

# Factors Influencing College Students' Use of Shared Bicycles -- a Case Study of Jiujiang University, China

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**Abstract.** Under the environment of sharing economy, the undergraduates are an important subject in using bicycles. Through the analysis and processing of the survey data of SPSS and AMOS, it is found that the undergraduates' behaviors of using Shared Bikes are positively affected by their action intention, which in turn are affected by their attitudes and perceived behavioral control, and the attitudes play an intermediary role in behavioral norms' influencing their intention. This paper argues that enterprises should improve users' attitudes and perceptions of bike sharing: on the one hand, improve safety and convenience, and on the other hand, reduce costs.

## 1. Introduction

In the recent years, people are using internet on mobile phones instead of on personal computers. Technologies like ITO, AI, and Big Data are developing rapidly. As the environment is increasingly polluted, green environment, low-carbon travel become deeply rooted in people's hearts. Therefore, shared bikes are conveniently created under the sharing economy to solve the "last mile", and have been warmly welcomed by the public. According to the data in the 《Annual Report on Development of the Chinese Sharing Economy released by the national information center in Feb. 2018》 [1], the traded value in the sharing economy market has reached 4.9205 trillion RMB, representing 47.2% rise from last year. The operating method the shared bike use is "Enterprise investment, time-sharing lease"[2]. From that we can see, the users of shared bikes are in a rising trend.

## 2. Theoretical basis

The theory of planned behavior was proposed by Icek Ajzen in 1988 based on the theory of rational behavior. When analyzing individual behavioral factors that affect people, rational behavior theory assumes that people have the ability to fully control themselves. However, in actual situations, human behavior is not only influenced by subjective attitudes and norms, but also by external conditions. Human behavior may change if the external environment conflicts with subjective ideas. In the theory of planned behavior, attitudes, subjective norms and perceptual behavioral control will positively influence the intention of action, and there will be mutual interactions among the three, and the intention of action largely determines the use behavior. Gao Jian and Wei Sheng[3] study green consumption intentions from three aspects: lifestyle, subjective norms and perceived behavior control, and innovatively divide lifestyle into four parts: fashion consciousness, leadership consciousness, price consciousness and development consciousness. Studying the interaction between several major factors, and finally achieved the research results: The fashion consciousness and price consciousness divided in the way of life have a positive impact on the green consumption intention. Subjective norms and perceived behavior control can reflect the positive interaction of the four kinds of consciousness on the green consumption intention.

### **3. Propose models and assumptions**

Based on the related research of planning behavior theory, this paper studies attitude, subjective norm and perceptual behavior control as the main factors affecting undergraduates' intention to use shared bikes. The perceptual behavior control is divided into several aspects of experience perception like environmental protection, safety, convenience and cost. The assumptions are made based on the theory.

#### **3.1. Attitude**

Attitude is the positive or negative state of perception an individual's shows to behavior or a specific object, and the strength of belief and behavioral assessment determine the individual's attitude towards behavior. When sharing bicycles is more beneficial to people (time, cost, etc.), people will show more positive attitude towards it. Improve the perceived benefits, reduce the perceived risk, and positively promote and advocate can increase users' enthusiasm[4]. Therefore, assumptions are made as follows:

H1: The attitude of users using shared bikes is positively related to the intention of action.

#### **3.2. Subjective norms**

Subjective norms can be seen as a kind of pressure on the external society. Active related groups will have an impact on individual behavior. When friends around are using shared bikes, individuals will change their attitudes and use shared bikes to be consistent with the group, or even to get others' approval. Therefore, assumptions are made as follows:

H2: Subjective norms of users using shared bicycles are positively related to attitudes.

H3: The subjective norms of users using shared bicycles are positively related to the intention of action.

#### **3.3. Perceptual behavior control**

Perceptual behavioral control is the experience developed after relevant experiences and has an effect on attitudes and intentions of action. Largely because of their environmental friendliness, the convenience of riding and stopping, and the relatively low travel cost, shared bikes have been welcomed by the public since their appearance. These good perception experiences will affect future intentions after using shared bikes. Therefore, assumptions are made as follows:

H4: The perceptual behavior control of the user using the shared bicycle is positively related to the action intention.

H4a: The user's experience of using the environmentally friendly utility of shared bikes is positively related to the intention to act.

H4b: Experience perceptions of users using shared bikes safety are positively related to action intentions.

H4c: The experience of users using shared bikes convenience is positively related to the intention of action.

H4d: Experience perceptions of users using shared bikes costs are negatively correlated with action intentions.

Based on the above theoretical basis and assumptions, the model of influencing factors of the use of shared bicycle college students in this study is shown in Fig.2.

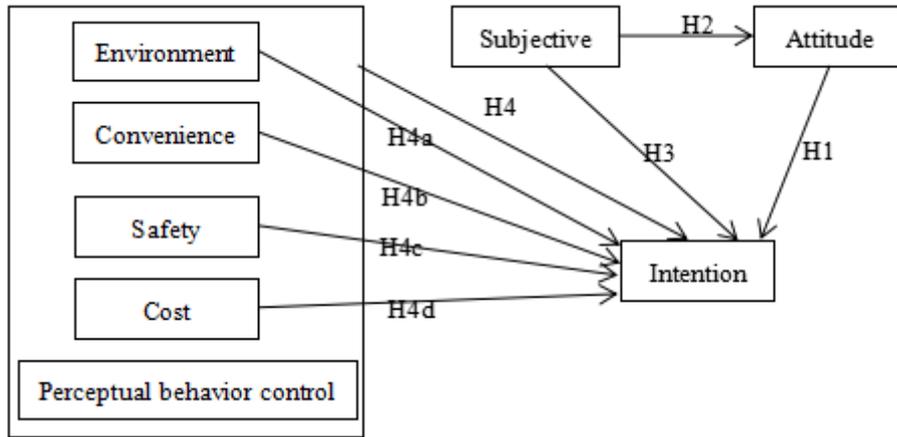


Fig. 2. Hypothesis model

#### 4. Design a Questionnaire

In this study, the hypothetical model is tested by questionnaire. A Likert 5-level scale is used in which 1 indicating very disagree and 5 indicating very agree. The specific items are shown in Table 1.

Table 1 .Questionnaire scale

Variable		Questions
Intentions		Will the inconvenience affect your next choice for the shared bikes
		Will you use shared bikes less due to the high deposit risk
		Will you consider other brands when you get used to one brand
Attitudes		Is that worth the money to use the shared bikes
		Is using shared bikes a way to be young and healthy
		Do you think the shared bikes make a huge impact on daily life
		Do you think the shared bikes have a positive future
Subjective norms		Will you be affected to choose the shared bikes if people around are using them
		Is there a high praise on shared bikes around you
		Will you be affected to choose the shared bikes if there are many on the campus
Perceptual behavior control	Environment	Your satisfaction of the shared bikes on green environment
	Convenience	Your satisfaction of the convenience of the shared bikes
		Your satisfaction of the use of the shared bikes (the seat adjustment)
	Safety	Your satisfaction of the safety of the shared bikes(brakes, bells)
		Your satisfaction of the safety of the shared bikes(internet safety)
	Cost	Your satisfaction of the deposits of the shared bikes
Your satisfaction of the renting standard of the shared bikes		

## 5. Analytical data and test models

### 5.1. Reliability test and validity test

In this study, SPSS 19.0 was used to analyze reliability analysis. It can be seen from the table that the  $\alpha$  coefficient of the subscale is also greater than 0.7, indicating that the scale meets the basic requirements. The validity test is shown in Table 3. The KMO value of the sample data is greater than 0.5, and the Bartlett spherical test results are significant, indicating that the variables of the measurement model have good structural validity.

### 5.2. Model test

After the reliability and validity test, the structural equations are verified by AMOS, the path analysis is performed on the model, and the hypothesis relationship is verified.

Table 2 .Reliability analysis result

Variable		Cronbach's $\alpha$
Intentions		0.815
attitudes		0.799
Subjective norms		0.813
Perceptual behavior control	Environment	0.840
	Convenience	0.826
	Safety	0.835
	Cost	0.842

Table 3 .KMO and Bartlett spherical test of the whole day scale

KMO Value		0.791
Bartlett Sphericity Test	Approximate Chi-square	5962.380
	DF(degree of freedom)	210
	Sig (p value)	0.000

Table 4. Hypothesis test result

Hypothesis	Path Coefficient	P value	Test Results
H1	0.491	***	Correct
H2	0.412	***	Correct
H3	0.091	0.106	False
H4	0.697	***	Correct
H4a	0.311	***	Correct
H4b	0.455	***	Correct
H4c	0.365	***	Correct
H4d	-0.482	***	Correct

### 5.3. Discussion of results

First, the attitude of the users using the shared bikes is positively related to the intention of the action, and the perceptual behavior control of the user using the shared bikes is positively related to the intention of the action. From the perspective of the theory of planned behavior, the degree of influence of attitude, perceived behavior control and subjective norms on the intention of action is studied. According to the investigation, attitude has positive influence on the intention of action, and the path coefficient also shows that perceptual behavior control has a significant positive effect on action intention and this empirical test cannot clearly indicate the positive effect of subjective norms on the intention of action. It may be that the degree of change of the undergraduates' influence on the surrounding environment or their classmates is not very high and cannot directly affect the action. When undergraduates hold an positive attitude towards shared bikes, they will increase the intention to use shared bikes. It is said that good experience perception will enhance the intention of action, while bad perception experience will reduce the user's intention to act.

Secondly, in the aspects of environmental behavior, convenience, safety and cost in the aspect of perceptual behavior control, the specific effects of perceptual behavior norms on attitudes and

intentions of action are studied in detail. Through analysis, users' perceptions of the environmental protection, convenience and safety of shared bikes are positively affecting their attitude towards shared bikes. Because sharing bike reduce carbon emissions, advocate green travel, and can be easily stopped at any time. So users have a positive attitude towards shared bikes, but their perception of cost is negative. In addition, the user's perception of the convenience of sharing bikes positively affects the intention of action. The survey found that the environmental nature of shared bikes will change the attitude of users, but it is not related to the user's intention to act.

Third, attitudes have a mediating effect on the influence of subjective norms on the behavioral intentions of undergraduates using shared bikes. That is, although subjective norms do not directly affect the intention of action, but positively affect the attitude of the user, this influence in turn affects the user's intention to act.

## **6. Summary**

Shared bikes have always been a representative product of the sharing economy. Studying the intention and behavior of shared bikes users using shared bikes can help companies apprehend the way people use them. The law of behavior is conducive to better decision-making in management and promotion, and provides inspiration for other shared economic business models.

First, improve convenience. Simply expanding the scale of launch is not the fundamental way to expand the benefits. Although there are many colleges and universities in China, the teachers and students of colleges and universities are a large user group, but in the investigation process, it can be found that there will still be no bike available. When a bike is placed, the company locates a place with a high traffic flow and expands the scale of the delivery. The information of the positioning device and its own database is used to determine the location where the user has the highest frequency of parking and use.

Second, improve security. Improve not only the maintenance of bikes, but also the improvement of network security. For the safety performance of bikes, maintenance personnel need timely maintenance management, but the strengthening of network security technology needs to be solved urgently. The development of technology needs continuous improvement.

Third, reduce perceived use costs, especially the use of deposits and speed up the refund of the deposit. For the deduction of time and distance, a more reasonable calculation method should be adopted. Even for different regions, different charging periods can be used for different usage periods. The income source of the enterprise is not only from the user's renting fee, but also the bike interface is used to create a diversified profit model[5].

The sample research data of this paper comes from undergraduates in the same university. If conditions permit, the research data can be collected from universities in other regions to make the research data more objective and comprehensive, so that the sample data can represent the overall characteristics of college students. At the same time, it is also possible to investigate the same group of users at different time periods to see if their attitudes, experience perceptions, etc. will change greatly and affect the results. The results of the study can be further refined in these follow-up studies.

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