

A Study of the Parent-Child Experience Design for Public Space of Community Shopping Center: A Case Study of Tianjin Future World Shopping Center

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Abstracts

With the increase of the proportion of children to the population and the per capita expenditure on education, culture and entertainment of households across the country, parent-child consumption is a very important economic behavior at present and has great potential in the future. In addition, with the decline of Engel's coefficient, people's consumption structure has gradually changed from satisfying the purpose of food and clothing to enjoyment-based experiential consumption. Among them, parent-child consumption is particularly obvious in the excessive consumption of experiential consumption due to its special customer demand attributes. However, in the past 10 years, China's real estate has exploded and a large number of shopping centers have been built and opened, but the design concept of shopping center space cannot fully keep up with changes in consumer demand. Therefore, the purpose of this study is to conduct research and analysis from the level of consumer cognition, physiological needs and psychological needs, and derive the parent-child experience design strategy of public space in community shopping center, and verify it through design prototypes.

This study uses questionnaire research to use the design prototype of Future World Shopping Center in Tianjin, China to conduct design verification, and qualitatively study the theme of public space experience design of community shopping centers.

For the survey results, this study first uses SPSS data analysis software as an analytical tool, and analyzes the "consumers' cognition of community shopping centers", "consumers' physiological needs for public space in community shopping centers", "consumers' psychological needs for public space in community shopping centers" and "consumers' social background" in the questionnaire by using the percentage method. After reaching the preliminary analysis conclusion, the Future World Shopping Center will be used as a design prototype to verify the feasibility of the research results.

Through a series of theoretical research, practical research and design prototype verification, this study draws the following conclusions:

1. Based on consumer cognition, parent-child customer entertainment learning should be designed as the main customer journey, and consumer shopping needs should be integrated into it. Moreover, for the spatial style of the shopping center, it is necessary to work the high style and aesthetic level;

2. Based on the physiological needs of consumers, humanized power configurations in terms of safety and convenience should be designed according to the different physiological characteristics of parent-child customers;

3. Based on the psychological needs of consumers, devices or activity planning that parent-child customers can participate in should be designed.

Keywords: Parent-Child Experience Design; Public Space; Community Shopping Center; Tianjin Future World Shopping Center

Introduction

Background

According to the "Seventh National Population Census Communiqué" released by the National Bureau of Statistics of China (2021 : online), the population aged 0~14 is 253.38 million, accounting for 17.95%, and with the liberalization of the three-child policy, the child group will also show an upward trend in the future. According to data released by the National Bureau of Statistics in October 2022, the per capita expenditure on education, culture and entertainment of residents nationwide in 2021 was 2,599 yuan, an increase of 106.0% over 2012, an average annual increase of 8.4%, and an increase of 0.3 percentage points over 2012. It is judged that parent-child consumption is a very important economic behavior at present and has great potential in the future.

According to data from the Chinese government website (2020), domestic Engel data continued to decline from 2016 to 2019, from 30.1% to 28.2%. With the decline of Engel's coefficient, people's consumption structure has gradually changed from satisfying the purpose of food and clothing to enjoying experiential consumption. Among them, parent-child consumption is particularly obvious in the excessive consumption of experiential consumption due to its special customer demand attributes. According to the "2020 Top 100 Brand Owners Pay Attention to Newly Opened Shopping Centers" released by Xiong (2021 : online), parent-child formats account for 9% of subdivided formats, second only to catering and retail, becoming the third largest experience format.

In the past 10 years, China's real estate has exploded, and a large number of shopping centers have been built and opened. Due to the rapid construction and opening demand, the space design concept of the shopping center cannot fully keep up with the changes in consumer demand, and because the shopping center design has a certain timeliness attribute, the design needs to be updated regularly.

This study will adopt the method of case study, using Tianjin Future World Shopping Center in China as a case study.

Literature Reviews

Community shopping center definition: Table 1 Community shopping center features

	Location	Business districts and target customers	Scale	Commodity structure
International Civil Service Commission (ICSC)	-	3 miles	30,000~125,000 m ²	Generally anchored by a supermarket
The State Administration for Market Regulation of China and the International Standardization Administration	It is located in or around the center of the residential area, with convenient transportation . It is mainly closed independent buildings	The radiation radius is ≤ 3km, and the customers are mainly surrounding residents	Excluding parking lot, usually 10,000~50,000 m ²	Mainly family life, leisure and entertainment
The Complete Real Estate Encyclopedia (Denise L. Evans, JD & O. William Evans, 2007)	-	3 ~6miles	100,000~300,000 sq.ft	A mixture of retailers and food service establishments

From the above discussion, it can be judged that the main service group of community shopping centers is daily consumption customers within the range of 3~9.5km, and its functional formats are also mainly to meet the daily consumption of life and entertainment (U.S. Shopping-Center Classification and Characteristics, 2017 : online).

Theories related to public space in shopping centers

Mitrašinović and Mehta (2021 : 4) argues that public space is an intermediary space that connects different buildings, but as large-scale urban construction leads to a shift in social structure, the historical social bonds between individuals are weakened, cities increasingly become gathering places for individuals, and public open spaces as part of the urban environment become impersonal and fragmented. Public space plays a vital role in urban development. As stated by Cecilia (2021 : 1), public space not only promotes economic development and community revitalization, but also promotes the well-maintained, health and safety of the urban environment through its continued use, making the city an attractive place to live and work.

Kusumowidagdo et al. (2013 : 211-219) through a study of three shopping centers, Pasar Atum, Ciputra World and Tunjungan Plaza, concluded that shopping malls built in earlier years tend to focus more on social relationships than physical conditions, while more recent shopping malls derive a sense of place from their physical conditions and provide new experiences. Probably different shopping centers have different sense of place, and the diversity of attachment styles, people and cultures, and time also play a role in creating different sense of place. The types of relationships that can occur here are iconic, biographical, experiential, functional, and dependent.

Ouyang (2016 : 1) found through research and analysis of customers' consumption behavior that customers will continue to walk or stop and observe at any place in public space, and when shopping malls can give consumers more consumption information, they can promote their desire to consume. In the collective shopping center, because its space is more complex, whether the space is recognizable and whether consumers can intuitively identify their position in the space is an important factor in the design.

In summary, the public space of the shopping center carries the transitional space role between the community and the store, in addition, with the change of urban construction and social structure, new requirements are also put forward for the social function of the public space of the shopping center.

Experience design theory

Experience design first appeared in the field of human-computer interaction, first used by Shedroff (2001 : 9), the definition of experience design, Chinese and foreign literature has not clearly defined. Wikipedia points the definition of "experience design" to "User experience design": User experience design (UX design, UXD, UED, or XD) is the process of defining the experience that users will experience when interacting with a digital product or website; Baidu Encyclopedia's definition is: experience design is to integrate consumer participation into design, in the design of service as "stage", products as "props", environment as "scenery" (Experience Design, n.d.).

In recent years, the scope of experience design is not limited to the field of human-computer and Internet interaction, and experience design is also a hot topic in space design. Chen (2012:online) based on the study of experiential commercial and commercial space concluded that the experiential design of public space in shopping malls has the following design strategies:

- (1) Induce rich perceptual experience in sight, hearing, touching and smell;
- (2) Through the planning of entertainment themes, the setting of entertainment facilities and the introduction of entertainment activities, and induce the entertainment experience of public participants;
- (3) Use diversified aspects, characteristic nodes, personalized furnishings to induce the aesthetic experience of personality highlights;
- (4) Adopt a holistic spatial sequence, contextualized place manufacturing and regional cultural inheritance to induce the emotional experience of situational integration.

For children's customer groups, some scholars have also done theoretical research on experience design.

In the end, experience design originated in the field of human-computer interaction and focuses on human-computer efficiency. On the one hand, with the development of the times and the intersection of various disciplines, experience design has gradually become

popular in the field of space design, focusing on the interaction between people and space in various sensory aspects, so that customers can gain a sense of participation. On the other hand, for children, the experience design of the space should focus on entertainment and the interaction between indoor and outdoor spaces.

Research Objective(s)

The research and analysis were carried out from the level of consumer cognition, physiological needs and psychological needs, and the parent-child experience design strategy of public space in community shopping malls was obtained, and verified by design prototypes.

Research Methodology

1. Research Design

This study uses questionnaire research to use the design prototype of Future Tiandi Shopping Center in Tianjin, China to conduct design verification, and qualitatively study the theme of public space experience design of community-based shopping centers.

2. Population

The research object of this study was a combination of parent-child customers going to Tianjin Future World Shopping Center, and the age of children was selected to be in the range of 0~14 years old.

3. Sample size

In order to make the sampling data cover different subjects within the scope of the study as much as possible, according to the age and sex of the children, the sampling groups were divided into four sampling groups: 0~7 years old boys' families, 0~7-year-old girls' families, 7~14-year-old boys' families, and 7~14-year-old girls' families. Due to the limitation of time and labor costs, 20 groups of customers were selected by random sampling in each group owner for sampling questionnaires, and finally a sample of 80 people was obtained.

4. Questionnaire for content design

The main purpose of this study is to investigate the cognition and demand of parent-child consumers in Tianjin Future World Shopping Center on public space, and the questionnaire questions adopt a combination of closed and semi-open.

5. Data Collection Data Collection Case selection

Qualitative data is collected in text, intelligent verbatim transcription with the help of intelligent software, and data collection by interpretation and classification.

6. Data Analysis

The survey data of the four parts of the questionnaire is presented in percentage form, which can more intuitively reflect the trend of customer needs.

Research Scope

This research focuses on Future World Shopping Center in Tianjin, China.

Research Findings

In this study, SPSS data analysis software was used as an analytical tool to analyze "consumers' cognition of community shopping centers", "consumers' physiological needs for public space in community shopping centers", "consumers' psychological needs for public space in community shopping centers" and "consumers' social background" in the questionnaire by using the percentage method. After reaching the preliminary analysis conclusion, the second part of this chapter will use the Future World Shopping Center as a design prototype to verify the feasibility of the research results. Later, in the third part of this chapter, the expert group will be invited to consult on the prototype design, and after receiving the suggestions, analyze and summarize and modify the prototype design to arrive at the final design.

Research and analysis

1. Consumer cognitive analysis of community shopping centers.

In this study, consumers' cognitive analysis and research on community shopping centers are divided into four items, namely visit frequency, visit duration, main purpose and development trend prediction, and the sample characteristics are described in the following table:

Table 2 Consumer behavior analysis

Consumer awareness measurement options	Number	Percentage	Total
How often would you like to bring your children to Future World Mall?	More than 1 time per week	48	60.0%
	1~4 times a month	26	32.5%
	Hardly going	6	7.5%
How long do you stay at a time when you bring your children to Future World Mall?	Within one hour	11	13.8%
	1~2 hours	41	51.3%
	More than 2 hours	28	35.0%
The main purpose of your bringing children to Future World Mall is:	Shopping	25	31.3%
	Entertain, learn	32	40.0%
	Gather with friends	18	22.5%
	Others	5	6.3%
What do you think the trend of community-based shopping malls like Future World is:	High style	35	43.8%
	Chinese traditionalization	14	17.5%
	Diversified	8	10.0%
	Exotic	7	8.8%
	Trendy	12	15.0%
	Others	4	5.0%

According to the statistics obtained from consumer cognitive analysis in the sample, the measures are summarized as follows:

(1) Frequency of visits: Only 7.5% of the respondents hardly go to the mall, the highest proportion is 60% more than once a week, and 32.5% is 1~4 times a month.

(2) Duration of visit: Among the respondents, the largest number of visitors for 1~2 hours accounted for 51.3%, the lowest proportion was 13.8% within 1 hour, and the remaining

visits were more than two hours, accounting for 35%.

(3) Main purpose: The most important purpose of visiting was entertainment and learning (40%), followed by shopping (31.3%), gathering with friends (22.5%), and other purposes (6.3%).

(4) Development trend judgment: Respondents judged the development trend of shopping malls as "high style" (43.8%), while other judgments accounted for "Chinese traditionalization" (17.5%), trend (15%), diversification (10%), exotic style (8.8%), and others (5%).

Through the above analysis data, it can be seen that most consumers need to go to the shopping center more than once a week, and most of them spend 1~2 hours each time. Consumers go to shopping malls simply shopping is no longer the most important purpose, but the proportion of entertainment and learning is the highest. For the future development trend of shopping centers, more customers tend to "high style".

2. Analysis of consumers' physiological needs for public space in community shopping centers.

In this study, the physiological needs of consumers on the public space of community shopping malls were divided into 12 items, and the characteristics of statistical samples were described in the following table:

Table 3 Analysis of consumers' physiological needs for public space in community shopping centers

	Consumer Physiological Needs Measurement Options (People Counting)					Total
	Not needed at all	Not required	Uncertainty	Required	Much needed	
Common lounge seats	0	5	15	26	34	80
Public charging devices	2	4	22	43	9	80
Interactive entertainment area for children	4	12	26	27	11	80
Temporary activity area	1	3	16	35	25	80
Featured themed art installations	2	3	14	37	24	80
Mother and baby room	0	5	14	29	32	80
Public restrooms with special equipment for children	0	0	5	42	33	80
Paid studios	2	11	25	35	7	80
Interactive cultural and educational panels or digital installations	3	16	36	22	3	80

Indoor greenery	4	9	21	32	14	80
Children's lounge	0	2	5	43	30	80
Others	1	3	43	25	8	80
Total	19	73	242	396	230	960

According to the statistical results, the maximum number of people in need of "public rest seats" is 34, followed by 33 people in "public restrooms with special equipment for children", and 32 and 30 people in "mother and baby room" and "children's lounge" respectively.

There are 8 configuration respondents who choose from the statistics at all, of which the number of "children's interactive entertainment area" and "indoor green plants" is the maximum number of 4;

No need to count, only "public toilet with children's special equipment" configuration is not selected, the rest of the configuration selection number of 2~16 people;

In the uncertain statistics, there were more respondents choosing from various configurations, of which the maximum number of "other" items was 43;

In the statistics of the required items, there are more people to choose, among which the number of people choosing "public charging device" and "children's lounge" is up to 43 people.

In the statistics of very needed items, the number of people choosing "public leisure seats" was the largest 34, followed by "public toilets with special equipment for children" with 33 people, followed by "mother and baby room" with 32 people, "children's lounge" with 30 people, "temporary activity area" with 25 people, and "special theme art installation" with 24 people, and the rest of the options were selected by a smaller number of people.

Summarizing the above statistical results, it is concluded that consumers have a demand for most humanized and experiential configurations in shopping malls, and have strong demand for parent-child related functions such as "public rest seats", "mother and baby rooms" and "public toilets with special equipment for children".

3. Analysis of consumers' psychological needs for public space in community shopping centers

In this study, consumers' psychological demand analysis and research on public space in community shopping centers were divided into 8 items, and the characteristics of statistical samples were described in the following table:

Table 4 Analysis of consumers' psychological needs for public space in community shopping centers

	Consumer Psychological Needs Measurement Options (People Counting)					Total
	Not needed at all	Not required	Uncertainty	Required	Much needed	
I would like to be able to bring my children together with friends in the mall	0	13	18	31	18	80

I want my children to grow and exercise while interacting in the mall	3	11	21	39	6	80
I hope that the experience activities in the shopping can help the children improve their aesthetics	8	5	28	27	12	80
I want the entertainment experience to change every time the mall changes	2	6	32	29	11	80
I want the experience inside the mall to be safe	0	9	16	31	24	80
I am willing to pay a reasonable fee for a good experience	1	3	22	34	20	80
I wanted the public spaces in the mall to be more interesting and exploratory	3	4	15	39	19	80
I want to talk to my kids about participating in handicraft activities in the mall	4	8	19	29	20	80
Total	21	59	171	259	130	640

The statistics show that the maximum number of people in the very need item selection is "I want the experience activities in the mall to be safe", and the minimum number of people choosing "I want children to grow and exercise while interacting in the mall" is at least 6;

In the statistics of the required items, the total number of overall choices was 259, of which "I hope children can grow and exercise while having fun and interacting in the shopping mall" and "I want the public space of the shopping mall to be more interesting and exploratory" The maximum number of people choosing is 39;

There is no need to count at all, the overall number of people selected is at least 21, and "I want to be able to bring children to a party with friends in the mall" and "I want the experience activities in the mall to be safe" are not selected;

In the non-counting process, the overall selection was 59 people, and the maximum number of people in the "I want to be able to bring my children to a party with friends in the mall" was 13;

The maximum number of people in the "I want the entertainment experience in the mall to change every time" is 32 people and the minimum number of people in the "I want the public space in the mall to be more interesting and exploratory" is 15.

In summary, consumers are more enthusiastic about the design and activities of shopping malls that can bring good experience and psychological feelings, and are willing to pay for a good experience.

4. Analysis of consumer social background.

This study divided the analysis and investigation of consumer social background into 5 items, and the characteristics of statistical samples are described in the following table:

Table 5 Analysis of consumer social background

Consumer social context measurement options		Number	Percentage	Total
Child gender	Boy	48	60.0%	80
	Girl	32	40.0%	
Children's age	0~7 years old	37	46.3%	80
	8~14 years old	43	53.8%	
Age of parents	18~25 years old	22	27.5%	80
	26~33 years old	16	20.0%	
	Over 33 years old	42	52.5%	
Parental occupation	Government employees	13	16.3%	80
	Teachers, doctors, lawyers	17	21.3%	
	Farmer	19	23.8%	
	Freelancing	13	16.3%	
	Soldier	1	1.3%	
	Others	17	21.3%	
Annual household Income	Less than 80,000 yuan	15	18.8%	80
	80,000~200,000 yuan	35	43.8%	
	200,000~500,000 yuan	21	26.3%	
	500,000~100,000 yuan	7	8.8%	
	More than 1 million yuan	2	2.5%	

The results of the analysis show that 60% of children are boys and 40% are girls; Children aged 0~7 accounted for 46.3%, 8~14 years old accounted for 53.8%; 27.5% of parents aged 18~25, 20.0% aged 26~33, and 52.5% over 33 years old; The highest proportion of parents' occupations was farmers, accounting for 23.8%, followed by teachers, doctors, lawyers and others, accounting for 21.3% respectively; The highest proportion of annual household income of 8~200,000 is 43.8%, and the lowest proportion of more than 1 million is only 2.5%.

Summarizing the above data, the proportion of children and boys in the parent-child customer group of this community-type shopping center is slightly higher than that of girls, the children over 8 years old are slightly higher than those under 7 years old, the parents have no specific tendency to occupation, and the middle-income families are most.

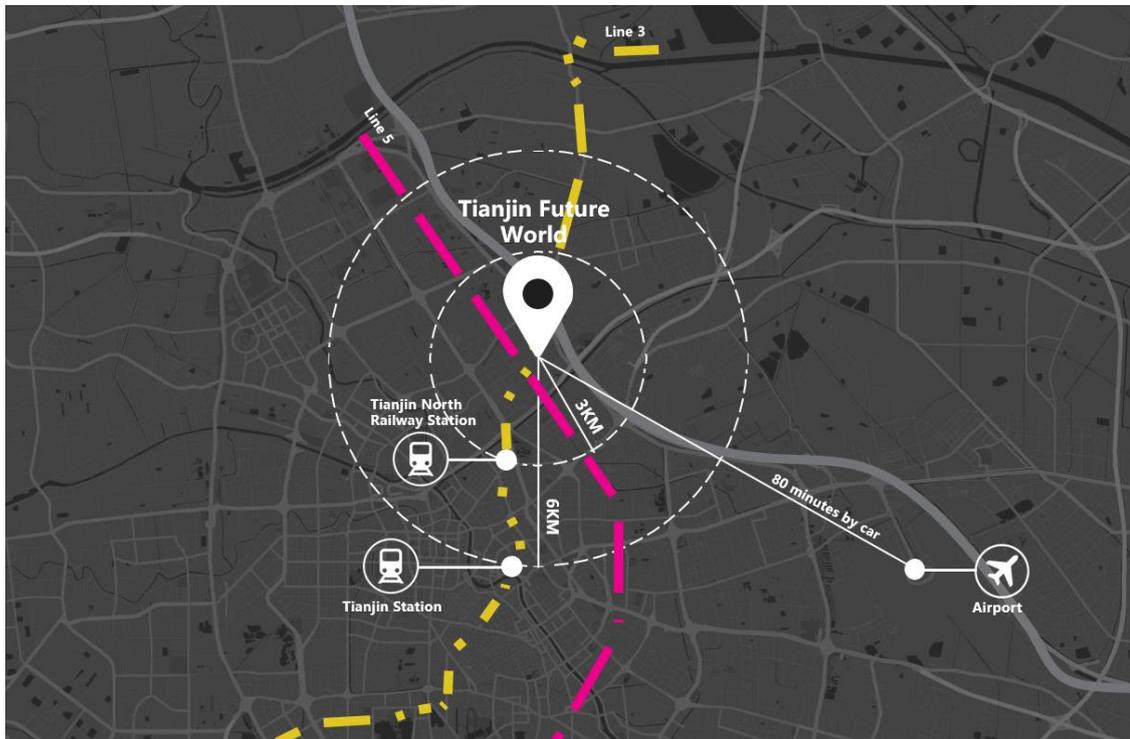
Scheme design

1. Prototyping schemes

This study uses Tianjin Future World Shopping Center as the design prototype to explore the topic of community shopping center experience design.

2. Project positioning:

The project is located in Yixing Fu, Tianjin, according to the literature review chapter community shopping center definition, the main service scope of this project is permanent residents within 3km of the surrounding area, and will also attract some visitors within 6km.



Picture 1 Location analysis

(Image source: Produced by this study)

3. Conceptual analysis:

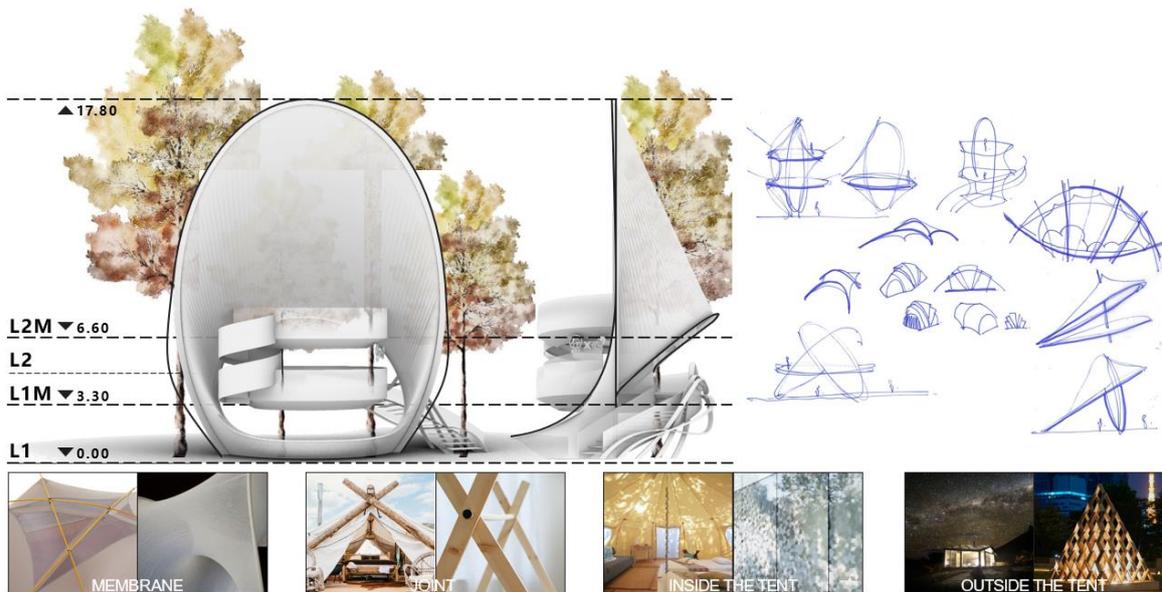
According to the literature review of the concept of "experience design", the focus of experience design needs to pay attention to the interaction between people and space, and for children, it should also pay attention to the fun of space, so this project finally proposed the concept of "Urban Camping", hoping that in the high-style aesthetic space, customers can explore and interact in the space, and set up various interesting nodes and installations to bring customers a unique experience process.



Picture 2 Conceptual analysis

(Image source: Produced by this study)

Based on the concept of "urban camping", the most important atrium space in this project is extended from the concept of camping experience, and the design elements of "Membrane", "Joint", "Inside the Tent" and "Outside the Tent" are extracted to obtain an atrium structure design with interesting exploration experience.



Picture 3 Element extraction
(Image source: Produced by this study)

4. Main atrium space design:

Due to time constraints, only the most representative atrium space was selected for design verification in this study.

Based on the theoretical suggestions and actual project situation analyzed by this study, the design space style of the atrium of Tianjin Future World Shopping Center in the future mainly adopts the "High style" aesthetic trend chosen by most customers in consumer cognitive analysis.

According to the results of the consumer function analysis, the atrium structure of this project can be used as a "temporary activity area" or as a featured art installation to enhance the sense of customer experience. In addition, due to the introduction of the concept of "urban camping" through the park, the program can also host urban camping themed activities with the help of light shows.



Picture 4 The first draft of main atrium space design
(Image source: Produced by this study)

Expert consultation on design solutions

In order to verify the feasibility and market recognition of the design, the above design scheme was respectively invited to Ms. Wu Chao, founder of Hong Kong NEWS Design Office, Mr. Zheng Gangqiang, doctoral supervisor of Wuhan University of Technology, and Mr. Sun Shengyang, Operation Director of Sino-Ocean Real Estate's Commercial Business Division, to comment on the design from different professional perspectives, and the main suggestions are as follows:

Ms. Wu Chao suggested: the overall style of the atrium design is relatively tonal, but the relationship between the atrium structure and the building floor needs to be further studied, and the display effect, practicality and interest can be comprehensively considered;

Teacher Zheng Gangqiang suggested: the theme of "urban camping" can be taken as the theme of the entire project, and the branch theme story can be extended in the atrium space to enhance the overall interest and experience;

Mr. Sun Shengyang: At present, consumers have a high degree of recognition of light and shadow technology, and some projects in the market have also had successful cases, which can combine dynamic light and shadow elements on atrium structures.

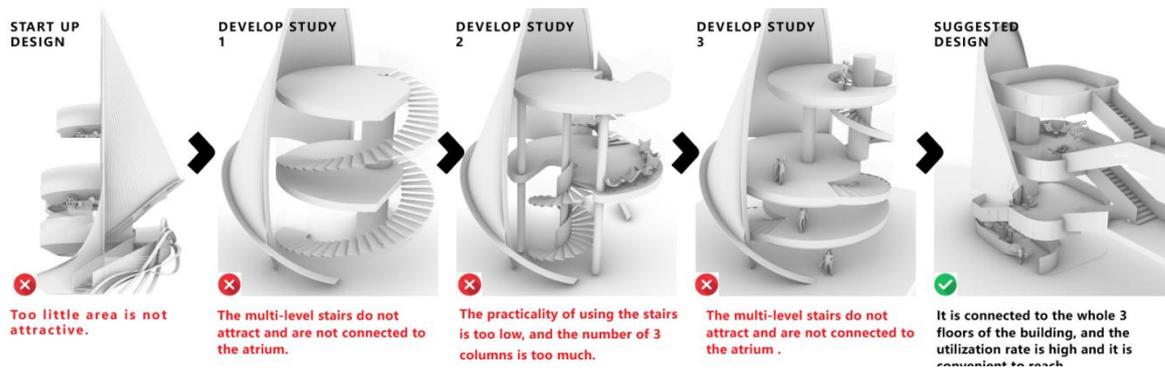
Final plan

In response to the suggestions made by Ms. Wu Chao, Mr. Zheng Gangqiang and Mr. Sun Shengyang, the following modifications were made in the prototype design:

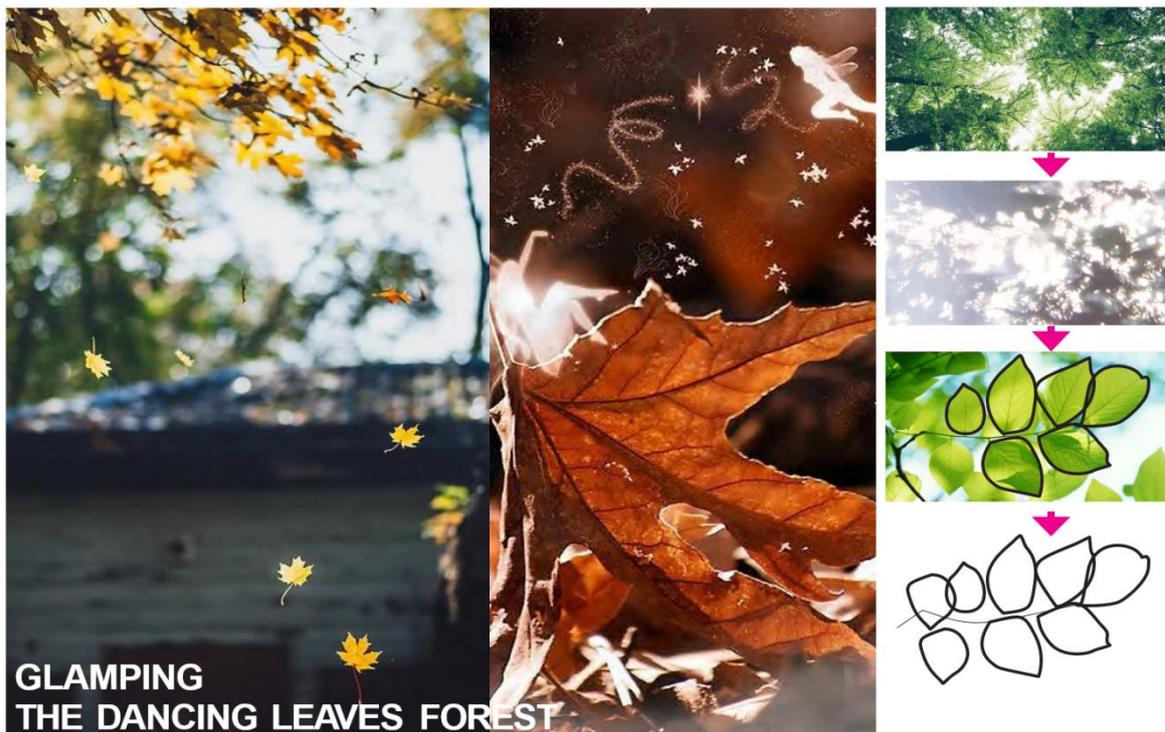
(1) In terms of theme style, under the big concept of "Urban Glamping", the concept of "jungle leaf dance" is given to the atrium space, and rich light and shadow changes are formed through the top leaf-like shading film combined with light;

(2) The atrium structure was specially analyzed and discussed, and constantly improved, which solved the problems of small space, not connected to the floor, too narrow stairs, and many columns in the prototype design, and the final plan was obtained after a total of 4 drafts;

(3) The membrane structure of the atrium structure adopts dynamic light and shadow design elements, which produces light and shadow changes during the customer's walking process, which is a unique experience for customers.



Picture 5 Derivation of structure design (Image source: Produced by this study)



Picture 6 "Urban Glamping" to "The Dancing Leaves Forest"
(Image source: Produced by this study)



Picture 7 The final draft of main atrium space design
(Image source: Produced by this study)

Discussion

With the increase of the proportion of children to the population and the per capita expenditure of families on education, culture and entertainment, people's consumption structure has gradually changed from satisfying the purpose of food and clothing to enjoying experiential consumption. Since the design concept of shopping center space cannot fully keep up with the changes of consumer demand, the purpose of this study is to conduct research and analysis from the level of consumer cognition, physiological needs and psychological needs, and derive the parent-child experience design strategy of public space of community-based shopping centers. The conclusions of this study can be summarized in the following aspects:

1. Based on consumer cognition, parent-child customer entertainment learning should be designed as the main customer journey, and consumer shopping needs should be integrated into it. Moreover, for the spatial style of the shopping center, it is necessary to work the high style and aesthetic level;

2. Based on the physiological needs of consumers, humanized power configurations in terms of safety and convenience should be designed according to the different physiological characteristics of parent-child customers;

3. Based on the psychological needs of consumers, devices or activity planning that parent-child customers can participate in should be designed.

The significance of this study lies in that through the research on parent-child experience design strategy of public space in community-based shopping centers, on the basis of meeting the consumption needs of parent-child customers and improving the commercial value of shopping centers, it can also promote the healthy growth of children and enhance the happiness of parents and children to a certain extent.

Recommendations

1. Theoretical Recommendation

This study only uses Tianjin Future World Shopping Center as the prototype design, there are geographical limitations, and it is hoped that subsequent researchers can make prototype designs for other regional projects in order to verify the conclusions more comprehensively.

2. Policy Recommendations

Based on the conclusion of this study, it is suggested that relevant departments such as the government and industry associations can formulate policies related to parent-child care in public spaces of shopping malls, such as parent-child rest areas, special art installations, handicraft studios, etc.

3. Practical Recommendations

There are many factors affecting the experience of parent-child customers in community shopping centers, due to time and manpower constraints, this study mainly discusses consumer needs and spatial characteristics, but there are still many factors that have not been discussed, and it is suggested that future researchers can study and discuss other aspects, such as intelligent design, merchant positioning, event planning, sound and light environment, etc.

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