Survey Report of Wayfinding Experience Within Cities in China

Fung Ha Sandy Lai[(✉)]

Department of Information Art and Design Academy of Arts and Design,
Tsinghua University, Haidian District, Beijing 100084,
People's Republic Of China
jjsandylai@gmail.com

Abstract. Wayfinding is a kind of systematic communication system which helps people find their way by using elements of words, signage, maps, graphics, digital media, etc. This survey report focuses on how users use existing wayfinding design systems and wayfinding means in transportation services within cities in China. The method of paper surveys and online surveys were adopted to examine the effectiveness of existing wayfinding systems. Some elements of wayfinding systems such as the usability of the character design of 'Pinyin' (using Latin letters to help pronounce Chinese words), graphical information and digital means were also addressed. There were 196 valid interviews obtained in the paper survey at Beijing South Railway Station, and 35 valid responses from online survey which were given by foreigners with travel experience in China. Preliminary results indicated that the mobile internet is the most preferred wayfinding tool. Consistency, legibility and safety are important wayfinding principles.

Keywords: Wayfinding design · Mobile internet · Interactive information kiosk

1 Introduction

Wayfinding systems can be applied broadly in urban informatics, infrastructure service, transport service and so on. A definition of wayfinding was described by an experienced architect, Kelly C. Brandon: "*Wayfinding design is the process of organizing spatial and environmental information to help users find their way. It should not be considered different activity from traditional signage design, but rather a broader, more inclusive way of accessing all the environmental issues.*" [1].

Recently, the integration of new digital technologies with wayfinding design has become a hot topic in transportation services of smart city [2, 3] projects in China. These new digital technologies include mobile technology, interactive information kiosks, QR code [4], GPS systems, etc. However, some fundamental problematic wayfinding issues, such as misleading signs, irrational roadway wayfinding design, inconsistent 'Pinyin' character systems, etc., have to be attended and resolved before building a smart city project in order to avoid any inappropriate wayfinding design which may lead to an unnecessary waste of resources.

Being a part of the research project namely "Functionality and Usability of Interactive Wayfinding Design within Cities in China", this survey report aims to present the findings and the analysis from both the online survey and the field survey on wayfinding experience in China. Over two hundred local people and foreigners had participated in the two surveys. The objective was to identify the problems and shortfalls of the designs and the systems in order to find ways on improving the existing wayfinding experience. Through the findings and the analysis, it is shown that no matter what kind of new technologies are employed in the wayfinding design/system of the transportation facilities, majority of the people prefer to have a more direct, more accurate, faster and safer wayfinding path to find their way or information. The result also indicated that majority of the people rely on using the mobile internet to search destinations and information as it is more handy and effective to use.

2   Methods

In terms of the major wayfinding design elements (i.e. signage, color, text, graphical information with digital devices), field survey and online survey are used to assess the effectiveness of existing wayfinding design system in transportation service in cities within China. In both of the surveys, the target groups were invited to answer the questions given under two separate carefully designed questionnaires both with multiple-choice questions and open-ended questions.

2.1   Field Survey by Questionnaire

- Location: Beijing South Railway Station (Beijing, China)
- Target Group: Local Chinese
- Survey Period: 1st to 10th September 2014
- Sample Size: 200
- Age range: (1) 55 or above; (2) 36 to 54; (3) 15 to 35.
- Total Number of Valid Interviews: 196
- Survey Team: four (4) students from Tsinghua University

The reasons for choosing the above-mentioned survey period and location were that schools in Beijing usually start in Fall and many students and their parents from different cities are used to traveling to schools in Beijing via railway. Therefore, it was a better opportunity to meet up with the target group and to conduct the field survey during this period and location.

2.2   Online Survey

- Location: China
- Target Group: Foreigners

- Survey Period: 22th September 2014 to 5th October 2014
- Sample Size: 100
- Age Range: (1) 55 or above; (2) 36 to 54; (3) 15 to 35.
- Total Number of Valid Response: 35

The target group were foreigners who have either traveling or working experience in China. This online survey aimed to assess the usability and effectiveness of the 'Pinyin' character system in wayfinding, and preferences of using wayfinding tools and signage in transportation service within cities in China.

3   Findings and Analysis

From the survey results, the following findings were observed.

3.1   Preferences of Using 'Mobile Internet', 'Interactive Information Kiosk', and 'Information Center with Attendant'

– 74 % of local Chinese interviewees preferred to use 'mobile internet' to search for information, destinations and booking travel tickets. Majority of interviewees of the 55 or above age group tended to choose 'information center with attendant' as second choice. Only a few of the other age groups preferred to use 'interactive information kiosk'. (see Fig. 1)
– The younger age groups (i.e.15 to 35 age range and 36 to 54 age range) tended to choose 'mobile internet' rather than other means to search for destinations and information.
– In general, the reasons for not choosing 'interactive information kiosk' were that (1) interactive information kiosks are not easy to find (i.e. not enough); (2) not as interactive as compared to the attendant at the information counter; (3) interactive information kiosks have different interfaces and are difficult and slow to operate; (4) some people are not familiar with using digital technology.
– Many felt that the mobile internet was the most useful, efficient and accessible way of searching for information, e.g. via Google Maps or Baidu Maps.
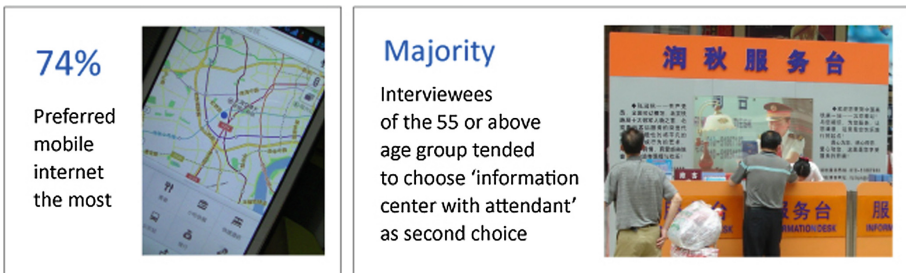

Fig. 1. Preferences of using wayfinding means for local Chinese interviewees

– The majority of people prefer to use a more direct, fast, accurate and convenient wayfinding mean to find their way, not necessarily via digital means

3.2 Graphical Information

Over 50 % of interviewees felt that most of the signage and graphical information are readable and clear. However, around 33 % expressed that some graphical information were not effective for wayfinding, e.g. the graphical arrow signs with text marking on the floor (see Fig. 2) may not be apparent as people normally glance at eye level and their views may be obstructed by the crowd walking around the railway station, especially during peak seasons like the public holiday of the *Lunar New Year* [5] or Autumn Festival.

Fig. 2. Graphical arrow signs with text marking on the floor

3.3 Effectiveness of the 'Pinyin' System in Roadway Signage for Foreigners

– 62 % respondents thought that the signage with 'Pinyin' was helpful in finding their destination. One of the common comments from the respondents is that having 'Pinyin' was especially helpful when he/she asked local people for directions. 'Pinyin' helped him/her pronounce the word accurately.
– However, it would be better if the 'Pinyin' letters were spaced out appropriately instead of all bunched together, e.g. 'Shanghailu' as one word is hard to read (see Fig. 3), whereas if it was spaced out, 'Shanghai Lu' it would be easier for foreigners to read.
– 'Pinyin' delivers little to no meaning to people who do not understand Chinese.
– The result indicates that legibility is important. Although the majority of foreign respondents felt that 'Pinyin' is useful, it seems that having no spacing in long 'Pinyin' characters may reduce the effectiveness and readability in wayfinding.
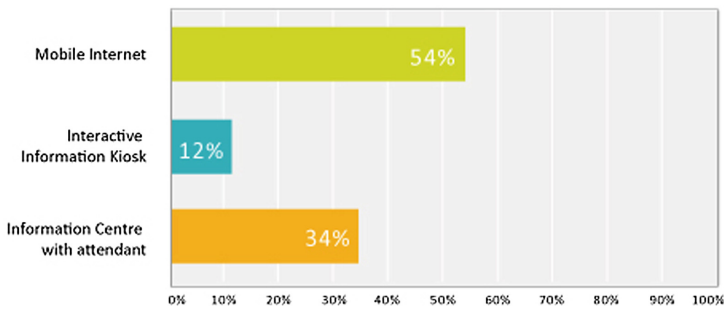
Fig. 3. Road sign with 'Pinyin'

Fig. 4. Preference of using wayfinding means for foreign respondents

3.4 Preferences of Using Wayfinding Means for Foreigners

– 54 % of respondents preferred to use 'mobile internet', whilst 34 % of respondents chose 'information center with attendant', and only 12 % chose 'interactive information kiosk'. (see Fig. 4)
– In case there was no 'mobile internet', the result showed that almost all respondents preferred to choose 'information center with attendant' or ask someone directly near them for finding their destination rather than choosing 'interactive information kiosk'. This is especially true for younger age groups, as all of them chose the information center in this case.

4   Conclusion

The online survey results reflect that the mobile internet is the key platform for releasing and receiving information for wayfinding within cities in China. The majority of local and foreign people consider the mobile internet as a more handy, direct and effective means for wayfinding. According to the data analysis, it is indicated that the usability of interactive information kiosks is low. However, interactive information kiosks may still be necessary for a minority of users.

In the both surveys, if no mobile internet is available, most of the respondents preferred face to face communication with an attendant at the information center as the second choice for getting information rather than choosing to use the interactive information kiosk'. The reasons for that may be due to (1) foreign languages are not available on the interactive information kiosks (2) insufficient platform design and poor interface support in most of the interactive information kiosks, e.g. too many interface layers; loading time is too long for each interface.

Although the mobile internet may become the dominant tool for wayfinding, elements and principles of legibility, consistency and safety still need to be explored in the research for looking at the effectiveness in wayfinding within cities in China.

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