The Impact of the Sharing Economy on Traditional Product Sales: The Case of Bicycle Sharing in China

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Abstract: The sharing economy, exemplified by bike-sharing services, has transformed urban mobility while raising questions about its impact on traditional product sales. This study examines how bike-sharing affects consumers' intention to purchase private bicycles in China. Using the Perceived Value Theory, a conceptual model is developed to explore the relationships between the perceived value of shared products, the intention to use shared products, and the purchase intention of private products. Through empirical analysis based on survey data, findings indicate that higher perceived value of shared bicycles positively influences the intention to use them, which in turn negatively impacts the purchase intention of private bicycles. Among the four perceived value dimensions—economic, social, emotional, and functional—economic, emotional, and functional values significantly influence consumer behavior, while social value plays a less decisive role. These results suggest that the sharing economy does not merely complement traditional consumption patterns but actively reshapes them, potentially reducing demand for private ownership. The study contributes to understanding consumer decision-making in the sharing economy and provides insights for businesses and policymakers in managing the coexistence of shared and private product markets.

1 INTRODUCTION

As an emerging economic model, the sharing economy has gained significant traction across various industries, offering solutions for economic development that differ from those of traditional microeconomic frameworks (Zhou et al, 2022).

Among its many applications, bike-sharing systems have been widely adopted in cities worldwide, serving as a convenient commuting option (Li et al., , 2015). Fu et al. (2024) examined the impact of bike-sharing on urban public transportation ridership, revealing that in larger cities with well-developed public transit networks, shared bicycles effectively complement rail transit while acting as substitutes for bus services. Furthermore, policies encouraging bike-sharing have been shown to enhance overall public transportation usage.

In addition, existing literature has explored factors influencing bike-sharing demand (Eren & Uz, 2020) and proposed methods for evaluating and balancing rental pricing and return rates in bike-sharing systems (Li et al., 2015).

Despite the increasing maturity of bike-sharing systems and their recognition as an environmentally friendly transportation alternative, the impact of shared bicycles (as shared products) on the sales of traditional bicycles (as upstream products) remains unclear. Empirical research on this topic is limited, highlighting the need for further investigation.

Perceived Value Theory (Zeithaml, 1988), by integrating economic and psychological elements, places consumers in a decisive position within transactions, emphasizing a consumer-oriented approach. This theoretical framework provides a valuable lens for analyzing the impact of product sharing on sales,, identifying key variables and dimensions relevant to the study.

Against this backdrop, this study investigates the impact of product sharing on traditional bicycle sales, drawing on Perceived Value Theory and situating the analysis within the Chinese bike-sharing industry under the sharing economy.

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2 THEORETICAL ANALYSIS AND RESEARCH HYPOTHESES

2.1 Customer Perceived Value

The concept of perceived value was first systematically introduced by Zeithaml (1988). Given the ambiguity and lack of consensus regarding related concepts within the academic community, Zeithaml developed a theoretical framework to elucidate the interrelationships among perceived value, perceived quality, and perceived price. According to Zeithaml's definition, consumer perceived value is a holistic assessment derived from weighing the utility obtained from a product against the costs incurred.

Subsequent researchers have refined this theoretical model. Kantamneni and Coulson (1996) developed a multidimensional measurement model for consumer perceived value, validated its effectiveness through surveys, and identified key dimensions of perceived value. Similarly, Bourdeau, Chebat, and Couturier (2002), based on an analysis of internet consumer behaviour, categorized university students' perceived value of internet usage into five core dimensions, including social and hedonic value. Their study represents an extension of CPV theory in the digital economy, offering new insights into experiential consumption and online consumer behaviour.

CPV has since been widely adopted as a theoretical tool across different contexts, from the examination of service quality in fast-food restaurants in the real economy (Slack et al., 2021), to the purchase of sleep products (Kuncoro et al., 2021), and even to food delivery robots (Hong et al., 2023).

In the context of the sharing economy, numerous studies have leveraged CPV theory to explore consumer behavior and market dynamics Zhang (2020) applied the CPV framework to examine the impact of product sharing—specifically truck and bicycle sharing—on product sales. Similarly, Ding and others(2021) constructed a CPV-based model to examine factors influencing users' willingness to pay for shared power banks.

Since its introduction, CPV theory has undergone continuous refinement and empirical validation across a broad spectrum of research domains and practical application. From traditional product consumption to the digital economy and, more recently, the sharing economy, CPV has remained a crucial tool for understanding consumer decision-making processes. Building upon existing research, this study further explores the applicability of CPV iwith the sharing economy, using the bike-sharing industry as a case study, to enrich the theoretical and practical understanding of CPV in emerging business models.

2.2 Variables and Hypotheses

The primary objective of this study is to explore the impact of consuemrs' intention to use shared products —specifically, shared bicycles— on their purchase intention for corresponding private products, namely private bicycles. However, when constructing the analytical model, it is essential to consider the complex interrelationships among variables, particularly the factors influencing consuemrs' intention to use shared bicycles. As outlined in previous literature, CPV theory provides a theoretical foundation for understanding the determinants of consumers' adoption of shared bicycles.

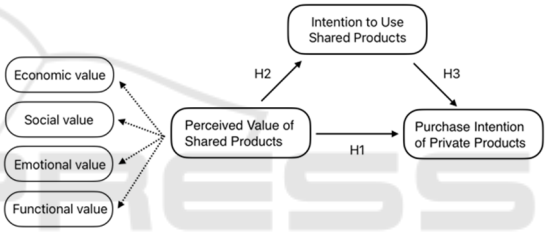

Figure 1: Theoretical Model

Therefore, the proposed model (see Figure 1) in this study incorporates three key variables: Perceived Value of Shared Products (PV), Intention to Use Shared Products (PIS) and Purchase Intention of Private Products (PIP).

Traditional consumer behavior models have predominantly centered on purchase intention because ownership was historically regarded as the primary consumption goal. However, in the sharing economy, consumers may actively engage with and derive utility from products or services without actual ownership. Consequently, measuring usage intention offers a more precise reflection of how consumers adopt shared products based on perceived value.

The proliferation of internet technologies underpinning the current sharing economy model has facilitated a temporary separation between ownership and usage rights, blurring the boundaries between the two (Zheng, 2017). In light of this shift, Hypothesis 1 of this study is grounded in the Substitution Effect, positing that a strong intention to use shared products may reduce consumers' demand for private bicycles ownership, thereby exerting a negative influence on

their purchase intention. This phenomenon has been empirically validated in related fields, such as shared mobility (e.g., Uber vs. private car ownership) (He, 2022) and shared accommodation (e.g., Airbnb vs. traditional hotel stays) (Xu, 2020). Moreover, an analysis of the ecosystem of a taxi-hailing app revealed that user satisfaction and trust in the platform are significantly influenced by both hedonic and utilitarian value (Tumaku et al., 2023).

H1: The Perceived Value of Shared Products (PV) affects the Purchase Intention of Private Products (PIP).

H1a: The Economic value (PVE) negatively affects the Purchase Intention of Private Products (PIP).

H1b: The Social value (PVS) negatively affects the Purchase Intention of Private Products (PIP).

H1c: The Emotional value (PVe) negatively affects the Purchase Intention of Private Products (PIP).

H1d: The Functional value (PVF) negatively affects the Purchase Intention of Private Products (PIP).

The measurement of Perceived Value is complex. Sweeney and Soutar (2001) proposed the PERVAL (Perceived Value Scale) model in their study, emphasizing that consumers take multiple types of value into account when making decisions.

Economic Value (PVE): Consumers consider whether shared products offer better cost-effectiveness compared to private products. For example, they may evaluate whether using shared bicycles is more cost-saving than purchasing a private bicycle.

Social Value (PVS): Using shared products may provide social recognition, such as reinforcing environmental consciousness or fostering a sense of identity associated with the sharing economy.

Emotional Value (PVe): Consumers may experience positive emotions when using shared products, such as convenience, excitement from exploring new things, or a sense of enjoyment.

Functional Value (PVF): The actual performance and usability of shared products, such as whether using a shared bicycle is more efficient than owning one.

The model proposed by Sweeney and Soutar was originally designed to assess consumers' evaluations of durable goods. However, its core framework exhibits considerable adaptability, enabling its application across diverse consumption contexts. Within the sharing economy, consumers similarly evaluate economic, social, emotional, and functional values when deciding whether to engage with shared bicycles.

Among these dimensions, economic value is particularly significant in the sharing economy, as consumers frequently compare the relative cost of purchasing private products versus utilizing shared alternatives. Additionally, social value applies to shared bicycles, as the adoption of shared products may enhance consumers' social identity, particularly by aligning with environmental values and sustainable consumption practices. Emotional value reflects the degree of convenience, enjoyment, and novelty derived from shared bicycle usage, whereas functional value directly affects the actual user experience, including aspects like riding comfort and accessibility.

Therefore, drawing on Sweeney and Soutar's perceived value measurement framework, this study classifies the perceived value of shared products into four key dimensions—economic, social, emotional, and functional—to develop a more comprehensive understanding of consumers' intention to use shared bicycles and its subsequent impact on their purchase intention for private bicycles.

According to the definition of perceived value, it essentially represents a trade-off between perceived benefits and perceived costs (Zeithaml, 1988). Since purchasing behavior is driven by consumer needs, individuals tend to choose the option that maximizes perceived value (Feng et al., 2006). Additionally, previous research has confirmed a positive correlation between perceived value and purchase intention (Wood & Scheer, 1996).

Furthermore, prior studies indicate that when consumers attribute high perceived value to shared products, they demonstrate a stronger inclination to use them. This finding aligns with the hypothesis that perceived value serves as a key determinant of consumers' adoption of shared products, reinforcing the positive relationship between perceived value and usage intention.

Based on the above analysis, this study proposes H2: The perceived value of shared products affects the Intention to Use Shared Products (PIS).

H2a: The Economic value (PVE) positively affects the Intention to Use Shared Products (PIS).

H2b: The Social value (PVS) positively affects the Intention to Use Shared Products (PIS).

H2c: The Emotional value (PVe) positively affects the Intention to Use Shared Products (PIS).

H2d: The Functional value (PVF) positively affects the Intention to Use Shared Products (PIS).

The widespread adoption of shared products reduces the necessity of private product ownership,

allowing consumers to satisfy their needs through the sharing model without acquiring the corresponding private products. Building on this premise, this study proposes H3: The Intention to Use Shared Products (PIS) negatively affects the intention to purchase private products (PIP).

3 METHODS

3.1 Survey Instrument

This study employed a questionnaire survey to collect the necessary data. The questionnaire consisted of three sections and was administered online.

The first section gathered basic demographic information. The second section measured the perceived value of shared products, while the third section assessed relevant behavioral intentions. Both sections utilized a seven-point Likert scale (Likert, 1932) for scoring. The questionnaire items were designed with reference to well-established measurement scales from existing literature (Sweeney & Soutar, 2001; Bourdeau et al., 2002; Zhong, 2013; Zhang, 2023), incorporating the characteristics of bike-sharing as a shared product. Specifically, three items were designed for each dimension of perceived value—economic, social, emotional, and functional value. Additionally, three items were used to measure the intention to use shared products, and four items were developed to assess the purchase intention of private products.

Upon data collection, SPSS software was used for data analysis.

3.2 Study Participants

Since this study focuses on the sharing economy in China, all respondents are Chinese consumers. No specific restrictions were imposed regarding age, gender, occupation, or region, ensuring that the sample possesses broad and generalizable characteristics.

4 STATISTICS ANALYSIS

4.1 Descriptive Analysis

A total of 285 valid questionnaires were collected in this survey. Among the respondents, 41.75% were male, and 58.25% were female. The sample covers a wide range of age groups and income levels.

Most respondents were in the 20-29 age group (29.47%) and the 30-39 age group (27.02%), followed by those aged 40-49 (22.11%). Respondents under 20 years old and over 50 years old accounted for 11.93% and 9.47%, respectively.

In terms of educational background, 54.74% of respondents held a bachelor's degree or higher, including 50.88% with a bachelor's degree and 3.86% with a master's or doctoral degree. Additionally, 32.63% had an associate degree, while 12.63% had a high school diploma or below.

Regarding disposable income, respondents earning 7,001-10,000 RMB per month constituted the largest group (35.79%), followed by those earning 3,001-7,000 RMB (30.18%). Respondents with a monthly income of 1,001-3,000 RMB and above 10,000 RMB accounted for 13.68% and 12.63%, respectively, while 7.72% earned 1,000 RMB or less.

All respondents had prior experience using shared bicycles. Among them, 28.42% used shared bicycles almost daily, 51.23% used them two to three times per week, and 20.35% had used them but infrequently. This usage distribution ensures that respondents were able to answer the survey questions based on their actual consumption experiences, rather than relying on speculation or assumptions.

4.2 Validity Analysis

The validity analysis helps determine whether the design of the questionnaire items is reasonable. Firstly, the communalities for all research items are above 0.4, indicating that the information from these items can be effectively extracted. The KMO value for all scale items in the questionnaire is 0.887. Since the KMO value is greater than 0.8, it suggests that the data is highly suitable for information extraction, reflecting good validity. Additionally, the variance explanation rates for the six factors are 15.338%, 12.189%, 12.184%, 12.150%, 12.039%, and 11.692%, with the cumulative variance explanation rate after rotation being 75.593%, which is greater than 50%. This means that the information from the research items can be effectively extracted. Furthermore, the correspondence between the factors and research variables aligns with the expected results.

Table 1: Descriptive Statistical Analysis of the Sample

Category	Subcategory	Frequency (n)	Percentage (%)
Gender	Male	119	41.75
	Female	166	58.25
Age	Below 20 years	34	11.93
	20-29 years	84	29.47
	30-39 years	77	27.02
	40-49 years	63	22.11
	50 years and above	27	9.47
Education Level	High school or below	36	12.63
	Junior college	93	32.63
	Bachelor's degree	145	50.88
	Master's or Ph.D.	11	3.86
Monthly Income	1000 or below	22	7.72
	1001-3000	39	13.68
	3001-7000	86	30.18
	7001-10000	102	35.79
	Above 10000	36	12.63
Frequency of Shared Bike Usage	Almost daily	81	28.42
	2-3 times per week	146	51.23
	Used but rarely	58	20.35

4.3 Reliability Analysis

Reliability analysis is used to assess the accuracy and consistency of responses in quantitative research, particularly for attitudinal scale items. In the proposed model of this study, economic value, social value, emotional value, and functional value represent the four dimensions of Perceived Value of Shared Products. The analysis results indicate that the Cronbach's Alpha coefficients for these dimensions range from 0.833 to 0.849, demonstrating strong internal consistency.

Additionally, the Intention to Use Shared Products (α = 0.837) and the Purchase Intention of Private Products (α = 0.869) also meet high reliability standards. The overall reliability coefficient for all attitudinal scale items is 0.743, which exceeds the commonly accepted threshold of 0.7, indicating that the research data exhibits good reliability.

5 RESULTS AND DISCUSSION

5.1 Correlation Analysis

The correlation analysis examines the relationships between PIP, PIS, and the four dimensions of perceived value (PVE, PVS, PVe, PVF) using Pearson correlation coefficients to measure the strength of these relationships.

PIP and PVE, PVS, PVe, PVF: The correlation coefficients are -0.433, -0.472, -0.477, -0.429, separately, significant at the 0.01 level, indicating a significant negative correlation.

PIS and PVE, PVS, PVe, PVF: The correlation coefficients are 0.426, 0.434, 0.411, and 0.377, respectively, all significant at the 0.01 level, indicating a significant positive correlation.

PIP and PIS: The correlation coefficient is -0.413, significant at the 0.01 level, showing a noticeable negative correlation.

These results support the hypothesized relationships between the variables examined.

5.2 Regression Analysis

5.2.1 The Validation of H1

Table 2: Results of Linear Regression Analysis (n=285)

	Unstandardized Coefficients		Standardized Coefficients	t	p	Collinearity Statistics	
	B	Std. Error	Beta			VIF	Tolerance
Constant	6.695	0.290	-	23.081	0.000**	-	-
PVF	-0.170	0.055	-0.178	-3.077	0.002**	1.414	0.707
PVe	-0.238	0.060	-0.243	-3.990	0.000**	1.560	0.641
PVE	-0.153	0.062	-0.160	-2.476	0.014*	1.762	0.567
PVS	-0.170	0.075	-0.159	-2.276	0.024*	2.062	0.485
R^2	0.336						
Adjusted R^2	0.327						
F	F (4,280) =35.497,p=0.000						
D-W Value	2.010						

Table 2: Results of Linear Regression Analysis (n=285)

	Unstandardized Coefficients		Standardized Coefficients	t	p	Collinearity Statistics	
	B	Std. Error	Beta			VIF	Tolerance

Dependent Variable = PIP

* $p<0.05$ ** $p<0.01$

By conducting a linear regression analysis, we use PVF, PVe, PVE, and PVS as independent variables and PIP as the dependent variable. The resulting regression equation is:

$$PIP = 0.695 - 0.170 \times PVF - 0.238 \times PVe - 0.153 \times PVE - 0.170 \times PVS \quad (1)$$

The R-squared value of the model is 0.336, indicating that PVF, PVe, PVE, and PVS collectively explain 33.6% of the variance in PIP. The F-test result ($F = 35.497$, $p = 0.000 < 0.05$) confirms the overall significance of the model, meaning that at least one of the independent variables significantly influences PIP.

Additionally, multicollinearity diagnostics reveal that all VIF values are below 5, indicating the absence of multicollinearity issues. The Durbin-Watson (D-W) statistic is close to 2, suggesting that the model does not suffer from autocorrelation, confirming the independence of observations and the model's robustness.

PVF: $\beta = -0.170$, $t = -3.077$, $p = 0.002 < 0.01$
PVe: $\beta = -0.238$, $t = -3.990$, $p = 0.000 < 0.01$
PVE: $\beta = -0.153$, $t = -2.476$, $p = 0.014 < 0.05$
PVS: $\beta = -0.170$, $t = -2.276$, $p = 0.024 < 0.05$

The results indicate that PVF, PVe, PVE, and PVS all have significant negative effects on PIP, providing strong empirical support for H1.

While the current model can predict PIP to some extent, there is still considerable room for improvement. Given that the model explains 33.6% of the variance in PIP, additional factors likely contribute to consumers' purchasing decisions. Introducing more variables, such as consumer psychology, market trends, brand influence, and price sensitivity, may enhance the model's explanatory power.

5.2.2 The Validation of H2

Table 3: Results of Linear Regression Analysis (n=285)

	Unstandardized Coefficients		Standardized Coefficients	t	p	Collinearity Statistics	
	B	Std. Error	Beta			VIF	Tolerance
Constant	1.282	0.317	-	4.041	0.000**	-	-
PVF	0.155	0.082	0.138	1.897	0.059	2.062	0.485
PVe	0.146	0.060	0.146	2.411	0.017*	1.414	0.707
PVE	0.190	0.065	0.185	2.922	0.004**	1.560	0.641
PVS	0.204	0.068	0.203	3.016	0.003**	1.762	0.567
R^2			0.278				
Adjusted R^2			0.268				
F			F (4,280)=26.933,p=0.000				
D-W Value			2.043				

Dependent Variable = PIS

* $p<0.05$ ** $p<0.01$

By conducting a linear regression analysis, we use PVS, PVF, PVe, and PVE as independent variables and PIS as the dependent variable. The resulting regression equation is:

$$PIS = 1.282 + 0.155 \times PVS + 0.146 \times PVF + 0.190 \times PVe + 0.204 \times PVE \quad (2)$$

The R-squared value of the model is 0.278, indicating that PVS, PVF, PVe, and PVE collectively explain 27.8% of the variance in PIS.

The F-test result ($F = 26.933$, $p = 0.000 < 0.05$) confirms the overall significance of the model, meaning that at least one of the independent variables significantly influences PIS.

Additionally, multicollinearity diagnostics reveal that all VIF values are below 5, indicating the absence of multicollinearity issues. The Durbin-Watson (D-W) statistic is close to 2, suggesting that the model does not suffer from autocorrelation, confirming the independence of observations and the model's robustness.

PVS: $\beta = 0.155$, $t = 1.897$, $p = 0.059$
PVF: $\beta = 0.146$, $t = 2.411$, $p = 0.017 < 0.05$

PVe: β = 0.190, t = 2.922, p = 0.004 < 0.01
PVE: β = 0.204, t = 3.016, p = 0.003 < 0.01

The results indicate that PVF, PVe, and PVE all have significant positive effects on PIS, providing empirical support for Hypotheses H2a, H2c, and H2d. However, H2b is not supported, as PVS does not reach the required significance level.

The result for H2b (PVS → PIS) exhibits a different pattern compared to the other perceived value dimensions. While PVF, PVe, and PVE significantly influence PIS, PVS (Perceived Social Value) only shows a marginal effect (p = 0.059), failing to reach conventional significance thresholds.

Regarding this unexpected result, several points merit discussion. First, we need to consider the statistical tools and p-value threshold settings. Although PVS (Perceived Social Value) shows a marginal effect (p = 0.059), it does not meet the conventional significance threshold, which may be influenced by sample size or model specification.

Moreover, social value differs from the other three dimensions of perceived value in its source. Economic value, emotional value, and functional value rely primarily on an individual's personal judgment, whereas social value is closely tied to broader societal and environmental contexts. In certain economic products or services, usage or purchase can provide an opportunity to join a community or establish interpersonal relationships and social recognition—such as gym memberships. However, bike-sharing does not fall into this category.

Although shared bicycles are environmentally friendly and cost-effective, these characteristics alone may not be prominent enough to make bike-sharing a behaviour with strong interpersonal significance or moral value. Consequently, users may not perceive social value as a key driver in their decision to use shared bicycles, explaining why its effect on PIS was weaker than expected.

5.2.3 The Validation of H3

Table 4: Results of Linear Regression Analysis (n=285)

	Unstandardized Coefficients		Standardized Coefficients	t	p	Collinearity Statistics	
	B	Std. Error	Beta			VIF	Tolerance
Constant	5.111	0.242	-	21.091	0.000**	-	-
PIS	-0.394	0.052	-0.413	-7.635	0.000**	1.000	1.000
R^2				0.171			
Adjusted R^2				0.168			
F				F (1,283)=58.288,p=0.000			
D-W Value				2.046			

Dependent Variable = PIP

* $p<0.05$ ** $p<0.01$

A linear regression analysis was conducted using PIS as the independent variable and PIP as the dependent variable. The resulting regression equation is:

$$PIP = 5.111 - 0.394 \times PIS \quad (3)$$

The model's R-squared value is 0.171, indicating that PIS explains 17.1% of the variance in PIP. The F-test result (F = 58.288, p = 0.000 < 0.05) confirms the overall significance of the model, demonstrating that PIS has a significant effect on PIP. The regression coefficient for PIS is -0.394 (t = -7.635, p = 0.000 < 0.01), suggesting that PIS has a significant negative impact on PIP. Therefore, H3 is supported.

This outcome is consistent with prior discussions in this study, reinforcing the idea that the sharing economy does not merely supplement traditional consumption patterns but actively reshapes them. However, the explanatory power of the model (R^2 = 0.171) suggests that other factors beyond PIS also influence PIP. Future research should explore additional variables, such as consumer trust in shared services, product categories, and long-term behavioral shifts, to further clarify the dynamics between shared product adoption and private product purchasing decisions.

6 CONCLUSION

This study adopts an empirical research approach from the consumer perspective, based on perceived value theory, to examine the extent to which the perceived value of shared products negatively affects consumers' intention to purchase private alternatives. The findings reveal that the sharing economy functions as a disincentive for upstream product

purchases. Contrary to the prevailing assumption that the sharing economy primarily stimulates consumption, this study highlights its suppressive effect on market demand for traditional private products.

From this perspective, several important questions warrant further exploration. While bike-sharing serves as a representative case within the sharing economy, do other shared products and services exhibit unique characteristics that may lead to different consumption patterns? To what extent can the conclusions drawn in this study be generalized across other sectors of the sharing economy? Furthermore, how does the sharing economy interact with upstream product sales from a macroeconomic standpoint?

Additionally, this study finds that while economic, emotional, and functional values significantly impact consumers' intention to purchase private products, the role of perceived social value remains ambiguous. Unlike the other value dimensions, social value is intricately linked to broader societal and environmental contexts, rendering its influence more complex and potentially variable across different settings. Future research should further investigate the role of perceived social value in shaping consumer behavior across various shared product categories and access whether its impact varies across cultural and market conditions.

A deeper exploration of these issues will provide policymakers with valuable insights into the macroeconomic implications of the sharing economy's rapid expansion..Such an understanding is essential for designing informed policy interventions and regulatory frameworks that promote sustainable and balanced economic development in an era increasingly shaped by shared consumption models.

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