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Analysis and Suggestions on Influencing Factors of Bengbu City Residents' Shared Two Rounds Travel from the Perspective of Carbon Peak

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Abstract

Aiming at sharing two rounds (Shared bicycle, electric bike) hot issues of development, focus on sharing travel accounts for the high three lines and three lines below the city, the selection for "cycling benchmark city" reputation of bengbu as the research object of field investigation, collection of real data, using Logistic regression model analysis the influence factors of sharing two rounds of development related to the conclusion that In addition, constructive suggestions are put forward from residents, government and enterprises to promote the positive development of the two rounds of sharing, solve the "last mile" problem, alleviate urban traffic congestion and help the development and promotion of the two-wheela of sharing, so as to achieve the carbon peak goal in the field of transportation.

Keywords

Sharing Two Rounds; Logistic Regression.

1. Research Background

In recent years, China has continuously strengthened the construction of ecological civilization, optimized the industrial structure, vigorously advocated low-carbon life, continuously saved resources, protected the environment, and reduced carbon emissions. From the perspective of carbon peak and carbon neutrality, low-carbon and green travel is frequently mentioned. In addition, users gradually get used to and adapt to the market, sharing two-round travel mode will promote the green and low-carbon development of China's transportation sector, reduce China's carbon emissions, and promote the green development of urban transportation.

As a transportation option, shared bikes are highly socially adaptable and are gradually being adopted by ordinary people in a way that promotes the resilience of the transportation system [4]. the more the market sinks, the more frequently users use shared motorcycles. From the perspective of urban user distribution, the users of shared bikes in China are mainly concentrated in third-tier and lower-tier cities at present. First-tier cities account for only 1.8%, second-tier cities for 27.4%, third-tier cities for 36.2%, and fourth-tier cities and below for 34.6%. On the whole, in third - and fourth-tier cities where public transportation is not perfect, it is more convenient and fast to share two wheels and there are many users.

2. Research Significance and Objectives

2.1. Research Significance

2.1.1. Optimize Travel Structure and Ease Traffic Congestion

With the rapid increase in the number of motor vehicles, urban traffic congestion is becoming more and more serious, which will lead to a significant increase in the emission of pollutants

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from vehicles [1]. Therefore, alleviating traffic congestion is also one of the effective measures to reduce urban air pollution. By optimizing the travel structure of the masses, improving the proportion of green travel, controlling the large increase of cars, effectively alleviating urban congestion, reducing the emission of fuel vehicles such as cars, reducing air pollution and protecting the environment. In the era of "Internet plus", the two-round sharing, which provides public travel services by market-oriented means, has rapidly stimulated the potential demand of Chinese people for two-round sharing, and can better meet the daily travel needs of residents, becoming a new paradigm of supply-side structural reform of public transport.

2.1.2. Promote Green Travel and Achieve Dual Carbon Goals

Transportation industry is a key field to promote green development and achieve carbon peak and carbon neutral. In recent years, China's transport industry has actively promoted green and low-carbon transformation, vigorously adjusted the transport structure, and promoted the sharing two-wheel mode of travel, which has achieved positive results. Sharing two-wheela after several years of development, because of its flexible and convenient, low carbon environmental protection, affordable and many other advantages have been accepted and used by people. Sharing the two wheels can not only solve the "last mile" travel problem of residents, but also reduce energy consumption, improve urban environmental quality and build a green and environmentally friendly city.

2.1.3. Improve the Value of the Industry and Promote the Sharing Economy

Through precise positioning, scanning code unlocking and other technical means, the two sharing rounds solved the problems of complex system equipment, high maintenance cost, inconvenient loan and return at one stroke, burst out great vitality, and solved the billing and payment problems of the two sharing rounds based on the advantages of the Internet. Therefore, with the convenience it brings to residents, the two sharing rounds rise rapidly in a short period of time and are favored by social capital to promote the development of China's sharing economy.

2.2. Research Objectives

2.2.1. Understand Bengbu Residents' cognition Status and Acceptance of Shared Travel

This year will be the decisive year for the ministry of Transportation s goal of becoming a strong transportation nation with green travel ratio. Cities will achieve the proportion of green travel, reduce the carbon emissions of China's transportation industry, improve the proportion of green travel of Chinese people, sharing the mode of travel has a promising future. Whether the mode of shared travel is expected to be promoted on a large scale depends on the public's cognition and acceptance of it. Therefore, the project will start from the respondents' cognition of shared travel, and analyze the popularity of two-round shared travel and residents' willingness to accept it from multiple dimensions according to bengbu residents' travel demand, travel cost and travel structure.

2.2.2. Explore the Promotion Situation and Feasibility of Sharing Two Rounds in Bengbu City

In recent years, Bengbu has fully implemented the documents issued by The State Council and provincial government, committed itself to the construction of urban green travel structure and promoted the green, circular and low-carbon development of transportation industry. It has actively introduced shared bikes and moped, a fashionable mode of travel, and is known as the "benchmark city of cycling", providing a reference road for the construction of shared two-wheel travel in other cities in China. People's willingness to promote the two-round sharing mode is an important indicator to study whether the two-round sharing mode can be promoted effectively. Therefore, starting from people's acceptance intention, promotion preference and publicity situation of two-wheels sharing, the project analyzes respondents' promotion

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intention and influential factors of two-wheel sharing in various aspects, and explores the feasibility of two-wheel sharing mode promotion in Bengbu.

2.2.3. Predict the Future Development Prospects of Shared Travel

The application of shared two-wheel travel mode opens up a new way for urban green travel, which to a certain extent reduces the public's use of cars and fuel emissions, thus reducing carbon emissions and relieving energy and environmental pressure. On the other hand, sharing two-wheel travel mode can promote the formation of green and low-carbon transport mode, and ensure that the growth of carbon emissions in the transport sector is kept within a reasonable range. The project investigated residents' expectations and suggestions for the future development of two-wheel sharing by investigating residents' future development trend of two-wheel sharing, analyzed people's subjective attitude towards two-wheel sharing, and deeply explored the future development prospect of this mode of travel in China.

3. Analysis of Influencing Factors based on Logistic Regression Model

3.1. Data Sources

The data in this paper come from the field survey, which is authentic and reliable, excluding personal subjective views.

3.2. Analysis Methods

As a nonlinear classification statistical method, Logistic regression model provides results in the form of event probability and is widely used in the analysis of factors affecting things, especially when the dependent variable is a dichotomous variable, it is a common method to study the relationship between dependent variables and independent variables. According to this study, there are only two types of behaviors of respondents willing to promote and unwilling to promote, so the paper adopts Binary Logistic Regression model to analyze the factors influencing residents' willingness to travel on the two-round sharing. Let the probability of event occurrence (willing to generalize) be p, the value range is 0 to 1, then the probability of event non-occurrence (unwilling to generalize) is 1-p. This probability can be calculated by Logistic function, and its expression is as follows:

$$\text{Logit}(P) = \beta_0 + \beta_1 x_1 + \ldots + \beta_p x_p$$

Where, p is the probability that the investigation group is willing to promote the sharing of two-wheela to others,1 is willing to promote, 0 is otherwise, β_0 is the constant term, β_i represents the regression coefficient of the factors that influence the ith survey group to share the two-wheela of promotion to others, and x_i represents the ith independent variable (i=1, 2, 3, ..., n).

3.3. Model Setting

3.3.1. Index Selection

(1) Determination of dependent variables. We take the willingness of the investigation group to share two rounds of promotion as the most dependent variable, and choose willing to promote as y=1 and unwilling to promote as y=0.

(2) Independent variable selection and direction hypothesis. The independent variables were selected as "solving the last mile problem", "environmental benefit", "policy subsidy", "affordable price", "recommendation of relatives and friends", and "interest-driven", with a total of 6 influencing factors. The following hypotheses were proposed:

① It is assumed that solving the last kilometer problem will promote the development of shared two rounds.

ISSN: 2688-9323

② It is assumed that environmental benefits will promote the development of shared two rounds.
③ It is assumed that policy subsidies will promote the development of shared two rounds.
④ It is assumed that affordable price will promote the development of sharing two rounds.
⑤ It is assumed that recommendation from relatives and friends will promote the development of sharing two rounds.
⑥ It is assumed that interest drive will promote the development of shared two rounds.
See Table 1 for descriptions of relevant variables.

Table 1. Variable description table

variable name	meaning	Expected direction of influence
y	Will to share two rounds of promotion	
x_1	Solve the last mile problem	+
x_2	Environmental benefit	+
x_3	Policy subsidy	+
x_4	Affordable price	+
x_5	Recommendation of relatives and friends	+
x_6	Interest-driven	+

3.3.2. Analysis of Influencing Factors

All the above 7 variables were included into the equation, and Logistic regression analysis was conducted by SPSS software, and Table 2 was obtained. It can be seen that by incorporating all variables into the model, four independent variables that have an impact on the dependent variable are obtained, which are "solving the last mile problem", "environmental benefit", "affordable price" and "recommendation by relatives and friends". The P values of other independent variables are greater than 0.05, which cannot be included in the equation.

Table 2. Statistical table

		B	S.E	Wals	df	Sig.	Exp(B)
Step one	Solve the last mile problem	1.224	0.241	36.471	1	0.000	3.554
	Environmental benefit	1.024	0.275	30.732	1	0.000	3.088
	Policy subsidy	0.110	0.112	1.936	1	0.074	0.796
	Affordable price	0.599	0.108	20.181	1	0.000	1.953
	Recommendation of relatives and friends	0.798	0.143	26.462	1	0.000	2.765
	Interest-driven	0.001	0.342	16.252	1	0.058	1.674
	Constant	-1.173	1.265	43.239	1	0.000	0.001

Based on the above analysis results, we can further screen variables, and the P value of policy subsidy (0.074) and interest-driven (0.058) is greater than 0.05, and finally obtain the Logistic regression equation of "solving the last mile problem", "environmental benefit", "affordable price" and "recommendation of relatives and friends". The corresponding analysis results are shown in Table 3.

As can be seen from the OR value, the ranking of the degree of influence on the intention to promote the two rounds of travel sharing is as follows: "Solving the last kilometer problem" (1.253) > "environmental benefit" (1.023) > "recommendation of relatives and friends" (0.826) > "affordable price" (0.598).

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Table 3. Statistical table after screening

		B	S.E	Wals	df	Sig.	Exp(B)
Step two	Solve the last mile problem	1.253	0.211	33.431	1	0.000	3.478
	Environmental benefit	1.023	0.245	25.261	1	0.000	3.092
	Affordable price	0.598	0.123	16.181	1	0.000	1.792
	Recommendation of relatives and friends	0.826	0.133	24.061	1	0.000	2.542
	Constant	-2.132	0.863	78.172	1	0.000	0.000

Finally, the regression equation can be given as follows:

$$\text{Logit(P)} = -2.132 + 1.253x_1 + 1.023x_2 + 0.598x_4 + 0.826x_5$$

3.3.3. Model Conclusions

According to the regression equation, x_1(solving the last kilometer problem) will change by 1 unit on average, y (sharing the willingness of two rounds of promotion) will change by 1.253 units. x_2(Environmental benefit) changes by 1 unit on average, y (willingness to share two rounds of promotion) will change by 1.023 units; For every unit change in x_4(affordable price), y (willingness to share two rounds of promotion) will change 0.598 units; x_5(recommendation by relatives and friends) will change by 0.826 units on average for every change in y (shared willingness to promote two rounds); The constant is -2.132. The degree of influence in descending order is: "solving the last mile problem", "environmental benefit", "recommendation of relatives and friends", "consumer price".

4. Suggestions

Sharing two-round travel has always played an irreplaceable role with its unique advantages in optimizing travel structure or energy conservation and emission reduction, and has certain competitiveness in the green travel market, can be a good solution to the last kilometer of travel problem [2]. In an era when the pace of people's life is accelerating and residents' ecological concept is getting deeper, the green travel industry must accelerate improvement of its disadvantages, realize comprehensive optimization and combination, adhere to innovative development, formulate appropriate market development strategy, and build a benchmark of urban ecology if it wants to be more prosperous. In view of the above research conclusions, relevant suggestions are put forward for the development of two-wheel sharing industry from the three levels of enterprises, consumers and the government.

4.1. Enterprise Level

4.1.1. Fit Into the "Dual Carbon" Strategic Planning Layout

In 2020, the state clearly proposed the goals of "carbon peak" in 2030 and "carbon neutral" in 2060. As one of the green travels in Bengbu, two-round travel sharing has always been attached importance to by the Party and the government. Therefore, in line with the "dual carbon" strategic planning layout, bengbu sharing the two-wheel travel industry will surely give full play to the development of Bengbu sharing the two-wheel travel industry. Under the strong support of the government, centering on the strategy of energy conservation and emission reduction and combining the concept of "green sharing and low-carbon travel", bengbu shared two-round travel industry should be promoted to realize optimization and upgrading and focus on developing modern green travel industry.

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4.1.2. Strengthen Management and Improve Industrial Efficiency

Taking different measures to improve the share of travel structure of two rounds of inquiry, the strengthening of management including lease point distribution optimization, the daily maintenance of the vehicles will, for the promotion of residents travel demand and ecological protection were generates positive feedback, sharing the strength of the two rounds of management not only to increase the residents' experience, bring more convenience for the user, Thus, the demand for sharing the two rounds will be increased, and the industrial efficiency will be greatly improved and the spillover effect will be obtained. Enterprises will fulfill their social responsibility, make full use of new network technologies such as the Internet of Things, cloud computing and big data, develop intelligent management platforms, strengthen data mining capabilities, and enhance refined and intelligent management capabilities.

4.1.3. Set up a Reasonable Price Mechanism

In the analysis of the correlation between promotion intention and various factors, the correlation coefficient between affordable price and promotion intention is 0.5790; In the regression analysis of influencing factors that affect residents' intention to promote, the variable of consumer price changes by one unit on average, and residents' intention to promote two-round shared travel will change by 0.598 units. Price factors have a direct impact on residents' choice or promotion of two-round shared travel. Set up reasonable price mechanism, plan profit space from long-term Angle, not just pay attention to short-term profit, disturb market order. At the same time, we learn from foreign countries to share the development experience of two-round travel, constantly control costs and improve user experience, and explore development and profit models suitable for enterprises.

4.1.4. Adhere to Innovation to Meet the Diverse Needs of the Market

Innovation is bound to be a driving force for the development of shared travel. At present, most of the development of shared two-wheel travel still stays at the level of traditional vehicles, with little innovation and production in its extended functions. Sharing two-round travel enterprises should carry out market research to fully understand the market demand, adopt specific strategies to improve the quality of leisure cycling travel, formulate promotion policies, and promote the concept of shared bike travel. These measures can create positive attitudes among individuals and encourage users to reuse bike sharing [5]; Focus on research and development, develop exclusive new products and functions in response to market demand, accelerate the improvement of enterprises' self-innovation ability, actively promote industrial upgrading, realize the scale and intelligence of the two-round sharing travel industry, and constantly improve the market share.

4.2. Consumer Level of Sharing Two Rounds Travel

4.2.1. Promote Social and Ethnical Progress

We will strengthen the construction of urban civilization, encourage the public to actively participate in the governance process, reflect their demands and provide suggestions, and pay attention to and supervise the implementation of relevant policies. By reporting malicious users, complaining about illegal enterprises, and participating in government decision-making, we can improve sharing management. At the same time, residents should consciously abide by the corresponding laws and regulations, standardize the civilized use of the two-wheel sharing, resolutely eliminate uncivilized phenomena such as disorderly parking and parking, private lock change, pay attention to safety when riding, and consciously abide by the traffic rules.

4.2.2. Step up Publicity

Residents of Shared two wheel travel understand and cognitive changes will directly influence the consumption, the problem is solved by strengthening propaganda, sets up the brand effect, using the Internet to build green travel heralded platform, set up green travel column, using

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new media advertising methods to improve brand awareness and influence, ecological construction as the core, customer oriented, To realize the organic combination of traditional layout, Internet and green travel innovation and development, change consumers' perception, and promote the development and innovation of the two-round sharing travel industry. Especially in the vision of young people to vigorously promote, save work time, exercise[3].

4.3. Government Level

4.3.1. Strengthening Macro Guidance

China has put forward and implemented the "dual carbon" strategic development goal, and repeatedly proposed to promote high-quality development of green travel industry, and continuously enter the world. At present, Bengbu city green travel industry has many advantages such as policy support and broad consumer market, but at the same time, it also faces many disadvantages such as high management cost and low efficiency. The rapid development of Bengbu city shared two-round travel industry needs the macro-guidance of the government and the use of appropriate guidance mechanism to speed up the large-scale, standardized and modernized construction of the industry.

4.3.2. Strengthen Management and Standardize Market Order

There are some problems in the development of shared two-wheel travel, such as disorderly parking, waste of public resources, affecting public order, poor vehicle safety, and inconsistent vehicle use standards. Although sharing two-round travel brings convenience to people's travel, its rapid expansion also occupies a large number of public resources and disturbs the market order. The government should reasonably arrange the amount of investment on the basis of controlling and sharing the total amount of the two rounds. Establish strict market access standards, properly and orderly clean up the existing problem vehicles, and guide the operation scale of enterprises within a reasonable range. At the same time, the government should also intensify efforts to rationally build shared two-wheel parking areas and increase parking Spaces in some key areas.

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