

Research on the Factors of User's Improper Behavior based on the Visiting Consumption Model

Zhangshuai Yuan

Management School of Shanghai University, Shanghai 200444, China

Abstract

Access-based consumption is a new consumption mode in recent years. However, bike sharing, as a representative, is plagued by user misconduct, which leads to its limited development. The existing literature mainly considers the external punishment and other factors for the exploration of user's improper behavior based on the visiting consumption mode, and seldom considers the important role of personal motivation in the occurrence of bad behavior. Therefore, through the rational choice theory, moral choice theory and self-control theory, this study puts forward the function hypothesis and constructs the research model from the three dimensions of the individual. At the same time, this study uses a scenario-based questionnaire survey to collect data, and finally collected 536 valid questionnaires. Then, through the analysis of data, the research model and hypothesis are verified. The results show that moral definition has a significant positive impact on the occurrence of user misconduct, while self-concept has a significant negative impact on the occurrence of user misconduct. Finally, this study focuses on the improper behavior and its factors in a new consumption mode, and provides some reference and suggestions for the related enterprises based on access service.

Keywords

Access-based Consumption; User Misbehavior; Structural Equation Model; Rational Choice Theory; Moral Choice Theory; Self-Control Theory.

1. Introduction

In recent years, the business environment has changed with the development of Internet technologies. One of the alternatives to ownership consumption is called access-based consumption, where users pay for a temporary experience of a product[1]. Access-based consumption not only facilitates the use of products that users do not own, but also has the advantage of promoting environmental sustainability by sharing resources among users and maximizing the value of resources[1,2]. Access-based consumption includes car-sharing and bike-sharing (e.g., Zipcar, Mobike), online lending programs (e.g., Bag Borrow or Steal, Netflix), etc. One of the most popular access-based services in China in recent years is bicycle sharing, which is in line with the green travel concept advocated by the government and is dedicated to solving the problem of urban traffic congestion[3]

While access-based consumption models have many benefits, inappropriate consumer behavior is not only prevalent in access-based consumption environments, but harmful to companies and society as a whole. For example, many bike-sharing consumers tend to park their bikes randomly in random locations on the road or in private neighborhoods [4]. These parking violations not only infringe on public space, cause serious traffic congestion, and restrict the public flow of public goods [5], And it also forces bike-sharing companies to bear huge and almost unaffordable additional maintenance costs [6]. To regulate these consumer misbehaviors, bike-sharing companies have relied heavily on user policies based on credit

systems and formal sanctions for violations, but the results have been less than ideal [6]. In order to develop more effective responses to consumer misbehavior and achieve sustainable access-based consumption, it is important to gain insight into the root causes of these consumer misbehaviors.

In order to fully understand the factors influencing user misbehavior based on access consumption, this paper combs through and finds that although existing research has yielded some results, there are still some unresolved issues. First, the existing studies mainly consider the impact effects from a single-factor perspective, such as formal punishment based on deterrence theory, and lack a comprehensive analytical perspective that combines multiple factors. Secondly, the existing studies on bicycle sharing are mostly limited to the description of surface phenomena, i.e., describing the existing problems and giving broad recommendations, with insufficient research on the causes of misbehavior and lack of in-depth research on the mechanism of the effects. Finally, the consideration of misbehavior in existing studies is often limited to rewards and punishments, and lacks a personal perspective to explore the factors that produce it; therefore, the relationship between personal self-efficacy and misbehavior needs further research. This study will use the example of bicycle sharing in access-based services to explore how various influences from three dimensions of individuals combine to form misbehavior through structural equation modeling. The main contributions of this paper may be as follows: first, it explores the causal factors influencing user misbehavior under the access-based model and provides new ideas for the empirical study of user behavior under the new consumption model; second, it gives a comprehensive analysis perspective by exploring the factors of user misbehavior from the three dimensions of individuals in a comprehensive manner. Third, this study is beneficial for bike-sharing and access-based service companies to take appropriate measures to reduce user misbehavior through an in-depth analysis of user misbehavior.

2. Literature Review and Theoretical Foundations

2.1. Shared Bicycle

Bike-sharing is a typical access-based consumption model that has attracted extensive attention from scholars in recent years. The first is the discussion on the socio-economic value of bicycle sharing [7]. Yang et al. (2019) explored the key factors and major challenges affecting the sustainability of bike-sharing and provided corresponding solution strategies to promote the sustainable development of bike-sharing [8]. In addition, some scholars have explored the factors that drive users to use bicycle sharing in order to further increase their usage of bicycle sharing [9-10].

However, with the widespread use of bike-sharing, uncivilized use behaviors such as illegal parking have instead caused traffic burdens and affected the social benefits of bike-sharing. Some scholars have now explored the factors that influence users' civilized use of bicycles. For example, Jia et al. (2018) used a stimulus-organism-response model to explore the influence of four stakeholders - bike-sharing companies, the public, the media, and the government - on users' intention to use bicycles in a civilized manner, and the results showed that user interface design, social influence, and new media had a significant impact on users' awareness and attitudes toward uncivilized behavior [11]. Sun et al. (2019) explored the factors influencing users' civilized car use behavior based on the theory of planned behavior and found that attitudes, subjective norms, perceived behavioral control, and personal norms have significant effects on civilized car use behavior, while civilized car use intentions play a mediating role, and perceived policy effectiveness has a moderating role between the effects of intentions on real behavior [12].

2.2. User Misbehavior based on Access Consumption Model

Early access-based consumption research focused on elucidating the nature and scope of this new consumption model [13]. Later, after gaining a deeper understanding of access-based consumption, empirical studies began to examine how to motivate consumers to use access-based services [14-17]. Most of these studies implicitly assume that consumers who participate in market transactions will consciously comply with the relevant market order and regulations [18]. However, a variety of consumer misconduct that violates normal rules can occur in every trading market [19]. As the number of consumers increases, consumer misconduct becomes a serious problem, affecting the development and long-term prosperity of access-based consumption [20]. In particular, the sustainability of bike-share systems is threatened by consumer misconduct, such as parking violations [21-22]. Therefore, it is crucial to understand the root causes of consumer misbehavior in access-based consumption in order to develop effective countermeasures. However, there are relatively few studies that explore the reasons for users' misbehavior in access-based consumption contexts. Some of the research literature is shown in Table 1.

Table 1. The main research of access-based consumption

Year	Author	Methodology	Research Content
2012	Bardhie et al	Theoretical Research	Define the concept of access-based services, contrasting the nature of access with ownership and sharing
2013	Schaefers	Interview	Identify four patterns of motivation for users to use car sharing
2015	Schaefers et al	Questionnaire	Explore the impact of three risks of ownership on users' use of access-based services and the impact of access-based service use on reduced ownership consumption
2016	Edbring et al	Interview	Explore users' motivations and barriers to using alternative consumption models (access-based consumption and collaborative consumption)
2016	Lawson et al	Questionnaire	explored the reasons why users use access-based consumption and clustered them into four groups based on motivation
2016	Schaefers et al	Experiment	Exploring the factors influencing the contagion effect of user misbehavior in access-based services
2018	Poppelaars et al	Interview	Exploring the reasons why users reject access-based services

2.3. Theoretical Background

2.3.1. Rational Decision-making Theory

Rational decision-making theory is mainly derived from the expected utility model in early economics [23]. Rational decision-making theories include rational choice theory, rational action theory, and theory of planned behavior, all of which assume that people are rational when faced with choices and are motivated by self-interest [24]. In a rational decision-making process, individuals will weigh the benefits and costs of choices to calculate the utility of choosing a particular action; their perceptions of benefits and costs are related to personal characteristics [25]. Each consumer has his or her own judgment about benefits and costs and is likely to act inappropriately when the expected benefits of doing so exceed the costs. Rational decision theory has been used to study criminal behavior and policy violations in organizations. For example, Vance and Siponen (2012) explored the antecedents of employees' intentions to violate information security policies [26-27]. Perceived benefits and perceived costs are the two main components of rational decision theory. Perceived benefits are the expected favorable consequences of adopting undesirable behavior for consumers; these benefits can be intrinsic (e.g., exciting experiences) or extrinsic (e.g., monetary or physical assets) [26]. Prior research has found that perceived benefits positively influence the intention to engage in undesirable

behavior. For example, perceived financial gain plays an incentive role in theft, whereas self-benefits motivate consumers to engage in undesirable behaviors [28]. In contrast, perceived costs refer to the expected adverse consequences of misconduct [25-27].

2.3.2. Ethical Decision-making Theory

Compared to rational decision-making theory, ethical decision-making theory focuses more on concern for others than for oneself, shifting the focus from personal interests to the interests of others [28]. Some scholars assert that people are selfless, not just concerned with their gains and losses [29]. Consumers may avoid misbehavior not only because they believe that the potential costs of doing so outweigh the potential benefits, but also because they believe that such behavior is morally wrong [30]. Previous research has shown that individuals' moral judgments about particular behaviors can greatly influence their moral decisions [28]. For example, some people will consider the negative impact of these bad behaviors on the product company, while considering the moral condemnation of themselves [31]. Some studies have even identified ethical beliefs as the most powerful factor in deterring corporate crime [32]. In addition, some studies suggest that shame is a deterrent mechanism [33]. When a person engages in misconduct, shame refers to a deep sense of inner guilt and embarrassment [34]. This study suggests that shame is a negative self-conscious emotion involving unethical choices, which reduces the attractiveness of misconduct and influences consumers' intent to misbehave [35]. People will reduce misconduct when they predict a certain level of shame after committing misconduct or criminal behavior [36].

2.3.3. Self-control Theory

Hirschi and Gottfredson (1990) argue that criminal behavior of offenders is irrational, lacking in self-control and impulsive, and that criminal behavior of either kind is inextricably linked to self-control and suitable opportunities to commit crimes [37]. A comparative observation of the behavior of people with low self-control with those with high self-control shows that people with high self-control possess these characteristics: low risk-taking, low impulsivity, and less prone to criminal behavior and transgressions in the face of short-term, timely benefits. Self-control is a psychological aspect of activity, whose particular object of action is oneself. At the same time, the flexibility of self-control is an ability to manage words and actions well, and to upgrade and change behavior according to self-awareness. So, after a comparative analysis of the definition of self-control, in summary, self-control has the following two characteristics: (i) it is a discipline for impulsive behaviors as a way to achieve self-worth, and (ii) it is a control behavior aimed at achieving long-term goals.

3. Research Model and Hypothesis

According to rational decision-making theory, a gain is a favorable outcome expected by the user for taking a wrong action, which may be intrinsic, such as an exciting experience, or extrinsic, such as a monetary or physical asset [38]. Previous studies have shown that perceived benefits positively affect user misbehavior while perceived costs negatively affect it and are empirically supported. Similarly, in this study context, misbehavior may bring benefits and costs to the user, such as parking the car at the curb, which will make the user feel convenient and save his time but will be penalized by the system. Therefore, this study concludes that users will tend to violate the rules when they perceive the benefits of misbehavior to be high; users will tend to comply with the rules when they perceive the perceived costs of misbehavior to be high Output.

Hypothesis 1: Perceived benefits have a significant positive effect on user misbehavior.

Hypothesis 2: Perceived cost has a significant negative effect on user misbehavior.

Shame is a self-imposed punishment that refers to the guilt an individual feels when a violation is discovered by others and has the same deterrent effect as other punishments. Silic et al. (2017) found that employees' shame in the face of public disclosure of misconduct reduced their use of offending information technology [39]. In this study, users may have reduced undesirable behaviors due to the shame they expected to feel when their illegal bike sharing use was discovered by others.

Hypothesis 3: shame has a significant negative effect on user misbehavior.

The propensity to commit crimes is associated with certain characteristics of individuals, such as weak moral beliefs. Users will avoid misbehavior, perhaps not only because they perceive the cost to be high, but also because they believe the behavior to be morally wrong. Some scholars have found that the suppression of criminal behavior relies not only on formal punishment but also on the individual's moral belief that the behavior is wrong. In this study morality is defined as the degree to which users perceive the misconduct identified in the bike-sharing system as morally wrong. Since bike-sharing violations involve moral issues, this study argues that the moral definition will be an important predictor of user misbehavior.

Hypothesis 4: Ethical definitions have a significant positive effect on user misbehavior.

Self-control, a personality trait of individuals that develops during childhood and determines whether or to what extent people are willing to resist the temptation of immediate gratification [37]. Self-control theory suggests that people with low self-control have the ability to restrain themselves immediately when criminal opportunities arise than those with high self-control. Therefore, in this study, users may be able to effectively overcome the occurrence of random parking due to their own stronger control ability, thus contributing to less user misconduct.

Hypothesis 5: Self-control has a significant negative effect on user misbehavior.

Self-concept is an individual's perception of the appropriateness of a behavior given the adopted belief structure and helps to determine the individual's view of himself or herself [40]. To avoid cognitive dissonance, individuals will be under increasing normative pressure. In this study, users may be expected to be caught by others for violating bike-sharing use thus leading to normative pressure, which will help reduce users' misbehavior.

Hypothesis 6: Self-concept has a significant negative effect on user misbehavior.

Based on the above analysis, this study establishes the model shown in Figure 1.

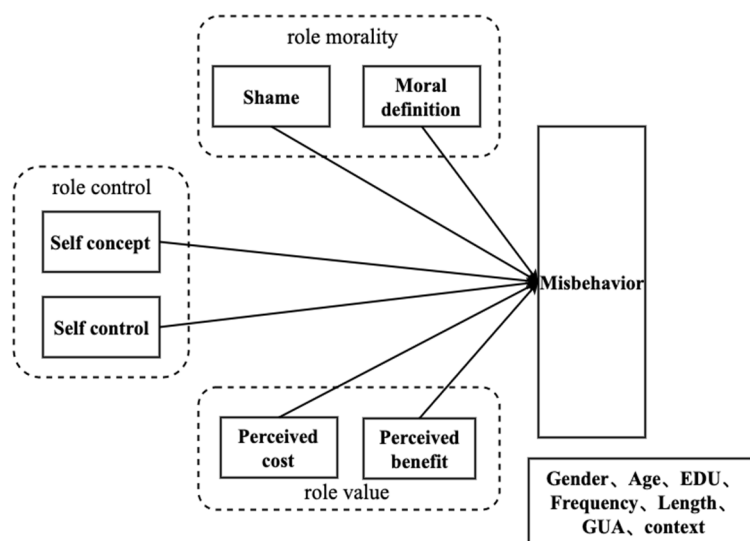


Figure 1. Research model

4. Research Design

A scenario-based online questionnaire was chosen to collect data for this study. The use of a scenario-based design is preferred in this study because it can reduce potential social desirability bias by using the third person to describe behavior rather than having respondents report their own behavior [41]. Similarly, scenario-based design can add a sense of realism by providing respondents with specific situations of misbehavior.

4.1. Scenario Design

In this paper, Delphi hair was used to develop scenarios. First, 21 types of uncivilized behaviors of bike sharing were compiled by collecting news, posts, microblogging information and interviewing frequent bike sharing users; subsequently, the Delphi method was used to survey 10 frequent bike sharing users, and after two rounds of scoring and screening to obtain the four types of inappropriate behaviors with the highest scores and synthesize them into two categories, namely inconvenient parking (i.e., in places that are difficult for other consumers to use parking bike-sharing) and random parking (i.e., parking bike-sharing randomly on the roadside) as the research protocol for this paper. First, respondents to the Delphi method study most frequently cited these two bike-sharing behaviors. This is consistent with the findings of previous studies [42]. Second, both situations reflect the fact that parking in the wrong place is a widespread problem that can have serious negative consequences in a bike-sharing environment. Overall, investigating these two situations can provide meaningful insights for practitioners.

4.2. Scale Development

All measures are adapted from existing scales [42]. This paper used reverse translation techniques to translate all English items into Chinese and to ensure that the wording of the items was appropriate for the bike-share environment. Two professors familiar with analytic methods and bike-share services checked the items for content validity and wording accuracy.

4.3. Data Collection

Before the formal data collection, this study conducted a pre-study on 30 college students who had used Mobiles. Through the analysis, the research results had good reliability and validity, indicating that the overall design of the questionnaire met the requirements. Based on the feedback from some respondents, this study further modified the corresponding question order and the way of language description to make the questionnaire content more concise and easier to understand, and to facilitate the respondents' responses.

This study ultimately relied on the Questionnaire Star platform to collect data and survey users who have used Mobiles and are aware of the MoFan score. Questionnaire Star is a professional questionnaire platform that collects a wide range of data to ensure that it can involve the majority of users who use Mobiles. The Mobike app was chosen as the research platform because Mobike is currently one of the more popular bike-sharing bikes in China and has a large user base. Investigators will be randomly assigned to a questionnaire in one of the four scenarios. In order to ensure the quality of the questionnaire, a test question "4+5=?" was designed in this study. to facilitate later screening of the quality of the questionnaire.

5. Results

5.1. Descriptive Statistics

With the help of the questionnaire star platform, after 3 weeks, a total of 598 questionnaires were finally collected in this study. Due to the large number of questions involved in the questionnaire, in order to ensure the reliability of the questionnaire data, this study strictly

censored the collected questionnaires, and finally obtained 536 valid questionnaires, with a valid recovery rate of 89.6%. Among the valid questionnaires, scenario 1 had 272, accounting for 50.3%; scenario 2 had 264, accounting for 49.7%. The number of respondents in each scenario was evenly distributed. Statistically, 37.7% of the respondents were male and 62.3% were female, and the average age of the sample was 28.4 years old, which was low overall and in line with the basic profile of bike-sharing users. In terms of education level, bachelor's degree was dominant, followed by specialist and master's degree and above. The overall length of use among the respondents was higher than 6 months, accounting for 77.4%, with an overall long duration of use, while the frequency of use was once a week or more, accounting for 79.0%, indicating that most of the respondents had some understanding of the use of Mobike. The specific results of demographic characteristics are shown in Table 2 below.

Table 2. Sample demographic characteristics

Variables	Properties	Count	%	Variables	Properties	Count	%
Gender	Male	202	37.7%	Time of use	1 month below	34	6.3%
	Female	334	62.3%		1-3 months	31	5.8%
Age	20 below	99	18.5%		3-6 months	56	10.4%
	21-30	231	43.1%		6 months -1year	129	24.1%
	31-40	180	33.6%		1-2 years	205	38.2%
	40 above	26	4.9%		2 years above	81	15.1%
Education level	High School and below	25	4.7%		Frequency	Less than 1 time per week	112
	Specialty	80	14.9%	1-3 times per week		215	40.1%
	Undergraduate	385	71.8%	4-6 times per week		146	27.2%
	Master's degree and above	46	8.6%	7-10 times per week		41	7.6%
				More than 10 times a week		22	4.1%

5.2. Data Validity Check

Table 3. Reliability and aggregate validity of the scale

Variables	Measurement indicators	Cronbach's Alpha>0.7	FL>0.5	CR>0.7	AVE>0.5
CI	C11 C12	0.807	0.854	0.910	0.835
PBC	PBC1 PCB2 PBC3	0.829	0.836	0.887	0.663
PCC	PCC1 PCC2 PCC3	0.878	0.878	0.925	0.805
SCL	SCL1 SCL2 SCL3 SCL4	0.732	0.745	0.773	0.613
SCP	SCP1 SCP2 SCP3	0.754	0.768	0.858	0.669
SS	SS1 SS2 SS3	0.798	0.824	0.879	0.709
MD	MD1 MD2 MD3	0.782	0.783	0.873	0.695

This study examines the reliability and validity of the scales. Reliability refers to the extent to which the measurement of a variable is reliable and is usually assessed using Cronbach's Alpha, Composite Reliability (CR) and Average Variance Extracted (AVE) [43]. Aggregate validity indicates the extent to which theoretically correlated measures in the model are correlated in practice, i.e., the correlation between the measures of a given variable, and is tested using the t-value, which satisfies the condition if the t-value is greater than 1.96. This study first tested the factor loadings of each measure in the questionnaire and found that the factor loading values were all greater than 0.7 and there were no questions that needed to be removed. The results of the tests of reliability and convergent validity are shown in Table 3. As can be seen from the table, the Cronbach's alpha values in this study are all greater than 0.7, the values of the combined reliability are all greater than 0.7, and the values of AVE are all greater than 0.5, which meet the requirements and indicate that the model has good reliability. The factor loading values of each measure in this study were greater than 0.5 indicating that the model has good convergent validity.

Discriminant validity indicates the degree of divergence between a particular variable and other variables, and it is measured by comparing the difference between the measure of that variable and the measure of other variables [44]. In this study, the square root of the mean analytic variance (AVE) of the potential variables was compared with the absolute value of the correlation coefficient to measure the discriminant validity, and the results are shown in Table 4. The values on the diagonal are the square root of AVE for each variable, which are greater than 0.7. The square root of AVE is greater than the correlation coefficient between the variables, indicating that the scale has good discriminant validity.

Table 4. Descriptive statistics and correlation analysis results of variables

	MD	Misbehavior	PBC	PCC	SCL	SCP	SS
MD	0.834						
Misbehavior	-0.404	0.914					
PBC	0.402	-0.335	0.814				
PCC	-0.282	0.522	-0.374	0.897			
SCL	-0.341	0.301	-0.257	0.288	0.681		
SCP	0.678	-0.587	0.460	-0.456	-0.394	0.818	
SS	0.430	-0.326	0.509	-0.274	-0.262	0.510	0.842

5.3. Hypothesis Testing

To test hypotheses H1-H6, this study used Smartpls 3.0 to construct structural equation models. The results of the structural equation analysis are shown in Table 5.

Table 5. Structural equation model test results

Hypothesis		M	STDEV	O/STDEV	P
H1	PBC -> MB	-0.041	0.046	0.877	0.381
H2	PCC -> MB	0.254	0.040	6.436	0.000***
H3	SS -> MB	-0.002	0.043	0.114	0.909
H4	MD -> MB	-0.061	0.049	1.213	0.226
H5	SCL -> MB	0.071	0.040	1.691	0.091
H6	SCP -> MB	-0.334	0.060	5.549	0.000***

It was found that self-concept had a significant negative effect on user misbehavior (p<0.001) and perceived cost had a significant positive effect (p<0.001), so hypotheses H2 and H6 were

confirmed. Whereas, perceived benefit, shame, moral definition, and self-control were not significant on delinquent behavior, so H1, H3, H4, and H5 were not significant. In this study's model, perceived cost and self-concept together explained 0.475 of user misbehavior, indicating that the model has good explanatory strength. The final hypothesis testing results of this study are shown in Table 6 below.

Table 6. Hypothesis H1-H6 test results

Hypothesis	Description	Results
H1	Perceived benefits have a significant positive effect on user misbehavior	Not Established
H2	Perceived cost has a significant negative effect on user misbehavior	Not Established
H3	Shame has a significant negative effect on user misbehavior	Not Established
H4	Ethical definitions have a significant positive impact on user misconduct	Established
H5	Self-control has a significant negative effect on user misbehavior	Not Established
H6	Self-concept has a significant negative effect on user misbehavior	Established

6. Conclusion

6.1. Research Findings

The specific findings of this study are as follows. Through structural equation modeling analysis, this study finds that perceived benefits are not significant for user malpractice and hypothesis H1 is not valid. This may be due to the fact that the rewards in the Mobai app are not obvious enough and have less incentive effect on users; on the other hand, it may be due to the fact that the effect of perceived benefits depends on the combination of other factors, and the same hypothesis H2 is not valid. The reason why H3 is not valid is that there may be no moral pressure from others when the user misbehaves, so the sense of shame is not effective in preventing the misbehavior of individual users. In contrast, the moral definition of moral choice theory has a significant positive effect on users' misbehavior, and hypothesis H4 holds. Self-control, on the other hand, does not have a significant effect on user misbehavior, and hypothesis H5 does not hold because individual self-control may depend on personal morality as well as other self-efficacy factors. In contrast, self-concept has a significant positive effect on user misbehavior, and hypothesis H6 holds.

6.2. Research Contribution

6.2.1. Theoretical Contributions

The theoretical contributions of this study are mainly twofold. Firstly, this study expands the research in the area of bike-sharing, access-based consumption of misbehavior. Bicycle sharing is an emerging context that is prone to misbehavior, and there are relatively few studies exploring user misbehavior in this context. Secondly, this study adopts a scenario-based questionnaire to empirically elucidate the antecedents of user misbehavior formation from three dimensions of individuals, which helps to enrich the research in this area.

6.2.2. Practical Contributions

First the findings of this study have redo implications for practitioners of access-based consumption. Specifically, the findings of this paper provide useful insights for providers of access-based services (e.g., bike-sharing companies) to develop more effective countermeasures against undesirable consumer behavior (e.g., parking violations).

6.3. Limitations and Future Prospects

There are some limitations in this study. In fact, the generation of user misbehavior also includes other influencing factors, such as formal punishment. Therefore, future attempts can

be made to study the role of more variables on user misbehavior from other perspectives as a way to develop have a more comprehensive understanding. Finally, this study only focuses on studying bike-sharing as an access-based service. Although bike-sharing has a large user scale with more serious violations and is somewhat representative, future attempts can be made to replicate this study in other access-based consumer services to improve the external validity of the results.

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