
Community Informatics in Chongqing: A Case Study of the Real-Name and ID Requirement Policy in the Chinese Railway System

HUO RAN 霍然 AND WEI QUNYI 魏群义

ABSTRACT

This study discusses strategies for narrowing the digital divide by examining the real-name and ID requirement policy that governs online purchases of train tickets in China. Using a case study, the authors of this study asks what factors influence online ticket purchasing by railway passengers and examines how Chinese public libraries offer online ticket-purchasing assistance as a strategy for bridging the digital divide. Deploying both quantitative and qualitative methods—including questionnaires and semistructured interviews—the authors found that four factors—gender, age, social status, and privacy concerns—were most important in influencing passengers' online ticket purchasing, and that Chinese public libraries do facilitate access to the digital world.

INTRODUCTION

Over the past two decades, rail travel—especially between urban and rural areas—has grown tremendously in China. This is in part because so many people have left home to pursue employment or higher education. Travel increases especially during the summer holidays and around Chinese New Year 春节 and peaks around the Lunar New Year. The period around the Chinese New Year usually begins 15 days before this turn of the year and lasts for about forty days in total (“Chunyun,” 2012). The railroad sees an extremely high traffic load during this period. Annually, approximately three billion passengers travel between China's provinces during this time—possibly a world record. STNN 星岛环球网 reported that in the two weeks of the Chunyun 春运 period in 2008, the number of passenger journeys exceeded 22 billion. This far exceeds China's population (“Chunyun,” 2012). Although other modes of travel are available in China—including air travel, which offers superior comfort, speed, and

accessibility—rail transport is affordable and remains the most commonly used mode of long-distance transportation in China.

China's railway system is administered by the Ministry of Railways. With the recent surge in industrialization and domestic migration, the railway network has experienced some difficulties ("Chunyun," 2012). The railway system has taken some steps to reduce the difficulties that rural workers, migrant workers, and students experience during the times of heaviest travel, but few of these strategies have been very effective. Perhaps the most basic frustration rail travelers experience during the Chunyun period is that some cannot purchase tickets (even if they line up for days), because of scalping 黄牛党 and other illegal activities. To accommodate the increased demand for tickets, the ministry updated the railway ticketing system in late 2009. This update incorporated the Quick Response code on tickets and implemented the real-name and ID requirement (RNIR) 火车实名制在线购票 ("Real-Name," 2012). These changes were instituted on a trial basis beginning in early 2010. When it became clear that these changes brought about some improvements, the system was expanded.

RNIR authorizes station staff and railway securities to check all passengers' identity documents and to prevent anyone without a ticket and a valid and matching ID from boarding. Tickets can be purchased in advance via the Internet, telephone, and ticketing offices. Thus only legal ticketholders can enter the waiting area or the station area. RNIR did not completely eradicate scalpers, but it did significantly reduce their activity. A survey team from Shandong found that 54 percent of passengers were in favor of this policy because it alleviated the difficulty of travel, whereas 46 percent were opposed, stating that some people experienced problems related to information accessing and other privacy-related issues (SOPS 山东大学药学院, 2012). The most significant innovation of RNIR is that passengers can buy railway tickets from the official Web site. Because members of some groups still have problems with purchasing tickets via the Web site, the value of this system has been subject to public debate.

In December 2011, libraries helped information-disadvantaged groups purchase tickets; Li (2012) discusses in particular the experience of Xinjiang Library. In Chongqing, 38 libraries helped citizens, especially rural workers 农民工, purchase tickets. This service, shown in figure 1, resulted in 345 successfully purchased tickets. This result indicates that the Chongqing Library achieved the greatest success among all the libraries in this program (Liu 刘葵, 2012). The program was supported by Chongqing's municipal government and is considered a public welfare project for disadvantaged groups in Chongqing. The project's main goal is to help rural workers; however other citizens, especially students and commuters, are also allowed to take advantage of this program.

We used the analytical lenses of the digital divide and community in-



Figure 1. Porters or “stickmen” of Chongqing buying train tickets online with the help of three staff members of Chongqing Library in January 2012. Chongqing’s porters are famous in China because the city has many small and steep streets that vehicles cannot navigate. They are primarily migrants from nearby rural areas. Photo by Wang Hai 王海, *Chongqing News* 重庆晨报. Used with permission.

formatics (CI) to understand RNIR. We examined people’s ticket purchasing behavior and the public library’s effort to help rural and migrant workers buy rail tickets online.

LITERATURE REVIEW

CI and the Digital Divide

A digital divide has emerged along with the development of the Internet. Countless studies have considered how to narrow this gap. Indeed, the field of CI came into being to study the problem of the digital divide. CI, also known as community networking, electronic community networking, community-based technologies, or community technology, refers to an emerging field of investigation and practice concerned with the principles and norms related to information and communication technology (ICT), focusing on the personal, social, cultural, or economic development of, within, and by communities (Gurstein, 2007, p. 11; Stillman & Linger, 2009). The field is formally designated as an academic discipline within a variety of academic faculties, including information science, information systems, computer science, planning, development studies, library science, and social informatics, among others. CI draws on insights about community development from a range of sociotechnical studies. As

a cross-disciplinary or interdisciplinary field, CI focuses on the utilization of ICTs for different forms of community action, distinct from pure academic study or research on ICT effects.

Research and practice in CI address a range of concerns and topics and provide a useful analytical framework for examining economic and social inequities in relationship to various forms of technology—social networking Web sites, electronic commerce, and information exchange. All of these platforms contribute to the creation of personal and group identities. A key conceptual element and framing concept for CI is that of “effective use,” which was introduced in a critique of a research preoccupation with the digital divide as ICT “access” (Gurstein, 2003). CI is concerned with how ICTs are used in practice and not simply in facilitating “access” to them. The notion of “effective use” is a bridge between CI research (research and analysis of the constituent elements of effective use), CI policy (developing enabling structures and programs that support “effective use”), and practice (implementing applications and services in support of local communities). The multiple paths that led to this interdisciplinary field notwithstanding, its starting point is the local, historical community (Williams & Durrance, 2012, p. 118).

In China, CI as a field has been most concerned with government policy and practical advances. One such advance was the 2009 Chinese public reading project 全民阅读计划, in which the Chinese government mandated that provinces should promote public reading and that public and academic libraries should make electronic resources available to the public. This policy emerged from the view that libraries serves a range of important functions beyond promoting reading—especially in the area of public computing and computer literacy. Chinese public libraries have adopted various measures in response to this directive, many of which have been quite effective.

Rural residents are usually at a disadvantage in terms of access to network services. This is in part because they have relatively limited educational resources and in part because the scattered locations of their households invariably result in high network-deployment costs. As technology evolves, extending information and communication networks to rural areas poses a constant challenge (Teppayayon & Bohlin, 2010; Alleman, Rappoport, & Banerjee, 2010).

Chinese rural residents, especially those between sixteen and fifty years old, are likely to leave home in search of jobs in big cities instead of staying in rural areas. The National Bureau of Statistics of China reported that the number of migrant workers in China reached 262.61 million in 2012 (an increase of 3.9 percent compared with 2011). Of this figure, migrant workers who left their hometowns and worked in other provinces constituted 163.36 million (an increase of 3.0 percent over 2011), and migrant workers in China’s prosperous provinces reached 99.25 million

(an increase of 5.4 percent over 2011 data) (National Bureau of Statistics, 2013).

The relationship of rural people to ICT should not be considered solely in a rural context. As young and middle-aged rural people migrate to the cities for work, they enter an environment where the development of ICT is well under way, forcing them to adapt. In this study, we suggest that RNIR online ticketing requires cognitive and planning skills, and thus that a person's educational background and occupational status influence their online performance levels. Likewise, a person's environment can significantly influence their online behavior. And although sociocultural and politicoeconomic environments may exert influence in particular ways, they are not considered in this study. Instead, we focus on socioeconomic status and attitudinal factors: age, gender, various aspects of employment or education, and privacy concerns.

User Studies in RNIR Online

Although multiple technological measures relating to train ticketing have been implemented to meet the needs of the public, the requirements for buying tickets online and in person still differ. Obtaining online tickets requires an ID and an online bank account.

Although scholars have begun to consider both online behaviors and CI practices, studies combining the two are fairly rare in China. Even fewer studies have considered the process of buying train tickets online alongside factors that hinder a person's ability to do so. Ma, Xu, Xie, and Li (2011) classified passengers by purpose of travel and determined the main factors influencing different types of passengers. Wang (2011) established a mathematical model for calculating student ticket distribution and expounded on its actual effect. Subasi, Leitner, Hoeller, Geven, & Tscheligi (2011) designed and analyzed user requirements for a railway ticketing portal and focused on accessibility for older people. Studies have attempted to determine the needs of passengers in relationship to the railway ticket system. However, theories about users' information-seeking behavior and the specific problems they face in purchasing tickets have not received attention to date.

Users access the Internet to satisfy their need for information. This is what is known as "information-seeking behavior." Several scholars have developed models for understanding factors that affect information-seeking behavior. One of these models is "the information needs and seeking model," which proposes that information-seeking behavior is influenced by personal, interpersonal, and environmental factors. These factors can become barriers during the information-seeking process (Wilson, 2006). Wilson defines information behavior as the totality of human behavior in relation to resources and channels of information, including both active and passive information seeking and information use. When Chinese passengers need railway tickets, they can access the Internet or find an

alternative method. Once passengers access the Internet, their behavior is consistent with the influencing factors (personal, interpersonal, and environmental).

Research Objectives and Hypotheses Regarding Online Rail Ticket Purchasing

From our review of theories and practices regarding human information behavior and rail ticket purchasing, we hypothesize that a variety of personal and interpersonal factors, as well as different environments, affect rail ticket purchasing behavior:

- Age of the passenger
- Gender of the passenger
- Passengers' employment and education, particularly working conditions, place of study, type of job, and workplace
- Passenger's privacy concerns.

The overall objectives of this study are as follows:

- To determine the factors that influence people's online-ticketing behavior—with a special focus on ticket purchasers age, gender, employment/education, and context.
- To define the disadvantaged groups facing difficulty in RNIR online ticketing (Understanding who they are and how they behave will allow the government to take measures to address their specific needs, and help shape the development of future behavioral research in CI.)
- To document and reflect on the response of the public library to people's difficulties in purchasing rail tickets online.
- To ascertain whether RNIR online ticketing aggravates the digital divide.

Our findings on this topic will be presented to the Railway Ministry of China for future development.

METHODOLOGY

This study used both quantitative and qualitative methods to meet the research objectives and test the hypotheses above. We surveyed members of the public and supplemented that with interviews, and we interviewed library staff. The survey questions (provided in appendix 1), were based on sociological research methods and other similar investigations online (SOPS, 2012) and covered several areas. Questions 1, 2, and 3 concern basic demographics: gender, age, and identity (Q1, Q2, Q3). Identity is a question regarding an individual's hukou 户口—that is, their household registration—and identifies them as a migrant worker or student. Migrants are typically registered in China's rural areas but living in cities; they have less access to education and other public services, similar to undocumented workers in other countries. Question 4 is a way to measure the digital divide, asking "Can you go online regularly?" Question 5 concerns if and how often they ride the train. Questions 6 through 13 ask about online ticketing behavior and attitude.

We distributed the survey questionnaire on the Internet and in paper so as to reach people who are not online often or at all. On the Internet, we sent private messages to 100 people via two online forums, Minzhu Hu (<http://www.cqumzh.cn>) and Emuch (<http://emuch.net/bbs/>). We also sent emails to 100 people who were recipients of mass-marketing emails that we found in our own inboxes. Eighty-one people responded through these two avenues, completing an online questionnaire. We distributed the survey in paper form to 300 people in Chongqing Railway Station 重庆火车总站. Ninety-one questionnaires were returned. All but one were valid, for 90 useable responses. This resulted in an N of 171 for the survey.

We then carried out a set of semistructured interviews to supplement the survey. In other words, the interviewers had a set of prepared questions but were permitted to ask new questions based on the direction each interview took (Lindlof & Taylor, 2002, p. 183).

We also carried out semistructured interviews of CI practitioners, namely, two staff members of Chongqing Library 重庆图书馆. We established contact with Mr. Zeng Youhe 曾友和, assistant curator and spokesman for Chongqing Library, and Mr. Zhao 赵, a staff person at the Information Center of Chongqing Library. Mr. Zhao was one of those responsible for helping visitors acquire tickets. We spoke with each of them twice. They also provided information about 67 individuals who bought tickets online with the help of the library. The interviews focused on six questions, as will be seen in the section below.

FINDINGS

Findings were drawn from the survey data, the library's registration data on the patrons they helped, and the interviews with the two librarians. First we will consider the survey data.

Table 1 shows the basic demographic categories, going online and taking the train. (Going online is this study's way of measuring the digital divide.) First, the respondents were fairly balanced as to gender. More than half the respondents are 18–30, perhaps because half the surveys were collected online, but also because China's population is young.

Every demographic subgroup except one tends to go online regularly, reporting rates between 72 percent and 100 percent. Among those 51 years or older, only 29.4 percent report going online regularly. Likewise, every demographic group but one reports very high rates of taking the train. Among those 51 years or older, 24 percent never take the train. This report probably reflects the fact that official retirement age is between 50 and 60, depending on certain categories. But according to our data, three quarters of this age group does take the train. It is worth noting that the majority of respondents only take the train 1–2 times a year (54 percent); with this frequency of travel, it would be very easy to learn how to use the railway Web site, but then forget.

Apart from the three respondents who are under 18 years old, the migrant workers and students report the most frequent use of the train. As we have said, these are also people who face economic and social barriers due to their rural hukou. The migrant workers are least likely to go online regularly, but 72 percent is still a strong majority of those respondents.

Table 2 focuses primarily on train ticket purchasing behavior. This includes online ticketing and other purchasing channels. Again comparing the demographic groups, strong majorities of each group but two would indeed buy tickets online, suggesting that the railway was successful in opening this channel. But those 51 years or older and migrant workers report the lowest use of online ticketing, only 24 percent and 50 percent, respectively.

The most popular other ways to buy tickets are at the ticket office and through friends or relatives. Here people 51 years or older stand apart as all relying on friends or relatives (100 percent). Migrant workers are the lowest in this practice (44 percent), perhaps because many of their friends or relatives are not nearby. These two demographic groups also make the lowest use of phone purchasing.

Also in table 2 is a different question that concerns the digital divide. Only 11 percent of all the respondents say they do not use computers. The 51-years-and-older group (65 percent do not use computers) and the migrant workers (29 percent) are the outliers here. These numbers line up well with their answers (30 percent and 72 percent, respectively) to the question "Can you go online regularly?" and confirm that these two groups experience some digital divide (less use of computers/Internet) relative to other people. Answers to two other questions concerning slow Web sites and compromised privacy suggest that people have these complaints about the Internet.

Table 3 focuses primarily on attitudes toward online train ticketing. A total of 85 percent of all respondents find online ticketing more convenient or as convenient compared to other ways of buying tickets; a strong

Table 1. Train Travel and Digital Divide, by Demographic Group

	Can go online regularly (Q4)	Take the train only 1-2 times a year (Q5)	Take the train at least 5 times a year (Q5)	Never take the train (Q5)
Men (n = 76)	84%	46%	49%	5.3%
Women (n = 95)	85%	61%	32%	7.4%
Under 18 years old (n = 3)	100%	0%	100%	0%
18-30 years old (n = 99)	94%	59%	38%	3.0%
31-50 years old (n = 52)	85%	48%	44%	7.7%
51 years old or older (n = 17)	29%	59%	18%	24%
Migrant worker (n = 32)	72%	38%	63%	0%
Migrant student (n = 42)	98%	36%	57%	7.1%
Others (n = 97)	84%	68%	24%	8.3%
All (n = 171)	85%	54%	39%	6.4%

Table 2. Train Ticket Purchasing Behavior, by Demographic Group

	Would buy train tickets online (Q6)	Other ways I buy tickets (Q8)			Factors affecting my online ticketing (Q9)		
				Rely on friends or relatives to buy	I do not use computers	Official Web site or network is congested and slow	Worry that my privacy is compromised
		By phone	At ticket office				
Men (n = 76)	61%	41%	72%	33%	12%	16%	50%
Women (n = 95)	68%	38%	67%	49%	9%	20%	54%
Under 18 years old (n = 3)	67%	33%	100%	33%	0%	67%	100%
18-30 years old (n = 99)	72%	45%	77%	42%	3.0%	8.1%	58%
31-50 years old (n = 52)	65%	37%	58%	33%	7.7%	21%	44%
51 years old or older (n = 17)	24%	12%	59%	71%	65%	59%	35%
Migrant worker (n = 32)	50%	28%	69%	28%	19%	38%	34%
Migrant student (n = 42)	83%	60%	81%	41%	0%	4.8%	60%
Others (n = 97)	62%	34%	65%	47%	12%	18%	55%
All (n = 171)	65%	39%	70%	42%	11%	18%	52%

majority or all of each demographic group feel this way. Likewise, people's overall evaluation of online ticketing is mostly positive (54 percent) with some neutral (39 percent) and only a few (6.4 percent) feeling negative about online ticketing. Every demographic group follows this pattern, although people 51 or older and migrant workers are the most negative (18 percent and 16 percent, respectively).

We also analyzed the data about 67 people whom the Chongqing Library helped to buy a train ticket. We found one significant correlation: older people are less likely to have an online bank account. Since this is a requirement for purchasing train tickets, this group tends to be less prepared than others to use the online ticketing service.

From answers to our other survey questions and from interviews done with people, we conclude that the public strongly wants improvements in the railway's Web site and they want to use it to buy tickets. Respondents also think that there are inequities built into the system. A majority of

Table 3. Train Ticket Purchasing Attitudes, by Demographic Group

	Online ticketing more or as convenient compared to other ways (Q7)	Positive	Neutral	Negative
Men (n = 76)	80%	54%	39%	6.6%
Women (n = 95)	88%	55%	39%	6.3%
Under 18 years old (n = 3)	100%	100%	0%	0%
18-30 years old (n = 99)	91%	55%	43%	2.0%
31-50 years old (n = 52)	77%	48%	40%	12%
51 years old or older (n = 17)	71%	65%	18%	18%
Migrant worker (n = 32)	84%	44%	41%	16%
Migrant student (n = 42)	95%	60%	36%	4.8%
Others (n = 97)	80%	56%	40%	4.1%
All (n = 171)	85%	54%	39%	6.4%

the sample felt online ticketing was easy and saves time, and that it was more efficient and enabled better management. Quite a few also felt that it could end abuses by the railway ministry and would safeguard civil and equal rights. As to problems, roughly half the sample agreed that there were problems such as people not able to use the Internet, people not having ID cards, ID cards getting stolen, ticket scalping, and personal information not being secure online. As table 2 shows, privacy is a concern.

Interviews with the librarians reveal that Chongqing Library has some important characteristics—such as high-speed Internet connection, free resources, bus advertising, well-educated librarians, and a comfortable environment. The interviews told a lot about the Chongqing Library's help sessions for Chunyun 2012 train ticket buyers. To share this effectively, the librarians' comments are provided below in shortened form.

Although the user data was incomplete, the librarians recalled that most patron addresses on their ID cards were rural. This echoes our survey findings with regard to migrants. One of the library staff reported that it was harder to help women than men, and harder to help older people.

The librarians also suggested that occupation, official Web site congestion, and privacy concerns shape RNIR online usage. Most passengers do not have many years of formal education. Individuals over 50 years old are less likely to purchase tickets online—even if they know how to use computers. Young factory workers and company employees usually have finished high school and typically are familiar with using the computer and information seeking. But some workers who do not have online bank accounts go to libraries for free service. They need an account (which the librarians can help patrons open), free computer support, and a high-speed network.

Here in brief fashion are the other points made during the library staff interviews, question by question.

Q1. How long did the process take?

The program ran from January 11, 2012, to February 28, 2012, covering the beginning and the end of the Chunyun period. It aimed to help visitors learn how to use computers to purchase tickets for themselves without guidance. But even after the Chunyun period, individuals are permitted to make use of our facilities and services—computers, the Internet. Librarians are happy to help all patrons, especially rural workers.

Q2. How many people successfully purchased tickets? How did you determine ticket-buyers' social status, especially when it came to rural workers or the information-disadvantaged?

In Chongqing, 354 tickets were sold during the period, 150 of them through the Chongqing Library. To purchase tickets online, visitors only needed to show their ID and to pay the ticket price to a librarian. Librarians identified rural workers through the permanent home address information listed on their ID cards. In addition, we know that most white-collar workers and students already know how to buy tickets online—and they generally have access to computers at school, home, and office. Thus we assumed that anyone seeking the help of librarians to buy online tickets fit into the target group.

Q3. What happened during your operation? What kinds of feedback did you receive?

There was one problem during the process. The staff of the Information Center helped some patrons open online bank accounts to purchase tickets. However, one person wanted a refund after a librarian opened his account. But refunds are not available right away. The visitor did not understand this procedure and complained about this program for several days—until he got his money back. Apart from that incident, passengers were satisfied with this program because it really met their needs.

Q4. Will this program be in effect in the next Chunyun period?

The municipal government will launch a similar program before the Chunyun period of 2013. We think this program will be better than the first year's program. But before the implementation of this additional project, some measures should be taken to address the inadequacies of the previous program. Project staff should, for instance, visit places where rural workers gather. They should also conduct training courses to enhance the computer skills of rural workers.

Q5. What factors influenced the ticketing process, particularly with regard to the information-disadvantaged group?

We found that people over forty years old were most disadvantaged of all participants; they knew least about how to use new technology and

computers, and they had a great deal of trouble with RNIR online ticketing. People younger than forty—especially those who work in factories or companies—were far less confused by the process. They probably have a high school or college education.

Q6. Did any rural worker come back to learn more about other functions and resources in your library?

A number of the rural workers who learned to buy online tickets are interested in other free services provided by the library—such as borrowing books and using the e-reading room. This indicates that this sort of public program can bring the information-disadvantaged into libraries as new users.

CONCLUSIONS AND NEXT STEPS

To start, our findings indicate that all the demographic groups in our sample use the train and are positive to neutral about the online ticketing with real-name and IDs required. Our sample has shown particular demographic groups that experience less or no use of computers and the Internet—a digital divide—and are less likely to use online ticketing. And our statistics suggest that the other demographic groups include individuals who are digitally divided as well, just a smaller percentage. Plus, people who take the train infrequently are the majority, and they may need to be reminded how to purchase tickets online.

Particular demographic groups that seem at a disadvantage for using online ticketing are people over 50 and migrant workers. Without buying online, they have to go to the ticket office and spend time they don't have waiting in line; or they must depend on other people, who are perhaps too far away to help; or, at least under the old system, they could fall prey to ticket scalpers.

The library staff and the municipal government seem to feel that their computer help program is a success, otherwise it would not be repeated. Doing outreach or taking help to where migrant workers are is a great idea to improve the numbers of people the program can serve. More outreach to explain the details so that refunds do not become a problem for patrons or librarians, and training to help prepare librarians for all kinds of learners—women for instance—could be helpful. Digital divides such as we found can be overcome with this kind of program.

The patrons, speaking through our survey, and the librarians have much to tell the railway to help them improve the online ticket service. Improved functionality of the site (response speed) and ease of use, attending to privacy concerns, and promoting the service and the library's ability to help would help everyone travel more smoothly and happily during Chunyun and year round.

As with all studies, ours had some limitations. First, we did not analyze every group of responses in the questionnaire. Thus, it is possible that

some potential factors were not discovered. Second, it is possible that our questionnaire did not elicit the real thoughts of people who use online train ticketing; item setting, mentality, comprehension ability, or other unknown problems may have affected the results. Some individuals were reluctant to answer the online questionnaire, and many of the Chongqing Library's purchaser information forms were incomplete.

From the CI perspective, we report here that the technological literacy skills required to use the RNIR online ticketing system has created a digital divide. Many passengers find the system convenient, and many also have concerns. Railway management needs to do a better job of addressing passengers' concerns. Although some older people can use computers to access the Internet and some of them do have online bank accounts, they also voiced privacy concerns regarding that account and saw the process of account registration as complicated. People over age 50 show a positive or neutral attitude toward the convenience of online train ticketing (71 percent), but 65 percent say they do not use computers, and only 24 percent of our sample would purchase tickets online. This is an opportunity for public libraries. The government and other organizations should focus on information literacy in specific social strata such as older people and migrant workers.

Public libraries devote themselves to narrowing the digital divide when they help disadvantaged people access information resources. This study also suggests that public libraries, railway ministries, the government, and other organizations in China could do more to bridge the digital divide. All individuals should be able to benefit from a digitized society.

Results suggest that the Chinese railway ministry should adopt advanced technologies to ensure passenger privacy. Also the official Web site should be upgraded to meet the needs of particular groups. The entire Chinese railway network should offer online ticketing—similar to airlines, which allow passengers to purchase specific tickets online without paper documents. More importantly, technology should be developed to meet the needs of particular (disadvantaged) groups. Further research should address the structural and governance aspects of online train ticketing, as well as the role of leadership and authority in its operation. Larger community networks could be developed to enhance passengers' understanding of the online ticketing process. It would also be useful to know more about the formation, operation, limitations, and benefits of online ticketing with its real-name and ID requirement, in actual practice.

ACKNOWLEDGMENTS

The authors gratefully acknowledge Professor Yu Liangzhi 于良芝 of Nankai University 南开大学 for her guidance. Utmost gratitude also goes to Professor Kate Williams of the University of Illinois. We also wish to thank Dr. Wu Hanhua 吴汉华 of Peking University 北京大学, the librarians at

the Chongqing Library, and the devoted researchers and graduate students at the Library of Chongqing University 重庆大学图书馆. The authors express their gratitude to Peking University Library 北京大学图书馆 for hosting the 2012 eBeijing Conference on International Community Informatics, as well as to the authors and graduate students who joined the conference. Finally, the authors wish to thank those who strongly supported the completion of this study, especially Huo Yunsheng 霍云生 and Li Huijun 李慧筠.

Appendix 1. Questionnaire for Members of the Public, Distributed Online and in Chongqing Railway Station

1. Gender 您的性别
 - a. Male 男
 - b. Female 女
2. Age group 您的年龄
 - a. Under 18 岁以下
 - b. Between 18 and 30 岁
 - c. Between 30 and 50 岁
 - d. 50 or above 岁以上
3. Social role 您的身份是
 - a. Migrant worker 外来工作者
 - b. Migrant student 外地学生
 - c. Other 其他
4. Do you go online regularly? 平日是否经常接触网络
 - a. Yes 是
 - b. No 否
5. How often do you travel by train 乘坐火车的频率
 - a. Very often (at least 1/month) 频繁 (每月至少1次)
 - b. Often (at least 5-6/year) 经常 (每年5-6次)
 - c. Occasionally (only 1-2/year) 偶尔 (每年1-2次)
 - d. Never take the train 从不坐火车
6. Would you buy train tickets online? 您是否会用网络进行购票
 - a. Yes 是
 - b. No 否
7. Is online ticketing convenient for you? 网络购票是否带来方便
 - a. Yes, it is easier than before 是的, 票比以前好买了
 - b. No, it is more trouble 没有, 感觉更加麻烦
 - c. As usual 还是和以前一样
8. Other than online ticketing, how do you choose to get tickets? (check all that apply) 除了网购, 您的其他购票方式(多选)
 - a. Telephone 电话购票
 - b. Ticketing office 排队购票
 - c. Rely on family or friends to purchase 亲友代买
 - d. Other 其他
9. Which factors will influence your online ticketing process? (check all that apply) 影响你网络购票的因素 (多选)
 - a. I don't use computers 不会使用电脑
 - b. Heavy network congestion (official Web site) 网络速度过慢 (官网拥堵)
 - c. I worry that my privacy is compromised 担心隐私被泄露
 - d. Other factors 其他
10. The advantage of online ticketing (check all that apply) 网络购票的优势
 - a. The civil right of ticketing is ensured 维护了公民平等购票的合法权利
 - b. It is easily handled and I don't need to wait in a ticketing line 网络操作简单, 省去排队痛苦

- c. The efficiency of the ministry is upgraded, and the management is easier
提升铁路局工作效率, 方便管理
- d. The ministry cannot abuse of its authority anymore
杜绝内部购票这种不公平行为发生
- e. Other advantages 其他
11. Which problems do you think still exist in RNIR online ticketing? (check all that apply) 您认为网络购票的问题是?
- a. Some people don't know how to use the Internet 有的人不知道如何上网
- b. ID card may be stolen 身份证可能被他人盗用
- c. Ticket scalping may not be completely prevented 依然无法阻止内部购票行为
- d. Some passengers may not have an ID to get online tickets
部分没有身份证的人难以买到网上车票
- e. Private information may not be secure on the railway Web site
身份信息可能会被泄露
- f. Other problems 其他
12. Please evaluate online ticketing 您对网络购票的评价?
- a. Positive, it solves ticketing problem 利大于弊, 解决一票难求问题
- b. Negative, it causes inefficiency and is resource consuming 弊大于利, 效率低下和资源耗费
- c. Indifferent, it depends on the future practice 利弊相当, 要靠完善和检验才知道
13. Do you have any suggestions regarding online ticketing? (check all that apply)
对网络购票这种方式有何建议? (多选)
- a. Promote the ticketing Web site 完善网站建设
- b. Technologies to prevent information from being stolen from passenger's ID
多重技术保护乘客身份隐私
- c. Publicizing and training to encourage more people to use online ticketing
宣传和培训, 让更多人了解
- d. Open more ticketing branches before the high peak 高峰期前多开设现场购票点
- e. Other suggestions 其他

REFERENCES

- Alleman, J., Rappoport, P., & Banerjee, A. (2010). Universal service: A new definition? *Telecommunications Policy*, 34(1-2), 86-91.
- Babbie, E. R., Halley, F., & Zaino, J. (2000). *Adventures in social research* (4th ed.). Thousand Oaks, CA: Sage.
- Chen, L. (2012, January 12). *Don't know how to purchase train tickets online? The public library can help you without charges*. CQCB. Retrieved December 25, 2012, from <http://cqcbepaper.cqnews.net> (李晟. 不会上网购票? 图书馆有人免费帮 [EB/OL]. 重庆晨报).
- Chunyun. (2012, February). In *Wikipedia*. Retrieved December 16, 2012, from <http://en.wikipedia.org/wiki/Chunyun>
- Clarke, G., & Wallsten, S. (2002). *Universal (Ly Bad) service: Providing infrastructure services to rural and poor urban consumers*. World Bank-Development Research Group Policy Research Working Paper 2868. Abstract retrieved March 23, 2012, from Social Science Research Network Database.
- Coonan, C. (2006, January 28). Two billion journeys in China's own great migration. *The Independent*. Retrieved November 21, 2012, from <http://www.independent.co.uk/news/world/asia/two-billion-journeys-in-chinas-own-great-migration-524853.html>.
- Gurstein, M. (2007). *What is community informatics? (And why does it matter)*. Milan, Italy: Polimetrica.
- Gurstein, M. B. (2003). Effective use: A community informatics strategy beyond the digital divide. *First Monday*. Retrieved November 21, 2012, from http://firstmonday.org/issues/issue8_12/gurstein/index.html
- The investigation of real-name ticket sales was successfully achieved. (2012, February 13). Shandong University, School of Pharmaceutical Sciences (SOPS). Retrieved September 21, 2012, from <http://www.pharm.sdu.edu.cn/news/model/display.php?id=7168>. (“快乐回家”火车票实名制调查团队圆满完成调研 [EB/OL]. 山东大学药学院).
- Li, A. (2012, January 16). *Focus on the tickets purchase from public libraries*. Xinhua Net. Re-

- rieved September 21, 2012, from http://www.news3http://www.news365.com.cn/shipin/tbj/201201/t20120116_214431.html.65.com.cn/ (李爱斌. 新闻特写: 图书馆里订到的火车票 [EB/OL]. 新华社).
- Lindlof, T. R., & Taylor, B. C. (2002). *Qualitative communication research methods* (2nd ed.), Thousand Oaks, CA: Sage.
- Liu, X. (2012, January 12). 38 Public libraries in Chongqing help rural workers to purchase train tickets online. *China News*. Retrieved September 21, 2012, from <http://www.chinanews.com/sh/2012/01-12/3600017.shtml> (刘羨. 重庆38家图书馆免费帮农民工网上“抢购”火车票 [EB/OL]. 中国新闻网新闻中心).
- Ma, N., Xu, L., Xie, F., & Li, X. (2011). Reduction of the influential factors of railway passenger demand based on rough set. *Applied Mechanics and Materials*, 58–60, 112–117.
- National Bureau of Statistics of China. (2013, February). *Statistical communiqué of the People's Republic of China on the 2012 national economic and social development*. Retrieved June 8, 2012, from http://www.stats.gov.cn/was40/gjtjj_en_detail.jsp?searchword=migrants&channelid=9528&record=3
- Real-name ticket sales for all trains. (2012, January 2). *China Daily*. Retrieved May 26, 2013, from http://www.chinadaily.com.cn/business/2012-01/02/content_14370504.htm
- Stillman, L., & Linger, H. (2009). Community informatics and information systems: Can they be better connected? *The Information Society*, 25(4), 1.
- Subasi, O., Leitner, M., Hoeller, N., Geven, A., & Tscheligi, M. (2011). Designing accessible experiences for older users: User requirement analysis for a railway ticketing portal. *Universal Access in the Information Society* 10(4), 391–402.
- Tapia, A., Maitland, C., & Stone, M. (2006). Making IT work for municipalities: Building municipal wireless networks. *Government Information Quarterly*, 23(3–4), 359–380.
- Teppayayon, O., & Bohlin, E. (2010). Functional separation in Swedish broadband market: Next step of improving competition. *Telecommunications Policy*, 34(7), 375–383.
- 22 Billion person-times of people chose land transportation in the Chunyun of 2008. (2008, January 16). STNN.CC. Retrieved September 21, 2012, from http://www.stnn.cc/society_focus/200801/t20080116_713767.html. (年春运22亿人次选择陆路交通工具 [EB/OL]. 星岛环球网).
- Wang, Q. (2011). Study on student ticket distribution model and its particle swarm optimization algorithm. In *International Conference on Internet Computing and Information Services* (pp. 428–430). Hong Kong: ICICIS.
- Williams, K., & Durrance, J. C. (2012). Community informatics. In K. Williams, H. Shenglong, Y. Hui, & A. Alkalimat (Eds.) *Community informatics in China and the US: Theory and research* (pp. 118–129). Beijing: National Library of China. (韩圣龙, 阎慧. 社群信息学: 理论与研究 [M]. 北京: 国家图书馆出版社).
- Wilson, T. (2006). 60 years of the best in information research. On user studies and information needs. *Journal of Documentation* 62(6), 658–670.

Huo Ran 霍然 is currently a master's student in the Graduate School of Economics and Business Administration at Chongqing University, where she has studied library and information science since 2010. As a research assistant in the Library and Information Science Research Institute of Chongqing University, she has joined several research projects and presented different works on library users' studies. Her research interests include information behavior, students' information literacy, community informatics, and social science. In addition, Huo Ran has published on the topic of information seeking behavior.

Wei Qunyi 魏群义 is assistant director and researcher at Chongqing University Library where he teaches courses on library user studies. He earned his PhD in materials science and engineering after graduating from Chongqing University. His research interests include theoretical and practical studies of digital libraries, mobile libraries, Library 2.0, and materials informatics. Dr. Wei has published twenty-one research papers in journals, led several research projects, and lectured and written widely on the mobile library and Library 2.0. Among his articles are "A Review of Users' Information Behavior: Theories and Practical Studies," "Review of Theoretical Research and Practical Applications of the Mobile Library," and "Statistical Analysis of Research Hotspots in China's Information Science Based on Dissertations in Recent Decades."