



# **SERVICE SYSTEM DESIGN RESEARCH OF THE NANJING ROAD SMOKING-FREE PEDESTRIAN STREET**

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Actually thanks is not enough to present my feeling in deep, but the only word I can say at the begining of my thesis. Thanks to Politecnico di Milano and Tongji University for giving me the precious opportunity to have those joyful or painful but always unforgettable memories. It enriches my life forever.

## ABSTRACT

As product design develops from tangible product to intangible service, product design is not merely design and sale of material product, and designer does not merely make tangible product innovation. He should provide comprehensive " product and service system" , and explore a holistic solution to encourage actively and guide new value and consumption idea, satisfy the people's special demands and promote the sustainable development of the Chinese society and economy. Designer's role transforms from "supplier" to "coordinator" among different stakeholders.

Urban public service system reflects a city's comprehensive competitiveness, and should be systematic, human-oriented, informationalized, intelligent, efficient and sustainable.

This thesis, taking the Nanjing Road Pedestrian Street as an example, discusses the role of service design, commercial street environment, and commercial management in development of smoking-free commercial street, proposes strategies and theory suitable for the public service system of smoking-free commercial street, and design smoking-free service system for the Nanjing Road Pedestrian Street with methodology of product service system design.

This thesis aims at exploring application of product service system design in smoking control and creating smoking-free public environment. It proposes user-oriented product service system design method from the angles of product design and environment design. This thesis investigates smokers and non-smokers with questionnaires in the Nanjing Road Pedestrian Street, analyzes users' environmental behaviors and creates personae and user models. It introduces relevant literatures of PSSD and user-oriented PSSD. It puts forward the PSSD model between service provider and receiver. Users are required to participate in the whole design process. After study of users' demands and analysis of service function demands, this thesis finishes service prototype design and detailed system design and finally finishes establishment of public service system of smoking-free commercial street.

## ABSTRACT

-Italiano-

Il prodotto DESIGN viene qui trasformato da qualcosa di concreto e tangibile in qualche altra cosa che è intangibile e intellettuale, perciò esso non è solo design e vendita di un prodotto materiale.

Il DESIGNER non si limita a innovare con un prodotto concreto; egli si impegna a produrre un insieme che designeremo "prodotto e sistema di servizio", e a esplorare soluzioni olistiche. Queste stimolano e introducono nuovi valori, nuove idee nella mente del consumatore-fruitore; ancora, esse devono soddisfare speciali richieste del pubblico, e promuovere uno sviluppo sostenibile della società e dell'economia CINESI. Il ruolo del DESIGNER si innalza così da "fornitore" a "coordinatore" tra i diversi attori-azionisti.

Un servizio pubblico URBANO deve riflettere la competitività onnicomprensiva della CITTA'; e deve essere sistematico, mosso e ispirato da valori sociali, deve anche essere informazionale, intelligente, efficiente e sostenibile.

Questa TESI prende come campione NANJING ROAD trasformata in una strada rigorosamente PEDONALIZZATA. La tesi discute il ruolo del DESIGN, l'ambiente commerciale della strada, e una tale gestione commerciale che dia luogo a un'area pedonale libera da fumo e da fumatori. Vengono pertanto proposte strategie e teorie confacenti a un servizio pubblico. La metodologia del nostro lavoro approda a questo risultato: una Nanjing Road intesa come un esemplare distretto pedonale.

E ancora: la nostra tesi esplora applicazioni del DESIGN atte a scoraggiare l'abitudine del fumo in pubblico e a isituire al contrario zone libere da fumo e tabacco. E' quindi un DESIGN orientato al benessere dei fruitori-consumatori, e rispettoso dell'ambiente.

In linea con questo progetto vengono introdotti questionari da far compilare a fumatori e non fumatori nella Nanjing Road pedonalizzata, vengono studiate abitudini ambientali; si mira in conclusione a creare un pedone-cittadino MODELLO. Viene introdotta l'importante documentazione PSSD, un PSSD orientato ai fruitori. Il modello PSSD è istituito come tramite tra chi produce i servizi e chi li utilizza. I fruitori sono coinvolti e partecipano nell'intero processo del DESIGN.

Per il fatto di aver indagato le esigenze dei fruitori e le esigenze della domanda, questa tesi e le indagini correlate si impongono come un DESIGN prototipo, volto a realizzare una strada commerciale "smoking-free", libera dal fumo e dai veleni del tabacco.



# ACKNOWLEDGEMENTS

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**CHAPTER 01**

*Introduction*

## 1.1 PROJECT BECKGROUND

On December 27, 2012, China Ministry of Industry and Information Technology and China Quality and Technology Supervision Bureau issued on their official websites China Tobacco Control Plan(2012-2015), claiming to ban smoking in public places for its harm and also admitting at the same time that smoking-banning is a hard work for objective reasons.

Tobacco Control and Future--Chinese and Foreign Experts' Joint Assessment on China's Tobacco Use and Control issued in 2011 shows that there are 300 million smokers in China(see picture 1), amounting to one third of smokers of the world; and about 740 million non-smokers are exposed to the second-handed smoke. In 2005, there were 1.2 million people those death were attributed to tobacco, which is more than ten times of the death caused by road accidents. It is estimated that there will be more than 3 million people killed by tobacco in 2030, which means that in China the death caused by smoking will surpass that the death caused by aids, tuberculosis, road accidents and suicide. Tobacco now is the "first killer" of the Chinese people. There are more than 1 million employees in the tobacco industry which also provides at the same time more than 10 million jobs. Tax from tobacco industry occupies 7%-10% of China's revenue. Public places are the main smoking places. (Outlook Weekly) In China, 52.0% of male adults are smokers and 11.5% of teenagers are smokers. There are 15 million teen-agers of 13-18 years old who smoke and 40 million who attempts to smoke. (The Beijing News)



Image 1.1-1 Number of Chinese Smokers

Smoking banning in public places is not a new topic. Before China issued China Tobacco Control Plan(2012-2015), many other countries had already issued laws and regulation to control and ban smoking in public places. In the past ten years, many countries and regions have gradually decreased the number of smoking public places and increased the number of non-smoking public places. Taking European Union as an example, Italy, Ireland, England, France, Finland and Sweden ban smoking in all indoor public places, but more and more people smoke in outdoor public places. In recent years, China has learned from other countries and established special smoking-area in such public places as airport, restaurant and work place. Since January, 2011, China has banned smoking in all indoor public places, indoor work places, public transportation vehicles, and outdoor work places. However, the result is far from being satisfactory. In some public places, the smoking-banning laws are totally neglected by smokers. The passive smokers are still forced to smoke the second-handed smoke; the cigarette butts not only harmed the environment of the public places, but also caused fire frequently. The Chinese Government

has already taken tobacco control as an important sanitary policy and put great energy into publicizing the harm of smoking, hoping to decrease the number of smokers. However, tobacco control in recent years is still far from being optimistic. Therefore, a very important new research subject arises, that is, how to find a balance point between protection of passive smokers and admission of smoking in public places. There are 300 million smokers in China, so it is very important to balance liberty of smoking and health of non-smokers. It is a good way to make strict punish policy for smoking in public places and establish more special smoking areas in public places. This thesis, taking the Nanjing Road Pedestrian Street in Shanghai as a case, designs a smoking-free pedestrian street public service system, with the hope of applying it all over China.

Besides, from September of 2011 to July of 2012, the author of the thesis studied in Polytechnic University of Milan as an exchange student and specialized in product service system design, involving customer research, design psychology, consumer behavior research, and service-system design methodology. Therefore, the author hopes to use what she learned in Italy to finish the research subject of "Urban Public Space Product Service System Design".

## 1.2 RESEARCH OBJECT, CONTENT AND SCOPE

### 1. Research Object

The research object of this thesis includes the individuals and groups engaging in activities of business, leisure, entertainment and office work in the Nanjing Road Pedestrian Street in Shanghai.

### 2. Research Content

- \_Urban public space research (environment, facility and human's behavior)
- \_Product service system design
- \_Urban public service system

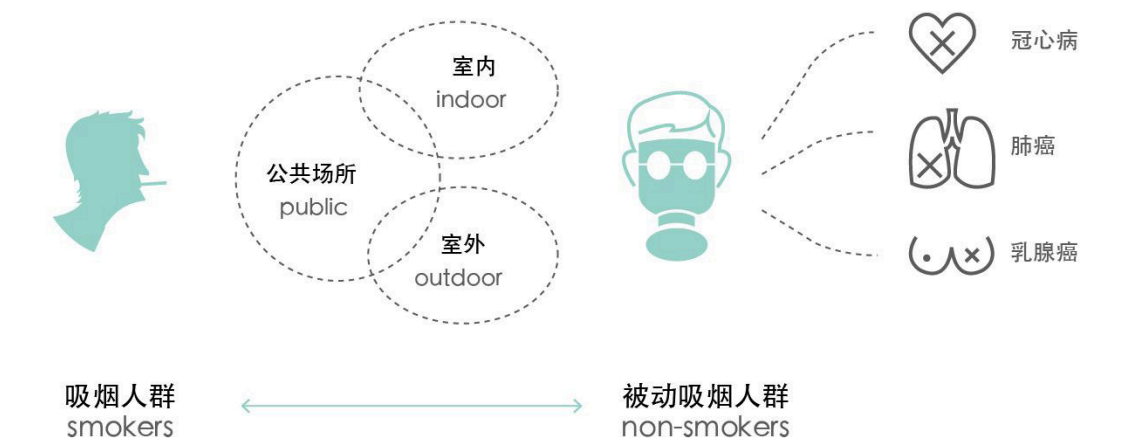


Image 1.1-2 Contradiction between Smokers and Non-smokers



- \_Pedestrian street research
- \_Smoking-free pedestrian street research
- \_Research of consumers' behavior in Pedestrian Street
- \_Smokers' behavior research
- \_The Nanjing road smoking-free Pedestrian Street public service-system design.

### 3. Research Scope

The research scope of this thesis is urban public space with the Nanjing Road Pedestrian Street as the focus. The Nanjing Road Pedestrian Street is a typical representative of China's pedestrian streets, so studying of it is of typical demonstration. This thesis will study the Nanjing Road Pedestrian Street and the commercial complex on it such as Raffles City and New World Plaza.



Image 1.2-1 The Nanjing Road Pedestrian Street

## 1.3 RESEARCH BASIS

### 1.3.1 Relevant Research Abroad

Consumer's behavior in Commercial Street is universal as well as unique at the same time. Environment Behavior and Space Art makes a study of the space design resulted from the interaction of environment and behavior. It divides the space around us into different kinds according to the size and discusses them one by one, from 0cm size to infinity size. According to the space of different sizes in the book, the author of the book proposes EBS (Environment-Behavior Studies) after case analysis. This book can teach the readers to record their own environment behaviors at any time to establish document and explore, explain and comment building and streets. In Life between Buildings: Using Public Space, the world-known urban design expert Jan Gehl focuses on daily life and various outdoor space around the people. From the angle of the people's requirement of material life environment, he, using behavior psychology and questionnaire, makes a detailed analysis of the methods of attracting the people to public space to walk, rest, stay and play game in order to promote social activities. In the fourth chapter (City at Eye Level) of City for People, Jan Gehl makes a study of the space suitable for walk, stay, meeting and exercise, which can provides reference for the analysis of the people's behavior in Pedestrian Street. He also lists many excellent design cases in European cities. Why is it necessary to apply service design in this research subject? How to use the methods of service design in this research subject? Design for Service gives answers. In this book, the author proposes that new economy era brings about future economy which is based on service, social network and sustainable development. future economy is social economy and service economy. This book mainly discusses service design--a mainstream design which promotes the development of future economy. New service design is different from traditional service design such as design of taxi, hotel and hospital. It is an innovative service design integrating net and social communication platform in communities. Service object is not only obtainer of information and service, but also provider of information and service. This book makes a detailed discussion of the process and methods of service design by 18 case studies, which provide inspiration for this research subject.

### 1.3.2 Relevant Researches in China and Abroad

In China, there are limited studies and investigations of the people's opinion toward smoking-free policy in public places and these studies and investigations mainly focus on limited public places such as restaurant. In 2008, China Health Education investigated 600 visitors in the Nanjing Road Pedestrian Street by questionnaire and the result shows: 85.5% of male visitors smoke; 14.5% of female visitors smoke; 34.5% of visitors know that smoking is harmful for health; 50.2% of non-smokers know that smoking is harmful for health; 17.6% of smokers know that smoking is harmful for health: 35.8%of visitors prefer smoking-free restaurants; 46.5%of visitors prefer restaurants with special smoking area. In Beijing, Shenyang, Shanghai, Changsha, Guangzhou and Yinchuan, researchers investigated 4815 smokers and 1270 non-smokers about their opinions toward smoking-free policy in work places: 52.9% of non-smokers support smoking-free policy in work places, 21.3% of smokers support smoking-free policy in restaurants and bars; 40.4% of non-smokers support smoking-free policy in restaurants and bars. The above studies show that most of the people support smoking-free policy in public places. Pedestrian Street Space Structure and Consumers Behaviors studies and classifies the consumers' behaviors in the Nanjing Road Pedestrian Street, concludes the basic feature of the consumers' behaviors in the Nanjing Road Pedestrian Street and establishes the math model of commercial space elements influencing consumers' behavior. Using the math model, it makes qualitative and quantities analysis of the consumers' behavior feature and explores the commercial space structure arrangement suitable for consumers' behavior feature.



## 1.4 RESEARCH TOOLS

### 1.4.1 Product Service System Design

Product service system is a complex thing which involves spot place, human, product, social activity group, organization system and activity. Product service design should take into consideration four factors: client, situation, process and object (product). Its final goal is to establish an interaction platform to make diversified interaction possible. Manzini defines product service system as “an innovation strategy, shifting the business focus from designing (and selling) physical products only, to designing (and selling) a system of products and services which are jointly capable of fulfilling specific client demands”. That is to say, enterprise will attach importance to providing consumers with a “happiness sense” from their requirements being satisfied to obtain development space instead of selling product to make profit. It is similar to what the people often say: What consumer needs is clean clothes instead of washing machine; what people need is quick conveyance of information instead of mobile phone; what people need is convenient transportation instead of automobile.

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Product Service System Design includes product and service. A complete product service system will design tangible product and intangible service and combine them rationally and effectively. It involves client, infrastructure, and communication network and so on. Its final goal is to improve consumer’s experience and service quality and satisfy consumer’s requirements. The service experience provided by a brand before, during and after sale determines the brand’s position in the mind of consumer.

The final goal of product service system design is to provide innovative solutions to different consumers’ requirements and problems in order to guarantee the win-win of relevant stakeholders. Product service system design can promote the sustainable development of service system in the Nanjing Road Smoking-free Pedestrian Street.

#### 1. Development Status quo and Trend of Service System Design

Service system design experienced three development stages:

(1)The first stage (Initial Stage): The first stage mainly focused on simple case study such as study of taxi service design and laundry service design.

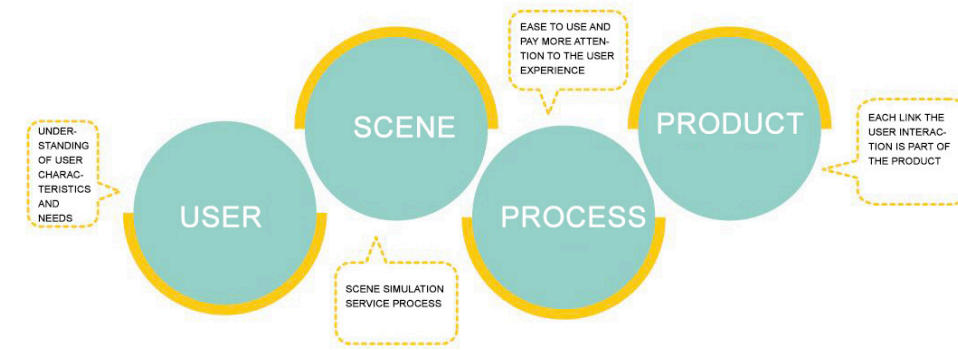


Image 1.4-1 Four Elements of Service Design

(2)The Second Stage (Development Stage): At this stage, with the support of European Union Committee, service system design experienced healthy development and made great achievement in basic theory. Manzini, Mont and Vezzoli are representative experts in this field and they focused on the following points: what is service system design? Why do we make service system design? What is the significance of service system design? Manzini made a detailed description of the most fundamental goal of service. System design(satisfying client’s requirement) and the most important change of service of system design(from selling “product to providing the whole service process centering product”) and made a deep discussion of the potential of service system design resource optimization and the sustainable development strategy for enterprises. He also discussed the service added value of service system design. Mont proposed that service system is a system designed in advance including product, service and supporting structure. And it is necessary to establish service network to satisfy clients’ requirements in advance so that it can satisfy clients’ and minimize its impact on environment. He also generalized the concept of product service design.

(3)The Third Stage (Current Stage): At this stage, service system design is a hot spot of the world. Many researchers make theoretical study and analysis of service system design. For example, as for methodology of service system design, Morelli studies how to make an analysis of a successful service system design, how designer sees the process from service design to service design management, and how to present service system. Besides, there are some researchers or research teams who study the application of service system in social life.

#### 2. Development Trend of Service System Design

1994, Britain Standard Association issued the first service system design management standard(BS7000-3 1994) which had its latest version(BS7000-3 2008) in 2008. After that, European designers have been very interested in service system design and some famous service design companies arose such as IEDO, Frog, Continuum. Some universities in some countries offer service system design major, for example, Politeconic University of Milan offers courses about product service system design.

In China, service system design is a new but promising major. There are 1.3 billion people and great market in China. College of Design in Jiang nan University offers product service system design major in the post-graduation education.

#### 3. Methodology of Service System Design

Service system design is trans-disciplinary. When we design with the methodology of service system design, we should take into consideration of many other academic fields such as social studies, marketing management, information science and so on.

1) Social structure and service system. Technology is a practice of social communication culture. Product service system is the result of social communication between service user and service technology elements. Therefore, product service system design should take into great consideration the integration of social communication and service technology elements.

2) Process management of product service system design. In How to Design a Service, Shostack divides product system into pre-use phase and use phase and explains their differences and connection. Pre-use is an imaginary description of service state. Use phase is an operation state of product service system. At this phase, we should take into consideration the following factors: basic technology, relationship with clients, market, and communication. A complete design should consist of five stages: planning stage and concept improvement, system design, detail design, test and feedback, improvement and upgrading.

3) Product service system technology introduction and presentation in design process. The final goal of design is to put an idea or plan into practice, so it is necessary to communicate with clients to verify the feasibility of a project by visual presentation. And visual presentation can help design participators understand easily and carry out the project.

#### 4. Product service system design evaluation standard

(1) Real demand standard: The realization of a design is client’s real demand. Client is an important part of product service system design and it is indispensable to meet his demand. Meeting client’s demand is the driving force of service system operation and the necessary condition to achieve interaction between stakeholders in service system.

(2) Practicability Standard: Practicability standard examines if product service system can meet users’ demand conveniently and quickly after they participate product service system. Practicability standard includes material-level practicability and non-material-level practicability. The former lies in product itself; the latter lies in the visual presentation of rules and procedures.

(3) Emotional experience standard. Emotional experience standard mainly refers to the client’s feeling when using product (material product and non-material product) or product service system. It involves client, product and all links in the interaction of service system. It does not concern how product and service system work; instead, it concerns how client uses them. What it concerns more is the interaction between product and human, the product’s function and the client’s experience and feeling in operation.

(4) Value standard. As a new commercial mode, product service system needs to create commercial value when it meets the client’s demand. Product service system involves complex interests circulation and stakeholders.

#### 1.4.2 Urban Public Service System

Urban public service system refers to the public product and service provided by urban public departments to citizens, including investing and maintaining urban infrastructure, offering jobs, establishing and supporting education, science, culture, medical care and health, sports, briefing social information in time, providing social security and so on. Urban public service in China can be classified into four types. The first is basic public service such as infrastructure, water, electricity, road, and telecommunication; the second is economic public service such as making planning, supervising rules, macro control, mobilization and allocation of capital; the third is social public service including education, health, sci-tech, culture, population and soon; the fourth is security public service such as national defense, police, fire-fighting and so on.

| TYPE    | basic public service  | economic                                  | public service                                  | social public service                            | security public service                 |
|---------|---|---|---|--|---|
| CONTENT | infrastructure, water, electricity, road, and telecommunication | making planning, supervising rules, macro | control, mobilization and allocation of capital | education, health, sci-tech, culture, population | national defense, police, fire-fighting |

Table 1 Chinese Urban Public Service

In recent years, along with the development of Trip Play(Integration of telecommunication net, broadcast net and internet) and Intelligent city, we use communication technology, “internet of things” technology, and internet technology to establish some public service systems to meet citizen’s demands for various public services, improve service efficiency and quality and establish urban brand.Urban public service system is a systematic, human-oriented, informationalized, intelligent, efficient and sustainable system which can show a city’s comprehensive competence ability. The government should introduce actively social resources into urban public system to reduce the government’s expenditure and improve the government’s efficiency. The government should introduce market mechanism into urban public service system. This research is at the initial stage of urban public service system construction.

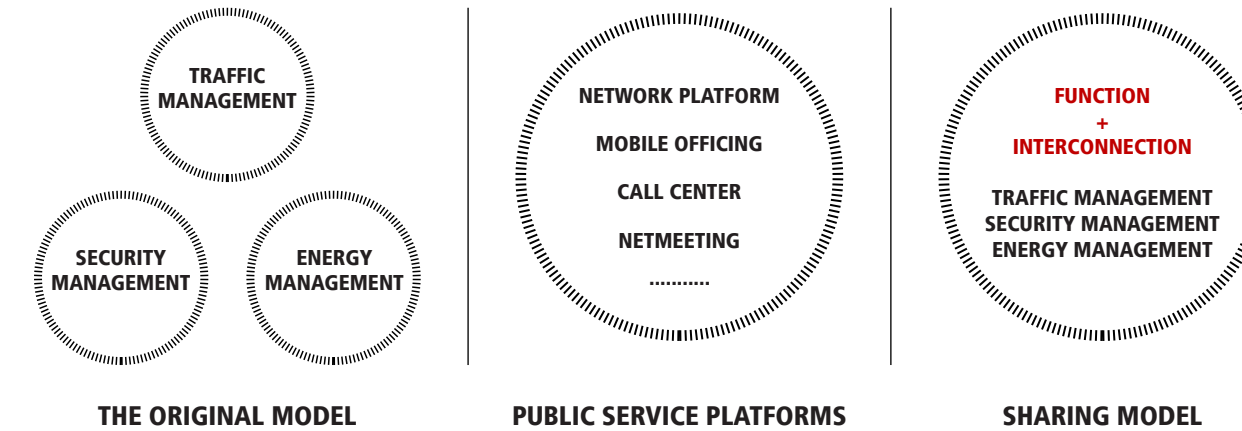


Image1.4-2 Urban Public Service System

#### 1.5 RESEARCH PURPOSE

The purpose of this research is to design a develop smoking-free pedestrian street with service system design method, population statistics method, consumer behavior method and brand marketing strategy in order to reduce smoking rate in urban public space. The ultimate purpose of this research is to introduce the public service system of smoking-free on the pedestrian street into all parts of China.

#### 1.6 RESEARCH VALUE

This research is of significance for implementation of tobacco control policy and introduction of the public service system of smoking-free on the pedestrian street into cities in China. It can not only provide reference for the development of the Nanjing Road Pedestrian Street, but also provide example for the development of other commercial space in China.

#### 1.7 RESEARCH FRAMEWORK

This thesis will develop according to the following line: research of urban public space and smoking-free pedestrian street exploration of service structure of smoking-free pedestrian street design of the Nanjing Road smoking-free pedestrian street-conclusion.

Firstly, this thesis, through reading relevant literature and social policy, concludes the social problems(smoking population and environment population), social contradiction(smoking freedom vs passive smoking), social demand(friendly social environment) and existing social resources(public fund association, smoking-control association, support from the Huangpu District) in urban public space’s environment, facilities and human’s behavior and makes feasibility analysis of smoking-free pedestrian street,Then, it, through field investigation, studies the development status quo of the Nanjing Road Pedestrian Street and proposes the basic structure of the public service system of smoking-free Pedestrian Street; finally, it, on the base of the above studies, concludes the public service system design model of smoking-free Pedestrian Street.

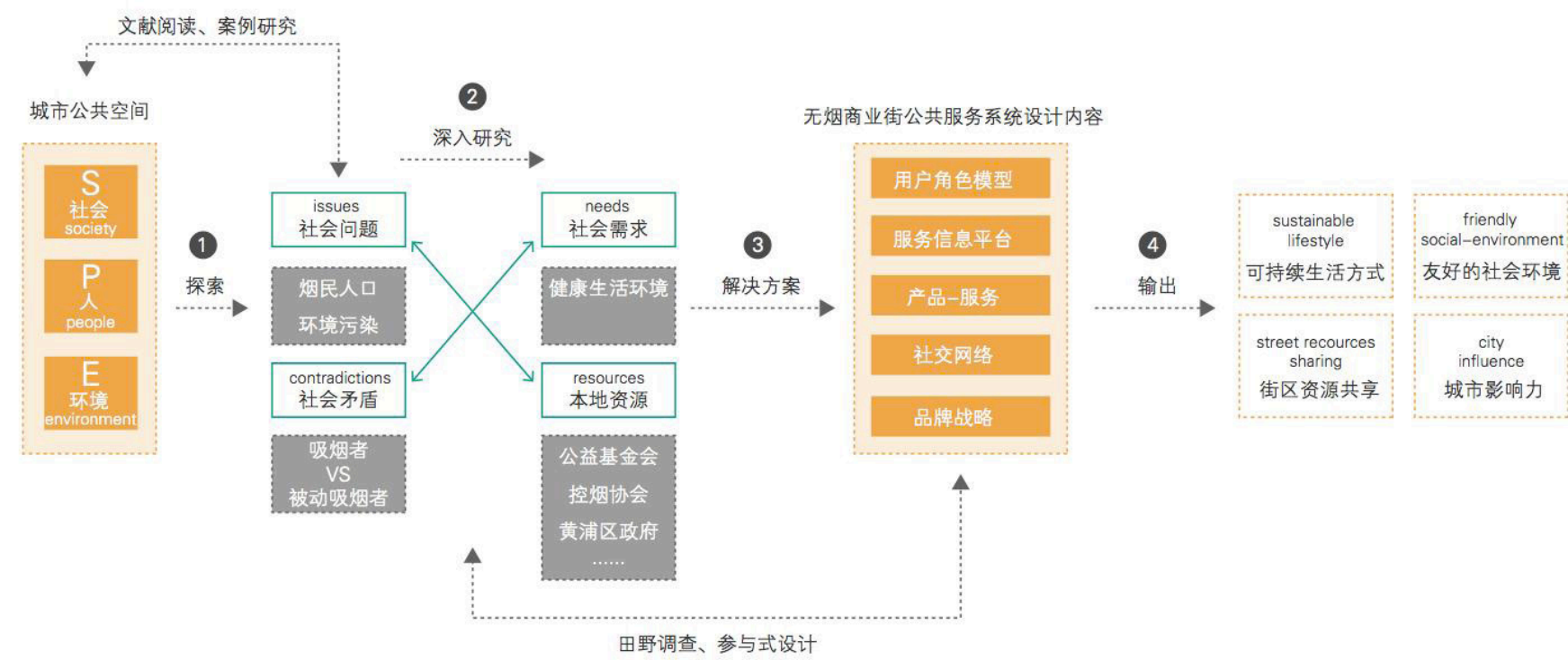


Image1.7-1 Thesis Frameworks

## SUMMARY

There are 30 million smoking population in China and smoking control is a long-term and hard work. Since there are so many smoking populations, it is impossible for China to use smoking control methods of foreign countries; tobacco industry is a main source of state's revenue, so it is unrealistic to ban completely smoking in all parts of China. Therefore, this thesis tries to find a smoking control model which is suitable China's condition to meet different consumption groups' demands in commercial streets, promote the sustainable development of smoking-free pedestrian street and develop the concept of "service system of smoking-free pedestrian street".

**CHAPTER**      **02**

*Urban Public Space and Smoking-free  
Commercial Street*



This chapter firstly explains urban public space, commercial street, smoking-free commercial street and their relationship; then it studies the attempts to establish smoking-free commercial street in China and abroad and analyzes the feasibility of smoking-free commercial street from social and economic angles; finally, it investigates and analyzes the development status quo of the Nanjing Road Pedestrian Street, i.e. environment status quo, service facilities status quo and consumers' behaviors status quo.

## 2.1 URBAN PUBLIC SPACE

Urban public space refers to the open space between buildings in a city and it is the place for the social activities of citizens. It is an important part of a city's environment and the carrier of diversified urban culture.

In <City for People>, Richard describes "city as the place where people gather, communicate, shop, relax or enjoy themselves" The public spaces of city-streets, squares and parks-are stages and catalysts for these activities. According to Jan Gehl, urban public space consists of street, pedestrian street, square and park which provide citizen with the environment for social activities.

Therefore, the quality of urban public space influences directly a city's comprehensive environment and the mass people's satisfaction. Constructing multi-dimensional and sustainable urban public space is the trend in the future. However, we should take environment, service system and consumers' behavior into consideration when we construct new type urban public space.

### 1-Environment

Urban public space consists of street, Pedestrian Street, square and park and the four elements have different functions. The four elements decrease gradually in their passage function and users' rhythm.

The main function of street is passage. Street is called "arteries and veins of a city" and shoulders the responsibility of providing passage for citizens. Therefore, passage is the prior consideration for street design.

The main function of square is leisure. Square is the main places where citizen rest and it also reflects a city's culture and image.

Park plays a more and more important role in citizen's social life. Park is a must for city. Modern park is not only a place where human and nature communicate with each other, but also a large urban public space which is beneficial to the people's leisure and health and can direct the people's awareness and intensify their natural common sense.

Pedestrian street, research object of this thesis, is between street and square. It is required to provide passage way for citizen, and meet citizens' demand for leisure, walking and shopping. In modern society, pedestrian becomes gradually the most lively space of a city. Therefore, pedestrian street is characterized by complexity, comprehensiveness and frequent use; and at the same time, there is an urgent demand for environment improvement for it.

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### 2-Urban service system

Multiple function and diversified form are the development trend of service system of urban public space. Different urban public spaces have different functions such as transportation, communication, rest, walk, sightseeing, exercise, entertainment, catering, exhibition, teaching and celebration. The charm of public space lies in that it is the place in which various people gather, various activities and stores occurs. Local residents and foreign visitors will choose public space to enjoy urban life.

Therefore, in designing service system of urban public space, we should take different functions into consideration in order or meet different people's demands and highlight urban public space's influence on urban environment and its service function.

### 3-Consumers' behavior

A man will keep a certain distance from other people in public space. This distance is invisible. But once other people enter the area of this distance, he will consciously or unconsciously turn his back to the intruder to convey certain information. Sociologist R-sommer calls this domain personal space.

Elements of urban public space behavior analysis include investigation of the individual's trip purpose, trip method and trip time and analysis of individual's visiting frequency and stay time in urban public space and his impression on it. At the same time, urban public space should take into consideration accessibility, facility quality, afforestation, comfort of environment and public sign.

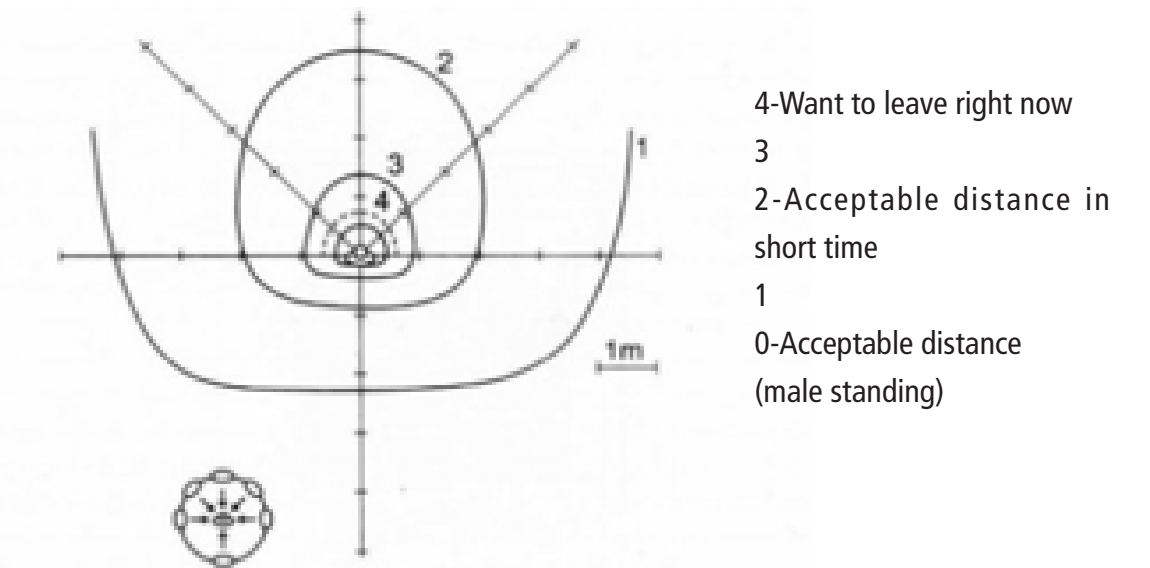


Image2.1 Personal Space(Testers' feeling towards the distance between them and people)

## 2.2 Commercial Street Development Status Quo

As a kind of urban public space, commercial street is an urban commercial form which consists of many retail stores (finance, catering, tourism, commodity, business and accommodation) and is arranged in order according to certain planning. Besides advantages of traditional commercial street, pedestrian street boasts merits of safety, convenience, comfort and multiple function, which makes it very popular in the world. Along with the development of new type pedestrian street, people turn their concerns from shopping condition to communication condition. In Communication and Space, Jan Gehl points out that outdoor space quality is directly related to outdoor activity occurrence rate. Therefore, pedestrian street's environment quality is the decisive factor of its popularity.

Pedestrian street is an important part of a city's economic development and attracts attention from scholars of different fields. In the past ten years, study of commercial street mainly focused on the following three points: trade and urban planning; urban design; urban tourism. Urban tourism is very important in the study of commercial street. Since 1980s, western scholars began to study urban tourism. According to the data in Annals of Tourism Research and Tourism Management, commercial street plays a very important role in attracting tourists to the city (Tao Wei, Zhong Wenhui 2003). In 1988, Jansen Verbeke defined urban tourism product and regarded historical building, urban landscape, museum, art gallery, theatre, sports and other activities as the first elements of urban tourism. And he regarded restaurant, dining hall, supermarket, shopping center and other services as the second elements of urban tourism. After 1990s, things changed and commercial street, shopping center became parts of urban tourism. For example, Harrods in London, Lafayette and Champs Elysees are not merely for retail; they are also festival-type shopping center or commercial street offering clothes, food and drink, exhibition and entertainment.

### 1-Commercial street model

Comprehensive commercial street. It not only offers shopping service, but also finance, catering, tourism, accommodation and business service. The Nanjing Road Pedestrian and the Wangfujing Street in Beijing are typical examples.

#### \_Special commercial street.

It boasts unique commercial feature and tries to meet consumer's individual and diversified demands. Typical examples are Huaihai Street known for famous brands, Sichuan Street noted for low price, Xizang street noted for tourism commodity, Fuzhou Street noted for cultural products.



Image2.2-1 Lafayette



Image2.2-2 Harrods



Image2.2-3 Champs Elysees

#### \_Pedestrian Street.

It provides consumers with comfortable and convenient environment free from traffic. The Nanjing Road Pedestrian Street is a typical example.

#### \_Shopping Mall.

It is also called "commercial street with roof" and a kind of large shopping center offering service of retail, catering, telecommunication, post, hair dressing and so on.

### 2-Commercial structure of commercial street

Nowadays, international dominating commercial structure of commercial street is as follows: shopping occupies 30-50%; catering occupies 20-25%; leisure, entertainment, hotel and service occupies 30-40%. In China, an investigation of more than 20 famous commercial streets by Chinese Pedestrian Street Work Committee shows that shopping occupies 50%, catering occupies 20%, leisure, entertainment, hotel and service occupies 30%. According to McKinsey & Company's investigation of the commercial structure of the four commercial streets in Shanghai, the shopping rate of pedestrian decreases and rate of tourism, catering, entertainment and leisure increases in downtown of a city.

|  | Nanjing Road Pedestrian Street | Huai Hai Road | Xu Jiahui | West Nanjing Road |
|--|--------------------------------|---------------|-----------|-------------------|
| <b>Retail</b>                                  | 62%                            | 60%           | 81%       | 32%               |
| <b>catering, entertainment, hotel, service</b> | 11%                            | 23%           | 12%       | 66%               |
| <b>Others</b>                                  | 27%                            | 17%           | 7%        | 2%                |
| <b>Total</b>                                   | 100%                           | 100%          | 100%      | 100%              |

Table1 Commercial Structure of Four Commercial Streets

### 3-Consumer group of commercial street

Before positioning market for a commercial street, it is necessary to determine consumer group, that is, to determine the potential consumers that a commercial street can attract to consume. Different commercial streets have different consumer groups. It is necessary to classify consumers into different groups and develop different commercial streets according to different consumers when we study consumers, we should take into consideration the location of commercial street and commodity arrangement.

The closer a commercial street is to downtown of a city, the more complex the consumers are. For example, the Nanjing Road Pedestrian Street is located in the most prosperous commercial area in the Huangpu District. It is close to Raffles and New World Department Store and radiates to such sightseeing spots as Shanghai Bund, Yu Yuan, Xin Tiandi and People's Square. Furthermore, subway line 1, line 2, line 4 and line 10 meet here. Therefore, consumers here are very complex and it is necessary for designer to classify different consumer groups and analyze their demands.

## 2.3 SMOKING-FREE COMMERCIAL STREET



Smoking in public places does harm to public safety and other people's health, so it is reasonable to ban smoking in public places by laws and rules. However, it is hard for smokers to quit smoking and their habit of smoking in public places is not formed in a day. Therefore, in China, it is far from an ideal and human-oriented way to inhibit completely smoking in public places. According to China's condition, smoking-free commercial street is a good choice. In smoking-free commercial street, smokers can smoke in special smoking area, so that they will not influence other people.



Image2.3-1 Smoking-free Commercial Street

## 2.4 FEASIBILITY OF SOMKING-FREE COMMERCIAL STREET

Studies shows that banning smoking in public places will not cast negative influence on economy; instead, it will increase happiness index of urban environment and consumer's satisfaction degree.

China Ministry of Industry and Information Technology and China Quality and Technology Supervision Bureau issued on their official websites China Tobacco Control Plan(2012-2015), claiming to ban smoking in public places for its harm and also admitting at the same time that smoking-banning is a hard work because there are so many smokers and tobacco industry contributes a lot to China's revenue. According to China Tobacco Control Plan(2012-2015), in the coming three years, China will make laws to ban smoking in public places and enforce intensively smoking-banning laws. And smoking rate in China shall decrease by 3%. Smoking rate of the youth shall decrease from 11.5% in 2010 to below 8.5%; smoking rate of the adult shall decrease from 28.1% in 2010 to below 25%. Tobacco enterprises are forbidden to promote cigarettes in any way. Brand signs of cigarette are forbidden to appear in film or TV program.

### 1. Making Tobacco Control Laws

In February, 2008, WHO issued 2008 World Tobacco Popularity Report, which concluded smoking-control experience and proposed MPOWER strategy(Table 2) to control tobacco.

The six measures of MPOWER are supplementary to each other. And the practice of MPOWER in some countries revealed that it can control smoking effectively.

| Strategy Name | Strategy Content   |
|---------------|--|
| Monitor       | Monitor tobacco use and prevention policies                    |
| Project       | Project people from tobacco smoke                              |
| Offer         | Offer help to quit tobacco use                                 |
| Warm          | Warm about the dangers of tobacco                              |
| Enforce       | Enforce bans on tobacco advertising, promotion and sponsorship |
| Raise         | Raise taxes on tobacco   |

Table2 MPOWER Strategy

## 2. Establishing Smoking Area in Public Places

Establishing smoking area in public places is a good solution to the contradiction between smokers' demand for smoking and smoking-inhibition in public places. Smoking area can be generally classified into three kinds: closed smoking area; half-closed smoking area and open smoking area.

- 1) Closed smoking area: Closed smoking area, mostly in indoor public places and with ventilation equipment and trash bin, can usually contain more than 10 people.
- 2) Half-closed smoking area: Half-closed smoking area, mostly in indoor public places or outdoor corridor, vents by open roof and its capacity is uncertain.
- 3) Open smoking area : Open smoking area, mostly in outdoor public places such as street, station platform, entrance of building, boasts butt-recycling equipment. However, it is rarely used in rainy days.

Facilities in smoking area should take the following factors into consideration:

- 1) smoking recycling to prevent smoking diffusion;
- 2) smoke purification to prevent environment pollution;
- 3) fire-prevention to ensure safety;
- 4) smoking-banning publicity to reduce smoking rate in public places.

### 2.4.1 Feasibility of Smoking-free Commercial Street from Social Angle

In 2006, China promised to WHO to ban smoking in public places. However, smoking-banning result is far from being optimistic because tobacco industry offers an annual tax of more than 100 billion Yuan and there are more than 300 million smokers in China.

In the following, the author will present some smoking-banning cases in China and abroad which can help us find a way to ban smoking in public places (Table 3).



Image2.4-1 Closed Smoking Area



Image2.4-2 Half-closed Smoking Area

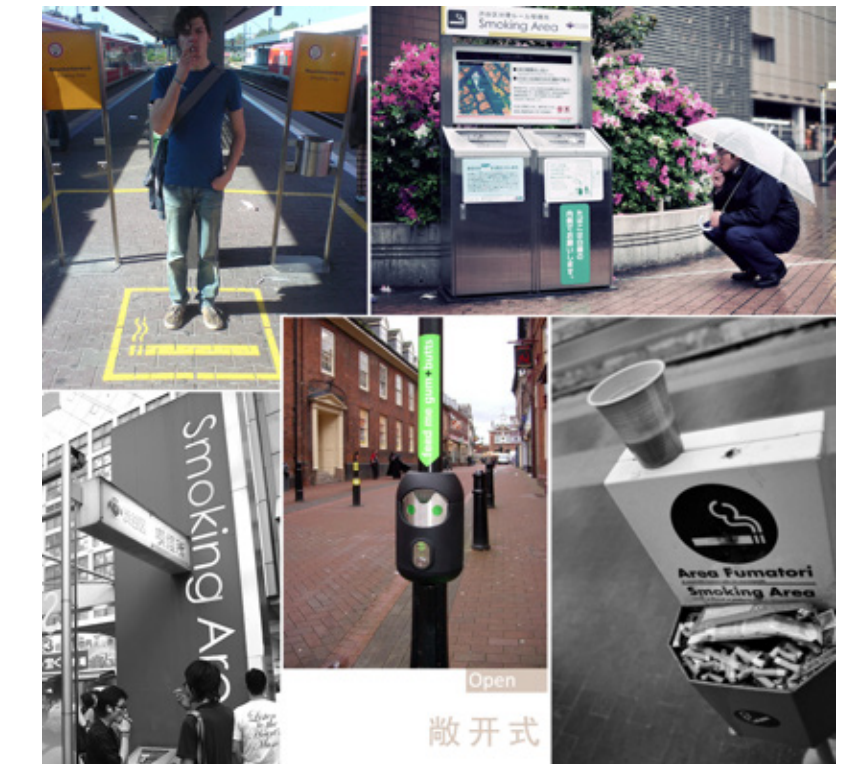


Image2.4-3 Open Smoking Area

|          | City      | Time     | Location                         | Desirable measures   |
|----------|-----------|----------|----------------------------------|--|
| In China | Xiamen    | 3 years  | Zhongshan Road Pedestrian Street | Volunteers to Publicize in the pedestrian street smoking-banning on holidays or festivals  |
|          | Hong Kong | 7 years  | Streets                          | Establish smoking-banning area and fine people smoking in smoking-banning area; publicize smoking-banning and raise taxes on tobacco                                       |
| Abroad   | Japan     | 30 years | Streets                          | Raise taxes on tobacco; make laws to ban smoking in public places; establish smoking area and smoking-banning area in commercial streets; establish smoking-banning groups |

Table 3 Smoking-banning cases in China and Abroad

### 1. Smoking-banning Policy and Law

Toronto of Canada took two steps to ban smoking. The first step was banning smoking in restaurant and building alley. The second step was banning smoking in bar, billiard parlours, casino and race track in June,2004.

### 2. Publicity of Volunteers

In Liaocheng City of Shandong Province, volunteers from Liaocheng University went to streets to publicize the harm of smoking and persuade the people to quit smoking by offering them candy on World Smoking-free Day.

### 3. Social Media and Non-governmental Organizations

In China, there are now Baidu Fund, Melinda Gates Fund, China Smoking Control Association, China Prevention Medical Association, China Youth Smoking Quitting and Prevention Center which support tobacco control. On May 31, 2013, Baidu launched the link of "say no to passive smoking". By hitting it, visitors can enter Baidu Encyclopedia to know the harm of smoking by "Tobacco and Body Map". If visitors continue to hit "say no", they can get different expressions of "saying no to passive smoking" in different countries. Furthermore, they can express their refusal attitude to passive smoking by "sharing on social websites".

Since China keeps enlarging the scope of smoking-banning, the space for smokers is becoming smaller and smaller. However, smokers' desire for smoking does not decrease. Government can increase fine for smoking in public places.

| City          | Shanghai | Guangzhou | Hong Kong       | Shenzhen | Beijing | Hangzhou        | Nanjing |
|---------------|----------|-----------|-----------------|----------|---------|-----------------|---------|
| Fine Sum(CNY) | 50       | 50        | 1500HKD≈1184CNY | 500      | 200     | Several hundred | 500-200 |

Table 4 Fine Sum Comparison(One Cigarette1~100CNY)

## 2.5 THE NANJING PEDESTRIAN STREET IN SHANGHAI

Among four commercial street modes, pedestrian street is mostly favored by consumers. Its greatest advantage lies in the fact that it can avoid the contradiction between pedestrians and vehicles and ensure pedestrians' safety. Pedestrian street originated in European and American countries. In 1950s and 1960s, the rapid development of automobile industry resulted in chaotic traffic and air pollution in urban area of cities in European and American countries. Consumers preferred shopping center in suburb area instead of that in urban area. As a result, commercial retail in urban area decreased. Therefore pedestrian street arose to revive commerce and improve transportation and environment in urban area and proved to be very successful. China began to establish pedestrian street in downtown area after knowing the advantages of pedestrian street. The Nanjing Road Pedestrian Street in Shanghai and Wangfujing Pedestrian Street are typical examples.

Before, the Nanjing Road was only a commercial street specializing in shopping service. At the end of last century, it developed gradually into No.1 commercial street in which gathered many hotels, shopping stores, banks, theaters, office building, century-old shops and entertainment squares.

### 2.5.1 Environment of the Nanjing Road Pedestrian Street

#### 1. Transportation

24 bus lines, 4 subway lines and 4 sightseeing bus lines meet in the Nanjing Road Pedestrian Street. Moreover, there are 12 roads passing through it from north to south among which the Middle Zhejiang Road and the Middle Tiangxi Road) are open to motor vehicles. The Liuhe Road(From the Ningbo Road to the Nanjing Road) the Jinhua Road(from the Jiujiang Road to the Nanjing Road)and the Shandong Road(From the Jiujiang Road to the Nanjing Road) are extension of the pedestrian area of Nanjing Road Pedestrian Street and are closed to motor vehicles.

#### 2. Commercial Distribution

In the northern part of it stand the following stores and shops from west to east: No.1 Department Store of Shanghai, Xinhua Bookstore, China Bank, Dongfang Building, Hope Brother's & Co, Maochang Glasses Company, Xianghong Dress Company, Shanghai Bed-Curtain Company, No.1 Food and Drug Store of Shanghai, Dress Shop, Jinjiang Hotel, Famous Shoes and Bags Store, Shanghai Dress Store, Pizza Hut, Sanyang Food Store, No.1 Drug Store of Shanghai, Sanye Glasses, LI-NING, Lily, Sunshine Commercial Building, New World Silverware Shop, Shanghai Tourism Souvenir Commercial Building, Baleno, Laofengxiang Silverware Shop, Nike, Gujin Underware Shop, Jinbo Famous Cigarette and Liquor Shop, Zhangxiaquan Scissors, Industrial and Commercial Bank of China, Laomiao Gold Shop, Hope Brother's & Co, Caitongde Drug Store, Chow Tai Fook Gold Shop, Laofengxiang Silverware Shop,

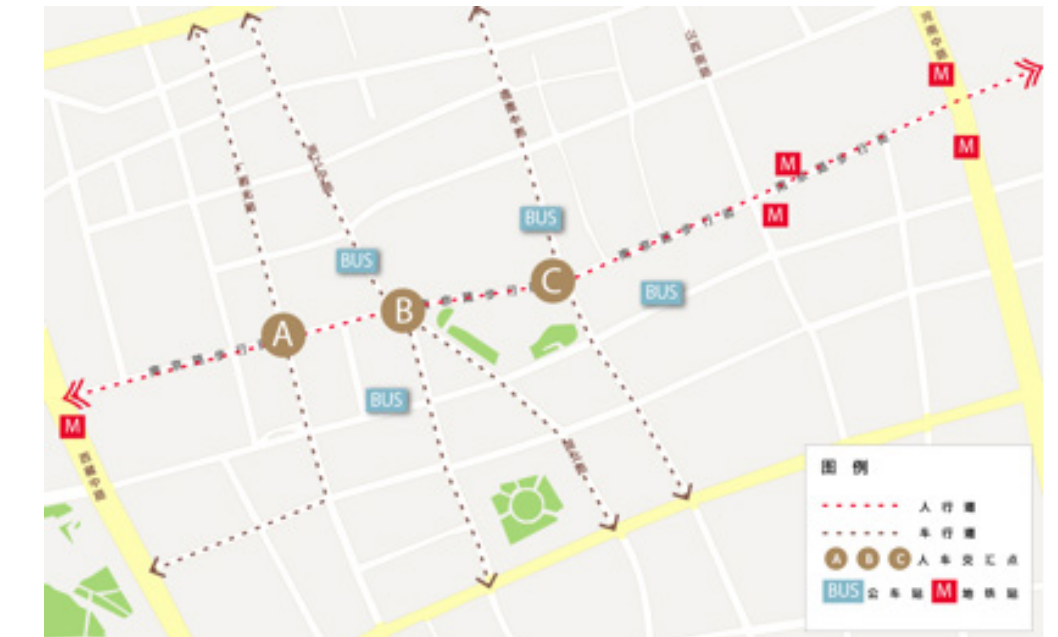


Image2.5-1 Transportation of the Nanjing Road Pedestrian Street



Duoyunxuan, Shaowansheng Food Company, Ming Jewelry, Hualian Commercial Building, Apple Flagship Shop, Hengji Shopping Center.

In the southern part of it stand the following stores and shops from west to east: Shimao International Plaza, Hagen Das, Starbucks, China Construction Bank, Costa Coffee, Subway Restaurant, Shayiqian Egg Tart, Xinya Cantonese Cuisine, Hetian Date, Wu-Liangcai Glasses, Haiyan Logistics, Hongchangxing Restaurant, Yanyunlou Restaurant, Baodaxiang Youth Shopping Center, Industrial and Commercial Bank of China, Ajisen Ramen, Yong'an Department Store, Giordano, Qichongtian Hotel, Jinzhong Cafe, Helen Hotel, New Wold Leisure Center, Manhattan Square, Maochang Glasses, BOSIDEN, Shanghai Landmark Building, Meters Bonwe, 353 Plaza, Hongyi International Plaza.

As for commercial structure, stores and shops in the Nanjing Road Pedestrian Street are mainly in the operation of shopping, catering, accommodation, finance, jewelry, clock and tourism souvenir. From the South Shanxi Road to the Middle Fujian Road, there are many century-old shops and stores with rich local favor.

According to the author's field research, the distribution of stores and shops in the Nanjing Road Pedestrian Street are in disorder and it is difficult for foreign tourists vcoming here for the first time to find what they want buy.

### 3. Usable Space-Concave Angle Space

We can create concave angle space for the tourists to have a rest. One way is to create small square by visible retreat of buildings; and the other way is create rest space by invisible retreat such as continuous colonnade.

However, the public signs in the Nanjing Road Pedestrian Street are in confusion. There are no shopping guide map and smoking-banning signs. For foreign tourists coming to the Nanjing Road Pedestrian Street for the first, it is difficult for them to find what they want to buy. Although there are 12 service pavilions in the pedestrian street which provide information inquiry service, there are no signs to point out where they are. There are smoking-banning signs only at the entrance of subway and inside the shops and stores, but they are not enough. Therefore, there are many people smoking on the seats in the rest area in the pedestrian street.



Image2.5-2 Laofengxiang(Left) and Zhangxiaquan(Right)



Image2.5-3 Smokers on Seats

### 2.5.2 Facilities

In the Nanjing Road Pedestrian Street, there are road lights, chairs , flower beds, trash bins, service pavilions, advertisement light booths, information inquiry system, telephone booths and public signs.(Image 2.5-4)

In the pedestrian street of 1033m, there are 12 service pavilions, each occupying an area of 4.5 square meters and boasting a unique function (Image 2.5-5).



Image2.5-5 Distribution of Service Pavilions

However, the author finds that the use ratio of these pavilions is very low because of their unreasonable arrangement. For example, tourist can only get tourism information in the sixth pavilion, which is located in the middle of the pedestrian street. Therefore tourists who come here for the first time can not get necessary tourism information immediately: only the first pavilion, the ninth pavilion and the twelve pavilions boast the function of mobile phone charging. But they are too disperse and not well-distributed, so tourists are difficult to know where to get mobile phone charging service.



Image2.5-4 Facilities on Nanjing Road



### 2.5.3 Consumer's Behavior

Consumer's shopping behavior is an important urban life and complex social phenomenon. It is not only related to consumer's personality, occupation and income, but also related to urban commercial environment. Today, consumers in a large consumption places are not merely satisfied with shopping, their consumption develops from shopping to leisure, social communication, food and entertainment. Shopping develops gradually into a happy exploration and experiencing process. Consumers can get material and spiritual satisfaction at the same time. They want to get information, rest, entertain, communicate, shop, enjoy food and art in this commercial space.

The author uses method of Consumer Behavior to study the behavior of consumers in the Nanjing Road Pedestrian Street and gets the following result

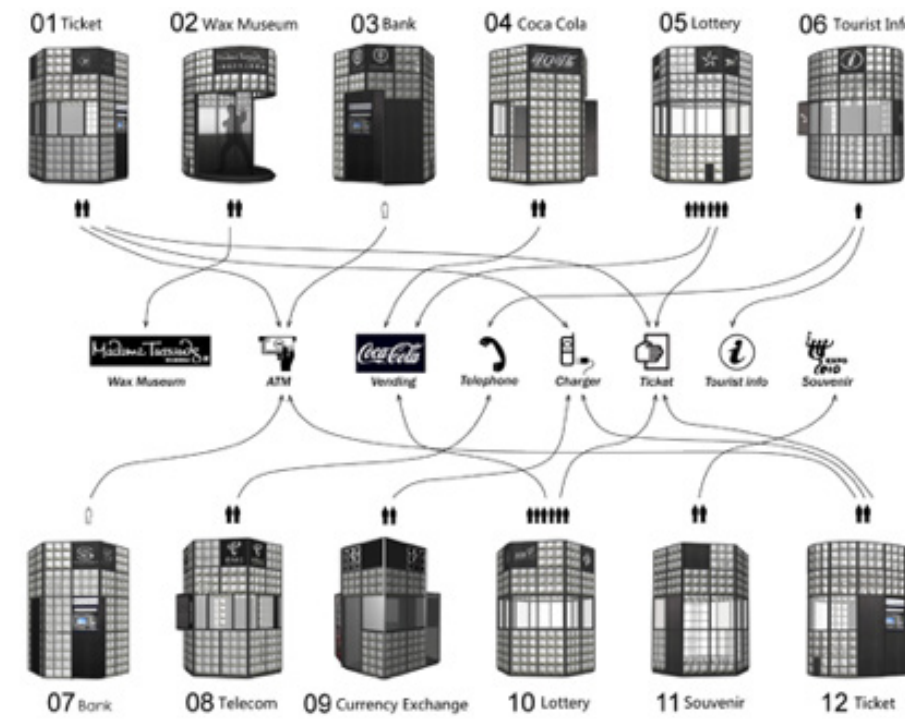


Image2.5-6 Functional Arrangement of Service Pavilions

#### 1.Date of Consumers in the Nanjing Road Pedestrian Street:

Consumer's age: below 20 occupies: 23.5%; 20-30: 32.6%; 30-40:19.9%

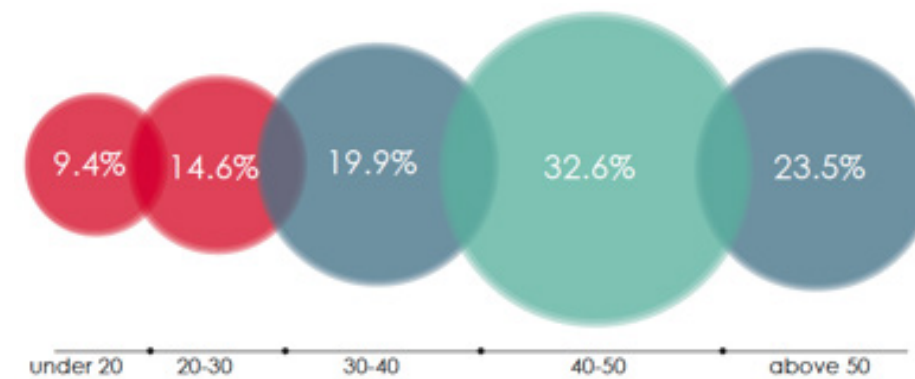


Image2.5-7 Consumers' Age

Consumer's occupation: civil servants: 7.5%; employees of public institutions: 28.9%; employees of foreign enterprises: 11.3%; workers: 11.2%; students: 25.5%; the retired: 3.6% ; others: 12%

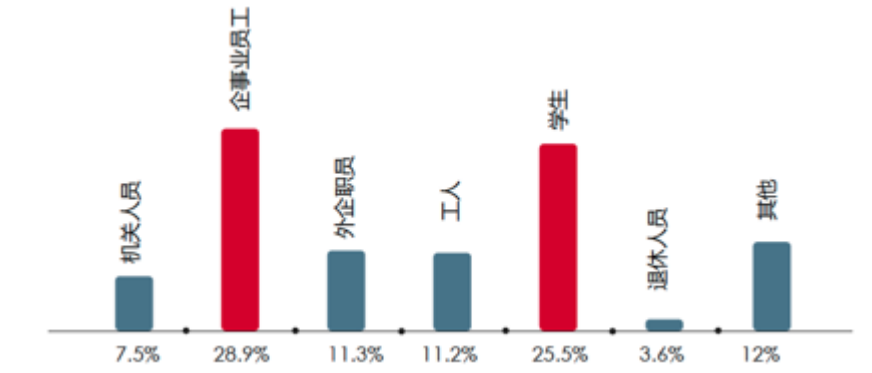


Image2.5-8 Consumers' Occupation

Purpose of coming to pedestrian street: 32.3% visitors are for sightseeing; 24.2% for shopping; 24.3% for leisure; 14.2% for food and drink; 6% for entertainment; 1.9% for others.

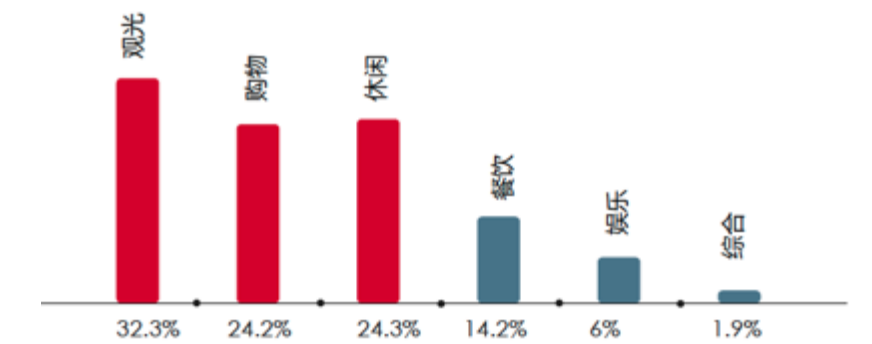


Image2.5-9 Purpose of Coming to the Pedestrian Street

Consumer's expenditure in pedestrian street: 13.9% of consumers spend RMB 100; 9.2% RMB 200-300; 21.3% RMB 500; 21% RMB 700, 4.5% more than RMB 1000.

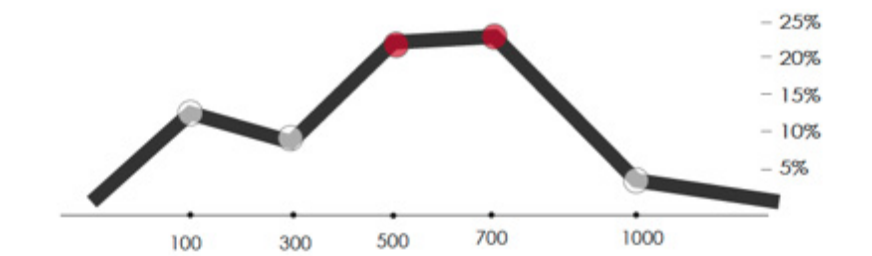


Image2.5-10 Consumers' Expenditure

Consumers' choice of commodities: 40.9% of consumers buy costume; 11.6% food; 3.7% household appliances; 8.3% tourism souvenir; 5.4% shoes and caps; 2.8% health food.

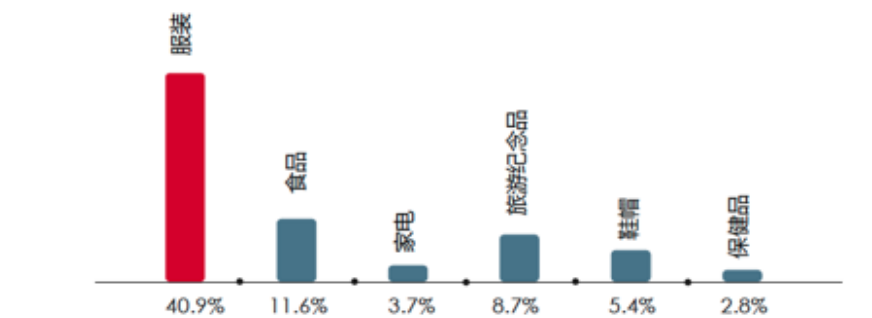
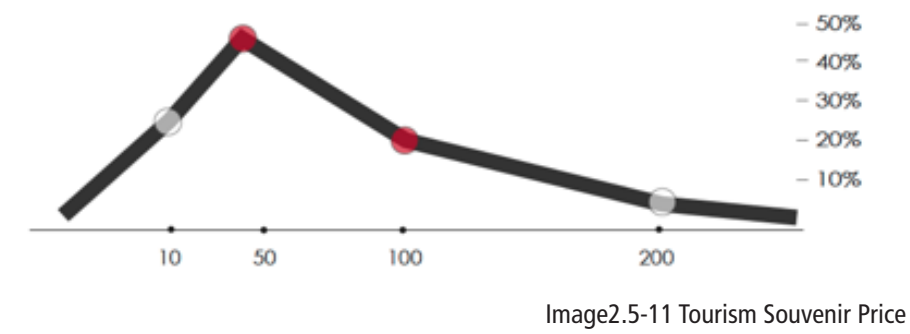


Image2.5-11 Consumers' Choices of Commodities

Tourism souvenir price: 29.6% of tourism souvenirs cost RMB10; 46.6% RMB 50; 20.2% RMB 100; 3.5% RMB 200.



## 2. Consumer's Behavior Feature



Image2.5-12 Consumers' Behavior

### 1). Dynamic Feature

There are three different entrance for visitor to enter the Nanjing Road Pedestrian Street, that is, People's Square entrance, East Nanjing Road entrance and Bund entrance. On December, 12, 13, 14 of 2012, the author stayed at the three entrances from 13:00-14:00pm and observed the people entering the Nanjing Road Pedestrian Street and found that 50% of visitors entered the Nanjing Road Pedestrian Street by People's Square entrance, 20% by East Nanjing Road entrance; 15% by Bund entrance, and the observation shows:

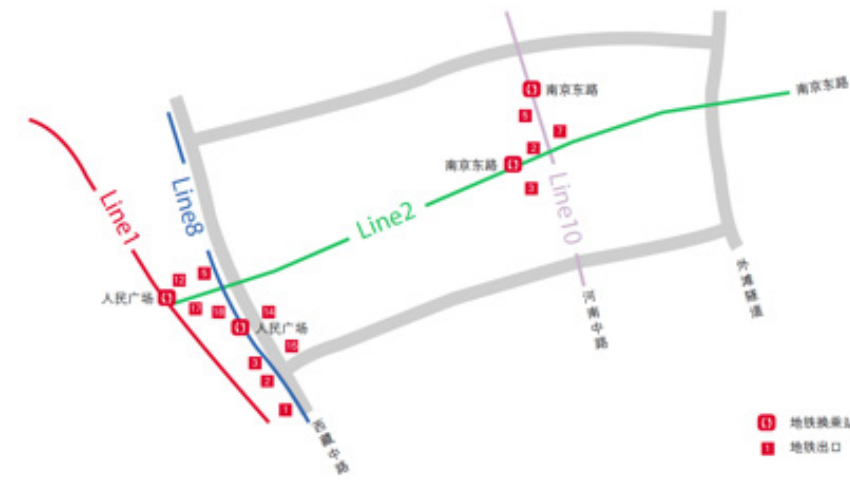


Image2.5-13 Entrance Distribution of the East Nanjing Road Pedestrian Street

Investigation shows:

\_At peak time, most of visitors enter the Nanjing Road Pedestrian Street by People's Square entrance because of convenience of subway and attraction of raffles, New World Shopping Mall, No.1 Department Store of Shanghai, Hong Kong Famous Brand Store and Dimei Shopping Center around it. And this can also explain why the Middle Tibetan Road is always crowded.

\_Most of visitors walk in the pedestrian street. Generally, visitors carrying commodities want to have a rest when they have a walk of 200-350m. In the middle of the pedestrian street, there is an entertainment square where visitors can have a rest. At the same time, various tourism festivals, culture festivals, New year countdown evening party were held in the Nanjing Road Pedestrian Street in recent years, which reflect the new trend of combination of urban commerce and cultural consumption.

\_The western part of People's Square is the place where there are many activities; while the eastern part of the Middle Henan Road is the place where there are a few activities. And spontaneous and social activities occur frequently in the places where there are many activities.

\_Most of tourists(48%) stay less 3 hours in the pedestrian street. A few of them stay half a day in the pedestrian street. (See Appendix 2)

### 2). Static Feature

When consumers have a short stay in the pedestrian street, they usually choose to stay near the building elevation facilities such advertisement board, trash bin and so on because they are under the protection of building elevation and other people can only pass in front of them. Therefore, they can observe them and respond easily. Well-designed and enough chairs are necessary for consumers' long stay and also the places where such outdoor activities occur as playing mobile phone, sun bath and observing other people.

Seat is indispensable in the pedestrian street and can provide consumers with places to have a rest. Consumers would choose seats with canopy when they have choices. If there are not enough seats, they would share seats with friends or sit on auxiliary seats (stairs, walls edge of flower beds, edge of fountains). In Life Between Buildings, Jan Gehl classifies seat into basis seat (chairs specially designed for pedestrian) and auxiliary seat (facilities on which pedestrian can sit). The physical environment

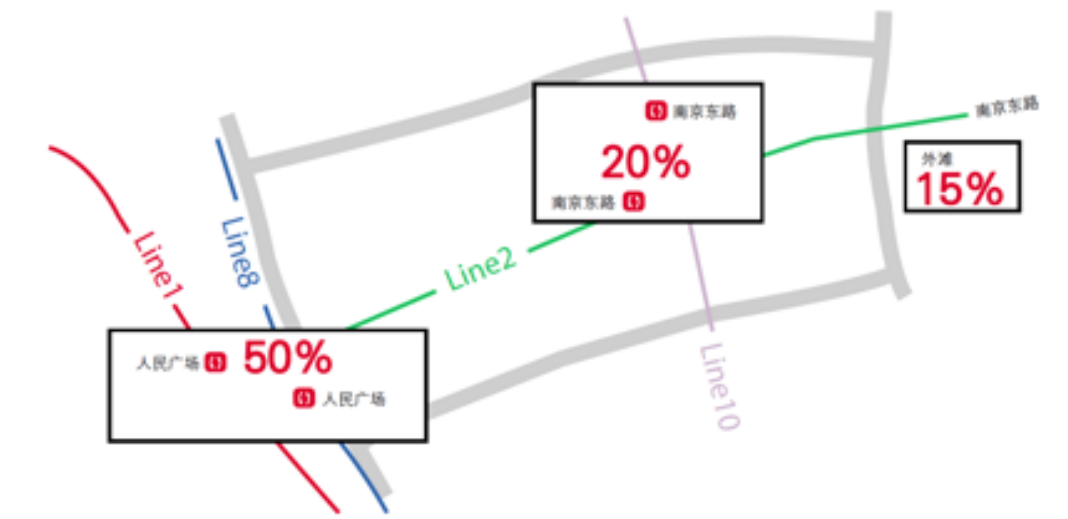


Image2.5-14 Human Traffic of Three Entrances



Image2.5-8 Auxiliary Chair(Left) and Basic Chair(Right)



of seat also determines pedestrian's choice. Pedestrian usually choose these seats without other people or without many people. If they have to share seats with other people, they usually sit at both sides of a seat and back to back in order to avoid eye contact with other people. Some people would sit at one side of a seat and put their belongings to other side of it. They do so because they want to keep personal space and avoid bothering from other people.

The author's observation shows: People waiting for friends usually choose the seat's side facing directly stores(such as A, D, E in the following picture) for the convenience of observing friends and responding; while people having a rest, eating, drinking, and chatting usually choose the other three sides(such as B, C, D, F in the following pictures). Design of chairs in the Nanjing Road Pedestrian Street takes pedestrian's behavior into consideration and every seat can face four directions.

This chapter investigates the public space of the Nanjing Road Pedestrian Street, probes into consumer's behavior modes, analyzes factors influencing use rate of public space, finds the problems and proposes solutions from the perspective of consumer's demand and urban design.



Image2.5-13 Different Behaviors of Consumers on the Seat

This chapter analyzes in details the space feature of the section from the East Nanjing Road to the Middle Henan Road and behavior feature of consumers in it and comes to the following conclusions:

- More and more consumers are the youth;
- Most of consumers are foreign;
- Consumer's income is relatively low;
- Consumer's expenditure is relatively low;
- Most of consumers come to the pedestrian street for sightseeing and leisure.

There are following problems in the development of the the Nanjing Road Pedestrian Street

- (1) Service facilities can not satisfy consumers and are lock of uniqueness
- (2) It is over-commercial and lack of local culture and history.
- (3) There are not enough basic service facilities.

The observation also shows the section from the Middle Fujian Road and the South Shanxi Road is most crowded because it boasts many century-old stores and rich unique local culture.



**CHAPTER 03**

*Construction of Smoking-free Commercial Street Public Service System*

This research tries to establish public service system of the Nanjing Road Pedestrian Street and explore the development mode of healthy smoking-free public commercial environment. Public service system is based on the following assumptions: (1) Improving living environment of commercial street and completing service transformation of commercial street by using existing resources and activating cooperative and open service; (2) establishing social communication platform for healthy smoking-free community by mobilization of community and operation between government, commercial community and enterprises; (3) The service in this research belongs to use-oriented service and provides social communication platform containing product, information and network. On this platform, participation of stakeholders, including consumers, smokers, stores, government and enterprises, is of significant for the healthy development of the service system. We should follow the following steps to establish public service system of smoking-free commercial street: Firstly, find stakeholders and define demands of local users; then, determine service type by the feedback from stakeholders and cooperative design; realize service system by physical or virtual platforms.

Product service system design can be classified into three kinds.

1. Product-oriented service: It ensures perfect operation of a product in its life circle and provides after-sale services such as maintenance, parts replacement, upgrading, product replacement, recycling.
2. Result-oriented service: It provides result according to consumers' demands. For example, it provides efficient travel, heat, and electric power. Consumer can enjoy the best service without buying product and even operating product.
3. Use-oriented service: It provides consumers with a platform (product, tool, opportunity and even qualification) to meet their demands. Car rental is a typical example. Consumer without automobile can use a car according to the contract by paying a certain sum of money.

A complete service system consists of three elements:

- (1)subject-consumers, service providers, cooperation partners, commercial users;
- (2)environment-physical environment, intangible digital environment, tangible and intangible comprehensive environment;
- (3)system-service site, network platform, users' handbook. This Chapter will discuss construction of public service system of smoking-free commercial street from those three elements.

### 3.1 IPPUKU CASE STUDY

Japan's smoking rate is high,so Japanese Government increases gradually the number of smoking-banning public places.In 2012,Ippuku established a chargeable smoking room called "Ippuku" in a street of Tiyoda-Ku of Tokyo. There are air-conditioner,chairs,vending machine,large exhibition screen,Wifi TV set and power sockets in it.It is open from 6 o'clock in the morning to midnight.Smokers can enter the smoking room and stay as long as they like by paying 50 Japanese Yen through Suiza or Pasma.Ippuku plans to establish 36 smoking rooms in commercial streets in the coming three years.

Ippuku Use Procedures

Consumers can enter the smoking room by swiping Suica card or Pasma card. Ippuku provides frequent consumers with preferential discount ticket. There is ticket machine in the smoking room. Consumers can buy ticket through ticket machine or the official website of Ippuku.

Ippuku tries to provide smokers with a good environment and at the same time charge reasonably. As a commercial operation, cost is also its necessary consideration. Therefore, it uses automatic service system. However, the smoking room is always clean and smokers can enjoy smoking in the comfortable environment. How can it keep the smoking room clean without service staff?

Firstly, air-conditioner and smoke ventilation system in the smoking room are in good operation which ensures clean environment and proper temperature. Secondly, it uses advanced water-circulation butt processing equipment which can ensure a clean and safe smoking room without smoke and smoke smell; it uses photo catalyst coating material which can kill bacterial and get rid of disgusting smell; it boasts ventilation system which can prevent smoking from going out of the smoking room and release automatically perfume.

At the entrance of the smoking room, there is ticket machine by which smokers can buy preferential price ticket(One-day ticket only costs 100 Japanese Yen; One-week ticket costs 500 Japanese Yen; One-month ticket costs 1800 Japanese Yen ). Smokers can also buy preferential price ticket through Ippuku's official website.

There is Wi-Fi in the smoking room and 20 minutes' use is free ( 10 minutes each time ); there are power sockets in the smoking room and consumers can charge their mobile phone without paying; there is vending machine, chairs and computer by which consumers can check their e-mail.

Smoking room is mainly for smokers. However, non-smokers can also enter it to have rest and drink. If non-smokers go to cafe, they have to spend 200 Japanese Yen at least; if they enter the smoking room, they only spend 100 Japanese Yen. Furthermore, smoking room is open from 6 o'clock in the morning to 12 o'clock in the evening.

At present, Ippuku is a successful experience in Japan. In the author's opinion, its success is closely related to Japan's tobacco control experience of 30 years and Japan's serious punishment of smoking in public places. It costs 1.2-1.3 million Japanese Yen per month, so if it wants to make profit, it must establish many smoking rooms. But it is not suitable for the Nanjing Road Pedestrian Street because most of consumers in it spend their money in tourism. However, it sets a good example in creating a civilized and comfortable smoking environment.



Image3.1-1 Official Website of Ippuku

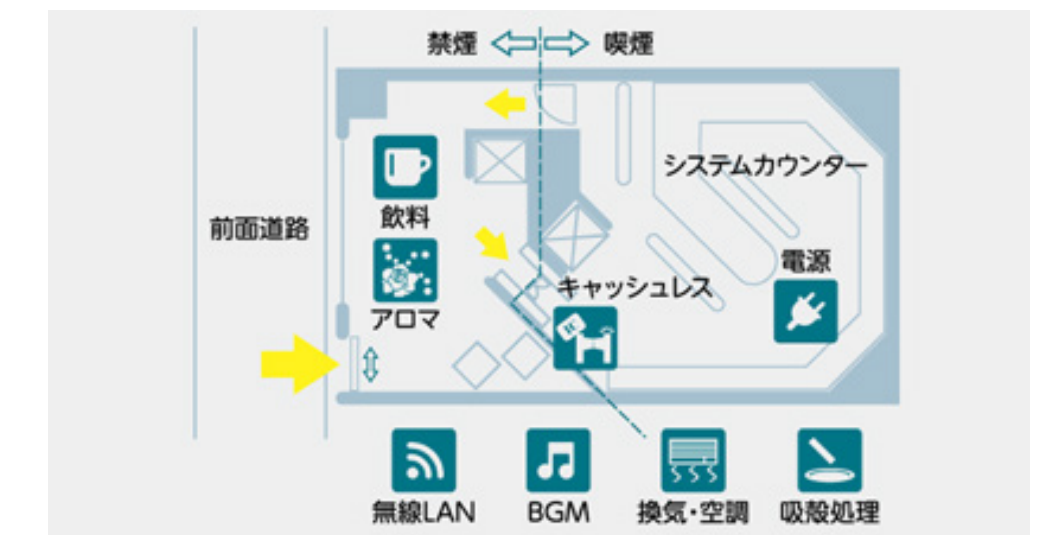


Image3.1-2 Ippuku Smoking Room



Image3.1-3 Ippuku Ticket Purchase Procedures Online

### 3.2 STAKEHOLDERS OF PUBLIC SERVICE SYSTEM IN SMOKING-FREE COMMERCIAL STREET

Stakeholders in this research include:

- (1) users-consumers (smokers and passive smokers);
- (2) developer-Huangpu District Government;
- (3) enterprises-tobacco enterprises;
- (4) cooperation partners-businessmen in the pedestrian street and non-governmental organizations. Different parties play different roles.

**Huangpu District Government:** In 2008, Huangpu District Government took measures to control smoking in the Nanjing Road pedestrian street, and included 23 stores. Now, it wants to enlarge the area of smoking control. However, it takes smoking-control measures instead of smoking-banning measures; it guides the people to quit smoking instead of forcing them to quit smoking. It tries to make the Nanjing Road Pedestrian Street a smoking-free street.

**Businessmen:** in the Nanjing Road Pedestrian Street: Investigation shows 70.5% of businessmen support establishing smoking-free stores; 91.9% of businessmen support establishing the Nanjing Road Pedestrian Street into a smoking-free street.

**Social media:** Baidu Fund, China Smoking Control Association, China Prevention Medical Association, China Youth Smoking Quitting and Prevention participated smoking control by publicizing the harm of smoking and providing smoking-quitting information, smoking-quitting methods and smoking-quitting products through net, media and public activities. Baidu Fund proposed the slogan of "say no to passive smoking" to promote a healthy life style.

**Consumers:** Local residents and foreign tourists are subjects of the service system. They are receivers and participators at the same time. Design should be based on their demands and also needs their participation.

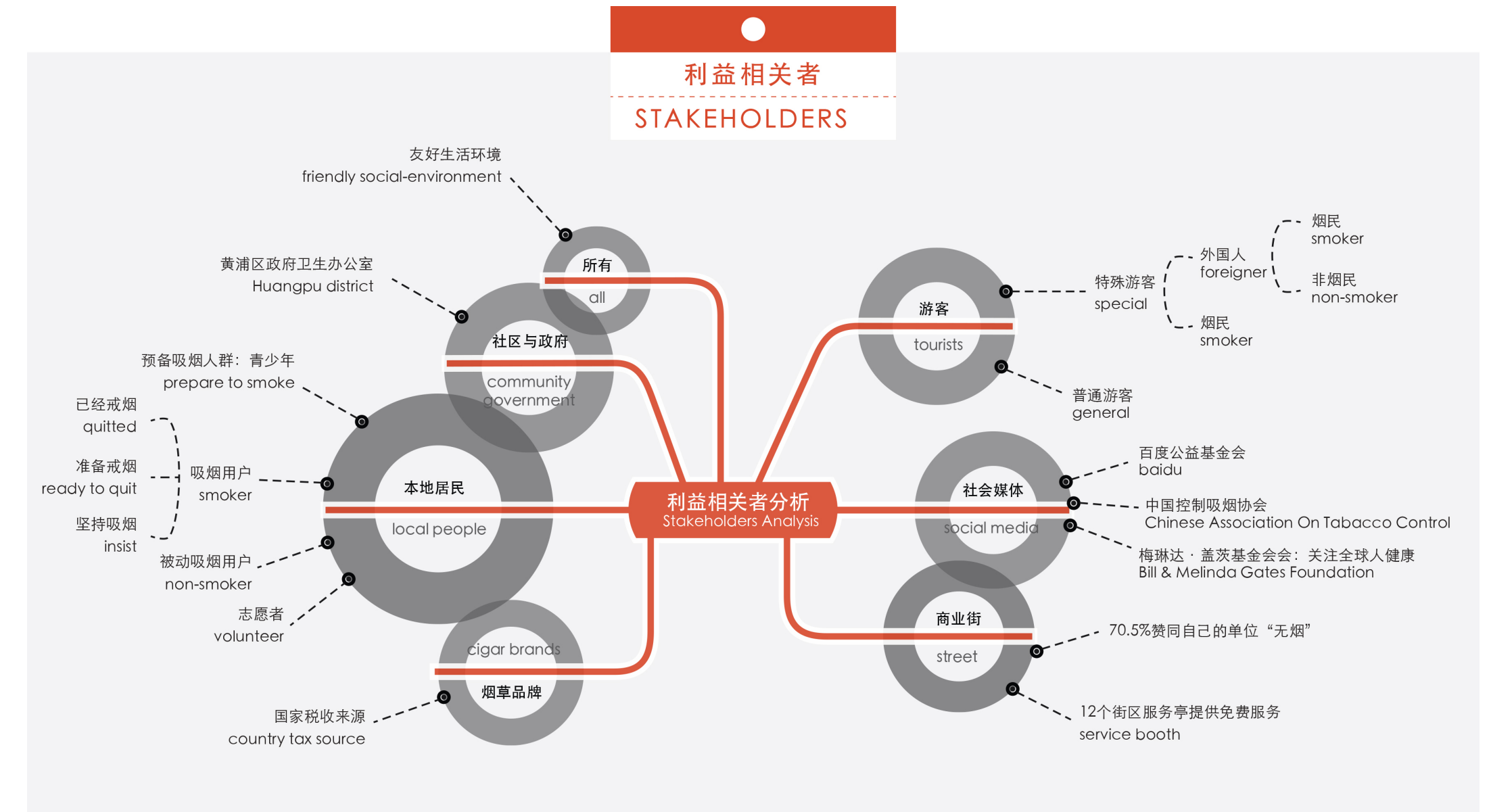


Image3.2-1 Relationship between Stakeholders



### 3.3 RESEARCH OF USERS OF PUBLIC SERVICE SYSTEM IN SMOKING-FREE COMMERCIAL STREET

Research of users aims in understanding smokers' and passive smokers' attitudes towards complete smoking-free policy in public places (taking the Nanjing Road Pedestrian Street as an example ), smokers' and passive smokers' environmental behavior demands in urban public places, and balancing sustainable development of environment and smokers' demands for smoking.

#### 3.3.1 Role-based User Modeling Method

The purpose of user research is to understand their idea and demands, so we must know the questions we should ask them and the ways of asking questions. We can classify user research into Quantitative Research and Qualitative Research according to different research methods.

Quantitative Research: If qualitative research answers the question of "why", then quantitative research answers the question of "what". It can find the trend and reflect the users' real situation through users data. It can verify the hypothesis proposed by qualitative research.

Qualitative Research: It is based on well-selected samples. Users interview, usability test, situational observation belong to this method. Its research result is open. However, researchers can understand consumers' behaviors and motives with the help of their experience and technology, and then find the reason of consumers' behaviors. In this research, the author mainly uses methods of questionnaire, photo diaries, interviewing and field observation. Before determining interview, a series of preparation are made.

- list interview outline, determine interview method, topic and question
- predict difficulties and accident in interview
- choose proper interview place and understand relevant knowledge and interviewee's information.
- dress properly and choose proper interview style and method according to different interviewees .



Image3.2-2 Interviewees(From left to right: student, worker and smoking man)

#### 3.3.2 Market Research

Questionnaire and focus group are good ways to get user's basic data. □Jesse James Garrett□2012□In this research, users data are mainly from the following sources:(1) Quantitative research of spacial structure and consumer's behavior of commercial street made by Wan Re and Zhu Wei(see chapter2);(2)The author's qualitative research of smokers.The author delivered 100 copies of questionnaire on the net and in the Nanjing Road Pedestrian Street(47ever-smokers and 53 passive smokers).After analysis of questionnaire,the author came to the following conclusion:

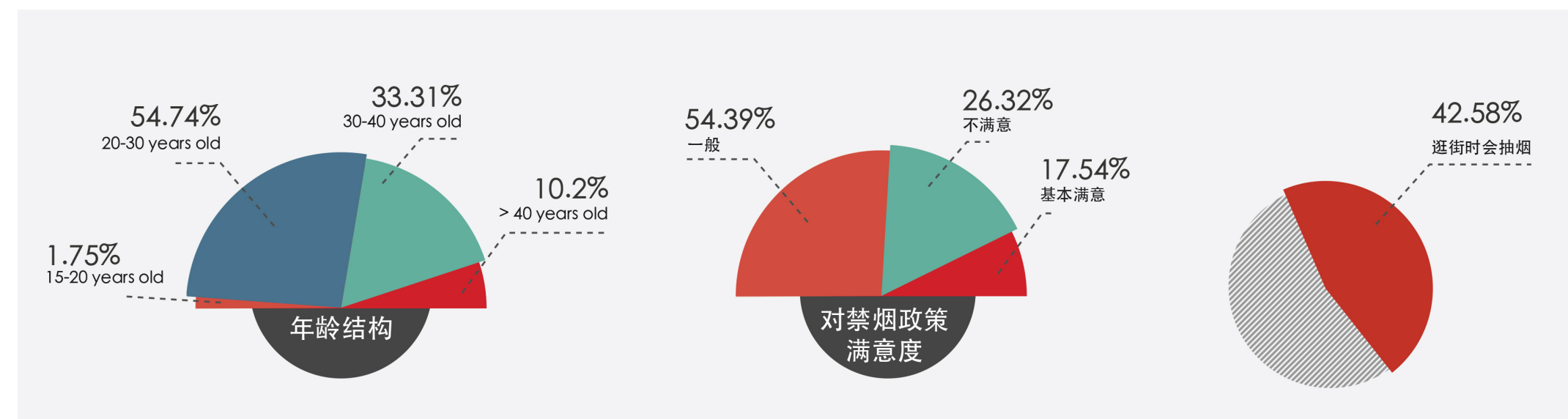
- 1.Smokers sex: male :45.61%; female:54.39%
- 2.Smokers age:15-20:1.7%; 20-30:74.74%;others:23.51%
- 3.Smokers occupation:student:26.2%;company staff:27.8%;others:46%
- 4.Ratio of smokers: Smokers:47%;non-smokers:53%
- 5.Smoking history:below 3 years:33.33%;3-5years:22.22%; 6-8years:33.33%; above 9years:11.11%
- 6.Smoking frequency:one cigarette each day:11.11%;1-5 cigarette each day:11.11%5-20 cigarette each day :66.67%above 20 cigarette each day:11.11%

- 7.Smoking time:below 5 minutes:58.32%;5-10 minutes:23.56%;above 10 minutes:18.12%
- 8.Smoking hand:left hand:53.48%;right hand:46.52%
- 9.Whether knowing smoking leads to lung cancer and coronary disease: Know :86.4%;Don't know:13.51%
- 10.Attempt to quit smoking: tried but failed: 45.56%; Going to try :32.22%
- 11.Satisfied with smoking-banning policy; just so so: 54.39%; unsatisfied 26.32%; relatively satisfied: 17.54%
- 12.Attitude to smoking-banning in public places:Support strongly:56%; Support:21%; Indifferent:17%;Oppose 60%(see table3-1)
- 13.Smoking when window shopping:42.58%
- 14.Seeing outdoor smoking-banning advertisement:68.95%
- 15.Smoking-banning media contacted: posters and screen in public;places:47.37%;TV:26.32%; Road sign:10.53%; net:8.77%
- 16.Influential smoking-banning advertisement: TV advertisement 31.56%;roadside advertisement 29.82%; net advertisement:28.07%
- 17.Continue to smoke when seeing smoking-banning sign:91.37%
- 18.Functional demands for smoking area: Shopping map:37.21%;News:26.85%; Smoking-quitting knowledge:19.33%
- 19.Way of getting information about smoking area: APP: 47.31%; Text message tracking:23.8%.

QUESTIONARIE 问卷调查 吸烟者: 43 被动吸烟者: 57

Online Research : 问卷星 <http://www.sojump.com/jq/2149761.aspx>

Field Research : 南京路步行街



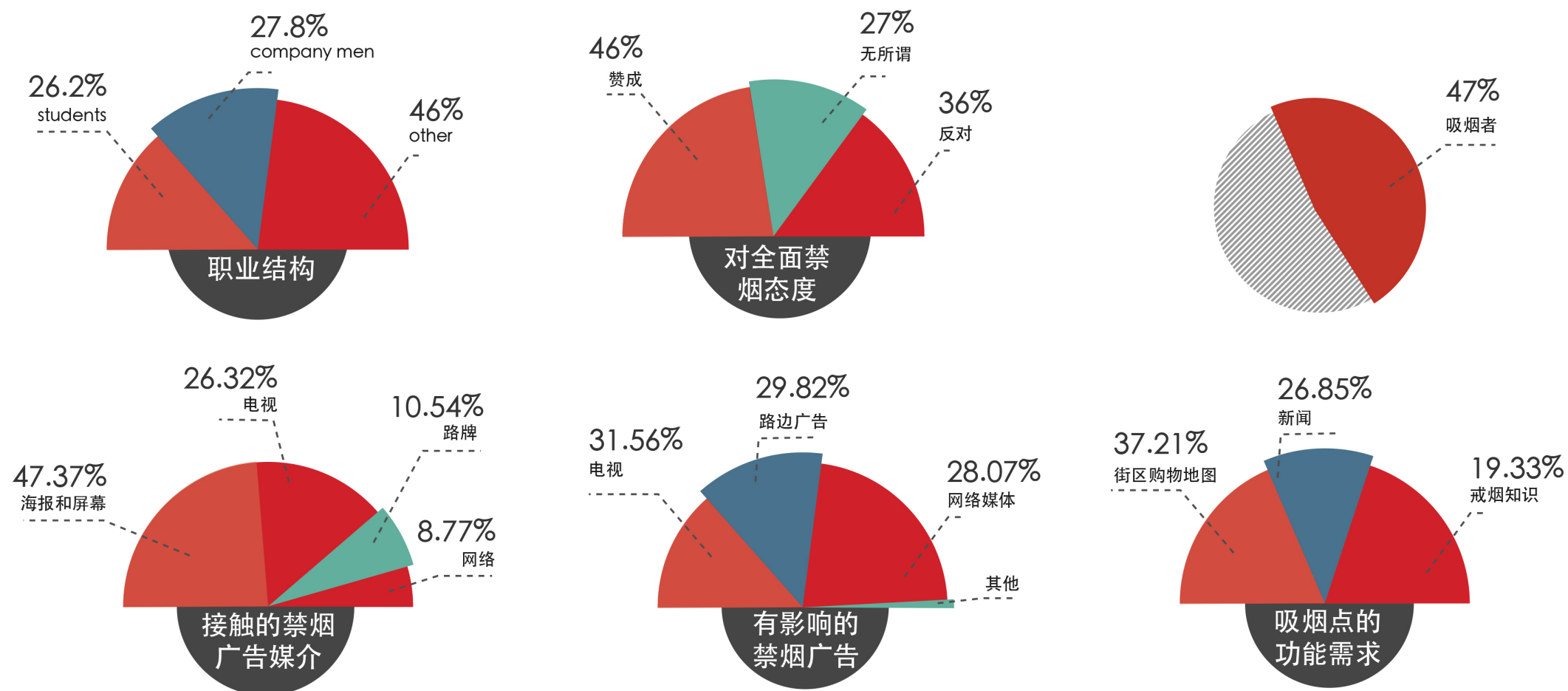


Image3.2-3 Qualitative Research of Consumers

The results from questionnaire shows the basic features of consumers:  
 (1)Sex: Female is more than male  
 (2) Age : Most of consumers are the young and the middle-aged.  
 (3) Occupation: Most of consumers are not students and company staff.

### 3.3.3 User Segmentation

User segmentation is the base of improving product image and service experience. A good product can meet the demands of different clients to the greatest degree. It can change according to different client's demands. User segmentation can provide different services for different clients.

Different products have different client groups. Therefore, enterprise should classify consumers into different groups according to different cultures, income, consumption habits, and life styles and then make different brand promotion and marketing strategies. We usually classify consumers into small group with same demands according to demographic standard: sex, age, education, income. The Nanjing Road Pedestrian Street is characterized by integration of shopping, tourism, business, exhibition and culture. It is full of Chinese and Shanghai characteristics. In this research, the author classifies consumers in the Nanjing road Pedestrian Street into two kinds:

- (1) general consumers: foreign tourists, local tourists and local residents;
  - (2) special consumers: smokers. Different consumers have different demands and we need to re-classify them according their service demands.(Image3.2-4)
- After defining consumers' demands, the next task is to determine their priority rank. Then, we should establish persona (or user model) which is virtual and at the same time based on real consumer groups. We establish persona according to a series of careful observation of consumers and analysis of consumers data. We should understand the target consumers and define the product's function according to persona.

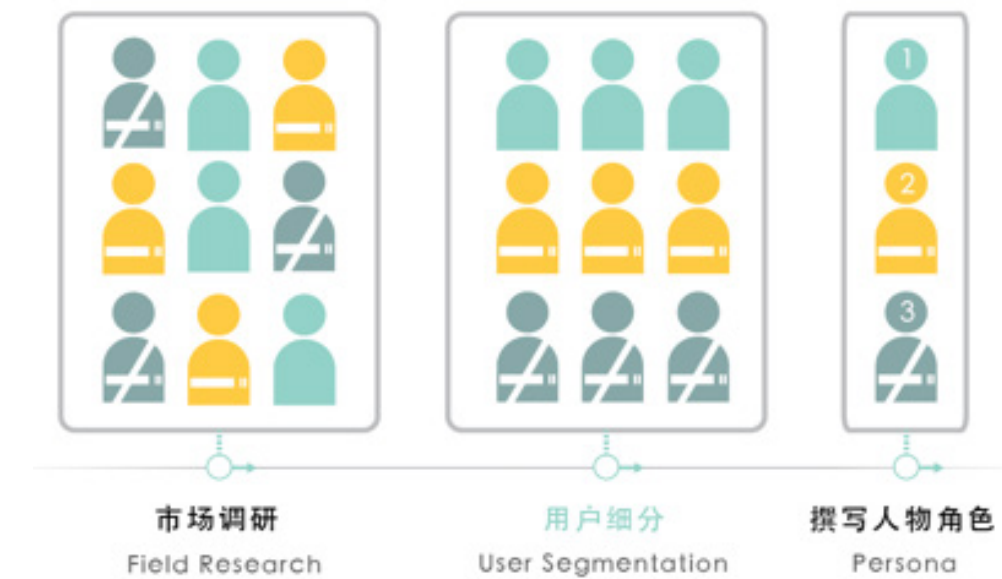


Image3.2-4 User Segmentation

### 3.4 TYPE AND NETWORK OF PUBLIC SERVICE SYSTEM OF SMOKING-FREE COMMERCIAL STREET

After analyzing target consumers' demands, the next task is to determine the objective of service, that is, what kind of service should be used to meet consumers' demands? What kind of network should be established between service types? What kind of platform should be established? The public service system of the Nanjing Road Pedestrian Street should not only be suitable for foreign tourists, but also for local residents.

#### Types of Service

- 1) Location service( LBS model):** Consumers can download the location of the smoking area in the pedestrian street and enjoy the location service of app by connecting i-shanghai
- 2) Smoking-free shopping:** Smoking-banning area and smoking area should be established in the Nanjing Road Pedestrian Street. Consumers can find the location of smoking area by public signs, intelligent inquiry system and non-commercial advertisement. In the smoking area, existing service facilities such as service pavilion, advertisement light booth, public phone booth can be used to provide information about shopping, culture, tourism and so on. The inquiry system in subway station can provide information (shopping location) of the pedestrian street.
- 3) Information sharing :** The service system should provide smokers and passive smokers with knowledge of harm of smoking and provide smokers wanting to quit smoking with smoking-quitting methods and smoking-quitting product information.

**4) Cigarette recycling system:** The service system should take measures to stimulate consumers to replace thing of the same value with cigarette to keep environment clean and create a smoking-free environment.

#### Network of Service System

Different types of service system form a service system network through the intermediary of clients. The precondition of establishing network of service system of the Nanjing Road Pedestrian Street is to divide it into smoking area and smoking-banning area, improve service facilities to meet demands of different consumers and create a safe, sustainable and healthy commercial street.

### 3.5 PUBLIC SERVICE SYSTEM PLATFORM OF SMOKING--FREE COMMERCIAL STREET

In this research, service system platform includes physical platform and virtual platform.

#### 3.5.1 Physical Platform

Physical platform refers to the services which consumers contact directly after they enter the Nanjing Road Pedestrian Street. In this research, smoking area is the most important physical platform in the public service system of smoking-free commercial street. But before consumers contact this physical platform, they may contact other physical platform and virtual platform. For example,they can use the intelligent inquiry system in the subway station (physical platform) to enter electronic map of commercial street (virtual platform) and then get location information of smoking area, finally enter the smoking area. They can also find the smoking area by mobile phone location service.

#### 3.5.2 Virtual Platform

##### 1. Reason of Virtual Platform Construction

Experience-type website is the mainstream of the era of Web.2.0 and can improve users'experience greatly. The user-oriented internet can make it possible for users to exchange information and cooperate with each other. The typical virtual platforms in China are Baidu, Youku, Sino, Renren, Douban and so on; the typical virtual platforms abroad are Wikipedia, Flickr, Twitter, Facebook, YouTube, Skype and so on.

##### 2. Virtual Platform Models

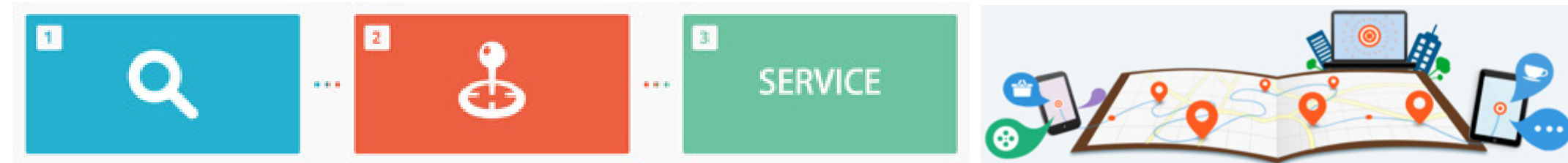


Image3.2-5 Location Navigation Function

#### 1) LBS: Location Based Service

One consequence of wide use of GPS and intelligent mobile phone is outdoor map service and location-based service. Service users in this research are mostly foreign users. Therefore, it is necessary to construct a sharable and convenient geographical information service platform. Most of intelligent mobile phones boast geographical information software. However, a single location function can not meet the service demand of multiple--functional commercial street, so it is necessary to add the function of navigation.

Case analysis 1: Foursquare and Roadside intelligent mobile phone software.

Users "arrive in" the restaurants, entertainment places and cinemas through Foursquare and get credits and bodge. It can provide users with geographical information and at the same time advertise these places for free. Roadside intelligent mobile phone software provides similar function. According to Alexander Galloway associate professor of Department of Media Culture and Communication in New York University, "Foursquare uses our desire to win in competition"

Case Analysis 2: National Public Toilet Map

In Australia, users can find any public toilet by downloading and using National Public Toilet Map, a software developed by Human Solutions Pty Ltd. Users can know detailed information of any public toilet in Australia, including its location, open time and service facilities in it.

The above cases boast the following features: Firstly, they are open and wireless location service platforms which can provide mobile phone, Pad, laptop with location service; secondly, they are based on GPS, Cell ID, WIFI and IP and cover national wide; thirdly, they can provide written description of city, region and street of the terminal; fourthly, they can provide Point of Interest information of the terminal.

#### 2) Online To Offline(O2O)

In recent years, more and more enterprises have introduced the consumption mode of Online to Offline into their marketing plan. Online to Offline is an interactive mode connecting physical platform and virtual platform. Users can pay online and enjoy service offline.

Case Analysis; Groupon

Groupon is China's first O2O platform based on LBS. It is a pioneering local life consumption platform in China. It aims in providing users with information about catering, shopping, leisure, entertainment. It is a interactive platform which releases promotion information and consumption evaluation. It provides enterprises with one-stop marketing scheme and is now indispensable for the people's life.

### SUMMARY

We must take into consideration stakeholders, service type and content, and service platform when constructing public service system of smoking-free commercial street. stakeholders play a critical role in it because they construct and operate service type and network and fulfill service content through physical platform and virtual platform.



**CHAPTER 04**

*Public Service System Design of the  
Nanjing Road Pedestrian Street*

## 4.1 APPLICATION OF DESIGN METHOD

Service system design involves product, service and user. It is a comprehensive solution to problem based on researches on user's demand, strength of community and urban development. It is a process of thinking problem and strategy. It is a process of setting and solving problem. It consists of induction and deduction. It is a process of designing strategy and the result of brand strategy.



Image4.1-1 Brand Strategy+User Needs=Service

In this research, service system design consists of four steps:

### 1. Analyzing: Background investigation, data collection, problem setting(See Chapter Three)

Tool: Field work, questionnaire, persona

It is the pre-phase work of service system design and focuses on demand analysis, user research and service positioning. Through field work, questionnaire and persona, researchers study users and stakeholders and find the solution to problem and then determine design direction. Participators at this step are mainly stakeholders (smokers and passive smokers).

### 2. Generating: Framework construction

Tool: Service moodboard

This step focuses on constructing service system framework and designing user's use situation. At this step, design and users are required to communicate with each. Participators at this step are mainly designers and users. Users are also required to take part in the process of design (participatory design).

### 3. Developing: PSS design

Tool: Journey map, system map, storyboard, product prototype (product brand), social communication network (websites, APP)

At this step, design is required to test all links in service system and participating users in order to ensure perfection of service system and efficiency of service.

### 4. Branding:

Tool: SWOT

This step focuses on analyzing living environment development mode and brand value of commercial street to find its advantage, disadvantage and core competence ability.

## 4.2 SERVICE ELEMENTS

There are mainly three service elements: subject element including users, service providers, cooperation partners, businessmen (owners of stores or shops), environment element including visible physical environment, invisible digital environment, visible and invisible comprehensive environment, system element including service site, network platform, users' handbook. In this research, the author classifies the service elements into three kinds: stakeholders, comprehensive environment and system element.

How to find solution to problem according to the analysis of data from investigation? In this research, the author firstly defines relevant key words and make moodboard. In the process of service design, moodboard can be used as a tool to collect concept and idea, generalizing service feature and providing reference for design direction and form.

Key words: Function, intelligence, comfort, season, tradition, necessity.

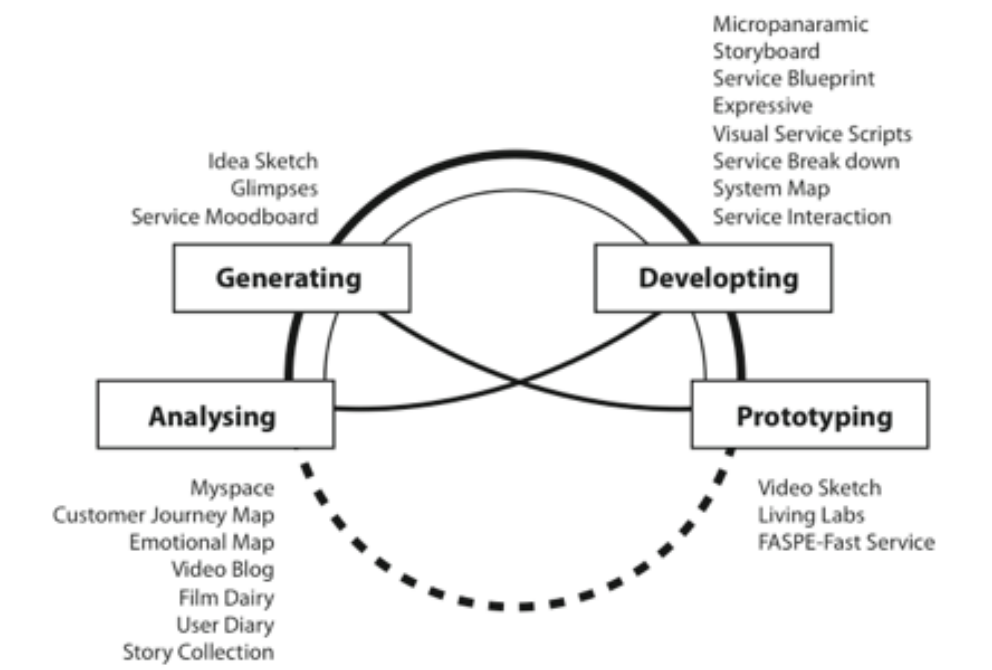


Image4.1-2 Application of Service Design Tools in Design

Moodboard 1( Picture 4.2-1) shows both smokers and non-smokers in the Nanjing Road Pedestrian Street spend their time by playing mobile phone and observing other people when they have a rest. Smokers usually sit in the rest area and close to trash bin. Their smoking usually last 3-5 minutes.



Image4.2-1 Moodboard Analysis:User



#### 4.2.1 Design Suggestion

China bans smoking in indoor public places, thus fewer and fewer people smoke in indoor public places. However, more and more people smoke in outdoor public places. It is of significance to balance smokers' desire to smoke and non-smokers' health. Human traffic in the Nanjing Road Pedestrian Street reaches 800 thousand a day and there are many smokers in them. We can balance smokers' desire to smoke and non-smokers' health by dividing the pedestrian street into smoking area and smoking-free area. But how to divide them and provide smokers with information about smoking area quickly is of significance. We should take service, product and communication into consideration when designing service system. Firstly, we should analyze stakeholders and users (smokers); then, we should establish the platform for the service system.

#### 4.2.2 Persona Setting

In this research, personae are based on the studies of consumers' behavior in the Nanjing Road Pedestrian Street and of smokers' demand. They can only represent the behavior feature of the main users and can not represent the behavior feature of all users. In the research, there are mainly three personae: Persona 1 is local smokers represented by Mrs Lao; Persona 2 is foreign smokers represented by Mr. Liu; Persona 3 is overseas smokers represented by Mrs. Anna. There are similarities and differences between them. They are all against tobacco-control policy. However, they get service information about smoking-free commercial street from different channels.



**PERSONA#1 Mrs Luo**

- 28,
- female
- Costume designer
- Shanghai jing an temple

Miss Rowe from started smoking at the age of 20, for eight years now.

Ms Luo knows smoking is bad for people's health, and also knows that second-hand and third-hand is harmful to others, but because of her work, sometimes she thinks smoke can reduce the pressure on her, so also will have you thought about going to quit smoking, so heavy.

Ms Luo is not like the design of the smoking area in some public indoor places because of the lots of people, interior is dirty and messy, air turbidity.

**PERSONA#2 Mr Liu**

- 35
- male
- white-collar
- Traveller to Shanghai

Mr Liu from began to smoke from reading period, have not been able to quit smoking, and heavy, sometimes he will smoking two bags of cigarette a day.

When his friend talks about his smoking, he is very sensitive, and resist, don't want to talk about it, he is also opposed to national anti-smoking policies, thinks that smoking is their freedom.

Mr Liu said, smoking will be very comfortable, relaxed, his brain is in a state of empty, that is why he has been reluctant to give up smoking.

**PERSONA#3 Ms Anna**

- 40
- female
- entrepreneurs
- Holiday

Anna is one of the leaders in a Swedish company, sometimes she will bring the whole family to Shanghai on a summer vacation.

Nordic crackdown on tobacco control is large, for the division of the smoking area is also very clear, so Anna rarely smoking in public places. But she don't know where to smoke when shopping.

Anna likes smoking with friends together so that they can chat together while smoking.

#### 4.2.3 Participatory Design(Co-design)

In order to meet users' demand to the greatest degree, user representatives are required to participate in design. We call it participatory design or co-design. Service is complex and involves many parts and their cooperation will result in satisfactory result. In participatory design, users can express their demand and expectation and can participate actively in design. Service is completed by service provider and users. In participatory design, designer should communicate with users all time and even regard them as members of the design team. They should collect users' idea by workshop and take in their suggestions. The advantage of participatory design lies in :

- 1) User can express their opinions and expectation;
- 2) Designer can know directly users' feeling when they interact with service;
- 3) Designer can judge quickly the practicability standard from the angle of user;
- 4) Interaction between designer and users can speed up renewal of service.

In this research, the author investigated four smokers regarding to their opinion toward smoking area's practicability and design. Firstly, the author asked them the following questions: Did you ever go to the smoking area? What is your impression on the smoking area? What kind of function in the smoking area is important for you? These questions are done at the first stage of research of status quo. At the second stage of designing service system prototype, the author asked smokers what they want to demand for regarding to the service system in the Nanjing Road Pedestrian Street and sequenced services according to priority of their demands. The following four paragraphs are their feedbacks:

##### 1. Foreigner (female), 41years old, spending holiday in Shanghai

"I don't like the closed environment of the smoking room because smoke smell will stick to clothes. Although I like smoking, I won't smoke when I walk outside in the street crowded with people because I know smoking will do harm to other people. Usually, when I smoke, I want to have a relaxation, so I will make phone call or play mobile phone when smoking. I go to the Nanjing Road Pedestrian Street occasionally. But I can't find the place to smoke. I often see tourists smoke in the chairs in the rest area and they often stay there for a long time."

##### 2. Visual designer (male), 28 years old, creative director of a company in Shanghai

"The smoking areas I ever went to are dirty, disordered and smelly. I will feel comfortable if these problems are solved. If I design the smoking area in the Nanjing Road Pedestrian Street, I will design open and round barrel-like smoking area without chairs and charging sockets which may lead conflicts between people. Smokers can find the location of smoking area by Baidu map or guide map in the street."

##### 3. Student ( male ), 19 years old, studying in Germany

When I stay in the smoking room, I want to go out as soon as possible. Some smoking rooms are bad in ventilation; some smoking rooms are so crowded. I feel unfair when I see other people smoke cheap cigarettes while I smoke expensive cigarettes. I often fancy to smoke in VIP smoking room, but it's unrealistic. The advantage of smoking room is that there are lighters everywhere. I hope that smoking room should be established between cafes or snacks shops or in the tourists distribution center. People won't be so stupid to stay in a special area because smoking desire comes. It's good if there are chairs. However, I feel unnatural when I sit together with strangers. Smoking outdoor is

good. But Shanghai's weather is bad.

**4. White-color, 26 years old, staff in a real estate company**

I once entered the smoking room in the Pudong Airport. Its advantage is that it's long and spacious, so many people can smoke in it without being crowded. There are lighters in it. Its disadvantage is that its ventilation is bad. If smoking area is established in the Nanjing Road Pedestrian Street, I think it the most important to provide eye-catching signs for it because there are so many visual signs in the pedestrian street. Moreover, it should boast good ventilation and provide lighters. Chairs are not so important for it because most of the people like to stand when they smoke. People only sit to smoke in private space.

The investigation shows most smokers want good ventilation and clean environment. They all don't want to smoke second-hand smoke, and their smoking desires are easily stimulated by other smokers' second-hand smoke. Smokers in the Nanjing Road Pedestrian Street are generally classified into two kinds. The first kind know the harm of second-hand smoke and choose to smoke by the side of trash bins. But the first kind only occupy a small part of smokers. The second kind are those smokers who smoke in the crowd, neglecting other people's feelings. They smoke when they are waiting for other people or having a rest. They hope the smoking area to be half-open so that they can observe walkers conveniently.

**4.2.4 Service Touch-point**

Service system design does not only concern product, but also various touch-points by which users contact with product. Touch-points of traditional service system design are mainly professional service staff who promote, guide, provide and support service product.

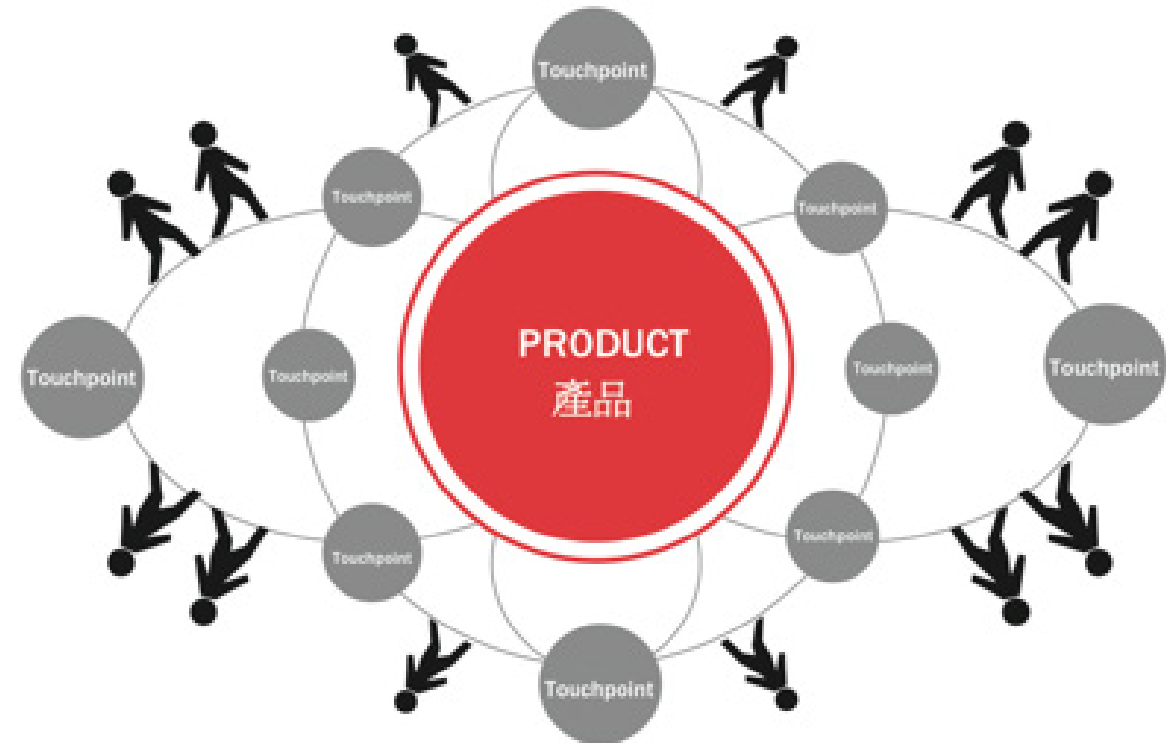


Image4.2-2 Relationship between Users, touch-points and product

At present, user-oriented service system design develops into community-oriented service system design. Different stakeholders in service system form creative community. Different individuals and groups unite together in a creative way, use together existing resources, live sustainable life and renew service system. Product service system design does not only concern product, but also various touch-points by which users contact with product. Users experience " product-centered service process" instead of " product". Users contact with product by various touch-points and form experience. Designer can connect different touch-points together to establish a visual framework so that they can understand clearly users' experience and feeling at every touch-point and the structure of a competence service system.

Take flight ticket booking online as an example, designer should think how to send ticket to consumers, how consumers get travel itinerary, how to inform consumers of the best time to depart and weather. They will produce different touch points. Designer should consider users' experience or different touch-points and try to improve them. Informing users by text message and informing users of weather can improve users' experience at different touch-points.

More touch-points can lead to more chances to experience and thus more possibilities to increase user's stickness to service system. Therefore, if we expand service pathway, we will increase touch-points and thus increase touch-points between users and service system. For example, Amazon will understand users' preference by questionnaires. By this, it can send right promotion information to right consumers.

At the same time, service design should concern the whole use process of consumers instead of one single touch-point. For example, traveling by train consists of a series of touch-points such as train schedule, ticket machine, station, train and servants.

Quality of service is relevant to SU Index ( service usability). SU checks if users can use service easily and mainly depends on quality and activeness of touch-points.

On December, 14, 2012, the author investigated 70 consumers in the Nanjing Road Pedestrian Street regarding their satisfaction degree for existing service touch-points (see Appendix 3). The result shows they are satisfied with existing chairs and service pavilions. SU evaluation method tries to find problem from the angle of users and is beneficial to understanding of users' experience feeling. It can find the solution to problem and then improve design. After observing shadowing users, we find the main touch-points in the Nanjing Road Pedestrian Street include (1) service pavilions; (2) chairs; (3) public phone booth; (4) advertisement light booth; (5) public sign; (6) subway inquiry system. Users' satisfaction degree is shown in Picture 4-9. According to the concept of smoking-free commercial street in this research and investigation of smokers, the author thinks that it is necessary to add the following touch-points: (1) smoking area; (2) website; (3) tobacco waste recycling station; (4) mobile phone application.

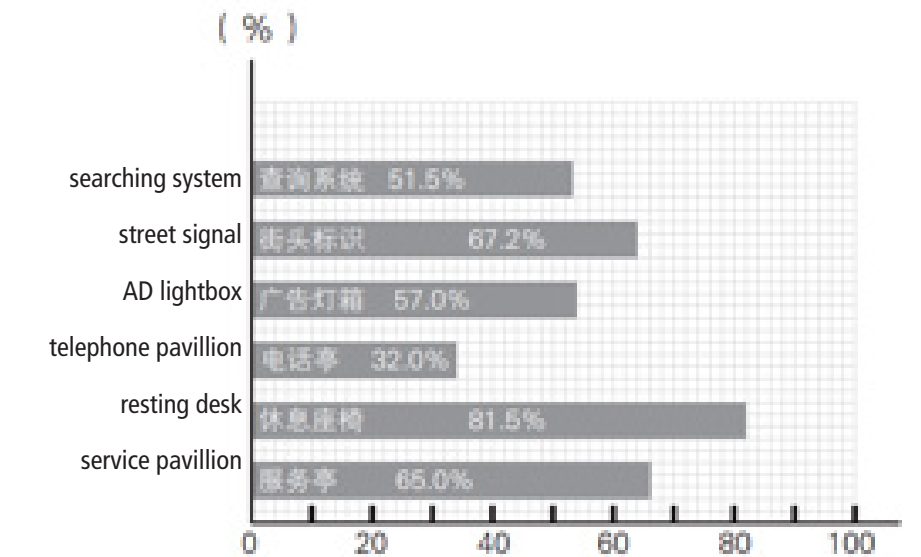


Image4.2-3 SU Index of Different Touch-points in the Nanjing Road Pedestrian Street

### 4.3 SMOKING-FREE COMMERCIAL STREET BRAND ESTABLISHMENT

That smokers don't know where to smoke is the first problem of establishing the Nanjing Road Pedestrian Street into a smoking-free street. Most of smokers know the rule of indoor smoking-banning, so they smoke in outdoor public places which are most crowded. As a result, the contradiction between smokers and non-smokers arise. To solve this problem, the author design smoke-spot, by which smokers in the Nanjing Road Pedestrian Street can connect i-Shanghai by mobile phone and find quickly the location of smoking area and other public services around in the Nanjing Road Pedestrian Street. Based on this, other service designs such as website, smoking pavilion, smoke recycling station will be done. They altogether contribute to the establishment of the brand of Nanjing Road Smoking-free Pedestrian Street. However, establishment of a brand is closely related to proper target market positioning. Once a brand chooses its target market, it should design corresponding product, brand image and enterprise image to get consumers' recognition.

#### 4.3.1 Brand Image Design

Name of service system: smoke-spot

The Nanjing Road Pedestrian Street is the entertainment and leisure place for local people and foreign tourists. It is called "China's No.1 Street" and boasts complex functions and diversified consumers. We choose the English letter "s" as the brand image of it because our service design involves smokers, smoke and spot.



Image4.3-1 Meaning of Smoke-spot

#### LOGO

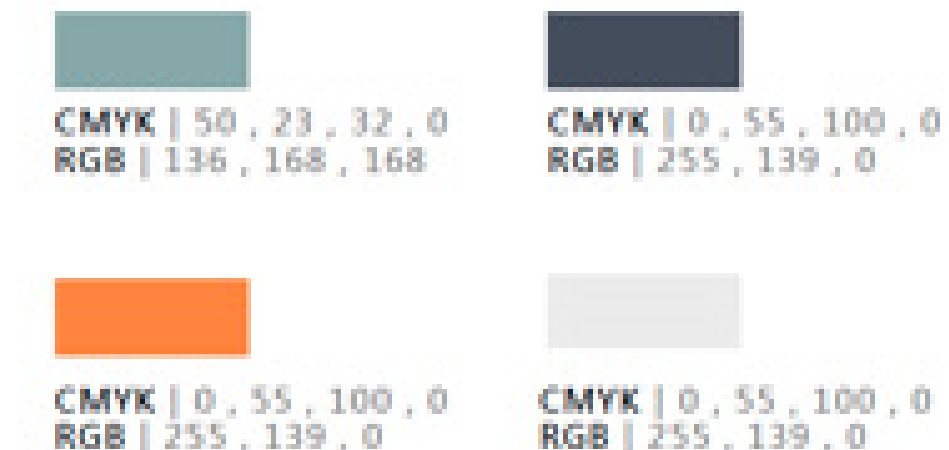


#### TYPEFACE 字体

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
 UVWXYZabcdefghijklmnopqrstuvwxyz0123456789

—  
 Century Gothic

#### COLOR PALETTE 色板



壹贰叁肆伍陆柒捌玖拾  
 一 二 三 四 五 六 七 八 九 十

—  
 方正细黑一简体



LOGO EXTENTION GRID logo形成

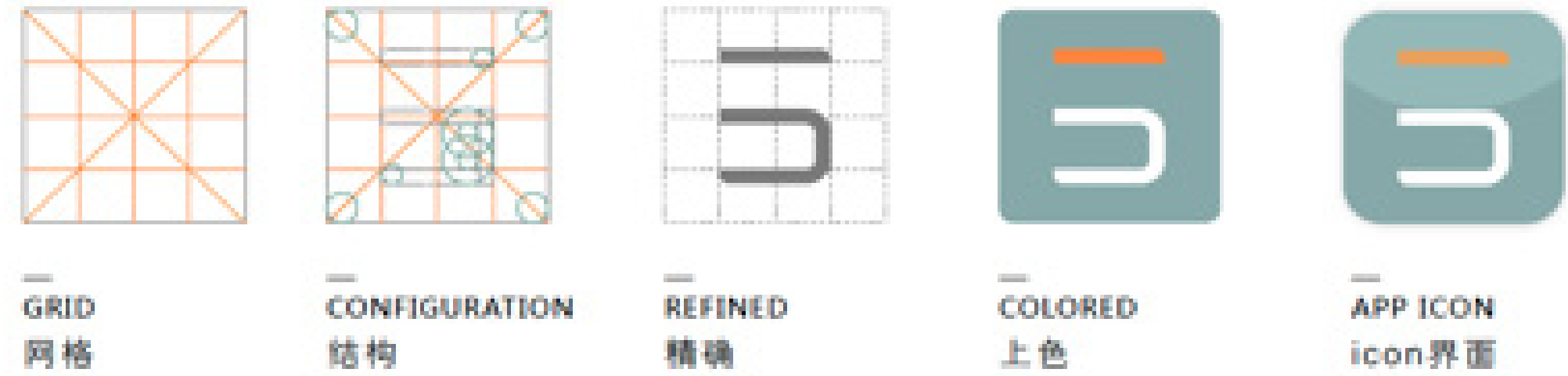


Image4.3-2 Image Design of Smoke-spot



Image4.3-4 Cooperation Advertisement of Smoke-spot

4.3.2 Brand Cooperation Strategy

Cooperation with other brands is necessary for a brand which wants to enter a market quickly and establish its influence in the consumers. Cooperation between different brands can lead to win-win for them.

1. Cooperation with various brands in the pedestrian street (service pavilion, supermarket, cigarette store, convenience store, cafe): Publicizing the concept of smoking-free commercial street and its service content in these above places where consumers gather.
2. Cooperation with digital mobile media (subway, bus, taxi ): Most of consumers in the pedestrian street are not local people. There are digital media in subway, bus, and taxi, so if we advertise our brand in them, it will be accepted quickly buy consumers.
3. Cooperation with virtual social network (Sina Weibo, Tencent Wechat): Wechat is a trans-platform (Android, i-phone, Windows Phone, blackberry, Symbian) communication tool with 300 million users. We can use it to promote the brand.



Image4.3-3 Cooperation between Smoke-spot and Sponsors

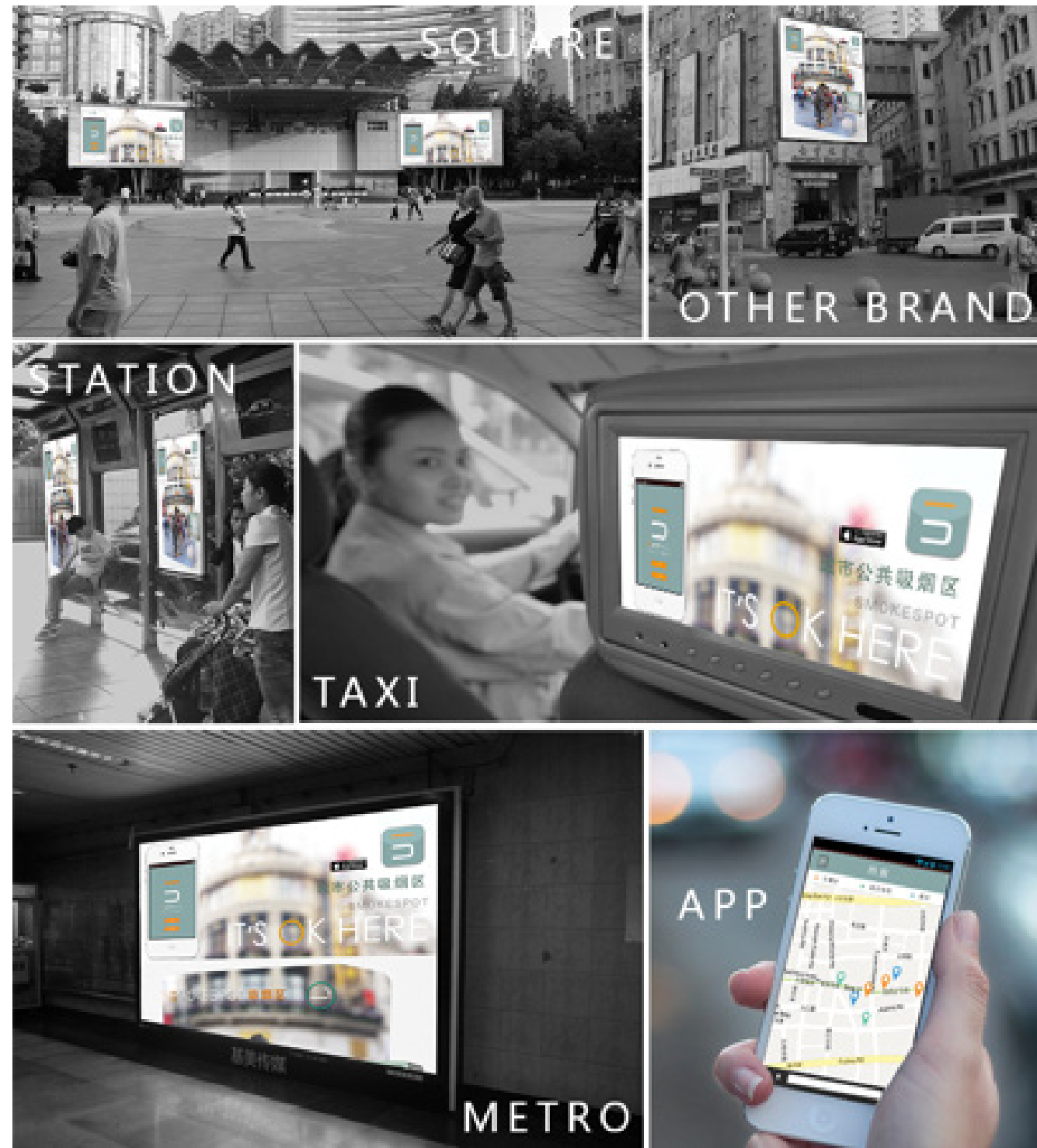


Image4.3-4 Cooperation Form of Smoke-spot and Sponsors

### 4.3.3 Brand Analysis

In this research SWOT is used to analyze the competition situation of public service system of the Nanjing Road Smoking-free Pedestrian Street from the following aspects: strength, weakness, opportunities and threats.

1. Strength: This service system can optimize the space of the pedestrian street, balance smoker's and non-smoker's benefit, ease government's smoking-control pressure, save human resources and money, achieve sustainable urban development, improve urban image. Moreover, with the support of mass media and various non-governmental associations, it will be influential.
2. Weakness: At the early stage, it is difficult to establish many service facilities; citizens are lack of self-awareness, so government should supervise the smoking-banning area.
3. Opportunities: It can cooperate with different industries and resources and are applied in commercial streets of different sizes. Service type and service network can be copied or developed according local condition.
4. Threats: The human traffic in the Nanjing Road Pedestrian Street is so large that it will do harm to the service facilities in it.

### 4.4 SERVICE SYSTEM FRAMEWORK

Methodology for product service system is used to study a service system and the relationship between its elements. It can help designer to analyze and present the relationship between and roles of system participators with a visual method. System map can be used in product service system design and simulation evaluation. By methodology of product service system, the designer can make service system framework in advance and design service process, elements and the interaction between service participators.

#### 4.4.1 System Organization Map

In this research, cooperation between different stakeholders bring about service experience for users at different touch-points. Stakeholders, touch-points and users' experience form a complete service system. The Huangpu District Government and public organizations and associations provide service consumers with information service and material service by network, APP, service pavilion advertisement. And the enterprises which sponsor smoking-free commercial street can promote their brands at the time when users enjoy service.

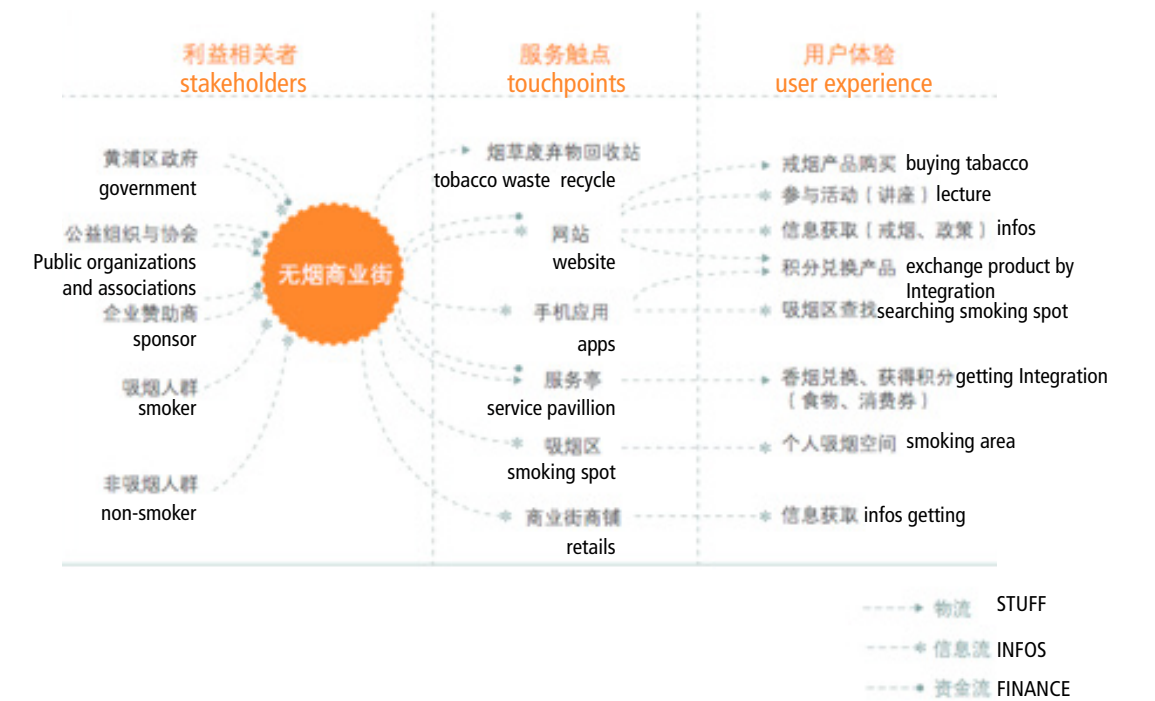


Image4.4-1 Relationship between Elements of Public Service System of Smoking-free Commercial Street

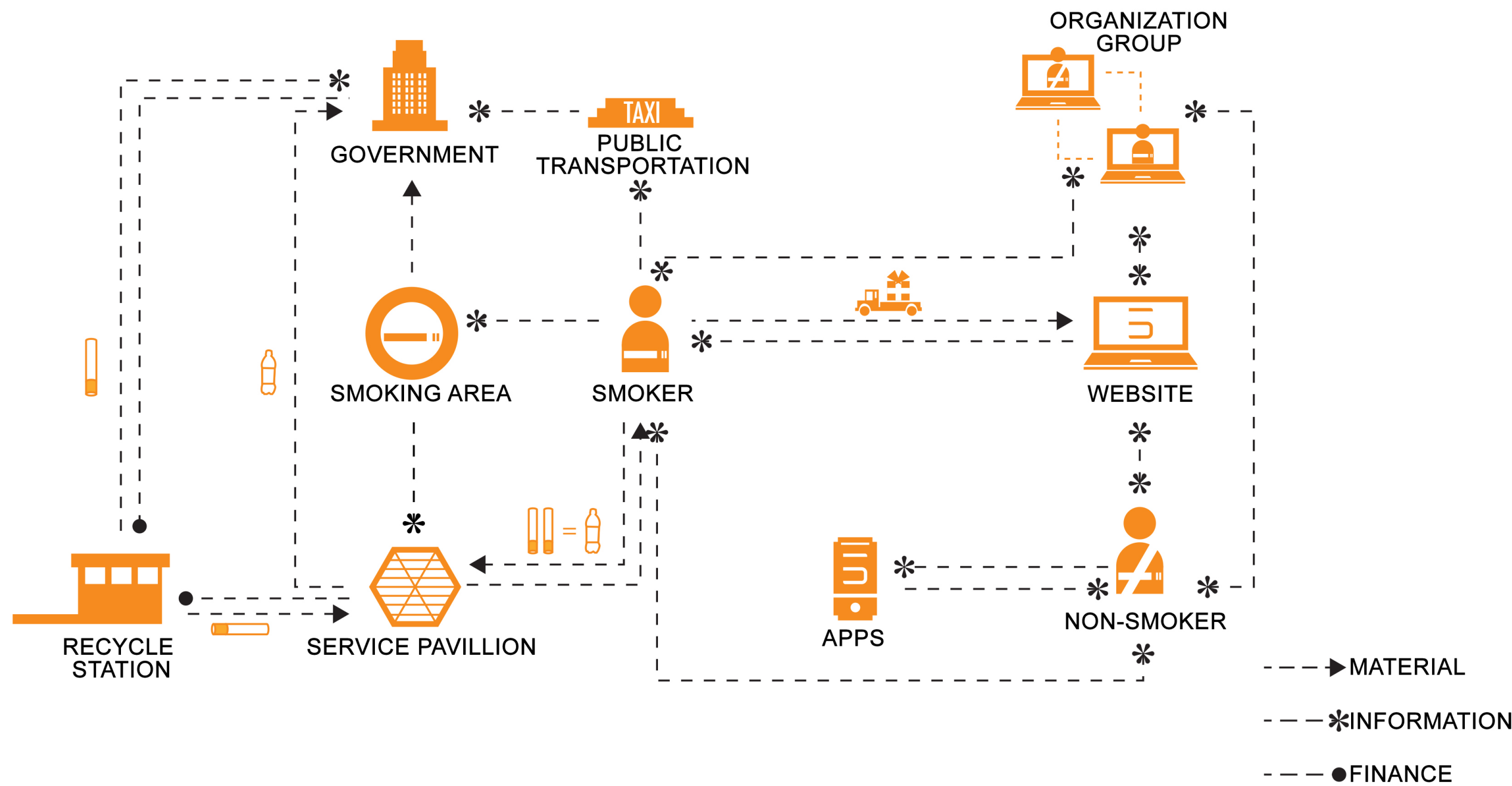


Image4.4-2 System Map of Public Service of Smoking-free Commercial Street

#### 4.4.2 Users' Experience

In this research, situational picture, model and story are used to describe service system's content and function.

In the process of improving service system, situational picture is used to describe imaginary service participators' activities. It can not only be used at the stage of design, but also at the stage of use to direct users to use service correctly.

Users' experience is a complete process, including pre-service period, service period and post-service period. Users' experience process in smoking-free commercial street is as follows: (1) Users understand service from advertisement, social media, social network and community and then choose service; (2) Users experience different service from different touch-points, for example, downloading app from smoke-spot website, watching advertisement of smoking-free commercial street from big screen in the street; exchanging product with cigarettes at service pavilion, find smoking area by app. And the touch-points can be connected together; (3) Designer get feedback from users after their use of service and then improve service.

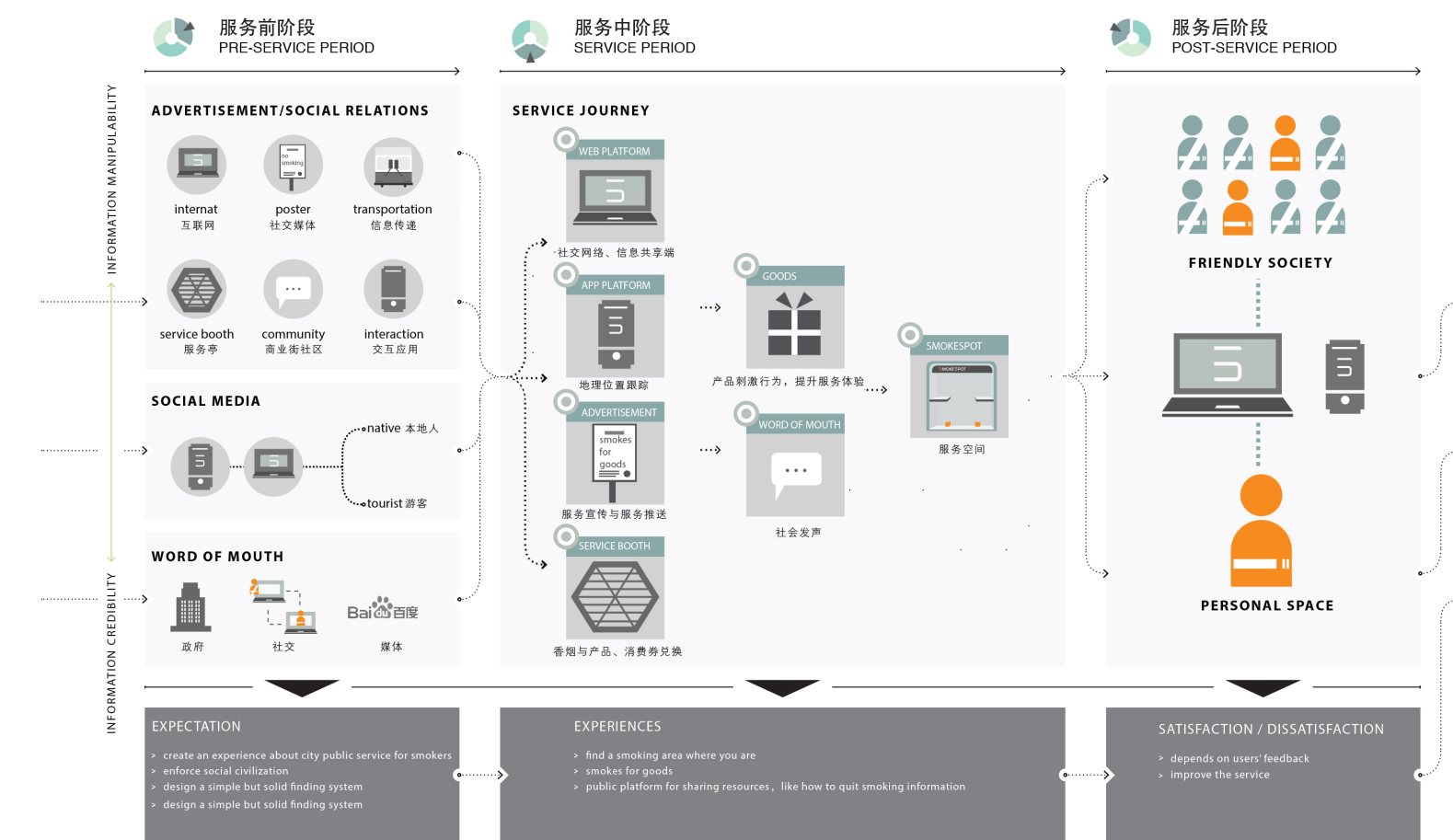


Image4.4-3 User Experience Process of Public Service of Smoking-free Commercial Street



## 4.5 PRODUCT DESIGN IN SERVICE SYSTEM

Development of service design blurs the boundary between intangible service and tangible product. We should combine organically intangible service and tangible product to improve users' experience.

### 4.5.1 Intangible Product

Urban public smoking area, APP and the website SMOKE SPOT

The purpose of SMOKE SPOT is to let smokers to find proper smoking area where they can smoke without influencing other people and to protect non-smokers from second-hand smoke.

Public service system of smoking-free commercial street establishes in mobile phone application software a virtual platform with location and navigation of smoking area. Smokers can exchange fixed product with cigarette at fixed places. They can get credits by scanning two-dimensional sign on the product and exchange award with enough credits.



Image4.5-1 Tangible Product and Intangible Service of Public Service System of Smoking-free Commercial Street



Image4.5-2 Website Map and Home Page of Smoke-spot



Image4.5-3 Information Framework of Smoke-spot APP





Image4.5-4 Map Menu of Smoke-spot



Image4.5-5 Personal Infos of Smoke-spot



#### 4.5.2 Tangible Product

##### Establishment smoking area

Firstly, the human traffic in the Nanjing Road Pedestrian Street is different at different time(see the following picture).

From 8:00-10:30, the human traffic mainly gather in the four subway stations and dynamic human traffic is more than static human traffic. From 10:30-1400, the human traffic is dispersed in the pedestrian street. From 14:00-18:30 and from 18:30-22:00, static human traffic is more than dynamic human traffic and the human traffic mainly gather in the middle of the street. This is because from 14:30-18:30, most of consumers finish shopping, entertainment and leisure activities, they want to have a rest of 10-20 minutes in the rest of area; and from 18:30 to 22:00, local residents around the pedestrian street come to it to exercise. Therefore, according to the above investigation, smoking areas are suggested to be established in different places in the pedestrian street with Century Square as the center.

Secondly, the Nanjing Road Pedestrian Street is like a fish skeleton in its shape, so smoking areas are better to be established in the joint of fish skeleton. It is suggested to increase smoking areas in the Liuhe Road, Century Square and Landmark Square which are free from motor vehicles.

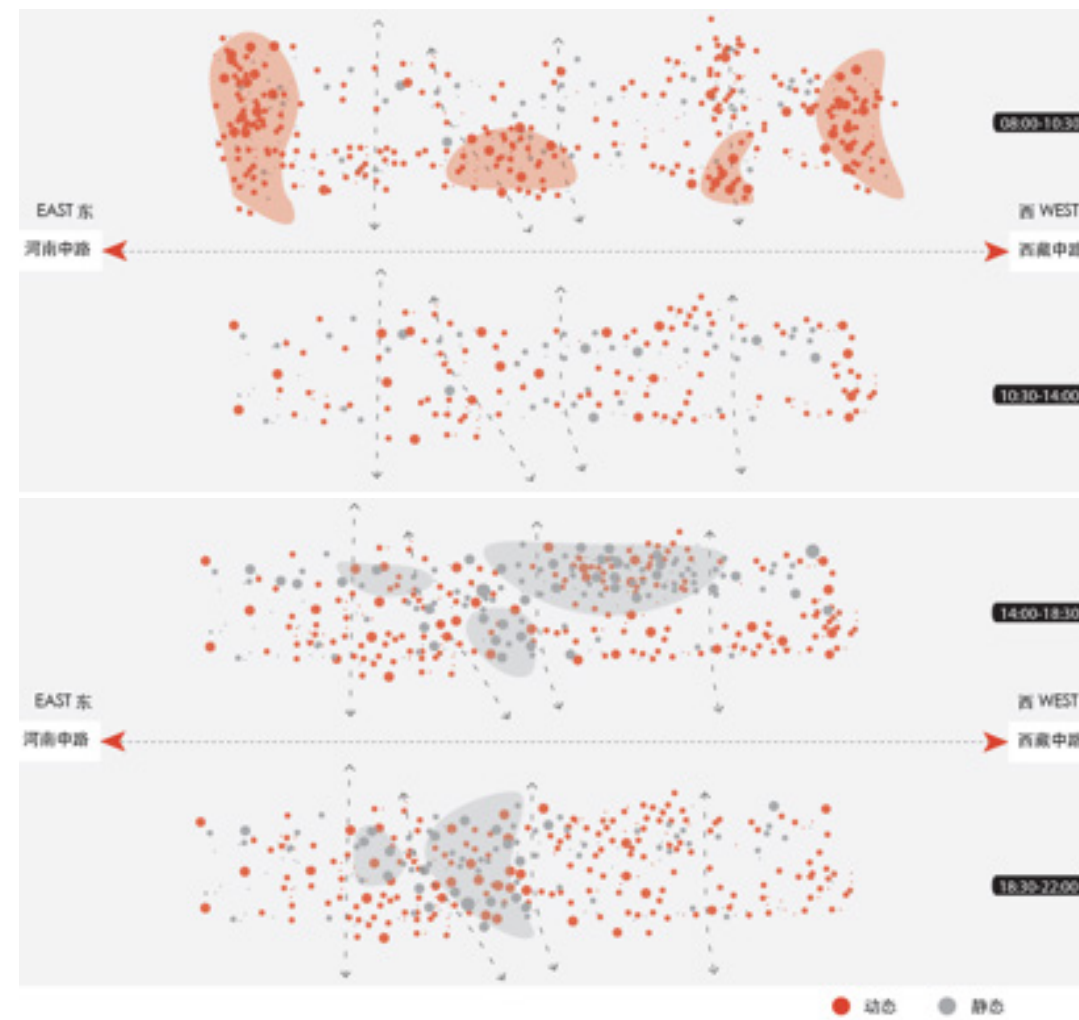


Image4.5-6 Human Traffic in the Nanjing Road Pedestrian Street at Different Time



Image4.5-7 Distribution of Smoking Area



Image4.5-8 Function Design of Smoking Booth

#### Summary

Service system design method is applied in the public service system design of the Nanjing Road Smoking-free Pedestrian Street. In the process of service design, the designer should consider feasibility and practicability. He should find the solution to problem and at the same time the common feature suitable for other urban public spaces.

The procedures of public service system design of the Nanjing Road Pedestrian Street is as follows: investigation, data collection, problem determination, service framework construction.

**CHAPTER 05**

*Conclusion*

## 5.CONCLUSIONS

City is the nucleus of social civilization, economy and politics. China now is experiencing quick expansion of population and rapid development of economy. There are many invisible social contradictions in China which result from demand's failure to be satisfied. The people's life demands in urban space change according to social changes. The purpose of this research is to improve the people's living environment and change life style by proper design which adapts to the changeable city. The author thinks that this research boasts two research focuses:

1. This thesis plans and designs the physical and virtual platforms of public service system of smoking-free commercial street with methodology of product service system design, defines the relationship between elements of the system and studies further its products and users' experience.
2. This thesis, based on investigation in the Nanjing Road Pedestrian Street, studies directly-related users(smokers and non-smokers) of smoking-free commercial street system design and analyzes the roles of stakeholders.

Innovation of this thesis:

1. This thesis studies the development status quo and potential of the Nanjing Road Pedestrian Street, positions its brand, reshape its brand image and design public service system of the Nanjing Road Smoking-free Pedestrian Street.
2. This thesis uses internal cooperation and innovation of regional ( the Huangpu District Government, the Nanjing Road Pedestrian Street ) to form urban service.
3. This thesis uses soft service to finish the task which hard smoking-control policy can not finish and improve urban public environment .

Shortcoming of this thesis:

This thesis fails to study the feedback of service

In the future, we can study the influence of service design on modern urban public space, influence of service design on the people's life style change, and how service design improve itself according to urban development, which are of significance for establishment of human-oriented and environment-friendly city.

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[http://www.3visual3.com/ad/07150046.htm`](http://www.3visual3.com/ad/07150046.htm)



## APPENDIX 1

### Internet Questionnaire about Smokers and Non-smokers

1. Your gender    A. Male        B. Female

2. Your age \_\_\_\_\_

3. Your occupation

A. Student    B. Civil servant    C. Businessman    D. Unemployed

E. Teacher    F. Clerk        G. Farmer        H. Worker

I. Medical staff    J. Retired        K. Others

4. Do you smoke    A. Yes        B. No

5. How long have you smoked

A. Less than 3 years    B. 3~5 years        C. 6~8 years

D. 9~10 years        E. More than 11 years

6. How often do you smoke (Note smokers or ever-smokers answer this question)

A. Less than one cigarette each day

B. 1~5 cigarettes each day

C. 5~20 cigarettes each day

D. More than a packet of cigarettes    20 cigarettes    each day

7. How long does it usually take to smoke a cigarette

A. 5 minutes        B. 5-10 minutes    C. More than 10 minutes

8. Do you know that second-hand smoking can lead to diseases such as coronary heart disease, lung cancer, asthma in children?

A. Yes        B. No

9. Have you ever tried to quit smoking

A. Yes, but I failed.

B. Yes, and I made it.

C. No, but I am ready to try.

D. No, and I don't want to try.

10. What's your feeling about the effects of the present smoking banning and related policies

A. Fully satisfied.

B. Satisfied.

C. Like a general.

D. Completely dissatisfied.

11. If the Nanjing Road Pedestrian Street were to be implemented a comprehensive no-smoking policy, would you support it ?

A. Strongly approval.

B. Approval.

C. It doesn't matter.

D. Disapproval.

12. When shopping in the Nanjing Road Pedestrian Street, will you smoke

A. Yes

B. No

C. It depends I will not smoke in the area where there is no-smoking slogans

13. Have you ever seen any advertisement about smoking-banning in public places

A. Yes

B. No

14. Where did you see the advertisement banning smoking in public places (no more than three choices ?

A. On television

B. On the network

C. On newspapers and magazines

D. On public posters or screens

F. Other places \_\_\_\_\_

15. In your opinion, which way of smoking-banning publicity has the most influence on you (no more than three choices ?

A. Television advertising

B. Network publicity

C. Newspapers publicity

- D. Posters on the street
- E. Others\_\_\_\_\_

16. When you see smoking-banning slogans in public, will you still smoke

- A. Yes
- B. No

17.The place you choose if you need smoke while shopping:

- A. The basic seats seats on the block
- B.The auxiliary seats flower beds, street steps, etc.
- C. Beside the trash bin

D. Others\_\_\_\_\_

18. What posture would you usually take in outdoor smoking? You may choose more than one choices

- A. Standing
- B. Leaning on something
- C.Sitting
- D. Walking posture
- E. Others

19. How long will you usually stay in the Nanjing Road Pedestrian Street

- A. Within 3 hours
- B. Half of the day
- C. Half day to a day

20.Which of the following places do you support to be smoking-banned entirely? You may choose more than one choices

- A. Restaurant
- B. Supermarket
- C. Bank
- D. Roadside rest area
- E. Others\_\_\_\_\_

21. If there is a special smoking area in the Nanjing Road Pedestrian Street what kind of function would you wish it to have You may choose more than one choices

- A. News
- B. Knowledge of smoking quitting
- C. Information of discount shopping
- D. Map of shopping
- E. Battery charging
- F. Sunshade, rain shade
- G. others

22.Which method, do you think, can be more convenient to know the exact location of smoking area

- A. SMS tracing
- B. APP application
- C. Map
- D. Others\_\_\_\_\_

**TABLE1:Consumers’ Behavior Survey in the Nanjing Road Pedestrian Street in 2013**

|                           |                            |                               |                            |
|---------------------------|----------------------------|-------------------------------|----------------------------|
| <b>Date of survey</b>     | 2012.12.14                 | 2013.5.12                     | 2013.5.15                  |
| <b>Time of survey</b>     | 24 hours                   |                               |                            |
| <b>Location of survey</b> | 1.People’s Square          | 2.Nanjing East Road           | 3.Century Plaza            |
|                           | 4.Shanghai Bund            | 5.Manhattan Square            | 6.Hualian Department Store |
|                           | 7.Yong’an Department Store | 8. Shanghai Landmark Building |                            |

|   |                                |                 |                   |                 |
|---|--------------------------------|-----------------|-------------------|-----------------|
| <b>Current Place</b>  |                                |                 |                   |                 |
| <b>Gender</b>   | 1.Male                         |                 | 2.Female          |                 |
| <b>Age</b>  | YEARS OLD                      |                 |                   |                 |
| <b>Occupation</b>   | 1.Student                      | 2.Teacher       | 3.Worker          | 4.Civil servant |
|   | 5.Clerk                        | 6.Medical staff | 7.Businessman     | 8.Peasant       |
|   | 9.Retired                      | 10.Unemployed   | 11.Others         |                 |
| <b>Marital Status</b>   | 1.Married                      |                 | 2.Unmarried       |                 |
| <b>Place of Residence</b>   | 1.Shanghai                     | 2.Other places  | 3.Around Shanghai | 4.Abroad        |
| <b>The average monthly income</b>                                   | CNY                            |                 |                   |                 |
| <b>Usual expenditure</b>  | CNY                            |                 |                   |                 |
| <b>Place of Departure</b>   |                                |                 |                   |                 |
| <b>Time of Arrival</b>  |                                |                 |                   |                 |
| <b>Planned Departure Time</b>                                       |                                |                 |                   |                 |
| <b>Means of Transportation</b>                                      | 1.Subway                       | 2.Bus           | 3.Walk            | 4.Taxi          |
|   | 5.Private car                  | 6.Bicycle       | 7.Others          |                 |
| <b>Your purpose of coming to the Nanjing Road Pedestrian Street</b> |                                |                 |                   |                 |
| 1.shopping  | 2.tour and sightseeing         |                 | 3.dining          |                 |
| 4.handling affairs  | 5.recreation and entertainment |                 | 6.others          |                 |

**TABLE2:Options for traveling purpose**

| <b>Shopping</b>   |                      | <b>Recreation and Entertainment</b> | <b>Dining</b>  | <b>Working, services</b> |
|-------------------|----------------------|-------------------------------------|----------------|--------------------------|
| Clothing          | Electronic products  | Films                               | Fast food      | Hairdressing and Beauty  |
| Shoes             | Bedding article      | Karaoke                             | Formal dining  | Bank                     |
| Bags              | Household appliances | Skittle-alley                       | Having a drink | Taking pictures          |
| Jewelry           | Sports goods         | Go sightseeing                      |                |                          |
| Cosmetics         | Furniture            | Relaxation                          |                |                          |
| Local specialties | Others               | Taking a walk                       |                |                          |
| Watch             |                      | No purpose                          |                |                          |

Please score for the following items 0~10 (one to ten)

1. Service pavilion
2. Rest seat
3. Telephone booth
4. Advertising lamp booth
5. Street signs
6. Inquiry system

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SHANGHAI