Space

From the above analysis, the environment of a community commercial space has a great impact on community residents' experience evaluation and satisfaction. First of all, it is necessary to ensure that the sanitary environment of the community commercial space is maintained in a clean and simple state. By cleaning up the entrance of the shop and the surrounding stalls, the congestion of the environment is reduced, and the space area is divided by moderate lighting to keep the entrance of the space smooth and bright and create an environmentally friendly community commercial space. The set decoration of the shop's exterior is also crucial, and the quality of the exterior decoration can increase interest in the space environment. Second, it is important to meet the convenience and safety of residents' transportation. In the 15-min community living circle, walking is the main mode of transportation for residents, so the diversion of people and vehicles can be reasonably planned by increasing the density of branch roads around the community commercial space, improving the accessibility of the community commercial space's transportation network and making residents' travel smoother [24].

5.1.2. Improve Supporting Facilities to Meet the Basic Needs of Consumers

According to previous studies, when there are both primary and quality-enhancing commercial configurations in community commerce, only the quality improvement type can improve residents' evaluation and satisfaction with community services and improve people's sense of livelihood and happiness [25]. Public facilities in community commercial areas should be placed in conspicuous places so that consumers can use them, improving consumption efficiency and enhancing consumption enthusiasm. In addition, considering the need for consumers of community commercial spaces to stay in the commercial area continuously, the rational arrangement of basic leisure facilities is significant. If consumers need a short rest after walking for a long time, a community commercial space can provide consumers with a temporary resting place for consumers by creating excellent and comfortable supporting leisure facilities or small leisure spaces to avoid negative emotions caused by the excessive fatigue of consumers and thus affect their enthusiasm for consumption. Each rest area also needs to create a beautiful environment, such as a combination of greenery and decoration, to enhance the quality of the space environment. Moreover, considering the use of passenger flow during peak periods, community commercial spaces should provide sufficient public facilities to give consumers a sense of security and safety [26]. At the same time, the spaces must be ergonomic in design and pay attention to humanized design to bring a better experience to community residents.

5.2. Optimization Strategies for Community Business Services

5.2.1. Create Community Services with "Temperature"

In the future, the ideal community business ecology should have a "warm" business model, emphasize outdoor, social and cultural functions and create a warm and comfortable community atmosphere. On the one hand, social and leisure activities for residents, includ-

ing flea markets, small sports gatherings, parent–child friendship parties and other places, can be held regularly to create an immersive consumption experience model, enhance the consumption experience of community residents and promote consumption passion. On the other hand, it is possible to explore the historical and cultural connotations in the city and community areas; create a cultural consumption agglomeration area in line with the community positioning; create a convenient, standardized and creative experiential consumption space; and highlight the characteristics of regional commercial brands [27]. This can not only enhance the vitality of community commerce and increase the cultural charm of the space but also enable community residents to complete the transformation of high-level cultural and emotional consumption patterns, linking consumers and the proximity of community commercial spaces.

5.2.2. Integrate Business Scenarios to Achieve Diversified and Intelligent Development of Business Formats

In response to the current homogeneity of community commercial spaces, in addition to basic shopping, dining and lifestyle services, community businesses need to gradually expand into richer community business formats, such as culture and leisure, parent–child entertainment, sports and fitness and social activities, to better meet the personalized, diversified and distinctive consumption needs of residents and provide a more comprehensive consumption experience for community residents. Attention should also be paid to regulating the business behavior and service attitudes of merchants, gaining recognition from residents through quality business services and attracting repeat customers, which is conducive to the sustainable development of community commerce.

With the widespread use of the Internet, digital transformation in all aspects of life is imperative. Therefore, the improvement and upgrading of offline community business services must also be combined with the digital economy, be consistent with smart community business services, and meet the needs of community residents for smart community business services [28]. Community enterprises should integrate terminal distribution and multi-functional services online and offline to achieve "zero distance" between community services and residents' needs, cloud services and safety and convenience. Existing lifestyle service outlets will be upgraded, and complete coverage of online home services will be promoted. By expanding the scope of community business services in terms of time and space, we will provide integrated offline and online services to better meet residents' needs for basic living and quality consumption [29]. In addition, services can be segmented for resident groups, extension functions and related personalized services around different groups can be expanded and multi-level and personalized goods and services suitable for other community consumer groups can be provided so that community commerce can play more significant roles in improving people's primary livelihood and promoting consumption upgrading.

6. Conclusions

Community commercial spaces are places of practice that maintain and enhance the interactions and communications that connect residents' lives in the community. This study aims to explore the impact of the design of community commercial spaces on residents' sense of experience. Through the research, the authors have gained a more concrete and deeper understanding of the importance of community commercial spaces to community residents. From the study results, the following points are noted: The higher satisfaction needs of community residents for community commercial spaces are focused on convenience, comfort and the richness of the business format. Residents are more likely to expect multiple consumption needs to be met in community commercial spaces. At the same time, convenient transport routes should be prioritized, and attention should be paid to the distribution of the number of public facilities and the variety of designs of rest areas. Conversely, factors such as scale, flow and accessibility within the space have little impact on community resident satisfaction.

The results of this study are as follows: First, based on the research of Maslow's needs theory, the needs indicators applicable to the design of community commercial spaces are constructed. In the research process, a questionnaire was used to obtain residents' subjective satisfaction data. The KANO model importance matrix data was used to discriminate and classify the priority of satisfaction factors, mainly to analyze the factors that enhance community residents' sense of consumption experience and explore the essential demand factors, thus providing a new perspective for the study of relevant community commercial spaces. Secondly, this paper finds that community commercial business configuration and service quality optimization can effectively improve residents' sense of experience and happiness, which helps to interpret residents' satisfaction with community commercial spaces from the perspective of consumption experience in the future and provides relevant theoretical support for research on people's sense of access and happiness. This paper examines the impact of community commercial space design on residents' experience evaluation and satisfaction and provides a path boundary for future related research.

Current research on community commerce is mainly qualitative, while quantitative research is mostly at the level of community commerce layout research, with less research based on actual consumer data. Therefore, it is essential to study the development of community commercial spaces from the consumer experience perspective and through the study of specific cases. There is still room for improvement in this paper, and it remains to be seen whether the findings can be extended to other second- and third-tier cities due to the large number of cities in China and the differences in development and planning. Future research could be conducted through tracking studies to gain a deeper understanding of the dynamic impact of optimizing the eco-configuration of community businesses on people's sense of access and well-being. In addition, the lack of segmentation of user groups in this paper and the fact that most of the respondents were young consumers may lead to some errors in the research findings, which need to be further refined and improved in future studies. Future studies can expand the research sample and strengthen the quantitative analysis to provide more comprehensive and scientific research data and more accurate guidance strategies for designing community commercial spaces [30].

The new urbanist community has proposed new requirements, from encouraging walking and promoting more neighborhood interaction to improving the livability and sustainability of urban communities. At the same time, the ease of living for special groups has yet to be strengthened in terms of guiding the indicators of social harmony to better highlight the goal of building livable communities [31,32]. In the future, the commercial design of communities will need to pay more attention to the needs of the population to achieve a more effective design that is truly "people-centered". A complete urban community commercial system should be explored in depth to indeed promote the healthy and efficient development of regional community commerce.

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Appendix A

Table A1. Sample questionnaire.

Pleasure: Quality Service Level					
Forward and Reverse Questions	Enjoyed it	Rightfully so	Doesn't matter	Reluctantly accepted	Very unlike
If this function is available your comment is?					
If this function is not available your comment is?					

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