Research on the Impact of Functions and Management of Second-Hand E-Commerce Platforms on User Behavior from the Perspective of User Experience

Shuhan Qi *

School of Managemen, Xiamen University Tan Kah Kee College, Zhangzhou, 363123 Fujian, China

* Corresponding Author Email: 3139520056@qq.com

Abstract. With the rapid growth of the global second-hand e-commerce market and the popularization of the circular economy concept, second-hand platforms face challenges such as information asymmetry and weak trust mechanisms during their rapid expansion. Existing studies mostly focus on a single dimension, lacking a systematic discussion on the synergistic effect of user experience elements and the mediating mechanism of "platform cognition". Therefore, this study takes "user experience" as the core and constructs a three-dimensional analytical framework of "Function-Management-Cognition", aiming to explore the impact path of platform functions and management on users' behavioral intentions and the mediating role of platform cognition. By collecting 228 valid data samples through questionnaires and combining linear regression and mediating effect analysis, the study finds that: platform functionality has no direct significant impact on users' behavioral intentions, and its role is fully realized through the mediating effect of platform cognition; platform management has both direct and indirect effects on the intention to increase usage frequency, while its impact on recommendation intention and continuous usage intention is only realized through the full mediating effect of platform cognition. The conclusions indicate that second-hand platforms need to shift from "functional competition" to "cognition construction". By optimizing management measures and functional design, they should systematically enhance users' cognition of the platform's reliability, merchants' reputation, and community atmosphere, thereby driving the continuous improvement of users' behavioral intentions.

Keywords: Second-hand E-commerce Platform; User Experience; Platform Cognition; Mediating Effect.

1. Introduction

With the vigorous development of global e-commerce, second-hand e-commerce platforms are experiencing unprecedented growth. Data shows that the global market size of second-hand goods trading platforms was approximately 1.15269 trillion US dollars in 2024. The Chinese market performed particularly strongly, with the transaction scale of second-hand e-commerce reaching 645.02 billion yuan, representing a year-on-year growth of 17.56%. Looking ahead, it is expected that the global revenue of second-hand goods trading platforms will reach 3.90011 trillion US dollars by 2031, with a Compound Annual Growth Rate (CAGR) of 19.2% from 2025 to 2031. In the Chinese market, leading platforms such as Xianyu and Zhuanzhuan have exceeded 300 million users, and the transaction categories have expanded from traditional second-hand goods to luxury goods, electronic products, and even virtual services, showing a significant "de-boundary" feature. Behind this rapidly expanding market is the dual driving force of the popularization of the circular economy concept and the awakening of consumers' awareness of sustainable consumption.

However, compared with traditional e-commerce, second-hand transactions face unique challenges. Firstly, the non-standardized nature of second-hand goods leads to severe information asymmetry in the transaction process. Due to the particularity of second-hand goods and the differences in people's criteria for evaluating the newness of second-hand goods, the information released about the goods is highly subjective, resulting in information asymmetric and opacity between buyers and sellers, which easily leads to disputes [1]. Secondly, the C2C transaction structure causes direct games between buyers and sellers, significantly increasing the difficulty of platform

governance as an intermediary. More importantly, due to the lack of a standardized quality assurance system, the platform's trust mechanism is relatively weak, which directly affects user experience and transaction efficiency.

Existing studies have obvious limitations in explaining user behavior on second-hand e-commerce platforms. On the one hand, most studies adopt a single-dimensional perspective, either focusing on platform function optimization or trust mechanism design, lacking a systematic investigation of the synergistic effect of user experience elements. On the other hand, although scholars generally recognize the importance of trust, they have not clearly defined the key role of "platform cognition"—a high-level psychological construct—in the "experience-behavior" transmission mechanism. This theoretical gap leads platforms to often fall into the "functional iteration trap" in practice: continuously optimizing functions but failing to significantly improve user retention.

Based on the above practical challenges and theoretical gaps, this study attempts to answer three core questions: Firstly, in the context of second-hand e-commerce, how do platform functions and platform management affect user behavior? Secondly, what mediating role does platform cognition play in the "experience-behavior" transmission? To answer these questions, this study integrates the user experience theory and the platform governance perspective and innovatively constructs a three-dimensional analytical framework of "Function-Management-Cognition". Through empirical research design, this study not only verifies the mediating role of platform cognition but also reveals the dual impact paths of management measures. These findings provide a theoretical basis for second-hand platforms to shift from "functional competition" to "cognition construction" and offer practical insights for solving the industry's "low activity and low loyalty" dilemma.

2. Literature Review and Hypothesis Deduction

2.1. Research on User Experience

Cognitive psychologist Donald Norman first proposed the concept of User Experience (UX) in 1995, whose core covers an individual's experience when using a system or service [2]. Regarding the definition and connotation of user experience, subsequent scholars have explained it from multiple perspectives [3]. Hassenzahl and Tractinsky argued that user experience exists in a specific interactive environment, integrating users' moods, expectations, tendencies, needs, etc., and possesses attributes such as functionality, usability, purposefulness, and complexity [4]. Olsson divided user experience into two specific types: one is experiential experience, which refers to the experience generated instantly; the other is cumulative experience, which refers to the overall experience over a period of time [5]. Xia Jinqiu pointed out that the connotation of user experience is the emotional experience—whether pleasant, bad, or deeply memorable—that customers generate through interactions with merchants and other consumers when selecting, purchasing goods, or services [6]. Li Jianye defined user experience as the physical and psychological perception established by users based on their own experiences after using a product or service [7].

Drawing on different definitions, this study defines user experience as: the subjective feelings and emotional responses of users during or after using a product, system, or service, including users' evaluations of the effectiveness, efficiency, and satisfaction of the product or service. Therefore, user experience is essentially an evaluation made by users after using a system, emphasizing the pleasure of mood, and can be regarded as an individual's subjective feelings and thoughts about the system.

Explorations on the importance of improving user experience and its influencing factors cover multiple aspects such as service processes and shopping scenarios. Cao Shanshan believed that improving user experience is not merely a simple optimization of interface design aesthetics or operational process smoothness, but an upgrade of the service system covering the entire usage process [8]. Every link of users on the platform—from browsing products and searching for information to placing orders, making payments, tracking logistics, and handling after-sales services—constitutes an important part of the overall experience. If a platform can provide a coherent,

efficient, and considerate service, it can significantly enhance user satisfaction and stickiness; otherwise, users may switch to other platforms, affecting the platform's reputation, market share, and profitability. Feng Wei's study focused on online shopping scenarios and found that factors such as trust tendency, security and reliability of platform payment methods, product delivery time, sellers' reputation evaluations, price attractiveness of online shopping products, whether the platform has an authoritative third-party evaluation mechanism, as well as consumers' education level, online shopping experience, and daily internet access frequency, all affect users' trust in online shopping to varying degrees, thereby influencing user experience [9].

2.2. Research on Second-Hand E-Commerce Platforms

In the research on second-hand e-commerce platforms, the trust mechanism is regarded as a key factor affecting transaction behavior. Scholars generally believe that trust plays a core role in promoting users' transaction intentions. Wan Yan et al. pointed out that in second-hand platforms with prominent C2C attributes and common one-of-a-kind transactions, users' trust in the platform itself is more important than their trust in transaction counterparts, and it is the main factor contributing to transaction intentions [10]. Even if the trust level between buyers and sellers is low, as long as users have strong trust in the platform and believe that the platform can effectively protect transaction rights and interests, users' transaction intentions will be significantly enhanced. This indicates that second-hand e-commerce platforms play an irreplaceable role in building a trust environment and acting as a credit intermediary.

Regarding the problems existing in platform operation, existing studies mostly focus on the protection of consumers' rights and interests and the dispute resolution mechanism. Taking "Xianyu"—a typical domestic platform—as an example, Shi Bingyan et al. found that there are many rights protection dilemmas in its actual operation, such as insufficient credibility of the "Xianyu Small Court" mechanism, difficulties in identifying transaction responsibilities, complex evidence collection processes, and the platform's use of opaque standard terms, which seriously affect user experience and the realization of rights [11]. Such studies reveal that while second-hand e-commerce platforms are developing rapidly, they still need to improve their governance structure and dispute resolution system.

In terms of operation models, scholars pay attention to the impact of new sales methods and business models on the development of second-hand e-commerce. Ye Jing et al. pointed out through empirical analysis that traditional second-hand luxury e-commerce has experienced shortcomings due to the lack of face-to-face communication, while the live-streaming sales model can significantly enhance consumers' product perception and trust through intuitive displays, professional explanations, and the combination of multimedia [12]. From the perspective of capital flow and business model selection, Wang Zhishan analyzed that most successful international second-hand e-commerce platforms such as Poshmark and Mercari adopt the To C model [13]. The reason is that C-end users constitute the main body of supply and demand, which is conducive to forming scale effects and controlling costs, thus highlighting the importance of user-centered research and experience optimization.

From the perspective of market structure and evolution trends, second-hand e-commerce platforms have not only expanded the boundaries of the traditional second-hand market but also formed complementarity and integration with offline channels. Taking eBay as an example, Brenda Parker pointed out that online platforms have not completely replaced the physical second-hand market; instead, they have realized cross-market resource flow and business format mixing, promoting the expansion of second-hand transaction audiences and the deepening of market levels [14]. With the general improvement of consumers' willingness to consume second-hand goods, the market share of domestic and foreign second-hand e-commerce platforms continues to grow, showing strong research value and development potential in this field.

In terms of factors affecting the service quality of second-hand e-commerce platforms, existing studies have identified several key dimensions. Ting Chi Hsiang et al. pointed out through the

combination of theory and empirical research that convenience, practicality, and interactivity are the core elements for measuring the quality of operational services, and there are significant interaction effects between these factors [15]. Such studies provide a theoretical basis and practical direction for platforms to optimize functional design and improve user experience.

2.3. Research Hypotheses

2.3.1. Hypotheses on the Direct Impact of Platform Functionality on Users' Behavioral Intentions

According to the Technology Acceptance Model (TAM), perceived usefulness and perceived ease of use are the key antecedents affecting users' behavioral intentions (Davis, 1989). In the context of second-hand e-commerce, platform functionality serves as the basic carrier for user-platform interaction, and its performance directly affects users' operational efficiency and the realization of needs. A smooth functional experience can reduce users' usage costs, and rich functional modules can cover the entire process needs of "browsing-screening-transaction-after-sales", thereby enhancing users' overall willingness to use the platform.

As a core element shaping user experience, platform functionality is a key antecedent affecting users' behavioral intentions. This study takes platform functionality (X_1) as the independent variable. The potential mechanism of its impact on users' behavioral intentions lies in: a well-designed platform function system can positively guide users' subsequent behaviors by improving their perceived utility and satisfaction during the interaction process. Specifically, when a platform has high smoothness in operation, high richness in service content, and high rationality and ease of use in interface design, users are more likely to generate positive emotional responses and usage attitudes, and this positive user experience will be directly converted into stronger behavioral intentions. Therefore, drawing on the research of Liu Fuling et al. (2024) and Huangfu Yajie (2023), this study measures platform functionality from four dimensions: smoothness, richness, layout rationality, and ease of use, with a total of 5 items. Users' behavioral intentions, as the dependent variable (Y), are measured comprehensively from three dimensions: platform recommendation intention (Y_1), continuous usage intention (Y_2), and intention to increase usage frequency (Y_3). Based on this logical relationship, the following hypotheses are proposed:

H1a: Platform functionality has a significant positive impact on users' willingness to recommend the platform.

H1b: Platform functionality has a significant positive impact on users' continuous usage intention.

H1c: Platform functionality has a significant positive impact on users' intention to increase usage frequency.

2.3.2. Hypotheses on the Direct Impact of Platform Management on Users' Behavioral Intentions

Based on the Institutional Trust Theory (Zucker, 1986), platform management (X_2) is regarded as a key institutional factor for building user trust and guiding their behaviors. This theory holds that by establishing and implementing clear rules and providing reliable security guarantees, platforms can create a stable and predictable transaction environment for users. Such institutionalized management measures can effectively reduce the perceived risks of users caused by information asymmetry and opportunistic behaviors, thereby cultivating users' trust in the platform. As Feng Wei (2010) confirmed, the transparency and security of platform management are the core of building consumer trust. In the context of second-hand transactions, which have higher potential risks, this trust is particularly important, and it constitutes an important psychological basis for users to generate positive behavioral intentions such as recommendation and continuous usage. Therefore, this study takes platform management as the independent variable and infers that excellent platform management can positively affect users' behavioral intentions by enhancing user trust. Referring to the research of Feng Wei (2010) and combining the characteristics of second-hand platforms, platform management is measured from four dimensions: environmental governance, rights

protection, information security, and payment security. Based on this, the following hypotheses are proposed:

H2a: Platform management has a significant positive impact on users' willingness to recommend the platform.

H2b: Platform management has a significant positive impact on users' continuous usage intention.

H2c: Platform management has a significant positive impact on users' intention to increase usage frequency.

2.3.3. Hypotheses on the Mediating Role of Platform Cognition

According to the Social Cognitive Theory (Bandura, 1986), an individual's behavior is the product of the continuous interaction between their external environment and internal cognitive factors. In the context of second-hand e-commerce with prominent information asymmetry, platform functionality (X_1) and management (X_2), as key environmental factors, do not affect users' behavioral intentions (Y) through a simple direct stimulus-response model; instead, their impact needs to be transmitted through users' internal cognitive evaluation process. Specifically, a smooth and easy-to-use functional interface and a well-governed management system with sound guarantees together constitute the "environmental signals" of the platform. By interpreting these signals, users form an overall judgment and belief about the platform's reliability, the overall reputation of merchants, and the community atmosphere, i.e., platform cognition (M). As revealed in the study of Xia Jinqiu (2024), this positive cognitive evaluation can effectively reduce users' perceived risks and decision-making uncertainty, thereby becoming an internal psychological motivation driving them to generate positive behavioral intentions such as recommendation and continuous usage. Therefore, platform cognition plays a core mediating role in the relationship between platform functionality, management, and users' behavioral intentions. To measure this mediating variable, this study draws on the research of Wan Yan et al. (2021) on trust in second-hand platforms and operationalizes platform cognition from three dimensions: platform reliability, merchants' reputation, and community atmosphere. Based on this, the following mediating effect hypotheses are proposed:

H3a: Platform cognition plays a mediating role between platform functionality and users' recommendation intention.

H3b: Platform cognition plays a mediating role between platform functionality and users' continuous usage intention.

H3c: Platform cognition plays a mediating role between platform functionality and users' intention to increase usage frequency.

H3d: Platform cognition plays a mediating role between platform management and users' recommendation intention.

H3e: Platform cognition plays a mediating role between platform management and users' continuous usage intention.

H3f: Platform cognition plays a mediating role between platform management and users' intention to increase usage frequency.

2.3.4. Hypothesis on the Partial Mediating Effect of Platform Management on Usage Frequency Intention

According to the Stimulus-Organism-Response (S-O-R) Theory (Mehrabian & Russell, 1974), external stimuli can affect user behavior through both direct paths and indirect paths mediated by cognition. In second-hand e-commerce, the optimization of platform management (such as cleaning up spam information and improving response efficiency) can not only directly reduce usage interference and promote the increase of usage frequency but also indirectly drive usage intention by enhancing users' cognition of the platform's security and governance capabilities. Wang Zhishan (2023) pointed out that the improvement of users' usage frequency on second-hand platforms particularly depends on environmental comfort, and platform management is the core of creating such an environment.

3. Research Design and Empirical Analysis

3.1. Questionnaire Design

Combining the characteristics of second-hand e-commerce platforms, this study uses a questionnaire survey method to collect data and measures variables using a 5-point Likert scale. The questionnaire mainly consists of three parts: the first part is basic information, including age, gender, education level, occupation, etc.; the second part is platform usage habits, asking respondents to select a second-hand transaction platform they are most familiar with for further investigation; the third part is the user experience scale, which refers to the existing research results of Liu Fuling [6] and Huangfu Yajie [9] to investigate users' evaluations of indicators such as platform functionality, platform management, platform cognition, platform recommendation, continuous usage, and intention to increase usage frequency of second-hand e-commerce transaction platforms.

3.2. Sample Analysis

An online questionnaire survey method was used, and links to the online survey were randomly distributed to respondents through the Wenjuanxing platform. The main part of the questionnaire contained 41 questions. Data collection was conducted from November 2024 to January 2025, and a total of 228 valid responses were obtained.

3.2.1. Independent Variables (Explanatory Variables)

(1) Platform Functionality (X_1)

Measurement basis: Drawing on the research of Liu Fuling et al. (2024) on the consumption experience quality of B2C social e-commerce platforms and the scale design of social e-commerce platform functions by Huangfu Yajie (2023). This study focuses on users' perception of the core functions of the platform, covering four dimensions: functional smoothness, richness, layout rationality, and ease of use.

Measurement items (5 items in total):

X_{11}: The platform is very smooth in the process of launching, browsing, and transaction.

X_{12}: The functions provided by the platform are very rich and can meet my needs.

X_{13}: The layout of the platform's functional modules is scientific and reasonable.

X_{14}: The platform's shopping process is simple and easy to get started.

X_{15}: The platform has detailed operation guidelines and is easy to learn.

(2) Platform Management (X_2)

Measurement basis: Referring to the research of Feng Wei (2010) on the influencing factors of online shopping trust and combining the governance characteristics of second-hand e-commerce platforms, this study focuses on users' perception of platform operation and management, covering four dimensions: environmental governance, rights protection, information security, and payment security.

Measurement items (4 items in total):

X_{21}: The platform is well-managed, and spam advertisements, inappropriate comments, etc. are handled in a timely manner.

X_{22}: The platform makes every effort to protect consumers' rights and interests from being damaged.

X_{23}: The platform has never leaked personal information.

X_{24}: The platform comprehensively protects the security of users' payments and accounts.

(3) Platform Cognition (X_3, Mediating Variable)

Measurement basis: Drawing on the research of Wan Yan et al. (2021) on trust in second-hand e-commerce platforms, this study focuses on users' overall subjective perception of the platform, covering three dimensions: platform reliability, merchants' reputation, and community atmosphere.

Measurement items (3 items in total):

X_{31}: I believe that the second-hand platform is reliable and trustworthy.

X_{32}: I trust merchants with good reputation and fame on the second-hand platform.

X_{33}: I think the communication and interaction between users on the second-hand platform are harmonious, friendly, and positive.

3.2.2. Dependent Variables (Explained Variables)

The dependent variable is users' behavioral intentions, which are divided into three dimensions, all measured by a single-item scale (based on users' degree of approval of the statement, 1 = Strongly Disagree, 5 = Strongly Agree):

Platform Recommendation Intention (Y_1): Refers to the intensity of users' intention to recommend the platform to others, with the measurement item: "I will recommend the platform to other friends".

Continuous Usage Intention (Y_2): Refers to the intensity of users' intention to continue using the platform in the future, with the measurement item: "I will continue to use this platform".

Intention to Increase Usage Frequency (Y_3): Refers to the intensity of users' intention to use the platform more frequently than currently, with the measurement item: "In the future, I will maintain or even increase the frequency of using the second-hand platform".

3.2.3. Linear Model Construction

The independent variable X_1 is platform functionality, referring to users' perception of the performance, usefulness, ease of use, and other aspects of the platform's core functions. X_2 is platform management, referring to users' perception of the platform's rules, policies, governance, security, atmosphere management, and other operational aspects. X_3 is platform cognition, referring to users' perception of the platform's overall image, reputation, credibility, and other aspects. The dependent variable Y_1 is platform recommendation intention, referring to the intensity of users' behavioral intention to recommend the platform to others. Y_2 is continuous usage intention, referring to the intensity of users' behavioral intention to continue using the platform in the future. Y_3 is intention to increase usage frequency, referring to the intensity of users' behavioral intention to use the platform more frequently than currently. Based on the above independent variables and dependent variables, the following linear model equations are established:

Platform Recommendation Intention Model:

$$Y_1 = \beta_{01} + \beta_{11}X_1 + \beta_{21}X_2 + \beta_{31}X_3 + \varepsilon_1 \quad (1)$$

Continuous Usage Intention Model:

$$Y_2 = \beta_{02} + \beta_{12}X_1 + \beta_{22}X_2 + \beta_{32}X_3 + \varepsilon_2 \quad (2)$$

Intention to Increase Usage Frequency Model:

$$Y_3 = \beta_{03} + \beta_{13}X_1 + \beta_{23}X_2 + \beta_{33}X_3 + \varepsilon_3 \quad (3)$$

3.3. Data Analysis

3.3.1 Basic Data Analysis

Table 1. The basic demographic characteristics of the research samples and the overview of usage behavior on second-hand e-commerce platforms.

Basic Indicators	Sample Size	Minimum Value	Maximum Value	Mean Value	Standard Deviation	Median
Age	135	18	73	31	11.566	28
Gender	135	1	2	1.489	0.502	1
Education Level	135	2	5	4.17	0.554	4
Occupation	135	1	8	3.622	1.597	4
Frequently Used Platform	135	2	6	2.289	0.752	2
Usage Frequency	135	1	5	3.415	0.805	4

Table 1 presents the basic demographic characteristics of the research samples and the overview of usage behavior on second-hand e-commerce platforms. Among the 228 respondents, the gender distribution is relatively balanced, with a slightly higher proportion of females (53.07%) and an average age of 31 years. In terms of education level, the highest proportion of respondents have a bachelor's degree (75%), followed by master's degree or above (18.86%); in terms of occupation, company employees account for the highest proportion (25.44%), followed by students (21.93%) and others (7.89%). Regarding the use of second-hand e-commerce platforms, Xianyu is the most frequently used platform by respondents (51.75%). In this questionnaire, respondents who selected "have never used a second-hand transaction platform" were asked to end the survey. Among the valid respondents, "seldom use" is the most common usage frequency (55%), which is significantly higher than other frequency options.

3.3.2. Reliability Analysis

Table 2. Reliability Analysis Table.

Dimension	Item Number	Cronbach's Alpha	Description
Platform Functionality	X_{11}-X_{15}	0.87	Measures functional smoothness, richness, layout rationality, and ease of use
Platform Management	X_{21}-X_{24}	0.84	Evaluates environmental governance, rights protection, information security, and payment security
Platform Cognition	X_{31}-X_{33}	0.79	Measures trust in platform reliability, merchants' reputation, and community atmosphere
Behavioral Intentions	Y_1-Y_3	0.88	Measures intentions of platform recommendation, continuous usage, and increasing usage frequency

The reliability analysis results show that the "Second-Hand E-Commerce Platform User Experience Questionnaire" used in this study (including 7 items) has good internal consistency, and all its Cronbach's Alpha coefficients are greater than the acceptable standard of 0.70, indicating that the measurement results of the scale are reliable (Table 2).

3.3.3. Collinearity Diagnosis

Table 3. Collinearity Diagnosis Table.

Item	VIF Value	Tolerance
Platform Functionality	5.105	0.196
Platform Management	5.805	0.172
Platform Cognition	7.598	0.132

Collinearity was tested using the Variance Inflation Factor (VIF). The results show that all VIF values are less than 10, indicating that the collinearity between independent variables is within an acceptable range, which will not have a serious impact on the results of regression analysis and meets the requirements of regression analysis (Table 3).

3.3.4. Correlation Analysis

Table 4. Correlation Analysis Table (Pearson Correlation - Triangular Format)

	Platform Recommendation	Continuous Usage	Increase Usage Frequency	Platform Functionality	Platform Management	Platform Cognition
Platform Recommendation	1					
Continuous Usage	0.796**	1				
Increase Usage Frequency	0.748**	0.793**	1			
Platform Functionality	0.746**	0.731**	0.666**	1		
Platform Management	0.768**	0.704**	0.721**	0.852**	1	
Platform Cognition	0.853**	0.811**	0.757**	0.889**	0.904**	1

Note: * $p<0.05$, ** $p<0.01$

Pearson correlation coefficients were used to examine the relationships between variables (see Table 4). The analysis results show that there are significant positive correlations between all variables ($p<0.01$), which are specifically manifested as follows:

(1) Platform cognition has the strongest correlation with other variables. Its correlation coefficient with platform functionality is r=0.889, and its correlation coefficient with platform management reaches r=0.904, showing a high degree of correlation; it also shows a significant strong correlation with the usage behavior dimensions (continuous usage r=0.811, increase usage frequency r=0.757) and platform recommendation (r=0.853).

(2) There is an extremely strong correlation between platform management and platform functionality (r=0.852), and platform management also has a significant correlation with all dimensions of usage behavior (continuous usage r=0.704, increase usage frequency r=0.721).

(3) In terms of usage behavior, continuous usage and increase in usage frequency show a high degree of synchronization (r=0.793), and their correlation coefficients with platform recommendation are r=0.796 and r=0.748, respectively.

(4) As an initial variable, platform recommendation maintains a significant moderate to high correlation with all subsequent usage behaviors (continuous usage r=0.796, increase frequency r=0.748) and system characteristics (platform functionality r=0.746, platform management r=0.768, platform cognition r=0.853).

3.3.5. Linear Regression Analysis

(1) Verifying the Direct Impact of Platform Functionality and Platform Management on Users' Behavioral Intentions

To test H1 (the impact of platform functionality on behavioral intentions) and H2 (the impact of platform management on behavioral intentions), linear regression analysis was conducted with platform functionality (X_1) and platform management (X_2) as independent variables, and platform recommendation intention (Y_1), continuous usage intention (Y_2), and intention to increase usage frequency (Y_3) as dependent variables respectively. The results are as follows:

Direct impact on platform recommendation intention (Y_1): The regression results show (Table 5): Both platform functionality ($\beta=0.348$, $p<0.01$) and platform management ($\beta=0.486$, $p<0.01$) have a significant positive impact on platform recommendation intention. The model explanatory power $R^2=0.620$ ($F=107.627$, $p<0.001$), indicating that H1a and H2a are initially valid.

Table 5. Regression Results of the Direct Impact of Platform Functionality and Management on Platform Recommendation Intention

	Regression Coefficient	95% CI	VIF (Collinearity Diagnosis)	Tolerance (Collinearity Diagnosis)
Constant	0.682** (3.044)	0.243 ~ 1.120	-	-
Platform Functionality	0.348** (3.245)	0.138 ~ 0.557	3.658	0.273
Platform Management	0.486** (4.714)	0.284 ~ 0.688	3.658	0.273
Sample Size	135	135	135	135
R^2	0.62	0.62	0.62	0.62
Adjusted R^2	0.614	0.614	0.614	0.614
F Value	F (2,132)=107.627, p=0.000	F (2,132)=107.627, p=0.000	F (2,132)=107.627, p=0.000	F (2,132)=107.627, p=0.000

Note: Dependent variable = Platform Recommendation;
D-W value = 1.745; * $p<0.05$, ** $p<0.01$ (t-values in parentheses)

Direct impact on continuous usage intention (Y_2): The regression results show (Table 6): Both platform functionality ($\beta=0.485$, $p<0.01$) and platform management ($\beta=0.289$, $p<0.01$) have a significant positive impact on continuous usage intention. The model explanatory power $R^2=0.558$ ($F=83.246$, $p<0.001$), indicating that H1b and H2b are initially valid.

Table 6. Regression Results of the Direct Impact of Platform Functionality and Management on Continuous Usage Intention.

	Regression Coefficient	95% CI	VIF (Collinearity Diagnosis)	Tolerance (Collinearity Diagnosis)
Constant	0.960** (4.088)	0.500 ~ 1.421	-	-
Platform Functionality	0.485** (4.318)	0.265 ~ 0.705	3.658	0.273
Platform Management	0.289** (2.677)	0.078 ~ 0.501	3.658	0.273
Sample Size	135	135	135	135
R^2	0.558	0.558	0.558	0.558
Adjusted R^2	0.551	0.551	0.551	0.551
F Value	F (2,132)=83.246, p=0.000	F (2,132)=83.246, p=0.000	F (2,132)=83.246, p=0.000	F (2,132)=83.246, p=0.000

Note: Dependent variable = Continuous Usage;
D-W value = 1.837; * $p<0.05$, ** $p<0.01$ (t-values in parentheses).

Direct impact on intention to increase usage frequency (Y_3): The regression results show (Table 7): Platform management ($\beta=0.571$, $p<0.01$) has a significant positive impact on the intention to increase usage frequency, while the impact of platform functionality ($\beta=0.201$, $p>0.05$) is not significant. The model explanatory power $R^2=0.530$ ($F=74.337$, $p<0.001$), indicating that H2c is valid while H1c is invalid.

Table 7. Regression Results of the Direct Impact of Platform Functionality and Management on Intention to Increase Usage Frequency.

	Regression Coefficient	95% CI	VIF (Collinearity Diagnosis)	Tolerance (Collinearity Diagnosis)
Constant	0.837** (3.304)	0.341 ~ 1.334	-	-
Platform Functionality	0.201 (1.661)	-0.036 ~ 0.439	3.658	0.273
Platform Management	0.571** (4.899)	0.343 ~ 0.800	3.658	0.273
Sample Size	135	135	135	135
R^2	0.53	0.53	0.53	0.53
Adjusted R^2	0.523	0.523	0.523	0.523
F Value	F (2,132)=74.337, p=0.000	F (2,132)=74.337, p=0.000	F (2,132)=74.337, p=0.000	F (2,132)=74.337, p=0.000

Note: Dependent variable = Increase Usage Frequency;
D-W value = 1.455; * $p<0.05$, ** $p<0.01$ (t-values in parentheses).

(2) Verifying the Impact of Platform Functionality and Platform Management on Platform Cognition

A prerequisite for the establishment of the mediating effect is that "independent variables have a significant impact on the mediating variable". Linear regression analysis was conducted with platform functionality (X_1) and platform management (X_2) as independent variables and platform cognition (X_3) as the dependent variable. The results show (Table 7): Both platform functionality ($\beta=0.423$, $p<0.01$) and platform management ($\beta=0.512$, $p<0.01$) have a significant positive impact on platform cognition. The model explanatory power $R^2=0.825$ ($F=386.512$, $p<0.001$), which meets the prerequisite for testing the mediating effect.

(3) Verifying the Direct Impact of Platform Functionality, Platform Management, and Platform Cognition on Users' Behavioral Intentions

Linear regression analysis was conducted with platform functionality (X_1), platform management (X_2), and platform cognition (X_3) as independent variables and the three dependent variables respectively to test whether the mediating effect is valid. The results are as follows:

Mediating effect on platform recommendation intention (Y_1): The regression results show (Table 8): After adding platform cognition, platform cognition (β=0.998, $p<0.01$) has a significant positive impact on platform recommendation intention, while the impacts of platform functionality (β=-0.067, $p>0.05$) and platform management (β=0.000, $p>0.05$) are not significant. The model explanatory power R^2=0.729 (F=117.468, $p<0.001$). Since platform functionality and management have a direct significant impact on recommendation intention, it indicates that platform cognition plays a full mediating role between platform functionality - recommendation intention and platform management - recommendation intention, and H3a and H3d are valid.

Table 8. Regression Results of the Impact of Platform Functionality, Management, and Cognition on Platform Recommendation Intention.

	Regression Coefficient	95% CI	VIF (Collinearity Diagnosis)	Tolerance (Collinearity Diagnosis)
Constant	0.283 (1.434)	-0.104 ~ 0.670	-	-
Platform Functionality	-0.067 (-0.625)	-0.277 ~ 0.143	5.105	0.196
Platform Management	0.000 (-0.001)	-0.216 ~ 0.215	5.805	0.172
Platform Cognition	0.998** (7.263)	0.729 ~ 1.268	7.598	0.132
Sample Size	135	135	135	135
R^2	0.729	0.729	0.729	0.729
Adjusted R^2	0.723	0.723	0.723	0.723
F Value	F (3,131)=117.468, p=0.000	F (3,131)=117.468, p=0.000	F (3,131)=117.468, p=0.000	F (3,131)=117.468, p=0.000

Note: Dependent variable = Platform Recommendation;
D-W value = 1.776; * $p<0.05$, ** $p<0.01$ (t-values in parentheses)

Mediating effect on continuous usage intention (Y_2): The regression results show (Table 9): After adding platform cognition, platform cognition (β=0.954, $p<0.01$) has a significant positive impact on continuous usage intention, while the impacts of platform functionality (β=0.089, $p>0.05$) and platform management (β=-0.175, $p>0.05$) are not significant. The model explanatory power R^2=0.663 (F=85.981, $p<0.001$). Since platform functionality and management have a direct significant impact on continuous usage, it indicates that platform cognition plays a full mediating role between platform functionality - continuous usage intention and platform management - continuous usage intention, and H3b and H3e are valid.

Table 9. Regression Results of the Impact of Platform Functionality, Management, and Cognition on Continuous Usage Intention

	Regression Coefficient	95% CI	VIF (Collinearity Diagnosis)	Tolerance (Collinearity Diagnosis)
Constant	0.580** (2.705)	0.160 ~ 0.999	-	-
Platform Functionality	0.089 (0.763)	-0.139 ~ 0.317	5.105	0.196
Platform Management	-0.175 (-1.468)	-0.409 ~ 0.059	5.805	0.172
Platform Cognition	0.954** (6.403)	0.662 ~ 1.247	7.598	0.132
Sample Size	135	135	135	135
R^2	0.663	0.663	0.663	0.663
Adjusted R^2	0.655	0.655	0.655	0.655
F Value	F (3,131)=85.981, p=0.000	F (3,131)=85.981, p=0.000	F (3,131)=85.981, p=0.000	F (3,131)=85.981, p=0.000

Note: Dependent variable = Continuous Usage;
D-W value = 1.778; * $p<0.05$, ** $p<0.01$ (t-values in parentheses)

Mediating effect on intention to increase usage frequency (Y_3): The regression results show (Table 10): After adding platform cognition, platform cognition (β=0.700, p<0.01) has a significant positive impact on the intention to increase usage frequency, platform management (β=0.231, p<0.1) is marginally significant, and the impact of platform functionality (β=-0.089, p>0.05) is not significant. The model explanatory power R^2=0.582 (F=60.685, p<0.001). Since platform management has a direct significant impact on increasing frequency, it indicates that platform cognition plays a partial mediating role between platform management - intention to increase usage frequency (platform management affects both directly and indirectly through cognition), and H3f and H4 are valid; platform cognition plays a full mediating role between platform functionality - intention to increase usage frequency, but since the direct impact of platform functionality on increasing frequency is not significant in the first step, H3c is only partially valid.

Table 10. Regression Results of the Impact of Platform Functionality, Management, and Cognition on Intention to Increase Usage Frequency

	Regression Coefficient	95% CI	VIF (Collinearity Diagnosis)	Tolerance (Collinearity Diagnosis)
Constant	0.558* (2.234)	0.068 ~ 1.048	-	-
Platform Functionality	-0.089 (-0.659)	-0.355 ~ 0.176	5.105	0.196
Platform Management	0.231 (1.658)	-0.042 ~ 0.503	5.805	0.172
Platform Cognition	0.700** (4.029)	0.360 ~ 1.041	7.598	0.132
Sample Size	135	135	135	135
R^2	0.582	0.582	0.582	0.582
Adjusted R^2	0.572	0.572	0.572	0.572
F Value	F (3,131)=60.685, p=0.000	F (3,131)=60.685, p=0.000	F (3,131)=60.685, p=0.000	F (3,131)=60.685, p=0.000

Note: Dependent variable = Increase Usage Frequency;
D-W value = 1.481; * p<0.05, ** p<0.01 (t-values in parentheses)

4. Conclusions

4.1. There are Differences in the Impact Paths of Platform Functionality and Platform Management on User Behavior

Platform functionality has no direct significant impact on users' behavioral intentions, and its role is fully realized through the mediating effect of platform cognition: functional smoothness and richness need to be first converted into users' cognition of the platform as "easy to use and reliable" to indirectly promote behavior. This also explains why some platforms "continuously iterate functions but fail to improve user retention"—functional optimization has not been simultaneously converted into the improvement of user cognition.

Platform management has dual paths of impact on user behavior: it only exerts a full mediating effect through platform cognition on recommendation intention and continuous usage intention; it has both direct effects (β=0.571, p<0.01) and indirect effects (mediated through cognition) on the intention to increase usage frequency. This indicates that management measures (such as filtering spam advertisements and ensuring information security) can directly reduce usage barriers and indirectly promote users to use the platform more frequently by improving cognition.

4.2. Platform Cognition is the Core Variable Driving Users' Behavioral Intentions

The empirical results show that platform cognition has a significant positive impact on platform recommendation intention (β=0.998, p<0.01), continuous usage intention (β=0.954, p<0.01), and intention to increase usage frequency (β=0.700, p<0.01), and the regression coefficients are much

higher than those of other variables. This indicates that users' positive cognition of the platform's "reliability, merchants' reputation, and community atmosphere" is the key prerequisite for determining whether they recommend or continue to use the platform. Second-hand e-commerce platforms have entered the stage of "cognitive competition", and the core logic of users' behavior decision-making has shifted from "whether the function is easy to use" to "whether the platform is trustworthy".

5. Research Significance and Future Prospects

5.1. Research Significance

The empirical analysis of this study reveals the complex mechanism between platform functionality, platform management, and users' behavioral intentions, especially the core mediating role played by platform cognition. These findings provide targeted theoretical guidance and practical insights for second-hand e-commerce platforms to break through the development bottleneck of "low activity and low loyalty" in the fierce market competition.

5.1.1. Focus on Platform Cognition Construction, Shifting from Functional Competition to Trust Competition

The core finding of this study is that platform cognition serves as the ultimate psychological engine driving user behavior. The optimization of platform functionality must be successfully converted into users' positive overall cognition of the platform to effectively promote behavioral intentions. This means that the strategic focus of platforms should be upgraded from simple "functional iteration" to systematic "cognition construction". In practice, precise measures should be taken around the three dimensions of the platform cognition scale: reliability, merchants' reputation, and community atmosphere.

To enhance users' cognition of the platform as "reliable and trustworthy", platforms should actively seek and promote authoritative third-party security certifications and actively participate in public welfare activities related to the circular economy, binding platform development with social responsibility to shape a responsible and reliable image. To consolidate the cognition of "trusting merchants with good reputation and fame on the platform", it is necessary to establish a stricter merchant access review and dynamic credit evaluation system, encourage high-quality merchants through traffic support, and severely publicize and punish violating merchants. Introducing professionals with e-commerce legal backgrounds to participate in dispute arbitration can ensure the fairness of complaint handling, thereby enhancing the credibility of the overall merchant ecosystem. To create a community atmosphere where "user communication is harmonious, friendly, and positive", platforms should design mechanisms to guide positive interactions, encourage the sharing of real transaction experiences, establish communities based on common interests, and severely crack down on false information. By publicizing the results of community governance to enhance management transparency, users can feel a warm and trustworthy community environment, ultimately strengthening their sense of belonging and loyalty.

5.1.2. Precisely Optimize Platform Management, Considering Both Direct Experience and Indirect Cognition

Platform management shows a unique dual impact path on users' behavioral intentions: it not only indirectly drives users' recommendations and continuous usage intentions by improving platform cognition but also directly promotes the intention to increase usage frequency. This finding requires platforms to make their management measures more precise and three-dimensional.

To exert the direct effect of management, the focus is on removing users' usage barriers. Aiming at the problem of mixed platform advertisements, spam advertisements and false information should be cleaned up through prominent labels and intelligent filtering technologies, providing users with a clean and smooth browsing environment to directly reduce irritability during usage. To exert the

indirect effect of management, the core is to make it the cornerstone of building user trust. Platforms need to continuously increase investment in information security technologies, upgrade data protection systems, and clearly inform users of how their information is protected through a clear privacy policy, effectively reducing users' concerns about personal information leakage. It is necessary to optimize the dispute resolution mechanism to make the rules more transparent and the process fairer. Clear standards for defining the responsibilities of buyers and sellers should be formulated, and a step-by-step solution should be provided, so that users can have a strong sense of rights protection before and after transactions and be convinced that the platform is a solid backing for their transactions.

5.1.3. Innovate Platform Function Design, Empowering Cognition Conversion and Demand Mining

The full mediating effect of platform functionality through platform cognition indicates that functional design is still the underlying cornerstone affecting user behavior. Future functional innovation should go beyond the optimization of basic experiences and serve more to trust building and the satisfaction of in-depth needs.

Functional innovation should directly empower the establishment of platform cognition. Aiming at the core pain point of the non-standardized nature of second-hand goods, platforms can focus on building a "first identification, then delivery" service. For high-value categories, introducing authoritative third-party identification institutions to issue professional reports is the most powerful proof that the platform is "reliable and trustworthy". Big data and artificial intelligence technologies should be fully utilized to achieve more in-depth personalized services. Through the analysis of user behavior, precise product recommendations can be made, and data linkage with other platforms in the ecosystem can be explored to intelligently push cost-effective second-hand products of the same type when users browse new products, accurately meeting their pursuit of cost-effectiveness.

Functional design should aim to improve the credibility and friendliness of the overall transaction environment from the source of information. Platforms can optimize product release templates to guide sellers to provide real product images and encourage detailed and objective text descriptions of defects. Such functions can effectively reduce disputes after transactions, subtly shape the platform's community atmosphere of "authenticity and transparency", consolidate users' positive cognition, and ultimately drive users' positive behaviors more sustainably.

5.2. Research Limitations and Prospects

5.2.1. Research Limitations

The sample size is too small. The size and characteristics of the sample may affect the representativeness of the research. If the sample is too small or does not fully represent the target population, the credibility and applicability of the research may be threatened. The sample should cover more age groups and occupations to enhance the generalizability of the conclusions.

Due to time and research capability constraints, this study only selected 228 existing consumers for the survey. Compared with the tens of thousands of users of second-hand e-commerce transaction platforms, the sample is only a part of them. The sample size is relatively small, and the research results may have certain deviations.

5.2.2.Research Prospects

To address these limitations, this study will take some measures in subsequent research, such as expanding the sample size, conducting in-depth data analysis, adding external factors and other variables, using multiple research methods for careful selection and analysis of data and methods, and in-depth understanding of consumers' awareness of buying and selling second-hand goods, which will also help solve the problems and shortcomings in the research.

In terms of research design, mediating effects should be added to verify whether platform functionality and management indirectly affect user behavior through platform cognition. At the same time, in subsequent research, other variables such as perceived risk, consumer preference, and

consumer satisfaction should be added, and the model should be further designed to deepen the research conclusions.

References

[1] Hou L F, Kuang X Y, Wu H X, et al. Research on the Development of Second-Hand E-Commerce in the Circular Economy - Taking "Xianyu" as an Example [J]. Renewable Resources and Circular Economy, 2024, 17(09): 7-10.

[2] Zachry M. An Interview with Donald A. Norman [J]. Technical Communication Quarterly, 2005, 14(4): 469-487.

[3] Peterme. Interface Design [EB/OL]. https://peterme.com/index112498.html, 1998-09-24, 2019-09-05.

[4] Hassenzahl M, Tractinsky N. User experience - a research agenda [J]. Behaviour & Information Technology, 2006, 25(2): 91-97.

[5] Olsson T. Concepts and Subjective Measures for Evaluating User Experience of Mobile Augmented Reality Services [M]. Springer New York, 2013: 203-232.

[6] Xia J Q. Research on the Impact of E-Commerce Platform User Experience on Purchase Intention [J]. Journal of Commercial Modernization, 2024, (21): 25-27. DOI:10.14013/j.cnki.scxdh.2024.21.047.

[7] Li J Y, Li Y. Research on the Influencing Factors of User Experience of Online Shopping APPs on Mobile Terminals [J]. Management and Administration, 2016, (11): 127-131. DOI:10.16517/j.cnki.cn12-1034/f.2016.11.043.

[8] Cao S S. How to Optimize User Experience on Cross-Border E-Commerce Platforms [J]. Foreign Investment in China, 2024, (10): 75-77.

[9] Feng W. An Empirical Study on the Influencing Factors of Consumers' Trust in Online Shopping [D]. Zhejiang University, 2010.

[10] Wan Y, Ning T G, Liu Y R, et al. A Study on the Difference in the Impact of Second-Hand E-Commerce Communities on the Transaction Intentions of Buyers and Sellers - From the Perspective of Social Presence [J]. Journal of Beijing University of Posts and Telecommunications (Social Sciences Edition), 2021, 23(06): 45-54. DOI:10.19722/j.cnki.1008-7729.2021.0167.

[11] Shi B Y, Li B. Research on Consumers' Rights Protection Issues on "Xianyu" E-Commerce Platform Based on Idle Economy [J]. International Public Relations, 2022, (13): 160-162.

[12] Ye J, Chen Y J, Wang X Y, et al. Research on the Continuous Purchase Intention of Clothing Consumers on Second-Hand Luxury E-Commerce Platforms [J]. Journal of Zhejiang Fashion Institute of Technology, 2023, 22(01): 27-31+48.

[13] Wang Z S. After E-Commerce, Second-Hand E-Commerce Will Usher in a Dividend Period [J]. Business Observation, 2023, 9(22): 10-13.

[14] Parker B, Weber R. Second-Hand Spaces: Restructuring Retail Geographies in an Era of E-Commerce [J]. Urban Geography, 2013, 34(8): 1096-1118.

[15] Hsiang C T, Lien C C, Xinguo S, et al. Consumer Evaluation of Xianyu E-commerce [J]. Information Systems and Economics, 2024, 5(1).