Article

The Research of Tripartite Collaborative Governance on Disorderly Parking of Shared Bicycles Based on the Theory of Planned Behavior and Motivation Theories—A Case of Beijing, China

Daozhi Zhao and Di Wang *

College of Management and Economics, Tianjin University, Tianjin 300072, China; dzzhao@tju.edu.cn
* Correspondence: wangdi666@tju.edu.cn

check for updates

Abstract: With the maturity of mobile payments and internet technology, a new type of travel mode, shared bicycles, was brought out by China's urban transport under the impetus of "the last mile" travel demand. Although convenient travel has been achieved by using shared bicycles, the resulting problems such as disorderly parking and the deposition of bicycles could severely influence urban traffic order and impede the sustainable development of shared bicycles. Based on the quasi-public goods property of shared bicycles, this article established a management system for the tripartite collaborative governance of disorderly bicycle parking by virtue of regulating the bicycle parking behavior of users, the promoting of multiple propaganda and macro-institutional controls of the government, and acquiring technique support of enterprise "entry settlement". Furthermore, considering the influence on the governance effect of user conduct, a structural model for guiding users to regulate bicycle parking to guarantee the governance effect by adopting material incentive and spiritual motivation was established via the utilization of the theory of planned behavior and motivation theories, and multiple hypotheses were also proposed. In this article, users of shared bikes in Beijing, China were selected as the research objects, and a questionnaire survey was adopted as the empirical research method. In addition, the governance validity on disorderly parking of the collaborative governance model was tested via hierarchical regression analysis after the collection and analysis of the factors influencing bicycle parking behavior of users. The obtained results show that the tripartite collaborative governance model could enhance the regular parking consciousness of users and improve the governance effect of disorderly parking. The research conclusion of this article could provide feasible suggestions for the governance of bicycle disorderly parking and propel the sustainable development of shared bicycles.

Keywords: sharing bicycle; disorderly parking; theory of planned behavior; motivation theories; tripartite collaborative governance

1. Introduction

With the development of the sharing economy, shared bicycles based on mobile payment have come to be the transport vehicle for short trips. The emergence of shared bicycles could meet "the last mile" travel demand [1], relieve the congestion of urban transport [2], and reduce the pollution of carbon emissions produced by daily travel [3,4]. Nevertheless, many negative problems have also arisen. Due to the lag of usage specification for shared bicycles and the lack of regular parking consciousness of users [5,6], parking bicycles at will and the resulting occupation of roadway and urban public spaces not only damage the city's appearance, but also disturbs the traffic order. Shared bicycles were considered to be a new form of sharing economy for supply-side structural reform of

public transport and the internet plus model, and the governance mode for the disorderly parking of shared bicycles deserves to be explored to realize the sustainable development of bike-sharing industry.

The former research on the governance of shared bike disorderly parking was mainly focused on policy governance. Deemed by Miller, acting as the macroscopic controller, the government should enact regulations to restrict the number of bicycles being placed on the market and introduce laws to regulate the development of bike-sharing industry [7]. Some other researchers proposed that the combination of big data technology and the internet of things (IoT) system should be utilized to realize the macro-control of bike-sharing industry and the planning of shared bicycle parking areas [8]. These articles mentioned above merely proposed some simple management suggestions from different perspectives and lack systematic exploration of the governance responsibilities of all stakeholders. After the analysis of the roles of the government, enterprises and users in the shared bike system and their individual responsibility, and dilemma in the governance of shared bike disorderly parking, the strategy of tripartite collaborative governance was firstly formulated in this article to make up for drawbacks of related researches.

Firstly, as the macro-regulator of the bike-sharing industry, the government was endowed with important impact towards the sustainable development of bike-sharing industry and compulsive responsibility for the amendment of drawbacks for shared bikes and the governance of shared bike disorderly parking [9]. As an environmentally-friendly travel tool, shared bikes exert good effects towards the green and sustainable development and supply-side reform, etc. Thus, the government needs to support the innovation of bike-sharing enterprises and encourage their sustainable development. However, the resulting problems of over-release and disorderly parking of bikes have brought new challenges to the government. Under this condition, as the balanced regulator, the government needs to enact industry regulatory measures and control the development direction of bike-sharing industry. Nevertheless, the government cannot thoroughly cope with the disorderly parking of shared bikes alone, due to the huge magnitude of bike-sharing industry and the limited material resources and manpower that could be provided by the government.

Moreover, as the provider of bicycle sharing services, enterprises also undertake compulsive responsibility for the management of shared bike disorderly parking. Due to the wide utilization range of shared bicycles, the logistics and manpower costs for scheduling bicycles by the operating enterprises could dramatically reduce their profits. Thus, it is hard to improve the disorderly parking of bicycles by the operating enterprises due to their characteristic of chasing interest. Pointed out by Xue [10], the disorderly parking of bicycles could be improved by enacting usage specification. Due to the existing strong competitive pressure of bike-sharing industry, catering to the convenience requirement of users is the essential factor to occupy the market. However, the restriction towards bicycle parking of users will bring down the convenience of using bicycles and influence their usage motivation, finally reducing the profits of related enterprises. Thus, it is hard for operating enterprises to curb the usage behavior of users by institutional restrictions, even when aware of the negative effect of disorderly parking of shared bicycles.

Finally, as the actual user of shared bicycles, users undertake direct responsibility for the disorderly parking of bicycles. The value realization manner of bicycle sharing services is different from traditional transport tools. Traditional public transport companies not only act as the service provider, but also act as the subject for the determination of service value. Under this condition, users are merely purchasers of service value and cannot produce any influence towards it. Bike-sharing enterprises are the producers and allocators of bicycles; the value of bicycle sharing services needs to be realized through the purchase of use rights by the users. As the users and value implementors of bicycle-sharing services, the irregular use and parking of bicycles by the consumers not only influence the city appearance, but also reduce the market value and social value of bike sharing service. A few researchers have analyzed the reason for disorderly parking of bicycles from the perspective of user behavior. Jiang [11] used the factor analysis method to conclude that the lack of self-discipline is one reason for users to park bicycles disorderly. Pointed out by Chen, users are endowed with the behavioral intention of

parking bicycles irregularly to realize the maximization of self-interest [12]. As reflected by the articles mentioned above, disorderly parking of bicycles reflects the spontaneous behavior patterns of users, which act as the bounded rational population during the acceptance of bike-sharing services. However, the existing behavioral intention of regulating bicycle parking was not mentioned. It is hard for users to regulate bicycle parking spontaneously due to the lack of self-initiative, even when aware of the negative effects of disorderly parking of shared bicycles.

Evidently, it is hard for the government to enact a detailed management program for the overall supervision of the bike-sharing industry due to their finite macro-control ability and administrative resource. For enterprises, the imperfect management mechanism has made them unable to avert the irregular using behavior of users. Furthermore, the number and distribution range of shared bicycles are large. In this situation, it is still hard for the enterprises to provide enough resources to fulfill effective management of shared bicycles due to their characteristic of chasing interest. Moreover, the unavoidable opportunistic behavior of users is the main reason for the disorderly parking of bicycles and the most important influencing factor for the value realization of shared bicycles. Thus, guiding users to park bicycles regularly is the key factor for the guarantee of governance effect. In summary, it is very hard for any party among the government, enterprises, and users to realize the thorough governance of shared bicycles due to the large magnitude of bike-sharing systems and the complex nature of disorderly parking of bicycles [13].

The theory of planned behavior (TPB) is a classical theory for the investigation of human behavior, and has been used to analyze the bicycle using behavior of users [14]. In addition, deemed by motivation theories (MT), human behavior can be altered by external stimulus [15], and the behavior intention of humans can be strengthened by rewards and punishments. The government could enact feasible policies and analyze the acceptance degree of users by MT and TPB, respectively, during the formulation process of governance policy for the disorderly parking of shared bicycles. Evidently, TPB and MT could provide theoretical support for the formulation of feasible macro governance policies by the government and the effective implementation of these policies.

Based on this, this article makes the governance of bicycle disorderly parking the starting point, sets the user behavioral intention of parking bicycles regularly as the dependent variable, formulates the solution pattern from the two aspects of management subject and regulation measures, explores the driving factors of material incentives and spiritual motivation, and further establishes the tripartite collaborative governance mode based on the macro supervision of government, the mechanism innovation of the enterprises, and the participation of users, in order to realize the resource integration, the power structure adjustment [16], and the co-governance of shared bicycle disorderly parking.

In general, the purpose of this study could be summarized as follows: Establish tripartite collaborative governance mode to solve the disorderly parking of shared bicycles, and provide certain theoretical supports and practical bases for the promotion of sustainable development for shared bike industry. Furthermore, the investigated relationships in this article are summarized as follows: The government enacts governance policies to supervise enterprises and standardize the behavior of users; the enterprises provide bike sharing services to users, comply with policy supervision, and provide an "entry settlement" technique to standardize the behavior of users; the users comply with the supervision of the government and enterprises and regulate their parking behaviors.

This article is arranged as follows: In chapter two, we summarize the facing challenge of the shared bicycle system and its development, and introduce the concept of tripartite collaborative governance. In chapter three, we construct the tripartite collaborative governance framework of "government–enterprises–users", and analyze the responsibilities for the governance of shared bicycle disorderly parking of the involved three parties. In chapter four, the influences on user behavior of governmental supervision and running mechanism innovation of enterprises are analyzed based on TPB and MT, and the structure model and hypotheses are also proposed. In chapter five, details on the questionnaire of shared bike users from Beijing are presented. In chapter six, the data of collected questionnaires are analyzed by hierarchical regression analysis (HRA) to obtain the influence

of intrinsic motivation of users, external incentives, and the acceptance level for the collaborative governance policy of users towards the dependent variable. Finally, the theoretical significance and practical significance are summarized, and the limitation of this research and future research directions are also discussed.

2. Literature Review

2.1. Bicycle-Sharing System

Bicycle sharing is the bike rental service provided by related enterprises, also referred to as free-float bicycle sharing [17], is endowed with the merits of convenience using and mobile payments [18]. Users can pick up and return bicycles as needed, without the responsibility of additional bike costs and management [19]. According to the statistics, the trip distances of shared bicycles are in the range of 1–5 km [20,21], making up the defect of green short trip mode of cities, and has come to be the key connectivity hub of urban transport [4,22].

Shared bicycles have uniform design standards and are always endowed with beautiful appearances. The weights of shared bicycles are in the range of 16–22 kg [20], and their quality is good enough to afford long-term reuse. In the middle of the last century, the first generation "White Bike" with no requirement for deposit and use costs was brought out by Amsterdam. Due to the fact that no lock was equipped and the subsequent severe theft problem, the first-generation shared bicycles vanished after a period of usage [23]. Then, the second-generation free shared bicycles were brought out by Denmark. At this time, fixed stopping points were introduced and coin deposits were to be provided by users. In addition, picking bicycles by intelligence card and a small usage fee to be taken from users after more than 30 min usage time were introduced in the third-generation shared bikes [24]. The shared bikes in China were referred to as the fourth-generation. These bikes were equipped with smart locks, contained internal global GPS, and could be picked up by users after the payment of a registration fee through the app installed on their mobile phone.

Besides the better hardware conditions mentioned above, the characteristics of motivational frameworks for shared bicycles, like low use costs, environmentally friendly, and easy availability, are also important factors attracting users. Pointed out by Chen [25], the characteristics pertaining to health and environmental friendliness are main factors encouraging users to use bicycles. Deemed by Du [26], the characteristics of low use costs and easy availability are important factors attracting users to cycle shared bicycles. Especially in the central business districts with high population density, the convenience and easy availability mean commuters are more willing to use shared bicycles [27]. Furthermore, according to the research results of Karanikola [28], traveling by bicycles is a low cost and healthy transport mode, and the purchase of bicycles by citizens should be subsidized by the government.

According to the public goods theory, goods with the characteristics of non-competitive consumption and utility non-exclusivity could be referred to as public goods [29]. For public goods, new consumers do not need to add supply cost, and cannot exclude people without paying fees from income range. Especially, goods with only one characteristic of public goods are referred to as quasi-public goods [30–32]. The marginal cost of adding a user for a bike sharing system is almost zero. Thus, bike sharing systems cannot produce crowding effects, and are endowed with non-competitiveness. Furthermore, bike sharing systems can also be endowed with exclusiveness due to bike sharing services being chargeable but not free. In summary, shared bicycles are quasi-public goods with utility exclusiveness and non-consumer competitiveness. Therefore, the negative effects produced by shared bicycles are endowed with sociality and publicity, and have intimate connections with the social environment and citizens. For the governance of shared bicycle disorderly parking, not only individual interest subjects, but also all stakeholders related to bike sharing systems should be considered and incorporated into the governance activities.

2.2. The Challenges for the Sustainable Development of Shared Bicycles

Many drawbacks of bike sharing industry were revealed during its rapid development, and thorny problems were also imposed on the urban transport systems. Because no fixed parking areas were allocated to shared bicycles, users could park bicycles at will. In this situation, the resulting occupation of public space turned this environmentally-friendly resource into unsightly "scenic spots" [33]. Moreover, damages towards shared bicycles happened occasionally due to the failure of prevention towards low credit users of related enterprises [34]. As reported, for bike sharing industry, there is a potential equilibrium point between city capacity and number of bicycles [35]. Nevertheless, the eagerness to occupy market share made related enterprises release bicycles blindly. In the first-tier cities like Beijing and Shanghai, the supersaturation of shared bicycles has already resulted in many problems [12]. Moreover, the inadequate construction of bike ways and related infrastructures are also challenges to the sustainable development of shared bicycles [36].

With regard to these problems of shared bicycles mentioned above, Sun [37] deemed that enterprises should establish a credit supervision system, and enhance the opportunity costs of related misconducts to restrain the immoral behaviors of users. In addition, the investigation of cycling routes of users via big data to realize the reasonable allocation of bike density should also be carried out by related enterprises [38]. Meanwhile, the government should increase the supervision degree, introduce industry access rules and management policies, restrict the bike release of related enterprises, and clean up poorly-run enterprises to guide the healthy development of the bike-sharing industry. Furthermore, the government should also pay more attention to the propaganda for the guiding of users to use bicycles in a civilized way and park bicycles regularly. Finally, users are the important part of shared bike system, and should be highly disciplined, so as to avert the behavior of parking bicycles at will and of maliciously damaging bicycles. This article focuses on the investigation of the governance of shared bicycle disorderly parking and explores the management responsibilities of the government, enterprises, and users, respectively.

2.3. Collaborative Governance

Collaborative governance is the governance mode carried out via the mutual cooperation between the government and related organizations [39–41], and is a new management mode for the replacement of adversarial governance [42]. The United Nations (UN) council on global governance defined the collaborative governance as follows: The co-management mode of affairs for individuals, public or private organizations, comprising formal rules and regulations with legally binding and formal institutional arrangements for facilitating consultation and compromise [43]. The essence of collaborative governance is the two-way communication and co-governance behavior among government, organizations, and citizens during the course of complex social public affairs, and the governance mode is based on the principle of voluntariness and mutual cooperation between multiple subjects [44,45].

The concept of collaborative governance was firstly introduced in the scope of operations and public administration by Professor Donahue from Harvard University [46]. After the reference of related research about user participation and value co-creation, Osborne discovered that collaborative governance is an inevitable interactive form in public service management [47]. After the introduction to China in the 1990s, the theory of collaborative governance has brought a new perspective of management science to public service researches, with the direction of service-oriented government construction and transformation of government management, mainly integrated with the empirical research of "urban governance" and "environmental governance".

Collaborative governance is the consensus-oriented mechanism of management policy, to make multiple subjects participate in the formulation and implementation of public policies, and enable the provision of theoretical guidance and reference towards the governance of bicycle disorderly parking. Acting as a quasi-public service activated by user demand, bike sharing services belong to one part of urban traffic management, which needs the government, enterprises, and users to reach an

agreement on the institutional planning decision and management style etc., to construct cooperative relationships, and to govern the disorderly parking of bicycles cooperatively.

3. Tripartite Collaborative Governance Model

This article constructed a tripartite governance framework. As can be seen from Figure 1, the government, enterprises, and users implement governance responsibilities according to their respective resource superiorities: The government supervises enterprises and regulates user behavior; enterprises provide bicycle services and comply with policy supervision; users regulate bicycle parking to respond to the policy and management of the running enterprises.
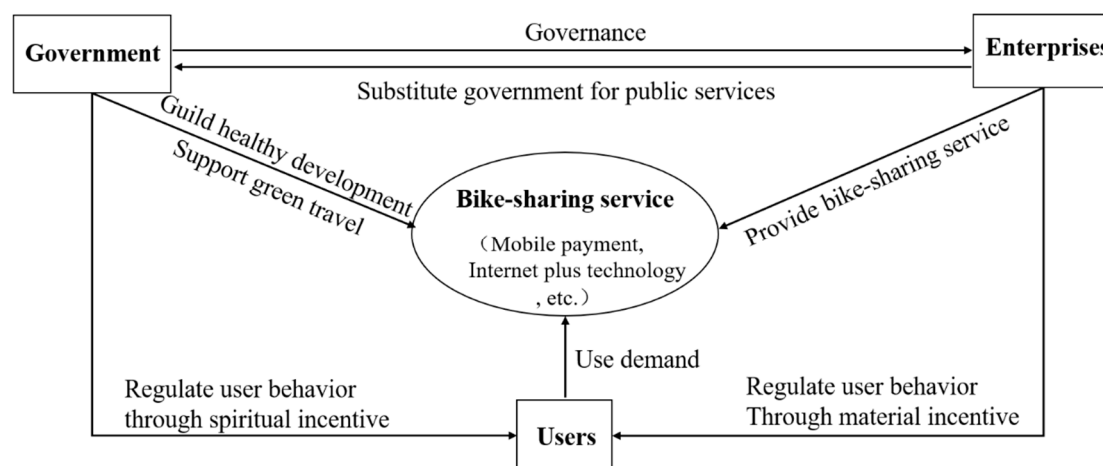

Figure 1. Tripartite collaborative governance framework.

Firstly, in the tripartite governance framework, as the subject of the macro supervision of bike sharing services, the government was endowed with irreplaceable function on the formulation of regulations and targets. Evidently, the leadership of government has an important impact on the governance effect [48,49]. On the one hand, the government has to improve the competition and supervision mechanism of the bike sharing market, relying on its public power resources, as well as to enact a development program of the bike sharing industry, to strictly divide the management responsibilities of bike sharing enterprises [50], and to eradicate their overdependence on governmental resources. Meanwhile, the government should improve the market exit mechanism, urge the enterprises to clear the backlog of bicycles in a timely manner, exert punishment toward enterprises with serious problems, and prompt the enterprises to operate well and improve service quality. On the other hand, the government needs to optimize urban green transport slow traffic systems to support this green travel mode, target the pain point of enterprise autonomy to strengthen the institutional norm for bicycle using while protecting the innovative advantages of shared bikes, and give spiritual motivation to users who use bicycles regularly.

Secondly, in the tripartite governance framework, enterprises are the subject for providing bike sharing services. Under the impetus of market demand, enterprises replace the government to provide bike sharing services with the characteristic of quasi-public service, and possess superiority in the manufacture, operation, and control of bicycles. The tripartite collaborative governance proposes new demands to enterprises to participate in the policy making and innovate running mechanism, while strengthens internal management, and provides material incentive to users who park bicycles regularly to reduce the disorderly parking of bicycles.

Finally, as one of the subjects of tripartite collaborative governance, the users have large numbers and wide ranging distribution. The improvement of disorderly parking at low governance costs could be realized when parking bicycles in parking areas is conducted by users. Nevertheless, in this situation, users may have low motivations due to the restriction of parking areas, which might change

their original habit of parking bicycles at will. As reported by Warner [51], the stakeholder with the lowest participation positivity will always destruct the governance achievements during the process of public problems [52,53]. Thus, the main point for the implementation of the governance effect is the normalization of user parking behavior. Evidently, how to enhance the awareness and participation degree of participation of users is key to the success of collaborative governance.

In conclusion, tripartite cooperative governance of "government–enterprises–users" could establish the coupled structure among the government, enterprises, and users, making up the limitation of governance by single subject. It should be noted that how to effectively guide users to park bicycles regularly is the key point for the governance of bicycle disorderly parking.

4. Design Research

How to guide the users with low participation is the key to successful governance. Therefore, the governance of the disorderly parking of bicycles needs a stimulus of the external environment, so as to change a user's old habit of randomly parking bicycles and cultivate a new habit of returning bicycles to parking areas. The influencing factors for the regular bicycle parking behavior of users were analyzed based on the theory of planned behavior and motivation theories in this chapter.

4.1. Theory of Planned Behavior and Motivation Theories

The theory of planned behavior (TPB) is the theory for the research of how to change human behavior patterns [54], and believes that behaviors are influenced by behavior intention, attitude, subjective norm, and perceived behavior control. Among them, behavior is the act of action practically taken by individuals. Behavioral intention is the subjective probability that a particular behavior is taken by individuals. The attitude is positive or negative standpoint towards a particular object or behavior of individuals. Subjective norm is the perception of social pressures perceived by individuals when taking a particular behavior, or the influences on individuals exerted by salient individuals or groups. Perceived behavior control is the degree of difficulty related to behavior performance [55], and can directly predict the possibility of behavior occurrence and reflect the condition of actual control conditions.

Motivation theories deem that behaviors respond to the change of environment, and the changing of original behaviors conducted by humans can be realized by the guiding of external environmental stimuli. The behavior intention of humans can be strengthened via exerting rewards or punishments for specific behaviors. Meanwhile, behavioral habits of humans can also be fostered in this way [56]. With regard to the governance of disorderly parking of shared bicycles, not only should the internal behavioral intention of users for parking bicycles regularly be investigated through TPB, but also the influence on user behavior of external factors generated by the governance of users' bicycle parking behavior, conducted by enterprises and government under the tripartite collaborative governance model. Therefore, this paper introduces motivation theories on the basis of TPB theory, and analyzes the influence of the government's spiritual incentive and enterprises' material incentive on parking bicycles behavior of users.

4.2. Model Framework

This paper constructs a research framework based on the theory of planned behavior and motivation theories. As shown in Figure 2, behavioral intention determines the behavior, attitude, subjective norm, and social norms, which jointly affect behavioral intention. Exogenous variables such as individual differences and social culture (such as frequency of utilization and problem consciousness, etc.) affect subjective norm and attitudes, and finally influence behavioral intentions and behaviors through intermediary factors of subjective norm and attitudes. The social norms of policy publicity and education affect the behavioral intention of users. The relationship between behavioral intention and behavior is regulated by the perceived effort of regular bicycle parking and the satisfaction of users with the current governance effect. In the following paragraphs, the influences of internal and external

mechanisms on user behaviors are analyzed and hypotheses are determined from multiple variables, including behavior intention, attitude, subjective norm, social norms, perceived behavior control, and material and spiritual incentives.
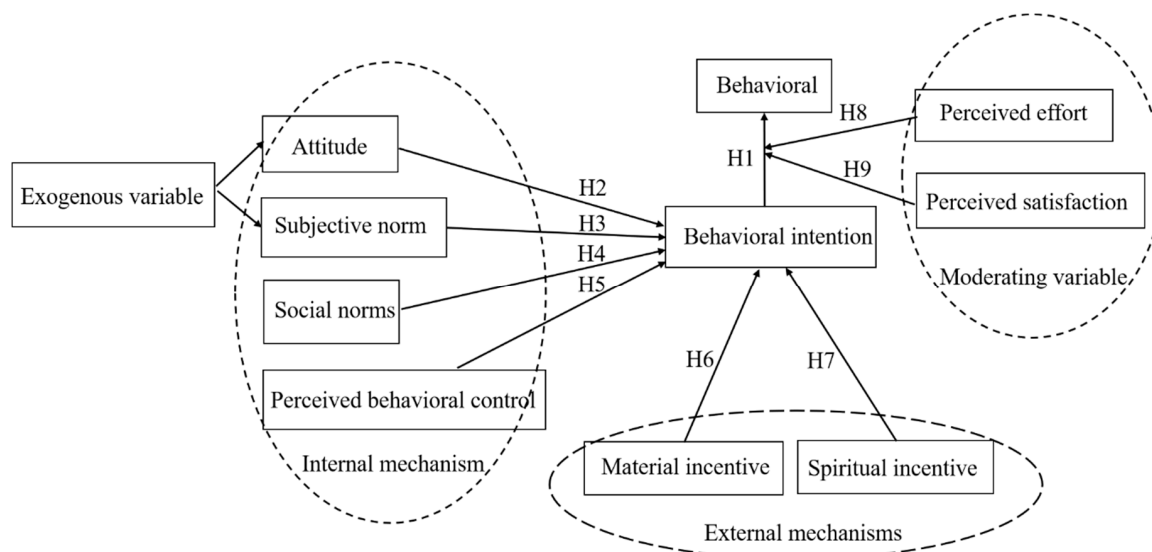

Figure 2. Conceptual model; H: Hypothesis.

4.3. Research Hypotheses

4.3.1. Behavioral Intention and Regulation of Bicycle Parking Behavior

　　Behavioral intention plays a leading role in behavioral choice [57]. Behavioral intention is the subjective judgement for a particular action taken by individuals, which reflects the intention for a particular action carried out by individuals. Previous studies have shown that people with a strong awareness of environmental pollution tend to be more willing to protect the environment [58], and the risk awareness of uncivilized behavior could prevent the occurrence of uncivilized behavior [59]. Some scholars have discovered the significance of user behavioral intention in the development of bike-sharing industry [60]. To some extent, the behavior of parking bicycles regularly is carried out on the premise of users' willingness. Behavioral intention is the internal mechanism for the regulation of bicycle parking by users, and the attitude, subjective norm, and social norms of users affect their behavioral intention. In dealing with the problem of disorderly parking of shared bicycles, users are the direct participants influencing the effect of controlling the problem. It is particularly important to study users' behavioral intention to regulate parking of bicycles. Therefore, Hypothesis 1 is proposed in this paper:

Hypothesis 1. *Users' behavior intention to regulate bicycle parking behavior has a significant positive impact on regulating bicycle parking behavior*.

　　Attitude is the positive or negative conceptual feelings for certain actions taken by individuals [61], and the attitude forms the intention, which further leads to actual behavior. The best way to understand whether or not an individual is likely to engage in a certain behavior is to know their views on this behavior [62]. Previous studies have well supported the effect of attitude on behavior intention [63]. Lathia deemed that the attitude of users to bike-sharing could change their cycling habits [64]. To analyze the intention of regulating bicycle parking, it is necessary to know whether users hold a positive attitude towards the behavior of parking bicycles regularly. The following hypothesis is proposed:

Hypothesis 2. *Users' attitude towards regulating bicycle parking significantly positively affects the behavioral intention of regulating bicycle parking.*

Subjective norm is the influence of significant others or organizations on individual behavioral intentions [65]. As social beings, the behaviors of users are influenced by other people and organizations [66]. Donald took the theory of planned behavior as the framework, and found that subjective norm significantly affects the intention of users to use bicycles [67]. For regulating the disorderly parking of bicycles, subjective norm can reflect the influence degree of important others and social organizations for users on regular parking behavior, and hence influencing the intention of users to regulate parking of bicycles. The following hypothesis is proposed:

Hypothesis 3. *Subjective norm significantly positively affects the behavioral intention to regulate bicycle parking.*

Social norms are the codes of conduct based on social culture, comprising the positive and negative attitudes of social ideology towards a certain behavior [68]. As social citizens, users' cognition of their behaviors are affected by social norms [69]. Social norms can subtly internalize social ideologies into civic codes of conduct [70,71], but individuals who violate social norms feel unpleasant [72]. With regard to the governance of disorderly parking of bicycles, users of illegally parked bicycles have a sense of shame. In order to avoid social isolation, they gradually internalize the regular parking behaviors into their own behavioral intention, finally affecting their parking behavior. Therefore, the following hypothesis is proposed:

Hypothesis 4. *Social norms positively affect users' behavior intention of regulating bicycle parking.*

Perceived behavioral control affects behavioral intention [73]. Perceived behavioral control is the perception of degree of taking control of the action conducted by individuals, which can reflect the influence to behavioral intention of personal past experience and behavioral expectation disorder [55,74], including internal control factors like personal emotions, and external control factors such as dependence, opportunity, information, etc. When individuals think about the more information resources mastered and the less obstacles expected by them, the stronger the influence on behavioral intention of perceived behavioral control variables. When parking a bicycle, the more accurate the obtained information resources and the more appropriate the established dedicated parking areas, the stronger the behavioral intention of users for parking bicycles regularly.

Hypothesis 5. *Perceived behavioral control significantly positively affects users' behavior of parking bicycles.*

4.3.2. Behavioral Incentive and the Regulation of Bicycle Parking Behavior

Behavioral incentives are external environmental stimuli that change the behavior of users [60,75,76], including material incentives and spiritual incentives. Pointed out by relevant researches, with regard to public services, users not only pay attention to service function, but also that concerning their own economic benefits [77]. Meanwhile, appropriate rewards and punishments could contribute to the realization of civilized behavior of citizens [78]. Evidently, charging dispatching fees to users who park bicycles in no-parking zones could restrain their disorderly parking behaviors and negatively punish the violations of users. Correspondingly, users could be encouraged to regulate their parking behavior by exchanging credit points for consumption coupons. The "entry settlement" mechanism can establish a social contract of rewards and punishments for users [79], and promote the cultivation of users' regular parking behaviors by strengthening the relationship between parking behaviors and their benefits. To sum up, material incentives affect users' behavior of parking bicycles, and the following hypothesis is proposed:

Hypothesis 6. *Material incentive significantly positively affect users' behavior of parking bicycles.*

According to Maslow's hierarchy of needs theory and Herzberg's two-factor theory, as "social people", users have spiritual pursuits beyond material pursuits [80,81]. As reported by previous studies, government regulations can influence the behavior of users and promote the healthy development of bike-sharing industry [82]. Meanwhile, the government could guide users to participate in the governance of bike-sharing as the role of masters via the guidance of public opinion [83,84]. Furthermore, by virtue of spiritual incentives like establishing credit score management system, deducting credit score to punish users who park their bikes in a disorderly way, and putting users on a credit blacklist with multiple violations could improve their intention to regulate parking behavior. The following hypothesis is proposed:

Hypothesis 7. *Spiritual incentive significantly positively affects users' behavior intention of regulate bicycle parking.*

4.3.3. Perception Dimension and the Regulation of Bicycle Parking Behavior

The emotional perception dimension of individuals can moderate the relationship between behavioral intention and behavior. An attitude–intention–behavior relation model developed by Bagozzi [85] and tested by Schmit [86] suggested that behavior is a comprehensive result of the estimation of specific situation and emotional response for individuals, and supported that the emotional perception dimension is the moderating variable between intention and behavior. Vroom [87] applied the effort variable in the expectancy theory of motivation, and deemed that effort is an important structure to moderate the relationship between work performance and organization motivation. Vargo [88] deemed that perceived satisfaction is an important variable moderating the participation motivation and experience of users. This paper argues that the variables of perceived effort and perceived satisfaction are important in moderating the relationship between behavioral intention and behavior of users.

Perceptual effort is the effort and time that needs to be provided by users when taking certain actions [61]. Although the disorderly parking of bicycles could be effectively avoided by an "entry settlement" mechanism, the possibility of no free parking spaces still exists when timely deployment cannot be conducted by enterprises. In this situation, users have to spend energy to find available dedicated parking areas. The motivation of using bicycles would be seriously influenced when much time and energy for seeking parking areas should be taken by users. Therefore, the following hypothesis is proposed:

Hypothesis 8. *Perceived effort significantly negatively affects users' behavior of parking bicycles.*

Satisfaction degree is the active perception of users for a specific event. The higher the user's perceived satisfaction, the higher the participation intention. The services provided by enterprises can meet the needs of users when convenient life is brought to them [89]. In addition, setting up special parking areas will affect the convenience of picking up and returning bikes by users and reduce the satisfaction degree. In addition, pointed out by Bouckaert, positive corporate government of negative issues could enhance satisfaction degree [90]. Thus, with regard to regulating the disorderly parking of bicycles, the perceived satisfaction for the current governance could influence the behavioral intention of users to regulate parking of bicycles.

Hypothesis 9. *Perceived satisfaction significantly positively affects users' behavioral intention.*

5. Methodology

This paper adopts the research method of issuing questionnaires to collect the influencing factors for the regular bicycle parking behavior of users. Bike-sharing users in Beijing were selected as sample objects. As the capital of the People's Republic of China, Beijing is the economic, political, and cultural center of China [9], and is also the first operating city of bike-sharing in China. As the second most populous city of the world, traffic congestion and environmental pollution are important issues affecting its economic development and citizen happiness index. As a green and environmentally-friendly way for travel, bike-sharing has achieved rapid development after entering the market. Meanwhile, the problem of disorderly parking of bike-sharing has aroused great attention of the government.

Yuliang Yang, deputy director of the Beijing Municipal Commission of Transport, said "In two years, the number of shared bikes in Beijing has increased to 1.9 million. The rapid growth of the number of bicycles has brought many problems such as random parking and bicycle deposition." (obtained from http://it.people.com.cn/n1/2018/0112/c1009-29760132.html). As for the problem of disorderly parking, relevant departments in Beijing have initiatively released related governance policies. In October 2018, Beijing Municipal Commission of Transport issued "The service quality of shared bikes operation (trial)" (obtained from http://it.people.com.cn/n1/2018/0813/c1009-30225811.html), and formulated the special regulation action manual for the control of disorderly parking of shared bikes. Special parking areas and no-parking areas for shared bikes were planned in the Forbidden City, Wangfujing Street, Financial district, etc., and the "entry settlement" mechanism was introduced to guide users to regulate their parking, in addition to dispatching fees charged to users who park their bikes in no-parking areas. The promulgation of this series of policies has important practical significance to control the problem of disorderly parking of shared bikes. It needs to be noted that users are the actual users of shared bikes. Whether the user can respond to the government governance and enterprise mechanism, and park bicycles in the special parking areas, is the key to controlling the problem. Therefore, this paper studies and analyzes the regular parking intention of bike-sharing users in Beijing.

The survey questionnaire was released on the online platform of Questionnaire Star during the period from 9 June 2019 to 1 July 2019 (https://www.wjx.cn/mobile/qlistnew.aspx). Since users of shared bikes are internet users, the release of the survey platform can effectively collect the questionnaire responses. A total of 476 questionnaires were received, and 395 valid questionnaires were obtained after the invalidated questionnaires were removed; the effective rate of questionnaires reached 83%. The majority of the sample had a bachelor's degree or above, and 84.57% of the sample were aged between 20 and 39—therefore, the sample conforms to the characteristics of young and highly educated users of shared bikes (Table 1).

Table 1. Sample distribution of questionnaire survey (*N* = 395).

Variables	Value	Percentage (%)
Gender	Male	54.97%
	Female	45.03%
Age	Below 19	6.13%
	20–29	42.92%
	30–39	41.65%
	40–49	8.67%
	50–59	0.42%
	60 and above	0.21%
Education level	Junior college	4.41%
	Bachelor	47.48%
	Postgraduate	48.11%
Occupation	Student	46.93%
	Owned enterprises	20.51%
	Public institution	19.66%
	Private enterprises	5.92%
	Foreign-owned enterprises	5.07%
	other	1.9%

A five-point Likert scale was used to measure the behavioral intention of users for parking bicycles regularly. Respondents rated the degree of agreement of the statement sentences of the questions according to their experience of using shared bicycles, with 1 for strongly disagree and 5 for strongly agree. As shown in Table 2, the declarative sentences of behavioral measurement were derived from the reference of Courtois [91], the declarative sentences of behavioral intention variables were derived from the reference of Chen [92], and the declarative sentences of attitude, subjective norm, and perceived behavior control variables were derived from the references of Azjen and Donald [67,70]. Referring to the research of Sunstein and Cialdini [68,71] to derive declarative sentences of social norm variables.

Table 2. Main variables and measurement items.

Variables		Measurement Items
Behavior		I would seek dedicated parking areas to regulate bicycle parking
		I won't park the shared bicycle in no-parking areas
Behavior intention		I would like to park the shared bicycle in a special parking area
Attitude		Parking shared bikes in disorder is an uncivilized behavior
		Regulating parking of shared bicycles could improve the appearance of the city
Subjective norm		Regulating parking of shared bicycles will be recognized by others
		Disorderly parking of shared bicycles is condemned by others
		Most users can park the shared bikes regularly
		Disorderly parking of shared bikes attracts the attention of passers-by
Social norms		My regulation of parking shared bikes will be praised by society
		It is immoral to park a shared bicycle in a no-parking area
Behavior incentive	Spiritual incentive	Parking bikes regularly gives me a sense of accomplishment
		I will be criticized for disorderly behavior
	Material incentive	My interests will be harmed by my disorderly behavior
		To avoid charging dispatch fees, park bikes in dedicated parking areas
		I have been punished for parking bicycles carelessly
Perception of effort		It is easy to regulate the parking of shared bikes
		Every time I park a shared bike, I have enough time to find a parking area
Perception of satisfaction		I am satisfied with the effect of controlling the disorder of the sharing bikes
		Special parking areas have been set up in areas where bicycles need to be parked in daily life
Cycle frequency	Average weekly usage	Divided into 4 categories, less than 1 times, 1–9 times, 10–19 times, 20 times and above, successively give 1–4 points
Problem consciousness		The disorder of sharing bikes seriously affects my living environment
		The disorderly parking of shared bikes seriously affects the appearance of the city
Government governance trust		Government governance can improve the problem of disorderly parking
		Government governance can enhance the behavioral intention of users of parking regular

6. Analysis of Results

In this paper, Cronbach's alpha coefficient is used to analyze the reliability of this proposed model, structural validity is analyzed by confirmatory factor analysis (CFA), and the integrating degree between hypotheses, model, and data is evaluated. Hierarchical regression analysis is used to test the relationship between variables and analyze the factors influencing users' regular bicycle parking.

6.1. Descriptive Statistical Analysis

The descriptive statistical analysis results of the main variables in this paper are shown in Table 3. The mean value of the dependent variable is 3.871, indicating that most users of shared bikes are willing to park bikes in dedicated parking areas. The mean value of behavioral intention is 3.35, indicating that respondents have high intentions of the behavior to parking bicycles regularly. The

mean attitude is 4.104, indicating that respondents have clear identification attitudes towards regular bicycle parking behavior. The variables of subjective norm and social norms mainly come from the behavioral moral identity of important people and related publicity and education proposed by the government. The mean value of subjective norm independent variables of respondents is greater than 3. The control factors of perceived behavior reflect the ease of perceived regular parking behavior, with an average of 3.459, indicating the agreement of regular parking behavior of respondents is easily accomplished. The spiritual incentive mainly comes from government-led propaganda, and material incentive mainly comes from the "entry settlement". The mean value of spiritual incentive is 3.511, and the mean value of material incentive is 4.081. In other words, the description of behavioral incentives has strong influence on the behavioral consciousness of regular parking and is reasonable, but the effect of material incentives is stronger. Regarding control variables, it can be found that respondents have strong problem consciousnesses for the disorderly parking of bicycles; they are not satisfied with the current situation of the management of this problem, and have high trust in the government to govern the parking of bicycles.

Table 3. Descriptive statistical analysis of main variables (*N* = 395).

	Variables	Cronbach's α	Mean	Standard Deviation	Min	Max
Dependent	Behavior	0.740	3.871	0.7730	1	5
Independent	Behavior intention	0.738	3.35	1.236	1	5
	Attitude	0.788	4.104	0.7628	1	5
	Subjective norm	0.830	3.6361	0.77209	1	5
	Social norms	0.857	3.633	0.8213	1	5
	Perceived behavioral control	0.810	3.459	0.9825	1	5
	Spiritual incentive	0.733	3.511	0.8357	1	5
	Material incentive	0.704	4.081	0.8036	1	5
Moderator	Perceived effort		3.804	0.9020	1	5
	Perceived satisfaction		2.790	1.1681	1	5
Exogenous	Frequency of utilization		2.27	0.863	1	4
	Problem consciousness		3.905	0.8319	1	5

As can be seen from the descriptive statistics results, the agreement to the behavior of parking bicycles regularly, intention, attitude, subjective norm, social norms, and perceived behaviors control of respondents all have positive effects on their behavior intention of parking bicycles regularly. Thus, the respondents could strongly feel the material incentive of an "entry settlement" mechanism and the spiritual incentive of the government's propaganda and education.

6.2. Hierarchical Regression Analysis

Hierarchical regression analysis is a "layer-to-layer" analysis method for distinguishing multiple steps [93]. This paper combines the governance background of disorderly parking of shared bikes, distinguishes the hierarchical differences of the influences on user behaviors of variables, and uses block selection of hierarchical regression analysis to examine the influences on user behavior of three group variables layer-by-layer. In the first group, the influence to regular parking behavior of behavioral intention, attitude, subjective norm, social norms, and perceived behavioral control variables are examined. These variables are five dimensions belonging to the TPB, and determine the intrinsic motivation of user behavior. In the second group, the influence on users' behavior of the spiritual incentive from government and the material incentive of "entry settlement" from enterprises were measured. In the third group, considering the acceptance degree of users for collaborative governance policies, the influences to regular parking behavior on use frequency, problem awareness, governance effect satisfaction, and government trust variables were measured.

6.2.1. Hierarchical Regression Analysis of Block One Variables

As can be seen from Table 4, the group variables in the first region have significant explanatory power over dependent variables, $R^2 = 0.625$, F = 12.948, $p = 0.000$, and the variation value of the five variables that can explain the dependent variable is 62.5%. Behavioral intention positively affects regular parking behavior, and individual explanatory power Beta is 0.29 (t = 0.460, $p = 0.646$), confirming hypothesis H1. Individual explanatory power of attitude is 0.110 (t = 2.125, $p = 0.460$), and the explanatory power of behavior intention on dependent variables is greater than that of subjective norm, confirming hypothesis H2. Subjective norm (Beta = 0.121) has a positive effect on the intention of regulating bicycle parking, confirming hypothesis H3. Social norms (Beta = 0.401) have a positive impact on the behavioral intention to regulate bicycle parking, confirming hypothesis H4. Perceived behavioral control has a positive impact on the behavioral intention to regulate bicycle parking, (Beta = 0.209), confirming hypotheses H5.

Table 4. Hierarchical regression analysis of block model abstracts and parameter estimates.

		Block One			Block Two			Block Three		
		Beta	**t**	**p**	**Beta**	**t**	**p**	**Beta**	**t**	**p**
Behavior intention		0.290	0.460	0.646	0.134	2.208	0.028	0.201	3.121	0.002
Attitude		0.110	2.125	0.460 **	0.103	2.115	0.035	0.088	1.785	0.075
Subjective norm		0.121	1.933	0.054 **	0.113	1.740	0.083	0.111	0.697	0.090
Social norms		0.401	6.841	0.000	0.258	4.453	0.000	0.245	4.290	0.000
Perceived behavioral control		0.209	2.987	0.003	0.174	2.645	0.009	0.271	3.278	0.001
Spiritual incentive					0.034 *	0.759 **	0.449 *	0.063	1.406	0.161 **
Material incentive					0.244	7.586	0.000	0.251 **	6.304	0.000
Perceived effort								−0.065	−2.025	0.044 *
Perceived satisfaction								−0.148	−2.888	0.004 **
Frequency of utilization								0.000	0.009	0.993
Problem consciousness								0.091	2.577	0.010
	R^2	0.625			0.835			0.884		
	F	12.948 **			11.437 **			7.623 ***		
Model summary	p	0.000			0.000			0.000		
	ΔR^2	0.625			0.210			0.049		
	ΔF	12.948			29.380			3.764		
	Δp	0.000			0.000			0.005		

p-values in the parentheses; Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

6.2.2. Hierarchical Regression Analysis of Block Two Variables

From Table 4, after the behavior motivation variables were added into the model, explanatory power of model is up to $R^2 = 0.835$, F = 11.473, $p = 0.000$; the explanatory power of this block is $\Delta R^2 = 0.210$, $\Delta F = 29.380$, $p = 0.000$, indicating that the block two contributes 21.9% of the explanatory power after controlling the influence of block one on users' regular parking behavior. This regional increment is endowed with statistical significance, indicating that the input of spiritual and material incentive factors can effectively enhance the explanatory power of the model; therefore, hypotheses H6 and H7 are confirmed. These results verify the influence on users' behavioral intention of the motivation emphasized in the literature of motivation theories [94,95], indicating the material incentive of enterprises and the spiritual motivation of the government could enhance the behavioral intention of users, even if users may not have the intention to regulate the parking of bicycles. Nevertheless, users would adopt the regulation of parking behavior when they think the regulation of parking is a thing that should be carried out and it coincides with their own interests.

6.2.3. Hierarchical Regression Analysis of Block Three Variables

As can be seen from Table 4, after the addition of variables in block three into the model, the explanatory power of the model is Beta = 0.884, F = 7.623, $p = 0.000$, and the increment of explanatory

power of the model is $\Delta R^2 = 0.049$, $\Delta F = 3.764$, $p = 0.005$, which has statistical significance, indicating that users have a high degree of agreement to the cooperative governance mode, thus confirming hypotheses H8 and H9.

Perceived satisfaction variables decrease the model explanatory by $\Delta R^2 = -0.148$, $\Delta F = -2.888$, $p = 0.004$, indicating the feedback of users' satisfaction degree on the current governance effect is not agreeable. We think that the governance of the disorderly parking of bicycles is at the initial stage, and no obvious effect can be seen. Moreover, users need time to develop new bicycle parking habits. Therefore, the satisfaction evaluation of the current governance effect is low, which negatively affects active participation intention of users to some extent. In addition, the average score of "special parking areas for daily bicycle parking have been set up" is 2.790, indicating the current construction level of special parking areas for shared bicycles cannot meet the requirements of user for parking bicycles.

7. Discussion

The results of the hierarchical regression analysis above are summarized as follows: The group variables in the first block have significant explanatory power over dependent variables, $R^2 = 0.625$, $F = 12.948$, $p = 0.000$, and the hypotheses H1, H2, H3, H4, and H5 are proved. Block two contributes 21.9% of the explanatory power, indicating that the spiritual and material incentive factors can enhance users' behavioral intention of regular parking of bicycles. The variables in block three increment of explanatory power of the model is $\Delta R^2 = 0.049$, $\Delta F = 3.764$, $p = 0.005$; however, the perceived satisfaction variables decrease the explanatory power, $R^2 = -0.148$, $\Delta F = -2.888$, $p = 0.004$.

Evidently, the variables of block two and block three enhance the explanatory power of the model, proving that external incentive factors improve the behavioral intention of users to park bicycles regularly, and users have a high acceptance degree to the governance model, verifying the scientificity of tripartite collaborative governance. However, users are not satisfied with the current governance level, which affects the participation willingness of users. Therefore, the government and enterprises should set up more parking areas according to the facilities condition of urban roads, and set interim storage spaces for bicycles to meet the tidal using demand of bicycles, parking demand of areas with concentrated bicycle demand, and demand of users for parking bicycles.

8. Conclusions

The disorderly parking of shared bicycles has disturbed the traffic order, damaged the city's appearance, produced severe social problems, and finally resulted in evident negative influences on its own sustainable development. This work deems that the governance of bicycle disorderly parking should be realized by the tripartite collaboration among the government, enterprises, and users. Therefore, this article constructs the "government–enterprises–users" tripartite cooperative governance framework with the consideration of the influence on regular bicycle parking behavior by motivation theories based on the TPB. This article makes shared bicycle users in Beijing as the research object, and investigates the influencing factors of regular bicycle parking behavior via the way of questionnaire. Meanwhile, the deep analysis about the influence of the collaborative governance model on regular bicycle parking behavior is also conducted by us via the use of SPSS hierarchical regression analysis. Finally, this article proposes corresponding management suggestions, combined with the development status of bike sharing services in China.

These research results verify the effectiveness of tripartite collaborative governance, and conclude that the behavioral intention of users, the spiritual motivation propagated by the government, and the material incentive of an "entry settlement" mechanism carried out by enterprises are the three main influencing factors on the behavior of regular bicycle parking. The independent variables of attitude, subjective norm, social norms, and perceived behavioral control of users are the intrinsic motivational factors influencing the regular bicycle parking of users. The hypotheses H1, H2, H3, H4, and H5 are proved by the verification of these five variables, significantly positively influencing the intention of regular bicycle parking. Spiritual motivation and material incentive are external environment stimuli

for the behavior of regular bicycle parking. As can be seen from the hierarchical regression results of block two, the variables of spiritual motivation and material incentive additionally contribute 21.9% explanatory power. This result declares that the external stimuli significantly positively influence the intention of regular bicycle parking. In particular, the material incentive provided by enterprises could directly influence the material benefits of using shared bicycles by users, and users would park bicycles regularly to avoid scheduling fees. The greater the material incentive intensity, the stronger of the user behavioral intention of regular bicycle parking. These results verify the hypothesis H6. Meanwhile, the spiritual motivation provided by the government could enhance the moral identity of user behavior for regular bicycle parking, further making up the deficiency of internal motivation of users to strengthen the social mind of voluntary parking of bicycles regularly, positively influencing the intention of regular bicycle parking of users, thus verifying hypothesis H7. As can be seen from the hierarchical regression results of block three, the regulated variables of perceived effort could negatively influence the behavior of users. Even if endowed with stronger behavioral intention, users would also refuse the regular parking of bicycles due to too much effort needing be taken. These results verify hypothesis H8. The satisfaction degree of users towards the governance effect and the effort degree for the perception of regular bicycle parking could adjust the relationship between the behavioral intention and behavior of users—and, the users would park bicycle regularly with higher motivation. These results verify hypothesis H9.

8.1. Theoretical Significance

This article investigates the factors influencing regular bicycle parking behavior of users by the combination of TPB and MT. As can be seen from the research, internal behavioral intention, external spiritual stimulation, and material incentive are the main factors influencing regular bicycle parking of users, and regular bicycle parking behavior is the outcome of the combined action of internal intention and external stimuli. The users endowed with strong subjective wishes for regular bicycle parking behavior and sensitivity for social spiritual motivation and self-benefit of material have the strongest behavioral intention of regular bicycle parking, verifying the research conclusion of Wu [96]. Meanwhile, as can also be seen from the research, even if the behavioral intention of users is not strong, regular bicycle parking behavior would also be positively adopted when users are affected by external social appeal and agreeable material benefits. This result shows that external stimuli could alter the influence of intrinsic motivation towards behavioral intention, and extend the theoretical system of the increase of extrinsic motivation or the supplement of intrinsic motivation reported by past literatures [97,98].

Besides intrinsic intention and extrinsic motivation, the perception of effort and satisfaction degree of perception also influence behavioral intention. Firstly, users with a higher perception of effort would refuse to park bicycles regularly and possess more obvious negative mood with more frequent bicycle use. Evidently, the more effort provided by perception, the lower wishes of users for regular bicycle parking. Thus, the rationality for the setting of shared bicycle parking areas should be enhanced to improve the convenience for bicycle parking of users while guiding users to park bicycles regularly. Furthermore, users with a low satisfaction degree of perception for the current governance level would refuse regular bicycle parking. In this situation, not only could the positivity for regular bicycle parking of users not be stimulated, but also could potentially indulge the opportunistic behavior of users, and result in more random parking phenomena.

These findings above show some discrepancies with theories in former literatures [99], and illustrate that the governance mechanism should not only be scientific and reasonable, but also needs to take into account user acceptance. Evidently, the governance of shared bicycle disorderly parking needs the collaboration of three indispensable parts: The government, enterprises, and users.

8.2. Practical Significance

This study provides practical reference value for the control of disorderly parking of shared bikes. Firstly, enterprises need to set up parking areas reasonably to improve the convenience of users to park bicycles regularly. Meanwhile, the scale of shared bikes should be regulated by the enterprises to make the number of shared bikes equal to the carrying capacity of cities, and interim storage spaces in the accumulation areas of bicycles should also be programmed to facilitate the bicycle parking of users during the peak usage period. Secondly, the government can combine the social credit system, establish a credit score management mechanism for users of shared bikes, strengthen the spiritual motivation for regular bicycle parking of users, and explore new modes for the management of shared bike users.

This research reflects the jointly built, governed, and participated social service pattern of the sharing economy by the government, enterprises, and users under the framework of collaborative governance. With the development of sharing economy, quasi-public services like bicycle sharing provided by the market will gradually appear in daily life, becoming an important part of social development. These services also need to cross the public–private boundary and integrate resource co-management of the government, enterprises, and users—and the governance case study of shared bicycle disorderly parking has great practical significance to promote the sustainable development of social services and social progress.

8.3. Limitations and Future Work

The bike-sharing users in Beijing are selected as research samples in this paper, which has some limitations. However, as the first and most developed market in China for shared bikes, Beijing is more representative. In future research, the influence on the behavioral intention of parking bicycles regularly by users produced by geographic variation should also be considered to make further improvements. Furthermore, the questionnaire only studied the determinants of users' parking behavior, and the influence on the enterprises of limiting bicycle parking areas, which could be investigated in the future, was not involved in this study. In addition, how to mobilize the behavioral awareness of users more effectively to realize the maximum value in society of bike sharing service is a future research project.

Author Contributions: All of the authors have contributed to the idea of this paper. D.Z. supervised the overall work and provided constructive advice to improve the manuscript. D.W. wrote the whole manuscript and polished the language of this paper.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Caulfield, B.; O'Mahony, M.; Brazil, W.; Weldon, P. Examining usage patterns of a bike-sharing scheme in a medium sized city. *Transp. Res. Part A Policy Pract.* **2017**, *100*, 152–161. [CrossRef]
2. Fishman, E. Bikeshare: A review of recent literature. *Transp. Rev.* **2016**, *36*, 92–113. [CrossRef]
3. Campbell, K.B.; Brakewood, C. Sharing riders: How bikesharing impacts bus ridership in New York City. *Transp. Res. Part A Policy Pract.* **2017**, *100*, 264–282. [CrossRef]
4. Liu, Z.; Li, L.; Zhang, Y.J. Investigating the CO_2 emission differences among China's transport sectors and their influencing factors. *Nat. Hazards* **2015**, *77*, 1323–1343. [CrossRef]
5. Purtik, H.; Arenas, D. Embedding social innovation: Shaping societal norms and behaviors throughout the innovation process. *Bus. Soc.* **2019**, *58*, 963–1002. [CrossRef]
6. Jia, L.; Liu, X.; Liu, Y. Impact of different stakeholders of bike-sharing industry on users' intention of civilized use of bike-sharing. *Sustainability* **2018**, *10*, 1437. [CrossRef]
7. Miller, S.R. First principles for regulating the sharing economy. *SSRN Electron. J.* **2016**, *53*, 147–202. [CrossRef]

8. Razzaque, M.A.; Clarke, S. Smart management of next generation bike sharing systems using Internet of Things. In Proceedings of the Smart Cities Conference (ISC2), Guadalajara, Mexico, 25–28 October 2015; pp. 1–8. [CrossRef]

9. Zhang, L.; Zhang, J.; Duan, Z.Y.; Bryde, D. Sustainable bike-sharing systems: Characteristics and commonalities across cases in urban China. *J. Clean. Prod.* **2015**, *97*, 124–133. [CrossRef]

10. Xue, Y.J.; Liang, H.G.; Wu, L.S. Punishment, justice, and compliance in mandatory IT settings. *Inf. Syst. Res.* **2011**, *22*, 400–414. [CrossRef]

11. Jiang, Q.; Ou, S.J.; Wei, W. Why Shared Bikes of Free-Floating Systems Were Parked Out of Order? A Preliminary Study based on Factor Analysis. *Sustainability* **2019**, *11*, 3287. [CrossRef]

12. Chen, X.; Qu, Q.; Chen, M.H.; Fang, S.; Cheng, Y. The sustainable existence of China's bicycle-sharing market: To oversupply or to disappear. *Sustainability* **2018**, *10*, 4214. [CrossRef]

13. Ricci, M. Bike sharing: A review of evidence on impacts and processes of implementation and operation. *Res. Transp. Bus. Manag.* **2015**, *15*, 28–38. [CrossRef]

14. Jakovcevic, A.; Ledesma, R.D.; Franco, P.; Caballero, R.; Tosi, J.D. Use of the Planned Behavior Theory to Explain Bicycle Use. *Av. Psicol. Latinoam.* **2019**, *37*, 283–294. [CrossRef]

15. Gan, C. Understanding WeChat users' liking behavior: An empirical study in China. *Comput. Hum. Behav.* **2017**, *68*, 30–39. [CrossRef]

16. Shrestha, M.K. Self-organizing network capital and the success of collaborative public programs. *J. Public Adm. Res. Theory* **2012**, *23*, 307–329. [CrossRef]

17. Ma, Y.; Lan, J.; Thornton, T.; Mangalagiu, D.; Zhu, D. Challenges of Collaborative Governance in the Sharing Economy: The case of free-floating bike sharing in Shanghai. *J. Clean. Prod.* **2018**, *197*, 356–365. [CrossRef]

18. Mateo-Babiano, I.; Bean, R.; Corcoran, J.; Dorina, P. How does our natural and built environment affect the use of bicycle sharing? *Transp. Res. Part A Policy Pract.* **2016**, *94*, 295–307. [CrossRef]

19. Shaheen, S.A.; Guzman, S.; Zhang, H. Bikesharing in Europe, the Americas, and Asia: Past, present, and future. *Transp. Res. Rec.* **2010**, *2143*, 159–167. [CrossRef]

20. Midgley, P. Bicycle-sharing schemes: Enhancing sustainable mobility in urban areas. *U. N. Dep. Econ. Soc. Aff.* **2011**, *8*, 1–12.

21. Bachand-Marleau, J.; Larsen, J.; El-Geneidy, A.M. Much-anticipated marriage of cycling and transit: How will it work? *Transp. Res. Rec.* **2011**, *2247*, 109–117. [CrossRef]

22. Yang, X.H.; Cheng, Z.; Chen, G.; Wang, L.; Ruan, Z.Y.; Zheng, Y.J. The impact of a public bicycle-sharing system on urban public transport networks. *Transp. Res. Part A Policy Pract.* **2018**, *107*, 246–256. [CrossRef]

23. Wang, M.; Zhou, X. Bike-sharing systems and congestion: Evidence from US cities. *J. Transp. Geogr.* **2017**, *65*, 147–154. [CrossRef]

24. DeMaio, P. Bike-sharing: History, impacts, models of provision, and future. *J. Public Transp.* **2009**, *12*, 3. [CrossRef]

25. Chen, S.Y. True sustainable development of green technology: The influencers and risked moderation of sustainable motivational behavior. *Sustain. Dev.* **2019**, *27*, 69–83. [CrossRef]

26. Du, M.; Cheng, L. Better understanding the characteristics and influential factors of different travel patterns in free-floating bike sharing: Evidence from Nanjing, China. *Sustainability* **2018**, *10*, 1244. [CrossRef]

27. Li, X.; Zhang, Y.; Sun, L.; Liu, Q. Free-floating bike sharing in jiangsu: Users' behaviors and influencing factors. *Energies* **2018**, *11*, 1664. [CrossRef]

28. Karanikola, P.; Panagopoulos, T.; Tampakis, S.; Tsantopoulos, G. Cycling as a smart and green mode of transport in small touristic cities. *Sustainability* **2018**, *10*, 268. [CrossRef]

29. Cowen, T. Public goods definitions and their institutional context: A critique of public goods theory. *Rev. Soc. Econ.* **1985**, *43*, 53–63. [CrossRef]

30. Reiter, M.; Weichenrieder, A.J. Public goods, club goods, and the measurement of crowding. *J. Urban Econ.* **1999**, *46*, 69–79. [CrossRef]

31. Meyer, R.A. Private costs of using public goods. *South. Econ. J.* **1971**, *37*, 479–488. [CrossRef]

32. Chambers, C.M.; Chambers, P.E.; Whitehead, J.C. Contingent valuation of quasi-public goods: Validity, reliability, and application to valuing a historic site. *Public Financ. Rev.* **1998**, *26*, 137–154. [CrossRef]

33. Li, T.; Zhang, Z. Design and Research of Bike-sharing Delivery Forecasting. *DEStech Trans. Comput. Sci. Eng.* **2018**. [CrossRef]

34. Yin, J.; Qian, L.; Shen, J. From value co-creation to value co-destruction? The case of dockless bike sharing in China. *Transp. Res. Part D Transp. Environ.* **2019**, *71*, 169–185. [CrossRef]

35. Yang, F.; Ding, F.; Qu, X.; Ran, B. Estimating Urban Shared-Bike Trips with Location-Based Social Networking Data. *Sustainability* **2019**, *11*, 3220. [CrossRef]

36. Lu, M.; Hsu, S.C.; Chen, P.C.; Lee, W.Y. Improving the sustainability of integrated transportation system with bike-sharing: A spatial agent-based approach. *Sustain. Cities Soc.* **2018**, *41*, 44–51. [CrossRef]

37. Sun, Y. Sharing and Riding: How the Dockless Bike Sharing Scheme in China Shapes the City. *Urban Sci.* **2018**, *2*, 68. [CrossRef]

38. Veeneman, W.; van der Voort, H.; Hirschhorn, F.; Steenhuisen, B.; Klievinl, B. PETRA: Governance as a key success factor for big data solutions in mobility. *Res. Transp. Econ.* **2018**, *69*, 420–429. [CrossRef]

39. Vangen, S.; Hayes, J.P.; Cornforth, C. Governing cross-sector, inter-organizational collaborations. *Public Manag. Rev.* **2015**, *17*, 1237–1260. [CrossRef]

40. Emerson, K.; Nabatchi, T.; Balogh, S. An integrative framework for collaborative governance. *J. Public Adm. Res. Theory* **2012**, *22*, 1–29. [CrossRef]

41. Huxham, C.; Vangen, S.; Huxham, C.; Eden, C. The challenge of collaborative governance. *Public Manag. Int. J. Res. Theory* **2000**, *2*, 337–358. [CrossRef]

42. Ansell, C.; Gash, A. Collaborative governance in theory and practice. *J. Public Adm. Res. Theory* **2008**, *18*, 543–571. [CrossRef]

43. Booher, D.E. Collaborative governance practices and democracy. *Natl. Civ. Rev.* **2004**, *93*, 32–46. [CrossRef]

44. Boardman, C. Organizational capital in boundary-spanning collaborations: Internal and external approaches to organizational structure and personnel authority. *J. Public Adm. Res. Theory* **2011**, *22*, 497–526. [CrossRef]

45. Vangen, S.; Huxham, C. The tangled web: Unraveling the principle of common goals in collaborations. *J. Public Adm. Res. Theory* **2011**, *22*, 731–760. [CrossRef]

46. Donahue, J. *On collaborative governance: Corporate Social Responsibility InitiativeWorking Paper No. 2*; John F. Kennedy School of Government, Harvard University: Cambridge, MA, USA, 2004.

47. Osborne, S.P.; Radnor, Z.; Strokosch, K. Co-production and the co-creation of value in public services: A suitable case for treatment? *Public Manag. Rev.* **2016**, *18*, 639–653. [CrossRef]

48. Shi, P. On the role of government in integrated disaster risk governance—Based on practices in China. *Int. J. Disaster Risk Sci.* **2012**, *3*, 139–146. [CrossRef]

49. Silvia, C. Collaborative governance concepts for successful network leadership. *State Local Gov. Rev.* **2011**, *43*, 66–71. [CrossRef]

50. Malhotra, A.; Van Alstyne, M. The dark side of the sharing econom and how to lighten it. *Commun. ACM* **2014**, *57*, 24–27. [CrossRef]

51. Warner, J.F. More sustainable participation? Multi-stakeholder platforms for integrated catchment management. *Water Resour. Dev.* **2006**, *22*, 15–35. [CrossRef]

52. Burton, B.K.; Dunn, C.P. Feminist ethics as moral grounding for stakeholder theory. *Bus. Ethics Q.* **1996**, *6*, 133–147. [CrossRef]

53. Fletcher, J.; Hamilton, B.; Kinner, S.; King, K.; Harvey, C.; Brophy, L. Working towards least restrictive environments in acute mental health wards in the context of locked door policy and practice. *Int. J. Ment. Health Nurs.* **2019**, *28*, 538–550. [CrossRef] [PubMed]

54. Fishbein, M.; Ajzen, I. *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*; Addison-Wesley: Reading, MA, USA, 1975.

55. Ajzen, I.; Madden, T.J. Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *J. Exp. Soc. Psychol.* **1986**, *22*, 453–474. [CrossRef]

56. Miner, J.B. The role motivation theories. In *Role Motivation Theories*; Routledge: Abingdon, UK, 2008.

57. Keh, H.T.; Xie, Y. Corporate reputation and customer behavioral intentions: The roles of trust, identification and commitment. *Ind. Mark. Manag.* **2009**, *38*, 732–742. [CrossRef]

58. Forsyth, D.R.; Garcia, M.; Zyzniewski, L.E.; Story, P.A.; Kerr, P.A. Watershed pollution and preservation: The awareness–appraisal model of environmentally positive intentions and behaviors. *Anal. Soc. Issues Public Policy* **2004**, *4*, 115–128. [CrossRef]

59. Dinev, T.; Hu, Q. The centrality of awareness in the formation of user behavioral intention toward protective information technologies. *J. Assoc. Inf. Syst.* **2007**, *8*, 23. [CrossRef]

60. Chen, M.; Wang, D.; Sun, Y.; Waygood, E.O.; Yang, W. A comparison of users' characteristics between station-based bikesharing system and free-floating bikesharing system: Case study in Hangzhou, China. *Transportation* **2018**, 1–16. [CrossRef]

61. Higgins, E.T. Making a Good Decision: Value from Fit. *Am. Psychol.* **2000**, *55*, 1217–1230. [CrossRef]

62. Taylor, S.; Todd, P.A. Understanding information technology usage: A test of competing models. *Inf. Syst. Res.* **1995**, *6*, 144–176. [CrossRef]

63. Davis, F.D.; Bagozzi, R.P.; Warshaw, P.R. User acceptance of computer technology: A comparison of two theoretical models. *Manag. Sci.* **1989**, *35*, 982–1003. [CrossRef]

64. Lathia, N.; Ahmed, S.; Capra, L. Measuring the impact of opening the London shared bicycle scheme to casual users. *Transp. Res. Part C Emerg. Technol.* **2012**, *22*, 88–102. [CrossRef]

65. Trafimow, D.; Finlay, K.A. The importance of subjective norms for a minority of people: Between subjects and within-subjects analyses. *Personal. Soc. Psychol. Bull.* **1996**, *22*, 820–828. [CrossRef]

66. Wood, W. Attitude change: Persuasion and social influence. *Annu. Rev. Psychol.* **2000**, *51*, 539–570. [CrossRef] [PubMed]

67. Donald, I.J.; Cooper, S.R.; Conchie, S.M. An extended theory of planned behaviour model of the psychological factors affecting commuters' transport mode use. *J. Environ. Psychol.* **2014**, *40*, 39–48. [CrossRef]

68. Sunstein, C.R. Social Norms and Social Roles. *Soc. Sci. Electron. Publ.* **2014**, *96*, 903–968. [CrossRef]

69. Butterfield, K.D.; Trevin, L.K.; Weaver, G.R. Moral awareness in business organizations: Influences of issue-related and social context factors. *Hum. Relat.* **2000**, *53*, 981–1018. [CrossRef]

70. Schwartz, S.H. Normative Influences on Altruism. *Adv. Exp. Soc. Psychol.* **1977**, *10*, 221–279. [CrossRef]

71. Cialdini, R.B.; Goldstein, N.J. Social influence: Compliance and conformity. *Annu. Rev. Psychol* **2004**, *55*, 591–621. [CrossRef]

72. DeBono, A.; Shmueli, D.; Muraven, M. Rude and inappropriate: The role of self-control in following social norms. *Personal. Soc. Psychol. Bull.* **2011**, *37*, 136–146. [CrossRef] [PubMed]

73. Azjen, I. The theory of planned behavior. *Br. J. Soc. Psychol.* **1991**, *40*, 471–499. [CrossRef]

74. Ajzen, I. Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *J. Appl. Soc. Psychol.* **2002**, *32*, 665–683. [CrossRef]

75. Lin, K.Y.; Lu, H.P. Why people use social networking sites: An empirical study integrating network externalities and motivation theory. *Comput. Hum. Behav.* **2011**, *27*, 1152–1161. [CrossRef]

76. Dawkins, C.E.; Jamali, D.; Karam, C.; Lin, L.; Zhao, J. Corporate social responsibility and job choice intentions: A cross-cultural analysis. *Bus. Soc.* **2016**, *55*, 854–888. [CrossRef]

77. Kowalkowski, C. Dynamics of value propositions: Insights from service-dominant logic. *Eur. J. Mark.* **2011**, *45*, 277–294. [CrossRef]

78. Lan, J.; Ma, Y.; Zhu, D.; Mangalagiu, D.; Thornton, T.F. Enabling value co-creation in the sharing economy: The case of mobike. *Sustainability* **2017**, *9*, 1504. [CrossRef]

79. Bozeman, B. Public-Value Failure: When Efficient Markets May Not Do. *Public Adm. Rev.* **2010**, *62*, 145–161. [CrossRef]

80. Koltko-Rivera, M.E. Rediscovering the later version of Maslow's hierarchy of needs: Self-transcendence and opportunities for theory, research, and unification. *Rev. Gen. Psychol.* **2006**, *10*, 302–317. [CrossRef]

81. Ewen, R.B.; Smith, P.C.; Hulin, C.L. An empirical test of the herzberg two-factor theory. *J. Appl. Psychol.* **1966**, *50*, 544. [CrossRef]

82. Akyelken, N.; Banister, D.; Givoni, M. The sustainability of shared mobility in london: The dilemma for governance. *Sustainability* **2018**, *10*, 420. [CrossRef]

83. Fujii, S. Reducing inappropriate bicycle parking through persuasive communication. *J. Appl. Soc. Psychol.* **2005**, *35*, 1171–1196. [CrossRef]

84. Cohen, B.; Kietzmann, J. Ride on! Mobility business models for the sharing economy. *Organ. Environ.* **2014**, *27*, 279–296. [CrossRef]

85. Bagozzi, R.P. The self-regulation of attitudes, intentions, and behavior. *Soc. Psychol. Q.* **1992**, *55*, 178–204. [CrossRef]

86. Schmit, M.J.; Allscheid, S.P. Employee attitudes and customer satisfaction: Making theoretical and empirical connections. *Pers. Psychol.* **1995**, *48*, 521–536. [CrossRef]

87. Vroom, V.H. *Work and Motivation*; Wiley: New York, NY, USA, 1964.

88. Vargo, S.L. Toward a transcending conceptualization of relationship: A service-dominant logic perspective. *J. Bus. Ind. Mark.* **2009**, *24*, 373–379. [CrossRef]

89. Miller, H.E.; Thomas, S.L.; Smith, K.M.; Robinson, P. Surveillance, responsibility and control: An analysis of government and industry discourses about "problem" and "responsible" gambling. *Addict. Res. Theory* **2016**, *24*, 163–176. [CrossRef]

90. Bouckaert, G.; Van d Walle, S. Comparing Measures of Citizen Trust and User Satisfaction as Indicators of, 'Good Governance': Difficulties in Linking Trust and, Satisfaction Indicators. *Int. Rev. Adm. Sci.* **2003**, *69*, 329–343. [CrossRef]

91. Courtois, C.; Montrieux, H.; Grove, F.D.; Raes, A.; Marez, L.D.; Schellens, T. Student acceptance of tablet devices in secondary education: A three-wave longitudinal cross-lagged case study. *Comput. Hum. Behav.* **2014**, *35*, 278–286. [CrossRef]

92. Chen, I.Y.L. The factors influencing members' continuance intentions in professional virtual communities-a longitudinal study. *J. Inf. Sci.* **2010**, *33*, 451–467. [CrossRef]

93. Shang, I.W.; Ku, G.C.M. How youth athletes satisfy their team? Identifying significant predictors of perceived coach leadership and team cohesion, team commitment: A hierarchical regression analysis. *Int. J. Sports Sci. Coach.* **2018**, *13*, 883–890. [CrossRef]

94. Chang, C.C.; Chin, Y.C. Predicting the usage intention of social network games: An intrinsic-extrinsic motivation theory perspective. *Int. J. Online Mark. (IJOM)* **2011**, *1*, 29–37. [CrossRef]

95. Davis, F.D.; Bagozzi, R.P.; Warshaw, P.R. Extrinsic and intrinsic motivation to use computers in the workplace. *J. Appl. Soc. Psychol.* **1992**, *22*, 1111–1132. [CrossRef]

96. Wu, R.; Wu, Z.; Wen, J.; Cai, Y.; Li, Y. Extrinsic and intrinsic motivations as predictors of bicycle sharing usage intention: An empirical study for Tianjin, China. *J. Clean. Prod.* **2019**, *225*, 451–458. [CrossRef]

97. Harackiewicz, J.M. The effects of reward contingency and performance feedback on intrinsic motivation. *J. Personal. Soc. Psychol.* **1979**, *37*, 1352. [CrossRef]

98. Ryan, R.M. Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *J. Personal. Soc. Psychol.* **1982**, *43*, 450. [CrossRef]

99. Van Eijk, C.; Steen, T. Why engage in co-production of public services? *Mix. Theory Empir. Evid. Int. Rev. Adm. Sci.* **2016**, *82*, 28–46. [CrossRef]