

# The Role of Customer Value Co-creation Behavior on Customer Loyalty: The Mediating Role of Customer Experience Value Among Bike-sharing Customers

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## Abstract

This study aims to investigate and construct a structural equation model to explore the mediating role of customer experience value between customer value co-creation behavior and customer loyalty. This study utilizes a mixed research methodology. In qualitative research, the factors affecting customer loyalty are analyzed through coding the content of the interviews with 20 bike-sharing customers. In quantitative research, data have been collected online through distributed questionnaires in order to understand the current demand status of bike-sharing customers in Taiyuan, Shanxi Province; and based on these survey data, structural equation modeling has been constructed to verify the research hypotheses and theoretical conceptual framework.

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The results show that customer value co-creation behavior has a positive effect on customer loyalty, and customer experience value plays a partial mediating role between customer value co-creation behavior and customer loyalty. The research in this paper complements the econometric research on customer value co-creation behavior in the sharing economy and provides a certain theoretical foundation for the development of the bike-sharing industry.

**Keywords:** Customer Value, Co-creation Behavior, Customer Loyalty, Mediating Role, Customer Experience Value

## 1. Introduction

In the era of a sharing economy based on the Internet, sharing products have emerged. Shared bicycles, as a development product of the sharing economy, have received extensive attention from scholars. Shared bicycle refers to bicycle-sharing services provided by enterprises. At present, the over-delivery of shared bicycles, low resource utilization, and chaotic management lead to low customer loyalty. Therefore, with the continuous development of the bike-sharing industry, customer participation in value co-creation has become an important research topic. In the context of the bike-sharing industry, value co-creation refers to the active participation of customers in value creation by reporting maintenance problems, suggesting new features and services, and providing feedback to the service provider. (China Sharing Economy Development Report, 2023)

This study explores the relationship between customer value co-creation behaviors and customer loyalty in the bike-sharing industry. Specifically, this study will examine the impact of customer value co-creation behavior on customer loyalty and the mediating role of customer experience value between customer value co-creation behavior and customer loyalty. This study will contribute to a better understanding of the importance of customer engagement in shared-use value

co-creation and provide insights for service providers to improve customer loyalty and enhance customer experience.

The significance of customer engagement in value co-creation is that it increases customer loyalty. When customers feel that their opinions are valued and that they have contributed to the service, they are more inclined to spread the word about the service to others and to keep using it. In addition, through client participation in the service creation process, service providers would obtain important insights into the requirements and preferences of their customers, which might help them improve their services and increase customer satisfaction. Even while there are advantages to having customers engage in value co-creation, there hasn't been much research on this topic in the bike-sharing industry. Therefore, by examining the relationship between consumer loyalty and value co-creation in the bike-sharing sector, this study could bridge this disparity. Specifically, this research investigates how customer experience value functions as an intermediary between customer engagement and customer loyalty, as well as the effects of customer engagement value co-creation on customer loyalty. Overall, this study helps elucidating the importance of consumer participation in the co-creation of value in bike sharing and providing advice to service providers on how to increase customer loyalty and happiness.

## 2. Research Objectives

The purpose of this study is to explore the influence mechanism of customer loyalty to bike-sharing by combining related theoretical studies and using empirical methods. Firstly, to construct a theoretical model including the comprehensive effects of customer engagement behavior, customer citizenship behavior, customer experiential value, and customer loyalty. Secondly, to explore the mediating effect of customer experience value in the relationship between customer citizenship behavior and customer loyalty.

### 3. Literature Review

This paper describes the research related to the four variables of customer engagement behavior, customer citizenship behavior, customer experience value, and customer loyalty, and then determines the connotations of the four variables and their constituent dimensions, to prepare the theoretical foundation for this research. Then review the Value Co-Creation Theory, Customer Loyalty Theory, Stimuli-Organism-Response Theory, Social Exchange Theory, and Planned Behavior Theory to be able to elucidate the theoretical scope of the specific research content of the article and provide the theoretical foundation for the subsequent research. Finally, the research hypotheses of this paper are formulated by reviewing and elaborating on the existing literature.

Under the guidance of the theory of value co-creation, some studies have shown that consumers' value co-creation behavior will have a positive impact on brand loyalty. Customer value co-creation embodies the interactive behavior between customers and enterprises, which can increase customer recognition of the enterprise's products and services, that is, there are problems with the products, which can be solved through reasonable communication. Therefore, there is a relationship between customer value co-creation behavior and customer brand loyalty. Although the shared bicycle carries the attribute of the separation of the right to use and the right to dominate in the sharing economy, the purchase of its right to use by users is still a consumption attribute.

H1: There is a positive and significant relationship between customer engagement behavior and customer loyalty.

H2: There is a positive and significant relationship between customer citizenship behavior and customer loyalty.

Basole and Rouse pointed out that the most important subject of value co-creation is the final customer, and the final customer's pursuit of maximizing their co-creation value dominates the customer's behavior, i.e., all the customer's activities are to realize the value. Therefore, customers, relative to the enterprise

value, are more concerned about the value obtained, and the co-created customer experience value is the most direct reason for customers to carry out value co-creation, so the most direct result of customers carry out value co-creation is the co-created customer experience value. Bu Qingjuan (2017) studied the results of customers' value co-creation interaction behavior in the context of a virtual brand community, and the results showed that help-seeking and interpersonal interactions in customers' value co-creation behaviors positively and significantly affect the utility value, the entertainment value, and the social value.

H3: There is a positive and significant relationship between customer engagement behavior and customer experience value.

H4: There is a positive and significant relationship between customer citizenship behavior and customer experience value.

There are many studies on the influencing factors of customer loyalty, and it has been generally recognized that customer experience value is one of the important antecedents of customer loyalty. Bu Qingjuan took the virtual brand community as the research object, and the results of the study confirmed that practical value, entertainment value, and social value all have a positive impact on customer loyalty. Wang Kun (2022) studied the impact of value co-creation behavior on tourist loyalty in theme parks, and the results showed that different dimensions of tourism experience value have different degrees of influence on tourist loyalty. Social value and emotional value have a greater positive impact on tourist loyalty than functional value and cognitive value.

There is a positive and significant relationship between customer experience value and customer loyalty.

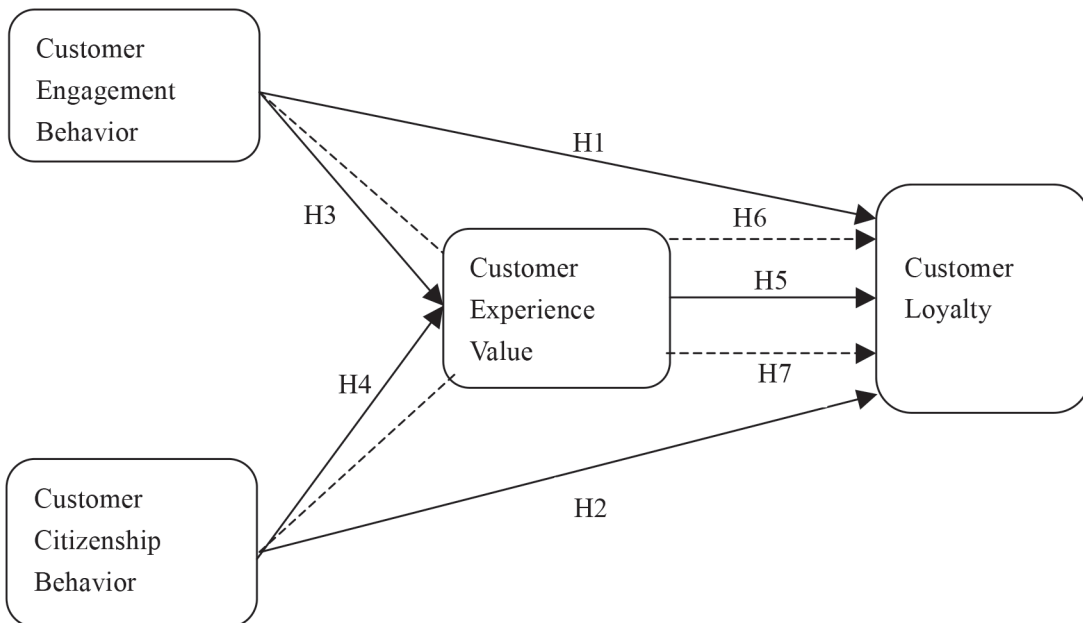
Tang Fangchen (2018) pointed out that customer experience value is the basis for enterprises to successfully carry out various marketing activities. The fundamental purpose of consumer participation in value co-creation activities is to seek to maximize value, and the amount of value obtained in the process of participation will also directly affect the results of customer evaluation of the consumption process.

Through participation in co-production, customers can freely express their preferences in the process of information exchange with the enterprise, so that the enterprise can accurately understand their needs, and improve its service mode and content, so that the goods and services provided by the enterprise can better meet the expectations of the customers, which will be conducive to the enhancement of customer value, reduce the perceived risk of the consumers and further enhance the sense of identity and satisfaction of consumers in the process of co-production, which will ultimately lead to the creation of consumer loyalty. Ultimately, it prompts consumers to produce loyalty behavior to the enterprise.

H6: There is a meditation role of customer experience value in the relationship between customer engagement behavior and customer loyalty.

H7: There is a meditation role of customer experience value in the relationship between customer citizenship behavior and customer loyalty.

#### 4. Conceptual Framework



Based on the value co-creation theory, customer loyalty theory, Stimuli-Organism-Response theory, and other related theories, the author thoroughly discusses the influence mechanism of customer value co-creation behavior on customer loyalty.

## 5. Methodology

This paper takes the value co-creation behavior of bike-sharing customers as the main research line and explores the behavior of customers in the process of value co-creation interaction and the results brought by these behaviors to customers, that is, customer loyalty. It presents the consumer's perspective on the bike-sharing value co-creation mechanism and offers businesses a scientific foundation for customer acquisition, customer retention, and subsequent enhancement of value co-creation.

This paper adopts qualitative research and quantitative research methods. Descriptive research, which is an inductive procedure, is the foundation of qualitative research. It primarily investigates people's beliefs, attitudes, behaviors, and other mental states, and the data collected are usually text-based and collected through interviews or observations. Quantitative research is to conclude by verifying the relationship between variables, emphasizing the relationship between data, and requires the collection of the numerical type of data, which can be collected through questionnaires.

This paper adopts the questionnaire survey method for research, it is easier to measure, can be researched on a big scale, and the results are easier to statistically process and evaluate, it can save time, labor, and physical strength. When using this approach, respondents can voice their ideas honestly and independently of outside influences. This is especially useful when looking into difficult topics as it often yields more trustworthy results.

This study adopts quantitative research methods, collecting data through questionnaires and using SPSS and AMOS for measurement. The object of the study is the bike-sharing customers in Taiyuan, Shanxi Province. The study used a stratified sampling method in probability sampling to collect data. A total of 453 data were

distributed and 400 valid data were recovered. The independent variable in this paper is customer value co-creation behavior, and the scale is adapted from a related study (Yi and Gong, 2013); the dependent variable is customer loyalty, and the scale is adapted from a related study (Hallowell, 1996); and the intermediate variable is customer experiential value, and it is adapted from a related study (Muniz and O’Guinn, 2001).

## 6. Data Analysis

This study was analyzed using SPSS and AMOS. SPSS was first used for descriptive statistical analysis and confidence analysis and then AMOS was used for hypothesis testing. Through the reliability analysis, the Cronbach values of customer engagement behavior, customer citizenship behavior, customer experience value, and customer loyalty were 0.817, 0.853, 0.857, and 0.849, respectively, which indicated that the variables had good reliability.

**Table 1** CFA of four Variables Scale

Variable	Items	Std. Estimate	S.E	C.R	CR	AVE
Customer Engagement Behavior	CEB4	0.752			0.818	0.530
	CEB3	0.696	0.075	12.737		
	CEB2	0.745	0.073	13.543		
	CEB1	0.716	0.079	13.083		
Customer Citizenship Behavior	CCB4	0.740			0.853	0.592
	CCB3	0.788	0.074	14.848		
	CCB2	0.778	0.071	14.682		
	CCB1	0.770	0.076	14.543		
Customer Experience Value	CEV4	0.770			0.859	0.603
	CEV3	0.737	0.067	14.561		
	CEV2	0.754	0.064	14.927		
	CEV1	0.842	0.063	16.612		



**Table 1** CFA of four Variables Scale (cont)

Variable	Items	Std. Estimate	S.E	C.R	CR	AVE
Customer Loyalty	CLO3	0.785			0.850	0.654
	CLO2	0.801	0.061	15.921		
	CLO1	0.839	0.065	16.466		

As can be seen in Table 1, the reliability values of all the measures of the model are higher than 0.5, and the CR for this dimension in Table 1 is greater than 0.7, which indicates that the model has good intrinsic quality and that the questionnaire has good reliability. The standardized loading value of this dimension can be seen in Table 1 is greater than the standard of 0.5, so the scale has good convergent validity.

**Table 2** Discriminant Validity

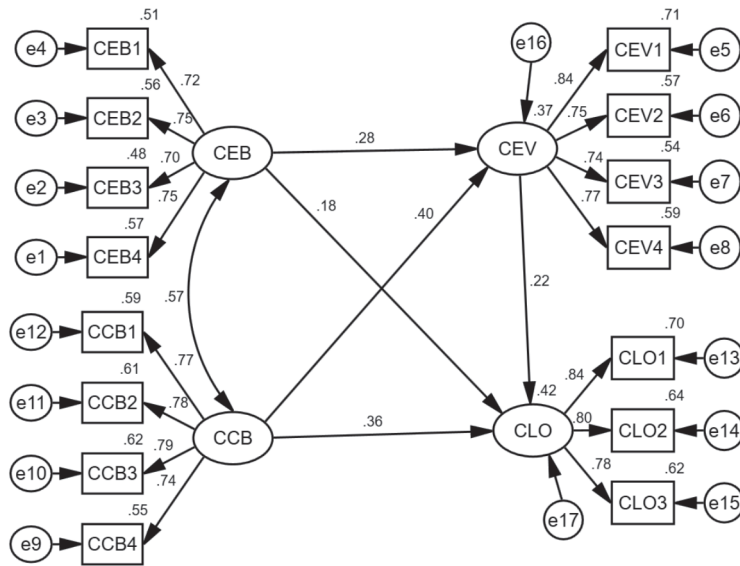
Dimensions	CLO	CEV	CCB	CEB
CLO	<b>0.809</b>			
CEV	0.409***	<b>0.777</b>		
CCB	0.465***	0.394***	<b>0.769</b>	
CEB	0.355***	0.321***	0.361***	<b>0.728</b>

*Notes:* The square root of the average variance extracted for each construct is denoted in bold.

\*\*\*P<0.001; \*\*P<0.01; \*P<0.05;

The results of the discriminant validity test for the four variables are displayed in Table 2, where the bottom triangles represent the Pearson correlation coefficients and the bold on the diagonal represents the square root of AVE. Table 2 demonstrates that there is a considerable difference between the variables and that the scale has excellent discriminant validity because the square root of AVE is greater than the correlation coefficients in the relevant columns.

In this study, the structural equation model of the path and mediating effect of customer value co-creation behaviors on customer loyalty mechanism is constructed by using AMOS 24.0, as shown in Figure 1. In Figure 1. the SEM includes 4 latent variables and 15 observed variables, of which the 4 latent variables are customer engagement behavior (CEB), customer citizenship behavior (CCB), customer experience value (CEV), and customer loyalty (CLO). In addition, 17 residual terms were introduced into the model to ensure the accuracy of the model.



**Figure 1** SEM Analysis of Mediating Effect

**Table 3** Model Fitting Index of SEM

Fit Inde	$\chi^2/df$	RMR	RMSEA	GFI	IF	NFI	TAG	CFI
Result	1.047	0.033	0.011	0.972	0.999	0.970	0.998	0.999

In this study, the Bootstrap analysis tool in AMOS software was used to test the mechanism of CEB and CCB on CLO, i.e., the mediating effect of CEV, that is H1-H7. The fit test indicators of the structural equation model are shown in Table 3. All metrics were within the acceptable range.

**Table 4** The result of Path Analysis

Paths			Std. Estimate	S.E.	C.R.	P	Hypothesis Result
CEV	<---	CEB	0.280	0.078	4.119	P<0.05	support
CEV	<---	CCB	0.404	0.071	5.879	P<0.05	support
CLO	<---	CEB	0.178	0.091	2.615	P<0.09	support
CLO	<---	CCB	0.363	0.087	5.008	P<0.05	support
CLO	<---	CEV	0.224	0.076	3.429	P<0.05	support

In Table 4, customer engagement behavior has a significant positive effect on customer loyalty ( $\beta = 0.178$ ,  $P=0.009$ ), hypothesis H1 is supported; customer citizenship behavior has a significant positive effect on customer loyalty ( $\beta = 0.363$ ,  $P<0.001$ ), hypothesis H2 is supported; customer engagement behavior has a significant positive effect on customer experience value ( $\beta = 0.280$ ,  $P<0.001$ ), hypothesis H3 is supported; customer citizenship behavior has a significant positive effect on customer experience value ( $\beta = 0.404$ ,  $P<0.001$ ), hypothesis H4 is supported; customer experience value has a significant positive effect on customer loyalty ( $\beta = 0.224$ ,  $P<0.001$ ), hypothesis H5 is supported.

**Table 5** Bootstrapping Indirect Effects Estimation Results

Parameter	Point estimate	Percentile		P
		Lower	Upper	
Total effect				
CEB-->CLO	0.241	0.103	0.380	P<0.05
CCB-->CLO	0.453	0.305	0.591	P<0.05
Direct effect				
CEB-->CLO	0.178	0.042	0.309	P<0.05
CCB-->CLO	0.363	0.195	0.516	P<0.05
Indirect effects				
CEB-->CEV-->CLO	0.063	0.020	0.128	P<0.05
CCB-->CEV-->CLO	0.091	0.031	0.170	P<0.05

Note. Adapted from software Amos.

In Table 5, there is a mediating impact because the confidence interval for the indirect relationship between customer engagement behavior and customer loyalty and the customer experience value does not include 0, that is, H6 is verified. In Table 5, There appears to be a mediating impact because the confidence interval for the indirect relationship between customer citizenship behavior and customer loyalty and the customer experience value does not contain 0, that is, H7 is verified. From the path coefficients in Table 5, it is evident that the effect of customer engagement behavior on customer loyalty is significant ( $P < 0.05$ ), indicating that H1 is verified and customer loyalty is partially mediated by customer engagement behavior. The path coefficients in Table 5 show that customer loyalty is greatly impacted by customer citizenship behavior. ( $P < 0.05$ ), indicating that H2 is verified and consumer loyalty is partially mediated by consumer citizenship activity.

## 7. Conclusion

In this paper, according to the results of hypothesis testing, all hypotheses were tested, indicating that customer experience value mediates between customer value co-creation behavior and customer loyalty.

The influence of customer participation behavior on customer loyalty was verified, which means that H1 was verified, and the effect of customer citizenship behavior on customer loyalty was verified, which means that H2 was verified, indicating that customer value co-creation behavior significantly affects customer loyalty. Users' active participation in value co-creation behaviors will enhance users' loyalty through psychological and experiential senses. Psychologically, users' participation in value co-creation will increase their emotional awareness of the enterprise, and a good value co-creation experience will enhance users' sense of identification with the enterprise, as well as stimulate a certain degree of tolerance, and increase users' willingness to use. In use, users will feedback problems to facilitate the enterprise to improve the quality of service, which in turn improves the experience of the user and improves customer loyalty.

The influence of customer participation behavior on customer experience value was verified, which means that H3 was verified, and the effect of customer citizenship behavior on customer experience value was verified, which means that H4 was verified, indicating that customer value co-creation behavior significantly affects customer experience value. Users' willingness to use is positively influenced by users' participation in value co-creation behavior. Users' participation in value co-creation will help users recognize the functions of the bike-sharing platform more clearly, experience the process of creating value in the enterprise more deeply, and experience the services of bike-sharing in depth, all of which can enhance the experience value of users in various aspects.

The influence of customer experience value on customer loyalty was validated, which means that H5 was validated. Customer loyalty is positively influenced by customer experience value. If the bike-sharing enterprise actively improves the experience value of users in all aspects, the improvement of experience value will increase customer loyalty. Therefore, the enterprise should guarantee the quality of the bicycle, ensure the use of customers, and help customers save time; the enterprise can publicize the green concept, environmental protection, and economic, but also exercise, which can enhance the customer experience value, and then enhance customer satisfaction and customer loyalty.

Customer experience value has a mediating role between customer engagement behavior and customer loyalty, which means that H6 was validated. Customer experience value has a mediating role between customer citizenship behavior and customer loyalty, which means that H7 was validated. So customer experience value has a mediating role between customer co-value behavior and customer loyalty, and it is partially mediated.

## 8. Discussion

1) Between customer engagement behavior, customer experience value, and customer loyalty, H1, H3, and H5 are verified, Customer engagement behavior has a significant positive effect on customer loyalty, customer engagement behavior has

a significant positive effect on customer experience value, and customer experience value has a significant positive effect on customer loyalty, which is consistent with the findings of Wang Ruoyu (2018), Qi Xintong (2020), Wu Zhiyao (2022) and others.

2) Between customer citizenship behavior, customer experience value, and customer loyalty, this paper shows through empirical test results that H2, H4, and H5 are verified. Customer citizenship behavior has a significant positive effect on customer loyalty, customer citizenship behavior has a significant positive effect on customer experience value, and customer experience value has a significant positive effect on customer loyalty, which is consistent with the findings of Xie Hong (2020), Liu Xiu (2020) and others.

3) The empirical results of the mediating effect in this paper indicate that customer experience value plays a partial mediating effect between customer value co-creation behavior and customer loyalty, which is consistent with the findings of Bu Qingjuan (2017) and others.

## 9. Recommendations and Limitations

Through the research of this paper, it is found that for the healthy development of the shared bicycle market, the government, operating companies, and users should all be included in the scope of shared bicycle management, and each of the three parties has its responsibilities and cooperates to realize the value creation of shared bicycles. The government should improve the relevant legal system, improve the construction of supporting facilities, and rationalize the layout of bicycle parking points. Enterprises can establish a sound rental platform and develop a platform for interaction with users. Bicycle users should change their mindset and actively participate in value co-creation.

This study has some limitations in time, sample size, variable selection, the scale is not validated in the context of the sharing economy, etc. In future research, the sample size can be expanded, the dimensions can be increased, etc.

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