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What affects the User Sharing Degree of Public Transportation Apps in China? - A Comparative Study between Government App and Business App

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Abstract In order to explore the factors influencing the user sharing degree of government apps in the field of public transportation, this study selected government app Beijing One Card and business app Bus Code (Beijing area) in the same field as the comparative analysis objects, and based on the network questionnaire survey and multiple regression analysis, explored the differences of factors influencing the user sharing degree of the two apps. It is found that system quality and platform promotion effect have a significant positive impact on the user sharing degree of two apps, while service quality has no effect on the user sharing degree of two apps. User preference affects user sharing degree of government app Beijing One Card, but has no effect on business app Bus Code (Beijing area). Since the downloads of Beijing One Card app is much higher than the downloads of Bus Code app (Beijing area), this paper believes that user preference determines that users are more inclined to choose government apps instead of business apps. In addition, government apps and business apps not only need to ensure the system quality and pay attention to the platform promotion effect, but also need to

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focus on the user's preference and guide the direction of the user's preference in a normal way, so as to improve the user sharing degree and expand the promotion scope of two kinds of apps.

Keywords User Sharing Degree · Government apps · Business apps · User Preference

Introduction

In order to provide more convenient services to the users, more and more government apps are running online. However, government apps have not been fully popularized among the people, and their user sharing degree is also very low, which directly affects the promotion scope of government apps. At the same time, business apps are also providing similar service functions to compete for active users. Take the field of public transportation as an example. In Beijing, there are lots of public transportation apps, such as Bus Code and Beijing One Card. Some public transportation apps have high user sharing degree and are well promoted, while others have low user sharing degree and slowly disappear from the app store.

What factors affect the user sharing degree of government apps and business apps? To sum up, in the existing research, scholars mostly discuss the topic of "sharing" from two dimensions: user sharing willingness and user sharing behavior.

Existing literature studies about user sharing willingness focus on users' psychological feelings. For example, Chen Minghong et al. (2017) studied the continuous willingness of social media users to share information based on the theory of perceived value. They believe that information sharing value, information quality, and user habits have a significant positive impact on information sharing willingness, while immersion experience has no effect on information sharing willingness, and user habits have a negative moderating effect on the relationship between perceived value and information sharing willingness. Wang Shaojian & Wang Yueqi (2015), based on information behavior theory and consumer behavior theory, constructed a research model of users' content sharing willingness, of which independent variables include perceived content quality, perceived risk, and trust belief in social media. They believe that users' perception of content quality affects their perception of risk and their belief in trust, which together affect the ultimate sharing willingness.

Existing research literature about user sharing behavior focuses on the actual actions of users. For example, Li Chen & Huang Can (2015), taking user motivation as the starting point, constructed a WeChat user information sharing behavior model with three levels: realistic stimulation demand motivation, individual psychological demand motivation and technical service support. They believe that dependence, generalization trend, and convenient life are the important factors that affect the information sharing behavior of WeChat users. Liu Chen et al. (2013) used the classification algorithm based on association rules to predict the information sharing behavior in online social websites. And taking Sina Weibo as an example, the forwarding behavior of Sina Weibo users is predicted.

These two dimensions, user sharing willingness and user sharing behavior, are based on the user-centered perspective. However, in the study of user sharing degree of government and business apps, the supplier (government or firm) and the promotion process are also very

important factors. If the three dimensions are combined and considered at the same time, the study will be more complete. It is worth noting that users have both citizen attribute and consumer attribute. This study combines the idea of 4P theory of Marketing, and studies the difference of influencing factors of user sharing degree between government apps and business apps by combining the supplier (government/firm), the demander (users) and the intermediate process (platform promotion effect), which makes up for the deficiency of related research. In this study, Beijing One Card app and Bus Code app (Beijing area), which have the highest user downloads in Beijing area pre-survey, were selected. Beijing One Card is launched by Beijing Municipal Traffic One-card Co., Ltd., which is a government app. The Bus Code was launched by Tencent Technology Co., Ltd., which belongs to the business app. Through comparative analysis, focusing on users' real experience and actual feedback, this paper explores the main factors affecting the user sharing degree of these two kinds of app users, and summarizes the improvement suggestions for government apps and business apps, which has important practical significance for further improving the performance of two kinds of apps.

Literature Review and Research Hypothesis

Whether it is a government app or a business app, its essence is service, and app is only the carrier of service. The user sharing degree of apps essentially reflects the decision-making behavior that users get higher satisfaction from app and share it with others. Previous studies mainly study the factors influencing user sharing degree from the following perspectives.

The first perspective is the study of users sharing willingness. This kind of research generally pays attention to the influence of information content on users' willingness to share, mainly from the aspects of information emotion type (Wan Xiaoyu et al., 2019; Zhang Hong et al., 2019) and information quality (Chen Minghong et al., 2017; Wang Shaojian & Wang Yueqi, 2015). Wan Xiaoyu et al. (2019) studied the influence of emotional types of Weibo information on users' willingness to share. They pointed out that users are more willing to share emotional information than non-emotional information; Compared with negative emotional information, users are more willing to share positive emotional information. Zhang Hong et al. (2019) also adhered to the views of Wan Xiaoyu et al. Based on emotional contagion theory and information processing theory, they investigated the influence of information emotion types on users' willingness to share through three role-scenario simulation experiments based on Weibo information of hot events. On the basis of the conclusion that they have a higher willingness to analyze positive emotional information, they find that interest plays a significant mediating role in the influence of information emotional types on sharing willingness, and this role is regulated by the way of information acquisition. With active acquisition, users are more interested and more willing to share. Chen Minghong et al. (2017) constructed a structural equation model based on perceived value theory, information quality theory and immersion theory, and held that information sharing value, information quality, and user habits have significant positive effects on information sharing persistence willingness, while immersion experience has no effect on information sharing persistence willingness, and user habits have negative moderating effect on the relationship between perceived value and information sharing persistence willingness. Wang Shaojian & Wang Yueqi (2015) believe that the existing research on Weibo

is mainly applied research. This kind of research pays more attention to how Weibo has changed people's lives, but less attention to the mechanism of this change, that is, why people forward Weibo and what factors prompt people to forward it. They pointed out that the forwarding intention of Weibo users is influenced not only by users' perception of the shared content itself, but also by users' perception of the risk of sharing, and by users' trust in the content publishers. Some scholars also studied from the perspectives of trust and interest. Li Liwei et al. (2019) based on the trust dimension, from the perspective of sharing economic service users and trust objects, divided trust into three types: trust in sharing platform, trust in service providers on platform and trust in shared products. Taking online attention industry as an example, they used PLS-SEM method to conduct an empirical study on the interaction of three different types of trust and their influence on consumers' willingness to participate in sharing economy. The research results show that trust in platform, service providers and shared products all have a positive and significant impact on users' willingness to participate in sharing economy. Trust in sharing economy has a transitive relationship, and trust in platform can be transferred to service providers and their shared products or services, and trust in service providers on platform can also be transferred to trust in shared products or services. Li Yin & Xiao Shan (2019) are also focus on the dimension of interest. Based on the Person-Artifact-Task model, they explored the influence of user's own characteristics, community tool characteristics, knowledge sharing task characteristics on flow experience and the relationship between flow experience and continuous knowledge sharing willingness. They found that interest has a positive influence on the flow experience. The stronger the flow experience generated by users, the stronger their willingness to continuously participate in knowledge sharing. This means interest indirectly affects users' willingness to participate in knowledge sharing continuously.

The second perspective is the study of user sharing behavior. This kind of research literature mainly focuses on communication studies, and scholars mainly use the theory of planned behavior (Gu Xiaodong et al., 2016; Peng Ke et al., 2013) and impulsive behavior theory (Jin Xiaoling et al., 2016) as theoretical model. Gu Xiaodong et al. (2016) combined and analyzed the influencing factors of mobile Internet users' link sharing behavior based on the theory of planned behavior. They found that four factors, such as perceived behavior control, self-realization needs, immersion needs, and subjective norms had significant positive effects on mobile Internet users' link sharing behavior. Peng Ke et al. (2013) also based on the theory of planned behavior. They summed up six influencing factors of Weibo users' sharing behavior: motivation, perceived behavior, trust, reciprocity, subject norm and incentive. They found that trust and reciprocity have obvious influence on Weibo users' sharing behavior. Jin Xiaoling et al. (2016) started from the perspective of impulsive behavior and introduced cognitive emotion theory, taking emergency information Weibo on Sina Weibo as an example, and constructed a theoretical model of Weibo original information sharing behavior. They found that users' perception of external environment has a significant impact on emotion and Weibo original information sharing, and emotion plays an intermediary role between them. Some scholars even devote themselves to predicting users' sharing behavior. Liu Chen et al. (2013) studied the information transmission process in the network and the transformation method of information transmission, and used the classification algorithm based on association rules to predict the information sharing behavior in online social networks. In addition, Ding Xuwu et al. (2014) believe that cognitive and emotional incentives and sharing behaviors triggered by

emotions can also be applied to the research field of social media. They emphasize that the emotions expressed by text descriptions in social media can be paid more attention, which will also stimulate users' behavior of forwarding and sharing information.

The third perspective is the research combined user sharing willingness and user sharing behavior. There are few literatures about this perspective, but they provide inspiration for this study. For example, Guo Kun et al. (2014) examined the moderating effect of self-esteem and altruism on the relationship between content sharing attitude and content sharing behavior of SNS users. According to the different types of online information, he divided the attitude and behavior of content sharing into four types: instrumental, ideological, recreational, and emotional. He believes that people with high self-esteem will regard Renren Website as a positive way to seek information or express themselves, and self-esteem will have a direct impact on content sharing and the active degree of users participating in Renren Website. People with low self-esteem rely on the Internet to seek knowledge and information with higher intensity. They may have a positive attitude towards knowledge and information, but their willingness to share is low. In addition, users with high altruism are more likely to share information on SNS. This study shows that self-esteem has a moderating effect on the relationship between instrumental, ideological sharing attitudes and behaviors, while altruism has a moderating effect on the relationship between ideological sharing attitudes and behaviors.

Adhering to the idea of the third perspective, this paper combines user sharing willingness and user sharing behavior, studies users' sharing degree from the perspectives of supply and demand sides of *4P theory*[1] in Marketing: *Product, Price, Place and Promotion*. By considering the products (government app/business app) and promotion provided by the supplier(government/ firm) and the user preference of the demander (users), this paper studies the user sharing degree of government apps and business apps.

4P theory is a theory in Marketing. Jerry McCarthy[2] pointed out that consumer buying behavior refers to the behavior of individuals and families buying products and services in order to satisfy their own consumption. All these consumers constitute the consumer market. As we know, ordinary people have not only the attributes of consumers, but also the attributes of citizens. Products can be not only private products, but also public products. What if we assume that the government app provided by the government and the business app provided by firms are regarded as different types of goods, and citizens are regarded as consumers who buy goods? That is to say, the government and firms provide products as suppliers, while consumers buy and use products as demanders. In order to stimulate demanders' consumption and use, the suppliers have set up many sales incentives in the process of commodity *promotion*, that is, by controlling the *price, place* and other aspects, the demanders' demand for products is stimulated. In other words, the government and firms, as app suppliers, have set down preferential policies such as price discount in the promotion process to encourage users to download, use, and share their public transportation apps. As shown in Figure 1:

[1] Jerry McCarthy. (1960). Basic Marketing. Illinois: Richard D Irwin Inc.
[2] Jerry McCarthy. (1960). Basic Marketing. Illinois: Richard D Irwin Inc.

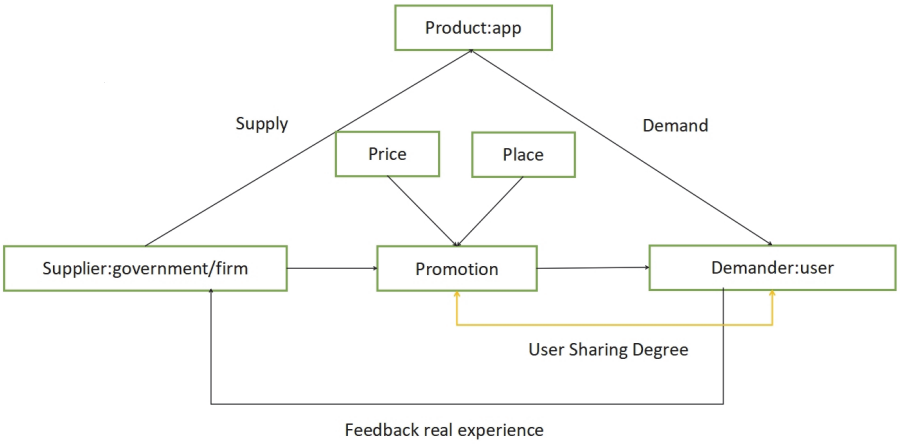

Fig. 1 From the perspective of supply and demand sides combined with 4P theory

Combining with *4p theory*, the user sharing degree can be improved by the promotion behavior of suppliers, and both *price* and *place* can stimulate the *promotion* of apps, thus stimulating the demand of consumers for *products*, that is, stimulating the download, use and sharing of apps by users. The better the supplier promotes and publicizes the products, the higher the demand for the product from the demander, and the higher the user sharing degree of the apps. In addition, through the feedback of the real experience of the product from the demander, the supplier can continuously improve the product to provide better services to feed demanders' need, indirectly expand the promotion scope of the product, and enable more users to use and share the product.

At present, most of the researches on government/business apps in public management are based on *SERVQUAL model* and *D&M information system success model* and focus on quality, including service quality, system quality, etc. However, the research on the promotion effect of government/business app platform is still intact, and more is the promotion of WeChat official account, Weibo, Tiktok account, etc. For the research of social platform and users, most scholars study from users' sharing willingness and sharing behavior. In order to study comprehensively, this study chooses to combine user sharing willingness with user sharing behavior, which constitutes the dependent variable of this paper--user sharing degree.

Service quality

Service quality is the key factor affecting user sharing degree. It mainly refers to the service provided by the customer service in app, whether the staff member can solve the user's difficult problems and special requests in time, and whether they can give feedback to the user's comments in time. Most scholars study the service quality based on SERVQUAL model. They mainly talk about elements of service quality (Lu Jingjun & Zhu Xiaofeng, 2012), evaluation of service quality (Yang Yafen, 2013), and e-government service quality to promote users' continuous use (Chen Zhenjiao et al., 2017).

SERVQUAL model[3] is a new service quality evaluation system proposed by American marketers A.Parasuraman, Zeithaml and Berry in the service industry in the late 1980s according to the theory of Total Quality Management. Its theoretical core is the "service quality gap model". The quality of service depends on the difference between the service level perceived by users and the service level expected by users. The expectation of users is the prerequisite for developing high-quality service, and the key to providing high-quality service is to exceed the expectation of users. SERVQUAL is the abbreviation of English "Service Quality". SERVQUAL model is a tool to measure service quality, and its five dimensions are tangibles, reliability, responsiveness, assurance, and empathy.

Lu Jingjun & Zhu Xiaofeng (2012) studied the factors of e-government service quality from two aspects of process quality and result quality based on Carnot model. In his opinion, process quality includes website quality, information service process quality, transaction service process quality, and participation service process, and result quality elements include information service result quality, transaction service result quality, and participation service result quality. Liu Hongli & Yang Lanrong (2012) drew lessons from the supply chain management theory in enterprise management, and put forward a new e-government service quality evaluation framework including four dimensions: public direct satisfaction, website quality, government cooperation, and information construction. Wang Gaoshan et al. (2019) studied the influence of e-service quality on users' continuous use of e-commerce websites, and put customer loyalty into this relationship to test its status and role. They believe that the quality of e-service has a positive impact on users' continuous use of e-commerce websites. Moreover, in the e-commerce environment, the quality of e-service has a positive impact on customer loyalty. Chen Zhenjiao et al. (2017) used the method-purpose chain theory in marketing for reference to explore how the quality of e-government service meets the practical and psychological needs of users, thus promoting the intermediary process of users' intention of continuous use. They believe that the quality of information service and service has a significant positive impact on users' intention to use continuously. Combined with the research content of this paper, the following assumption is made:

H1: Service quality has a significant positive impact on user sharing degree.

System quality

System quality is the basis of determining the quality of a government/business app. At present, the research on the system quality is mainly based on the *D&M Information System Success Model*, which studies the research problems of users' willingness to use continuously (Wang Fashuo & Ding Haien, 2019), users' adoption(Deden Witarsyah Jacob et al., 2017), and users' satisfaction(Zhang Chunfu, 2017).

D&M Information system success model[4] is a model that DeLone and McLean put forward

[3] Parasurman, A., Zeithml, V.A., Berry, L.L. (1988). A Conceptual Model of Service Quality and Its Implications for Future Research. Journal of Marketing, 49(4), 41-50.

[4] DeLone, W.H., & McLean, E.R. (1992). Information Systems Success: The Quest for the Dependent Variable. Information Systems Research, 3(1), 60-95.

in 1992. This model is widely used to discuss information system user satisfaction. The core variables of this model include service quality, system quality, and so on. System quality refers to the extent to which the functions of the system can meet the user's needs as simply as possible by dealing with the smallest problems. Delone and Mclean believe that system quality can be measured in terms of ease of use, reliability, and flexibility.

In Jin Minshan's master thesis(2015), she compared the information system factors of shopping websites that affect the trust and loyalty of consumers in China and South Korea. She thinks that the convenience of website retrieval only affects the loyalty of Korean consumers, the accessibility of websites only affects the trust of Korean consumers, and the security of websites only affects the trust and loyalty of Chinese consumers. Wang Fashuo & Ding Haien (2019) combined the technology acceptance model and the information system success model to construct the influencing factors model of the public's willingness to use government service app continuously. Through research, they found that factors such as system quality have a significant impact on the public's willingness to use government service app continuously. Yuanyuan (2019) studied the influencing factors of user satisfaction of government social media from the user's point of view based on the user satisfaction model, and found that system quality and other factors have a positive impact on user satisfaction of government social media. Deden W.J et al. (2017) established a new e-government adoption service model by extending the theory of technology acceptance and use. According to a large-scale multi-site survey of Indonesian users, they found that system quality has a positive impact on e-government service adoption. Zhang Chunfu (2017) discussed the factors that affect the user satisfaction of e-government websites based on the D&M Information System Success Model. He found that the system quality in the model will affect the user satisfaction of e-government websites. According to the above ideas, this study also makes the following assumption:

H2: System quality has a significant positive impact on user sharing degree.

Platform promotion effect

The platform promotion effect refers to the promotion effect of government apps and business apps, which includes users browsing the apps content, purchasing the products in the apps, commenting on the apps and using the apps to travel. At present, there are few literatures on this research topic.

In communication studies, many scholars have carried out research from two aspects: the promotion behavior of self-media (Li Ruixi & Han Xiaoqi, 2019; Guo Tian et al., 2019) and measuring the promotion results of self-media (Nie Yonghao & Chen Han, 2019). For example, in the research literature on self-media promotion behavior, Li Ruixi & Han Xiaoqi (2019) quantitatively analyzed the communication effect and influence effect of the top 200 tourism WeChat articles in WeChat official account with five factors as independent variables: whether the articles are original, whether they are hot spots, the main nature of WeChat official account, the richness of using multimedia means and the interesting of article titles. The results show that the communication effect of hot spots articles is better than that of non-hot spots articles, and the communication effect of articles published on official topics is better than that of unofficial topics. The dissemination effect of articles with interesting titles is better than that of

articles without interesting titles, but there is no obvious difference between the originality of articles and the richness of multimedia means. Feng Xiaodong et al. (2019) pointed out that the social trust formed by the public on the government Weibo platform has a greater impact on their behavior of spreading related government Weibos than their behavior habits, and has a strong ability to explain and predict, starting from social capital (fan number, fan quality, administrative level), social trust (public emotional tendency), and behavior habits (public historical interest theme). In the research of measuring the results of self-media promotion, Yan Bin (2019) thinks that we should focus on the research of promotion content, and decompose it into four elements, such as title type, originality or not, graphic layout and key information, and deeply discuss how the communication effect is affected by these factors. Liu Jinhong & Chen Di (2019) also decomposed the content elements into four parts: manuscript source, manuscript, review, and effect, and thought that the communication effect mainly depended on manuscript, manuscript source, and effect, and was less influenced by review. According to the research content, the following assumption is made:

H3: The platform promotion effect has a significant positive impact on user sharing degree.

User preference

At present, the research on users' preference of government/business app is in a blank field for the time being, and most of them are consumer preferences in marketing. Existing scholars study consumer preferences based on theoretical models such as multi-layer Bayesian model, Hotelling model, supply chain, joint analysis method, conditional valuation method, auction experiment method, and selection experiment method.

According to the related research, it can be found that the connotation of user preference is richer, which is not only the psychological expectation of users for products, but also a behavior choice. Prasetyo & Yogi Tri(2019) used multivariate analysis methods, such as factor analysis, regression analysis, cluster analysis, and joint analysis, and found that supplier image, performance, Internet quality, wireless network services, and Internet speed influenced Taiwan university students' user preferences. Cha Namjun et al. (2019) divided consumer preference into category preference and attribute preference, trying to find out the influence of AI recommendation on consumer preference. Fan Jingli et al. (2020) studied Chinese consumers' consumer preferences for new energy vehicles and found that economic benefits, performance attributes, environmental awareness, and government policies influenced their consumer preferences. In the Bayesian network model of B2C website consumer preference constructed by Xiong Li et al. (2018), there are 12 factors affecting consumer preference, including comfort, beauty, color, fabric, workmanship, quality, suitability, feel style, price, logistics, authenticity, and consistency.

In addition, this paper holds that personal information protection, travel data protection, transaction guarantee, transaction monitoring, and interest on shopping or travel and user habit are also belong to users' preference. If this app can provide good personal information protection, travel data protection and transaction guarantee, users will trust this app. If users trust an app, they will share it with others. Besides, suppliers should also pay attention to which functions in the app users are more interested in. Studying users' interests and habits are also helpful to

study users' preferences. For the study of trust, scholars basically start from three aspects: subject, object and environment. The subject is government/firm and consumers, the object is app, and the environment generally refers to the environment where such carriers are applied. Zheng Jing (2014) divided the influencing factors of trust into three categories: website factors, consumer personal factors and network environment factors. Website factors include website design, website communication timeliness and website security. Personal factors refer to consumers' personal trust tendency, while network environment factors refer to consumers' network environment cognition. Zhou Jianwen (2015) pointed out that the factors of group buying websites positively affect consumers' trust, among which website reputation has the most important influence, website safety has the second place, and website quality has the least obvious influence. Consumer factors have a positive moderating effect on the relationship between website factors and consumer trust, among which online shopping experience and herd mentality have a positive moderating effect on the relationship between website reputation and website quality and consumer trust, but have no moderating effect on the relationship between website security and consumer trust. Combining trust theory with technology acceptance and diffusion model, Seyed F.(2011) thinks that trust should include three factors: truster, trustee and environment. Li Liwei et al. (2019) also based on the trust dimension, from the perspective of sharing economic service users and trust objects, divided trust into three types: trust in sharing platform, trust in service providers on platform and trust in shared products. They conduct an empirical study on the interaction of three different types of trust and their influence on consumers' willingness to participate in sharing economy. The research results show that trust in platform, service providers and shared products all have a positive and significant impact on users' willingness to participate in sharing economy. Trust in sharing economy has a transitive relationship, and trust in platform can be transferred to service providers and their shared products or services, and trust in service providers on platform can also be transferred to trust in shared products or services. Peng Ke et al. (2013) also based on the theory of planned behavior. They summed up six influencing factors of Weibo users' sharing behavior and found that trust and reciprocity have obvious influence on Weibo users' sharing behavior.

Michelle et al. (2010) defined purchase interest as the trend of consumers buying a brand or taking actions related to purchase, and the measure was the possibility of consumers buying. In addition, according to the research of Bangwool Han et al. (2018), purchase interest is a part of consumer behavior in consumer attitude, that is, the tendency of respondents to take action before the purchase decision is actually implemented. Indicators used to measure consumers' purchasing interest include job differences, socio-economic differences, different hobbies or hobbies, gender differences and age differences. Li Yin & Xiao Shan (2019) are based on the dimension of interest. Based on the Person-Artifact-Task model, they explore the influence of user's own characteristics, community tool characteristics, knowledge sharing task characteristics on flow experience and the relationship between flow experience and continuous knowledge sharing willingness. They found that interest has a positive influence on the flow experience. The stronger the flow experience generated by users, the stronger their willingness to continuously participate in knowledge sharing. That is, interest indirectly affects users' willingness to participate in knowledge sharing continuously. Chen Minghong et al. (2017) pays attention to user habits and discovers that user habits have negative moderating effect on the relationship between perceived value and information sharing persistence willingness.

These indicators constitute the rich connotation of user preference. Combined with the research content, this study makes the following assumption:

H4: User preference has a significant positive impact on user sharing degree.

Based on the above analysis, the influencing factor model of user sharing degree of government/business app proposed in this paper is shown in Figure 2:

Besides, as this research is a basic research, the new model proposed by this research is only a basic model, so no control variables are added at present.

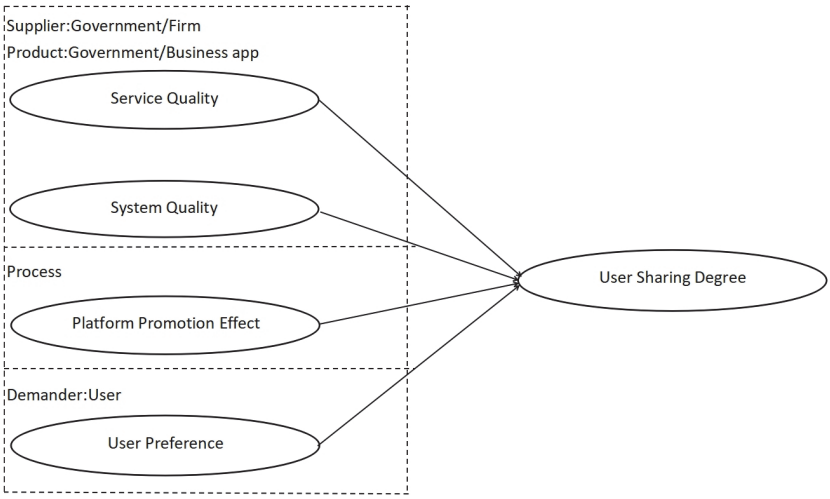

Fig. 2 Influencing factors model of user sharing degree of government/business app

According to the principle of multiple regression model, the expected formula of this study is as follows:

$$Y = X_0 + X_1 * \text{Service quality} + X_2 * \text{System quality} + X_3 * \text{Platform promotion effect} + X_4 * \text{User preference} + \varepsilon$$

X_1, X_2, X_3 and X_4 are all coefficients of multiple regression equation, X_0 is a constant and ε is an error term.

Data and methodology

In this paper, questionnaire survey is used to obtain data on the Internet by random sampling. The measurement indicators of variables in the questionnaire partly come from maturity scale and partly belong to self-made indicators. Among them, the user sharing degree is adapted from the respondents' willingness and behavior to share app. Service quality comes from SERVQUAL model, system quality comes from D&M Information System Success Model,

platform promotion effect and user preference are self-made indicators.

This questionnaire was launched on February 26th (2020) and ended on April 22nd(2020). A total of 935 users were interviewed, and 935 questionnaires were collected, each of which filled out one. Among them, 392 users chose Beijing One Card app, 174 users chose the Bus Code app (Beijing area), 301 users chose both apps, and 68 invalid questionnaires, with an effective recovery rate of 93%. Because this paper is mainly based on the comparison of two apps, the users who choose to use both kinds of app are not analyzed, that is, the basic data is 566 users who choose Beijing One Card app or Bus Code app (Beijing area) alone. According to the meticulous degree of users' answers, after strict screening, 344 questionnaires were selected for analysis. Among them, there are 243 users who choose Beijing One Card app, and 101 users who choose Bus Code app (Beijing area).

SPSS statistical software was used to analyze the multiple regression of the two apps. Before multiple regression analysis, Pearson correlation test is used to test each variable. The Variance Inflation is used to judge whether there is multicollinearity of variables, and then the multiple regression analysis is used to summarize the main influencing factors of user sharing degree. Finally, the two apps are compared by comparative analysis.

Analysis results and discussion

After collecting the data, Cronbach's Alpha coefficient should be used to test the reliability of the questionnaire. Generally speaking, Cranbach's Alpha coefficient is above 0.6, which indicates that the data results of the questionnaire are consistent. After using SPSS software to test the reliability of questionnaire data, the following table is obtained.

Table 1 Reliability analysis(see Appendix A for detailed questionnaire content)

Variables	Cronbach's Alpha	Number of question
Service quality	0.775	4
System quality	0.845	5
Platform promotion effect	0.834	4
User preference	0.852	10
User sharing degree	0.782	4
Overall	0.933	30

It can be seen from Table 1 that the overall Cronbach's α values of service quality, system quality, platform promotion effect, user preference and user sharing degree are 0.775, 0.845, 0.834, 0.852 and 0.782, respectively, and the overall Cronbach's α coefficient of the questionnaire is 0.933, all of which are greater than 0.7, indicating that the overall reliability of the questionnaire data is good and passes the test.

After the reliability test of the questionnaire, it is necessary to test the validity. Factor analysis is generally used in the validity test, and KMO value and Bartlett sphere test are used to measure the structural validity analysis. Kaiser clearly stipulated in his standard that KMO > 0.9 is very good, while KMO < 0.5 is not up to the standard. When carrying out the Bartlett sphere test, the significance probability in the result must be less than or equal to 0.05, which

means that the original variables have a certain correlation.

Table 2 Validity analysis

Dimensions	Question number	Factor loading	Explain variance ratio	KMO	Bartlett sphericity test
Service Quality SQ	SQ1	.805	85.761%	0.626	552.722 (Sig=0.000)
	SQ2	.764			
	SQ4	.759			
	SQ5	.783			
System Quality MQ	MQ1	.730	61.876%	0.827	686.241 (Sig=0.000)
	MQ2	.783			
	MQ3	.825			
	MQ4	.776			
	MQ5	.816			
Platform promotion effect PE	PE1	.848	66.920%	0.792	543.663 (Sig=0.000)
	PE2	.777			
	PE4	.885			
	PE5	.756			
User preference UP	UP1	.744	62.575	0.826	1814.790 (Sig=0.000)
	UP2	.752			
	UP3	.601			
	UP4	.460			
	UP5	.537			
	UP6	.561			
	UP7	.765			
	UP8	.765			
	UP9	.761			
	UP10	.575			
User Sharing Degree SD	SD1	.858	63.755%	0.777	498.421 (Sig=0.000)
	SD2	.845			
	SD3	.864			
	SD4	.595			

Among them, SQ3 “the APP provides a customer service consultation channel” and PE3 “the APP has a comment area that allows me to provide feedback” are logically self-consistent topics, which are not five-level scale topics, so they are deleted during analysis, and user data that cannot be logically self-consistent on this topic are also deleted.

In order to fit the research content of this paper, the service quality includes three aspects: users’ preferential policies for using APP, comment channel and timely response. The system quality includes two aspects: easy to use and suitable to use. The platform promotion effect includes three aspects: users’ browsing, traveling and commenting on APP. In addition, because the connotation of user preference is richer than that of service quality and system quality, 10 questions are set according to different connotations, including personal information protection, travel data protection, payment guarantee, transaction monitoring and user interest on shopping or travel and user habit (see Appendix C for detailed connotation of four influencing factors

and corresponding question numbers in Questionnaire).

In the aspect of service quality, the load value of each item factor is greater than 0.5, KMO is 0.626, greater than 0.6, and the proportion of cumulative explanatory variance is 85.761%, greater than 60%. Bartlett spherical test has obvious effect (sig<0.05), and its validity has passed the test. Similarly, it can be seen that indicators of other dimensions have passed the test. To sum up, the internal structure of validity measurement items in this questionnaire is consistent and the effect is ideal.

Analysis 1：Government app: Beijing One Card

Before multiple regression analysis, Pearson correlation test should be used to test the correlation of each variable.

Table 3 Correlation analysis

	Service quality	System quality	Platform promotion effect	User preference	User sharing degree
Service quality	1				
System quality	.381**	1			
Platform promotion effect	.689**	.317**	1		
User preference	.660**	.448**	.817**	1	
User sharing degree	.403**	.513**	.542**	.606**	1

* *. was significantly correlated at 0.01 level (bilateral).

Pearson correlation coefficients of service quality, system quality, platform promotion effect, user preference and user sharing degree are 0.403, 0.513, 0.542 and 0.606, and the coefficients have all passed the significance test with a significance level of 1%. Then, taking service quality, system quality, platform promotion effect and user preference as independent variables, taking user sharing degree as dependent variable, the multiple regression analysis is carried out. The results are as follows:

Table 4 Multiple Regression Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity statistics	
	B	Standard error	Trial version			Tolerance	VIF
(Constant)	.207	.335		.617	.538		
Service quality	-.117	.075	-.108	-1.567	.118	.482	2.074
System quality	.499	.083	.329	6.033	.000	.769	1.301
Platform promotion effect	.189	.070	.239	2.679	.008	.286	3.494
User preference	.381	.102	.334	3.732	.000	.285	3.514
R^2=0.457, Adjustment R^2=0.448, F=50.103(P < 0.05)							

According to SPSS analysis, the maximum value of all variance inflation factors VIF is 3.514, which accords with the standard of 0~10, so there is no multicollinearity of variables.

It can be found from table 1 that the multiple regression coefficient of system quality, platform promotion effect and user preference has passed the significance test and is significantly different from zero (Sig<0.05), and the multiple regression coefficient of system quality is 0.499, which indicates that system quality has a significant positive impact on user sharing degree, and its influence coefficient is 0.499; The multiple regression coefficient of platform promotion effect is 0.189, which indicates that platform promotion effect has a significant positive impact on user sharing degree, and its influence coefficient is 0.189; The multiple regression coefficient of user preference is 0.381, which shows that user preference has a significant positive impact on user sharing degree, and its influence coefficient is 0.381; However, the multiple regression coefficient of service quality failed the significance test (Sig > 0.05). That is, assuming that H2, H3 and H4 are valid, and assuming that H1: the service quality has a significant positive impact on user sharing is not valid.

Therefore, the multiple regression equation among service quality (SQ), system quality (MQ), platform promotion effect (PE), user preference (UP) and user sharing degree (Beijing One Card) can be summed up as follows:

$$Y_1 = 0.207 + 0.499*MQ + 0.189*PE + 0.381*UP$$

User sharing degree of Beijing One Card app is affected by system quality, platform promotion effect and user preference, but service quality has no effect on it. This conflicts with the views in previous literature studies. For example, Chen Zhenjiao et al. (2017) believe that the quality of information service and service has a significant positive impact on users' intention to use continuously. Users can only share if they like to use this APP. Therefore, in her literature, service quality should indirectly promote user sharing degree. However, in this paper, the service quality has no effect on the user sharing degree in the research of government app Beijing One Card. What really affects user sharing degree is system quality, platform promotion effect and user preference.

Analysis 2：Business app: Bus Code (Beijing Area)

As can be seen from the foregoing, correlation analysis should be carried out before multiple regression analysis.

Table 5 Correlation analysis

	Service quality	System quality	Platform promotion effect	User preference	User sharing degree
Service quality	1				
System quality	.220*	1			
Platform promotion effect	.472**	.025	1		
User preference	.508**	.273**	.679**	1	
User sharing degree	.293**	.494**	.369**	.407**	1

**. There was a significant correlation at the level of 0.01 (bilateral).

By using the same method, it is found that the Pearson correlation coefficients of service quality, system quality, platform promotion effect, user preference and user sharing degree are 0.293, 0.494, 0.369 and 0.407, and the coefficients have passed the significance test with a significance level of 1%. Therefore, it can be seen that there is a significant positive correlation between service quality, system quality, platform promotion effect, user preference and user sharing degree. Then, taking system quality, platform promotion effect and user preference as independent variables, taking user sharing degree as dependent variable, the multiple regression analysis is carried out, and the results are as follows:

Table 6 Multiple Regression Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity statistics	
	B	Standard error	Trial version			Tolerance	VIF
(Constant)	.677	.451		1.499	.137		
Service quality	.013	.096	.013	.131	.896	.696	1.437
System quality	.525	.098	.466	5.340	.000	.857	1.166
Platform promotion effect	.211	.080	.308	2.651	.009	.484	2.067
User preference	.068	.127	.065	.536	.593	.449	2.229
R^2=0.374, Adjustment R^2=0.348, F=14.325(P < 0.05)							

According to SPSS analysis, the maximum value of all variance inflation factors VIF is 2.229, which accords with the standard of 0~10, so there is no multicollinearity of variables.

It can be found from Table 6 that the multiple regression coefficient of system quality and platform promotion effect has passed the significance test and is significantly different from zero (Sig < 0.05), and the multiple regression coefficient of system quality is 0.525, which indicates that system quality has a significant positive impact on user sharing degree, and its influence coefficient is 0.525; By the same token, we can see that the multiple regression coefficient of the platform promotion effect is 0.211, which indicates that the platform promotion effect has a significant positive impact on user sharing degree, and its influence coefficient is 0.211; However, the multiple regression coefficient of service quality and user preference failed the significance test (Sig > 0.05). That is, assuming that H2 and H3 hold, H1 and H4 do not hold.

Therefore, the multiple regression equation among service quality (SQ), system quality (MQ), platform promotion effect (PE), user preference (UP) and user sharing degree (Bus Code (Beijing area)) can be summed up as follows:

$$Y_2 = 0.677 + 0.525*MQ + 0.211*UP$$

User sharing degree of Bus Code app (Beijing area) is affected by system quality and platform promotion effect, while service quality and user preference have no effect on it. This conflicts with the views in previous literature studies. Li Liwei et al. (2019) think trust in sharing economy has a transitive relationship, and trust in platform can be transferred to service providers and their shared products or services, and trust in service providers on platform can

also be transferred to trust in shared products or services. Peng Ke et al. (2013) found that trust and reciprocity have obvious influence on Weibo users' sharing behavior. Also, Li Yin & Xiao Shan (2019) found that interest indirectly affects users' willingness to participate in knowledge sharing continuously. That means the user preference should be have impact on user sharing degree. However, in the study of user sharing degree of business app Bus Code (Beijing area),user preference have no impact on user sharing degree.

According to the formula, the system quality has a great influence on the user sharing degree, followed by the platform promotion effect. However, this does not mean that the promotion effect of the platform is not important, and it is indistinguishable from the importance of system quality. If the system quality is too low, the app can't meet the needs of users, and users are unwilling to use the app, then the promotion effect of the platform can't be discussed. However, if there is a high system quality, the promotion effect of the platform can't keep up, and fewer people know the app, which will affect the user sharing degree of the app.

Discussion 1: Comparative Analysis of Beijing One Card and Bus Code (Beijing Area)

Comparing the results of multiple regression equation, it is not difficult to find:

Firstly, the system quality coefficient (0.525) of the business app Bus Code (Beijing area) is slightly higher than that of Beijing One Card (0.499), but there is no obvious difference between them. However, the system quality coefficient is much higher than other coefficients from Beijing One Card or Bus Code alone, which shows that users who share these two apps are more concerned about their system quality, and choose to share it because of their good performance in system quality. According to the latest achievements of modern quality management theory, quality equal to user satisfaction, and satisfaction promotes user's sharing activity[5], which is not difficult to understand that only when users' satisfaction with the app is improved, will their continuous use be improved and their desire to share be promoted. This paper suggests that "meeting users' needs and promoting users' sharing" should be the starting point and foothold of both government and business apps.

Secondly, there is no significant difference between the two apps in terms of platform promotion effect coefficient, and users rarely choose to share the app because of the platform promotion effect. This is different from the suggestions of government app in the existing literature. Some research results suggest that government app should pay more attention to publicity and promotion so as to improve user sharing degree. This paper suggests that both government app and business app should not focus on the promotion effect of platform, but should choose the strategy of "appropriate promotion, focusing on quality".

Thirdly, user preference has an impact on user sharing degree of government app, but has no impact on user sharing degree of business app. This is the biggest difference that affects the sharing degree of users of the two apps. This can also be proved by the comparison of the total downloads of the two apps. Users prefer to download the government app Beijing One Card, (see Figure 3 for details). As of 8: 05am on July 15, 2020, the total downloads of Beijing One Card app was 47,891,122 times, and the total downloads of Bus Code app (Beijing area) was

[5] Li Liwei, Liu Lina, & Li Jijian. (2019). Interaction of different trust in sharing economy and its influence on users' willingness to share. Credit Information, 37(07), 26-31.

9,116,199 times. The following figure shows a comparison of the downloads of the two apps in the past year.

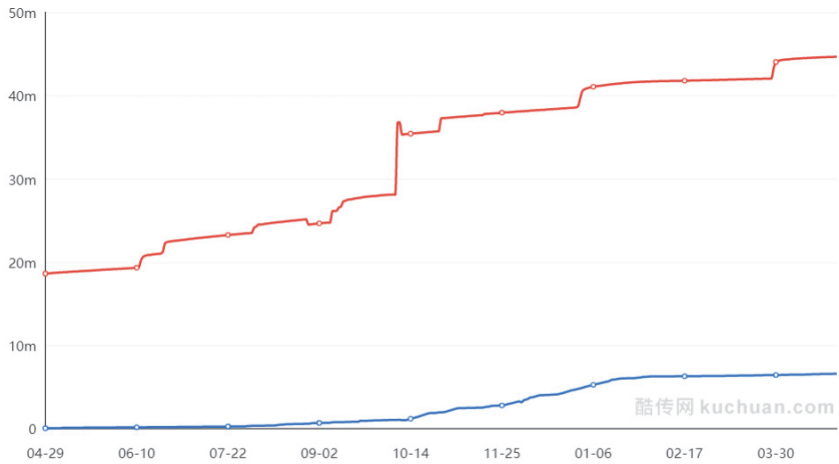

Fig. 3 Two app downloads amount in the past year (picture taken from Kuchuan.com, red curve is downloads of Beijing One Card, while blue curve is downloads of Bus Code)

Why do users prefer Beijing One Card app? This paper holds that, in view of the public service attribute of transportation, the government advocates the construction concept of "people-centered", which makes it have the unique innate advantages of reliability, authority and security, and is easy to form the psychological identity of users. First of all, the government app has established a good medium-and long-term image and strategic development goals. Everything is based on public services. In order to compete and survive, the business strategy of the business app often only considers the short-term, and the investigation and prediction and specific business behaviors are also short-term. This short-term strategy will inevitably ignore the investment in a large number of global, strategic and non-direct marketing. Secondly, the government makes use of abundant funds to enhance the attraction and attention of government affairs app through powerful planning and publicity activities, and through a large number of media publicity, it is the only choice to attract users to improve the popularity and uniqueness of positive images. The government uses its influence, with the concept of "serving the people", mobilizes effective resources, publicizes government affairs app, and enhances the appeal of government apps. At the same time, do a good job in market research and guidance, and strive to make e-government work more scientific and efficient.

Because of these advantages, the publicity of government app can be guaranteed, and because of the reliability of the government itself, users are more inclined to choose government app between government app and business app. This paper suggests that the government should increase efforts to cultivate users' preference and further enhance users' sharing of government app. Specifically, we can start from the following aspects: First, based on the principle of "improving the service ability and level of mobile government affairs", government should continue to revise the government app, continuously improve the user experience, enhance user satisfaction, and solidify the user preferences of existing user groups; The second

is to increase publicity and education for the younger generation of users, start from the "childhood", help them familiarize with the government apps, let them feel the convenience brought by the government apps to life, and promote the development of their use preferences; Third, pay attention to the silver-haired people (seniors), let the mobile government service cover more people, especially the elderly, and help them integrate into the new service mode through some service designs that are convenient for the elderly, so as to develop users' preferences, expand the scope of users' sharing and improve users' sharing. It should be emphasized that the cultivation of users' preference cannot be emphasized unilaterally, the system quality is the foundation, and the platform promotion effect is "two wings". Similarly, business apps should also pay attention to users' preference, and include cultivating users' preference in measures to improve apps and improve users' experience.

Discussion 2: What is user preference?

This paper holds that user preference refers to the rational and tendentious choices made by users when choosing goods and services, which is the comprehensive result of cognition, psychological feelings and rational economic trade-offs. Users will have special trust and interest in specific goods and services, and use certain types of goods and services repeatedly and habitually. They often take actions under the control of the subconscious.

There are three key words: habit, trust and interest.

Habit. Habit is not innate but are gradually "shaped" based on our characteristics of "seeking advantages and avoiding disadvantages" and the conditions of external environment. For the contact with new products, many users have developed the usage habits before. For example, the return button of many apps is at the top left of the screen. When users want to return, they don't need to think at all. The user habits identified by these users subconsciously cannot be easily broken, otherwise the usage cost will increase. In severe cases, users will give up using products. It is very important to cultivate users' habits. If users are used to using an app, this habit can hardly be changed. In view of this feature, we can start from "changing user habits" and improve user sharing. First of all, we should locate user needs, identify gaps, mine needs and suggest them to stimulate users' cravings; Secondly, provide executable objective conditions, ensure product system quality and service quality, pay attention to user experience, and give timely feedback when users have problems; Finally, when the user is willing to accept the suggestion, experience the product and get a good user experience, it is necessary to give the user an immediate "effective" reward, triggering the user's thirst for "new habits" and maximizing the user's perception of the current value. To some extent, user habits contribute to user preference.

Trust. User trust can be divided into two parts: trust in suppliers and trust in products. Suppliers can provide many products, and users choose to use all the products of this provider unconditionally on the premise of trusting this supplier. Trust in products refers to trust in a specific product. Maybe users don't trust its supplier, but they gradually trust the product after using it. Choose to use this product when comparing this product with functional products of the same type. This contributed to the user's preference to a certain extent. To cultivate users'

trust, we can start from the following aspects. First, first-hand experience is very important. It is the first step to establish trust to attract users to experience a certain product or service in person and give them a good feeling. Secondly, suggestions from reliable sources can also cultivate users' trust. For example, users are more likely to follow the suggestions of celebrities and experts to use a certain product or service. Finally, for a product that users have never seen or heard of, we can build trust by letting users know how it works. If users don't know how this product works, even if it is recommended by experts, some users tend to distrust it and refuse to use it.

Interest. Only when users are interested in a product will they use it. Behavior reflects interest. If an app operator wants to know the user's interest, the first thing to do is to collect user behavior information by various means. User behavior information refers to any operation of a user on a webpage, website or app product. Taking public transportation app as an example, users' behavior information includes opening app, logging in account, traveling by bus, etc. Users visit a certain page and perform certain operations, which largely represents their interests and hobbies, that is, user behavior information is the real demand of users for products. Furthermore, we collect so many user behavior data to better understand the user's interest points. After successfully extracting the user interest according to the user behavior information, it is necessary to describe the user interest in a more appropriate way. Judge what kind of activities the user is interested in, and then directly recommend the corresponding activities to the user. Increase users' preference on the basis of giving them what they want.

Users' habits, trust and interests are three important parts of users' preferences, and they complement each other. Whether it is a government app or a business app, it should be based on user habits, trust and interests, and cultivate user preferences to improve the user sharing degree of its app.

Discussion 3: The essential reason why users share government/business apps

The promotion of government/business apps increasingly depends on mastering users' sharing ideas and habits. If the government and firms can pay attention to the difference of users' sharing behavior, accurately locate the reasons of users' sharing and find out the influencing factors of users' sharing degree, they can grasp the user demand and develop appropriate promotion strategies.

Practicability. As a "product", the practicability of transportation apps is the main reason for users to share. The first key point of practicality is ease of use. Users can easily operate the app and use it to complete their travel purposes. If this app can't meet the basic requirement of "simple operation", it must not have the characteristic of "practicality". In other words, ease of use is the foundation of practicality. The second key point of practicality is compatibility. Whether this app meets the travel needs of users. For example, can the student group afford the travel mode provided by this app. And is this app compatible with all types of mobile phone systems. Can this app guarantee that all users can download it.The third key point of practicality is whether it can respond to users' comments and complaints in time and solve users' difficult

problems immediately. Generally speaking, practicality is the most basic reason to stimulate users' sharing.

Reliability. This is the second basic feature of transportation app as a "product". Because users will spend money with this app, the app needs to trade through a secure trading platform (such as WeChat or Alipay) and provide transaction records to reduce transaction risks. If there is a money dispute, the transaction records can be used as evidence. It is also necessary to ensure that this app will not disclose the basic information of users, including personal identity information and travel information.

Authority. In the cultural atmosphere of emphasizing authority in China, the recommendation of celebrities and experts is very important for users. Celebrity recommendation and advertisement have great influence on purchasing decision. Advocating authority will stimulate users to have more emotional influence when making use decisions[6]. Compared with private firms, the government is more authoritative. Respect for authority often leads users to download and share the product without hesitation.

Acquaintance effect. The acquaintance effect in this paper means that users believe in people they are familiar with. If users' friends share a product with them, they usually chooses to trust their friends and try to use the product. Therefore, when promoting their apps, the government and firms should grasp this special user behavior characteristic, provide users with good services, enhance user experience, and let them actively share it with "acquaintances". By "snowballing", the user sharing degree of their apps will be improved.

Brand concept. If the government and firms are regarded as brands, will users tend to choose products developed by the government or firms? According to the research in this paper, Chinese people trust the products provided by the government more than the products of firms. In the minds of Chinese users, the government is an "old brand" with authority and security. Liang Fang Huang & Lingling Wang (2012) pointed out that Chinese people have a special preference for famous brands. Brand awareness is rooted in the hearts of Chinese people. This is also an important reason why Chinese users are more inclined to trust government apps than business apps. Only when users trust this app can they arouse their "desire" to share it.

These are the reasons why users share government/business apps. Practicability and reliability of products are the basis, authority of suppliers is the boosting force, acquaintance effect and brand concept are "wings". In order to improve user sharing degree, the government and firms need to accurately understand the reasons for users' sharing, grasp the motivation of users' sharing and meet the actual needs of users.

[6] Liangfang Huang, & Lingling Wang. (2012). Research on the Application of 4Ps Marketing Theory Based on Chinese Consuming Conceptions. IEEE Conference.

Discussion 4: Compared with business apps, do Chinese users really prefer government apps?

Why do users in Beijing prefer Beijing One Card app? Do they really prefer government apps?

Analysis of the Nature of Beijing One Card: Integration of Offline and Online

Compared with the Bus Code app, the development process of Beijing One Card app is quite special. It existed in the form of offline physical card at the initial stage. Beijing One Card entity card was officially launched in May 2006, and users can enjoy discounts by swiping the card on the bus route with the "One Card" function. Later, users also could use Beijing One Card for buying goods or eat food in restaurant. This indirectly expanded the promotion of Beijing One Card physical card, which became "popular" among Beijing users.

After Beijing Municipal Traffic Card Co., Ltd. launched the corresponding application software in March 2014, users can use NFC function to recharge the card without going to the business outlets in person. Then, Alipay cooperated with the app, and Beijing One Card realized the function of recharging the card with Alipay wallet. On March 20, 2018, the Beijing One Card company has piloted the service of "scanning code by bus". Users can take the bus by scanning the QR code no matter what type of smart phone they hold. Before this, some users were already used to using its physical card to travel, and the mobile app was more convenient to use, so the users who used the physical card installed the corresponding app. In addition, the card opening fee is required to apply for the physical card, but from July 3, 2019, as long as citizens download the app, they can get the "Beijing-Tianjin-Hebei Interconnection Virtual Bus Card" without paying the card opening fee, and can travel to more than 300 cities including Beijing with their mobile phones.

After the word-of-mouth effect, the downloads of Beijing One Card app increased linearly in a certain period of time. The Bus Code app is different from Beijing One Card app. The Bus Code app is a real online app from its birth. It has no loyal "fans" and can only improve the download volume and user sharing by publicity and word-of-mouth effect. This is one of the important reasons why the download volume of Beijing One Card app is much higher than that of the ride code app.

The phenomenon of forcing users to download government apps

Why do users prefer government apps to business apps in apps with the same functions? This actually has some "*helplessness*". Now, from the provincial government to the county governments, almost all have their own government apps, and the slogan put forward is "Let people run less, let data run more". Keeping pace with the times, meeting the needs of the public and providing more convenient and efficient services is a good thing to establish the image of the government. However, in reality, some government apps are full of problems and has been criticized, and the convenience project at the fingertips has become a "face project". Nearly half of the government apps are not used by users.

In order to solve the problem of insufficient downloads, many organizations force their

relevant personnel to download the apps. For example, most universities in Jilin force students to download and use the "Voice of Youth" app, and a university in Tianjin also forces students to download the "Super Campus" app, which can obtain basic information such as the user's name, student number, mobile phone number, email address, school, college, grade, major and class. The download volume of such government apps is high, not because users love them, but because they are forced to use them. Users' comments on these apps are also intriguing. "If you really want to serve the people, don't force us to download them through the department." "Use the decree to force the download of apps." "We were forced by the college to download this app. Is it so unconfident as a government app?"

In this way, the phenomenon of compulsory downloading of government apps emerges endlessly. According to the research of Hofstede, China is a collectivist country with high power distance. Power distance[7] means that in an organization, the concentration of power and the dictatorship of leaders, as well as the extent to which a society can accept the inequality of power distribution in an organization, are very important status symbols in a society with high power distance. users accept the existence of "privilege", and the inequality between people is in line with expectations and welcome. Social status is balanced through various restrictions. Vulnerable groups rely on strong groups rather than interdependent with strong groups, and vulnerable groups are prone to appear emotionally. In school, students must respect teachers, so when the school requires students to download an app, students will choose to obey. Collectivism[8] refers to a closely integrated social organization, in which people are often divided into "within the group" and "outside the group". They expect to be taken care of by "within the group", but at the same time, they also pay for their absolute loyalty to the group. That is to say, when people around them download this app, they will also choose to download and use it under the pressure of the collective and in order to integrate into the collective.

Such "formalism", which only pays attention to the download volume and doesn't care about the actual use feeling of users, also hinders the research on user sharing degree to a certain extent. Although in this study, the government did not directly force users to download and share Beijing One Card app, there is indeed a phenomenon of forced download of app for other functions in other fields. The original intention of the development of government apps is to carry out the work more conveniently and accurately, instead of becoming a "burden", otherwise it will only be counterproductive. This requires us to strengthen the management and use of government apps on the one hand, integrate multiple related apps into a comprehensive app as much as possible, and pay more attention to the quality of apps instead of the quantity to achieve app office in a more targeted manner; On the other hand, it is necessary to improve the assessment mechanism, so that the assessment standards are closer to reality and adapt to the work, instead of reporting the downloads as achievements. We should understand that work should be "real", so that service can be "refined".

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[7] Hofstede G. (1950). Culture and organizations. International Studies of Management and Organization, 50-51.

[8] Hofstede G. (1950). Culture and organizations. International Studies of Management and Organization, 72-79.

Conclusion

It is easy to develop an app, but it is difficult to operate and promote it. What kind of apps will make users willing to share? It must be a "good" app. But, how to be a "good" app? First of all, the functions provided by the app should meet the real life needs of users, and its content should fully impress users and make them feel that it is easy to use and useful. This is an input process. Secondly, the app also needs to set up various incentive mechanisms to trigger users' sharing motivation, which is an output process. For example, a mutual benefit mechanism can be set, and users will get discount coupons after sharing app to their friends. Through the combination of input and output process, it can guide users' preference and improve users' sharing degree effectively.

This research is the basic research of user sharing degree. The model of user sharing degree proposed in this paper still has many shortcomings and needs to be improved. Firstly, in the choice of influencing factors, on the one hand, we should consider adding suitable control variables, such as age, economic income and so on. For people of different ages and incomes, the degree of sharing traffic app may also be different. If students have no income source, they are more likely to download, use and share public transportation apps. Ordinary office workers who want to save money may use the public transportation more. If they are well-paid people, they may choose to drive by themselves, so there is no need to download the travel app for public transportation. On the other hand, we should consider the Internet accessibility and network charges. Although the Internet has been widely used, there are still some remote areas that cannot use the Internet. Even if there is access to the Internet, users may not use the Internet frequently because of the internet speed, or the popularity of e-government is limited, so the public transportation apps cannot be used there. Although users can use other e-government services, public transportation as an essential part of users' daily life should be taken seriously. Besides, we should consider adding appropriate regulatory variables, such as whether education level will play a regulatory role in the influence of user preference on user sharing, and whether the higher the education level, the greater the influence of user preference on user sharing degree. Secondly, in the questionnaire design, the fourth indicator of this model-user preference is rich in connotation compared with other indicators, so there are many corresponding questions in the questionnaire. The result of trying to be perfect is that there are some redundancies in the questionnaire. In the future research, the questions of the questionnaire need to be refined to get the most effective answers with the least number of questions. Thirdly, in terms of data collection, random sampling and stratified sampling should be combined to ensure that samples are more objective. For example, divide the age into sections, and randomly sample users of different age groups and different regions. In addition, the sample size should be enlarged appropriately, and the sample size should be taken according to different proportions in each layer. However, this is only an ideal situation, which is difficult to achieve without a large amount of money and manpower. Lastly, in terms of the expansion of sample apps, although the government apps and business apps in the field of public transportation have been discussed, the government apps and government websites in other fields are also worth analyzing and comparing. Apps and websites are only carriers of public services, and the essence of government apps or government websites are to provide better public services for users. Through users' feelings and real feedback on the use of these carriers, the government can continuously improve its

public service carriers to provide better services. Over the years, the Chinese government has invested a lot of resources in the mobile government app. How to ensure the investment performance and improve the user sharing degree of the government app needs continuous and in-depth study.

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Appendix A

Investigation on the Factors of User Sharing Degree between Beijing One Card APP and Bus Code APP

1. Please select your gender [Single Choice Question] *
   ○ Male
   ○ Female

2. Please select your age range [Single Choice Question] *
   ○ Under 18 years old (Juvenile)
   ○ 19-35 years old (Youth)
   ○ 36-59 years old (Middle age)
   ○ After the age of 60 (Old Age)

3. Please select your highest education level [Single Choice Question] *
   ○ High school education and below
   ○ Bachelor's degree
   ○ Master's degree
   ○ Doctoral degree

4. Which transportation APP do you prefer to use ? [Single Choice Question] *
   ○ Beijing One Card APP
   ○ Bus Code APP
   ○ I don't use these two apps (Automatically jump to the end of the questionnaire and finish answering the questionnaire)
   ○ I like both APPs, and it is difficult to distinguish which app I prefer

Please answer the following questions for your favorite app

5. The APP I use has preferential policies [Single Choice Question] *
   ○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

6. These preferential policies make me choose to use this APP [Single Choice Question] *
   ○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

7. The APP provides a customer service consultation channel [Single Choice Question] *
   ○ Yes ○ NO (Automatically switch to question 13)

8.The customer service will answer my questions in time [Single Choice Question] *
   ○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

9. The solution provided by customer service is helpful to me [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

10. My mobile phone can download and use this APP [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

11. This APP interface is simple in design, and I can use it to complete my travel purpose [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

12. This APP meets my travel needs [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

13. I like the travel mode provided by this APP [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

14. This APP provides a way to travel that I can afford [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

15. I browse the advertisements on this APP every day [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

16. I use this APP to go to go out every day [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

17. The APP has a comment area that allows me to write feedback [Single Choice Question] *
○ Yes ○ NO (Automatically switch to question 23)

18. I have edited comments in this APP [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

19. I am willing to comment and feedback in this APP in the future [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

20. I used to recommend this APP to others [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

21. After I recommended it, I saw my friend using this APP[Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

22. Now and in the future, I am still willing to recommend this APP to others [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

23. Will you download this APP through sharing with friends ? [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

24. I don't think this APP will reveal my personal information [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

25. I don't think this APP will reveal my travel information [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

26. I think this APP can provide quality travel services [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

27. The APP will trade through the platform I trust [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

28. This APP has transaction records, so I can see my transaction information also can protect my transaction security [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

29. In this APP, I am interested in the ride function [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

30. In this APP, I am interested in shopping functions [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

31. In addition to using the ride function of this APP, I have also purchased goods in this APP [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

32. In addition to using the ride function of this APP, I will purchased goods in this APP in the future[Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

33. In this APP, I am interested in preferential policies [Single Choice Question] *
○ Strongly Agree ○ Agree ○ Neither agree nor disagree ○ Disagree ○ Strongly Disagree

Appendix B

Descriptive statistical analysis of questionnaire samples

Variable	Category	Frequency	Percentage (%)
Gender	Male	93	27%
	Female	251	73%
	Total	344	
Favorite APP	Beijing One Card	243	71%
	Bus Code	101	29%
	Total	344	
Age Range	Under 18 years old (Juvenile)	8	2%
	19-35 years old (Youth)	302	88%
	36-59 years old (Middle age)	27	8%
	After the age of 60 (Old Age)	7	2%
	Total	344	
Educational Background	High school education degree and below	19	6%
	Bachelor's degree	278	81%
	Master's degree	35	10%
	Doctoral degree	12	3%
	Total	344	

Appendix C

Connotation of Four Influencing Factors and Corresponding Question Numbers in Questionnaire

Variables	Connotations	Question number in the questionnaire
Service Quality	Preferential Policies	5,6
	Comment channel	7
	Timely response and solution of problems	8,9
System Quality	Easy to use	10,11
	Suitable for use	12,13,14
Platform Promotion Effect	Browse	15
	Travel	16
User Sharing Degree	Comment	17,18,19
	Sharing	20,21,22,23
User Preference	Privacy protection	24
	Safety protection	25,26
	Payment guarantee	27
	Transaction monitoring	28
	User interests	29,30,32,33
	User habits	31