



## OPEN Influence of platform satisfaction on the willingness to use a new platform

Peng Xiao, Yujie Sun, Yifei Chen✉ & Xinran Wang

This study focuses on the newly created online shopping platform for cosmetics and skincare, and based on the perceived value theory and rational behavior theory. It constructs a mechanism model between platform satisfaction, customer perceived value, and personal subjective willingness. It also conducts regression analysis on the collected 540 sample data and finds that: platform satisfaction will have an impact on the willingness to use the new platform, and customer perceived value and individual subjective willingness play a mediating role. In addition, after empirical testing, it finds that: platform use cost has a higher impact on the willingness to use the new platform than platform use risk. Customer-perceived value plays a higher mediating role than individual subjective willingness. These conclusions can provide practical reference for the construction of new cosmetics and skincare platforms as well as the reform and innovation of traditional cosmetics and skincare platforms.

**Keywords** Platform satisfaction, Customer perceived value, Individual subjective willingness, Willing to use the new platform

In recent years, China's e-commerce development is exceptionally rapid, the scale is expanding. The consumption pattern has also produced a huge transformation, and more and more customers begin to choose online shopping. According to the relevant research data of the 51st Statistical Report on the Development of China's Internet, it is shown that<sup>1</sup>, as of December 2022, the number of Internet users in China reached 1.067 billion, with an Internet penetration rate of 75.6%, an increase of 35.49 million from the end of 2021. In this environment, the turnover of traditional retail stores has begun to show a downward trend. More and more B2C e-commerce enterprises have appeared, and their competition is becoming more and more intense. The vigorous development of e-commerce has promoted the change and innovation of traditional business models. The platform economy has gradually become the mainstay of China's economic operation, and the importance of platform enterprises in the development of the industry and international competition has become increasingly prominent<sup>2</sup>. Numerous traditional retail enterprises have begun to actively transform into e-commerce platform enterprises. A variety of new platform enterprises have been born one after another. B2C e-commerce has become the focus of attention of enterprises and academics with its huge commercial potential and its necessity in the daily life of residents. In the wave of online shopping platforms, cosmetics and skincare online shopping platforms have also begun to emerge, such as wine fairy network, wine chain world, one nine, wine convenience and so on. The industry influence of vertical e-commerce platforms for cosmetics and skincare products is gradually increasing, and major cosmetics and skincare giants are also actively building their own e-commerce platforms. In today's context of fierce competition in a wide range of cosmetics and skincare online shopping platforms, if you want to build a new cosmetics and skincare online shopping platform and make it more consumers to choose and use, you need to take into account more influential factors. In recent years, various cosmetics and skincare enterprises have begun to establish their own platforms other than Taobao, Jingdong, and other comprehensive e-commerce platforms, to make a breakthrough in the fierce competition of e-commerce platforms and obtain more performance. However, there are still some problems that need to be noticed and solved in the cosmetics and skincare online shopping platform. For example, during the use of e-commerce platforms, the initial investment costs, maintenance costs and other operating costs will not be lower than the operating costs of offline retail stores, and some are even higher than those of offline stores. The sale of cosmetics and skincare products is even more, so the traditional cosmetics and skincare sales channels have been deeply rooted in people's hearts, making it difficult to integrate with the e-commerce online shopping platform<sup>3</sup>. Therefore, how cosmetics and skincare companies can create a new online shopping platform that meets customers' needs and makes them will to use it has become an important research topic.

School of Business, Anhui University, Hefei, China. ✉email: 00020@ahu.edu.cn

Although scholars have researched the willingness to use online shopping platforms, most of the current studies focus on the willingness to continue to use the existing platforms, while fewer studies focus on the willingness of customers to use new online shopping platforms. At the equal time, most of the present lookup on customer satisfaction focuses on the product itself and fewer studies are conducted on the customer's satisfaction with the platforms, not to mention the impact of the satisfaction with the platforms on the willingness to use the new platforms<sup>4</sup>. The willingness of customers to select a new online shopping platform is evaluated in the context of temporal sequence. Meanwhile, users are the core factor for the development and growth of cosmetics and skincare vertical e-commerce platforms. Only with a clear understanding of customer needs and the provision of appropriate products and services can a wine online shopping platform rationally allocate resources to meet user expectations<sup>5</sup>. Customers for platform to use the cost of consideration is the first to occur, when customers in contact with a new online shopping platform will first learn. When customers feel that learning to use a new online shopping platform needs to pay a lot of time and energy costs, they will give up using this new platform to use their own more familiar with the existing platform. Secondly, customers will consider the risk in the process of using, compared with the experience brought by choosing a new online shopping platform. Customers are more worried about the safety of their information and property. When customers have more and more choices, their satisfaction level and perceived value of the online shopping platform become the main factors influencing their choice of a new online shopping platform. Customers' characteristics are different, and there is a huge difference in the demand and choice behavior of online shopping platforms. Platform enterprises should also consider the differences in customers' characteristics, build and design new online shopping platforms according to the differences in customers' subjective wishes.

Therefore, according to the principle of perceived value and rational behavior theory, this paper will conduct an empirical learn about the willingness of customers to use the new platform by using the collected 540 sample data. Firstly, this paper explores the mechanism of customer's platform satisfaction on the willingness to use the new platform, compares and contrasts the degree of influence of the two dimensions under the platform satisfaction on the willingness of the customers to use the new platform. Secondly, we examine the mediating function of customers' perceived value and individual subjective willingness, and examine the extent of their role. More importantly, the results of the study will be used as a guide to explain in detail how the new online cosmetics and skincare shopping platform can attract customers to use it.

## Literature review and hypothesis formulation

### Platform satisfaction and willingness to use the new platform

Most of the existing studies on satisfaction by national and international researchers are based on the "expectation-inconsistency" theory<sup>6</sup>, the theory suggests that customers evaluate the experience of the consumption process by comparing the hole between the perceived product performance and the anticipated level. If the customer's perceived performance is in line with the expected level or exceeds the expected level, the customer will feel satisfied. Vice versa, they will feel dissatisfied. According to Lapidus and Pinkerton, the customer is in an exchange relationship between the purchasing and consuming of a product or a service. The customer, in the method of buying and ingesting a product or service, is in an exchange relationship with the merchant. The custome compares what he gets with what he puts in, and he will be satisfied only if he feels that the two are commensurate and that he is psychologically fair<sup>7</sup>. Satisfaction is a state of inner fulfillment achieved by the user.

The term "will" is of psychological origin. Fishbein<sup>8</sup> proposes that "willingness is the probability that an individual will interact in a sure behavior", then the willingness to buy is the probability of purchasing a good. Ajzen<sup>8</sup>, in studying the relationship between willingness and true behavior, posits that the generation of willingness precedes actual behavior, so we can predict the platform usage behavior of customers through their willingness to use the platform. Willingness to buy refers to the subjective probability of a customer's purchasing activity and the response of whether or not he is inclined to proceed to preserve a properly relationship with the merchant and suggests the purchase to others<sup>9</sup>. Kiseol<sup>10</sup> uses the Unified Theory of Acceptance and Use of Technology (UTAUT) as a theoretical backbone. The factors influencing customers' willingness to use online shopping platforms were investigated using American customers as research subjects. The study shows that customers' willingness to use is directly influenced by the external environment and fit, and indirectly influenced by meritorious performance expectations, hedonic expectations, and effort expectations.

Customers' willingness to use a new online platform is similar to their psychology and intentions when making a new offline purchase. This is because both create a sense of a new journey of initially the use of a product or service, i.e., a journey of whether or not consumption expectations can be fulfilled. In the study of customer behavior, customers willing to use a service or a product are built based on being satisfied with their initial consumption process. However, dissatisfied users tend to stop using these services or switch to alternative services. Similarly, in research related to online shopping platforms, users' willingness to use the platform mainly depends on their satisfaction with the platform in the process of using it. Specifically, pride is a key determinant of the intention to use online shopping platforms<sup>11</sup>. Customers decide whether to continue or discontinue the services of the platform by considering their satisfaction in using the platform<sup>12</sup>. Further, a customer's willingness to use a new platform will only lead to the purchase of a product if the online shopping platform adequately meets the customer's needs<sup>13</sup>. If the new platform provides customers with a product or service trial function that can visually show the comparison between the customer's benefit and payment in the process of using the platform, it can not only effectively alleviate the customer's psychological pressure but also attract more triers.

In this research scenario, since the new online shopping platform for cosmetics and skincare is a tool used by users in purchasing products and obtaining cosmetics and skincare-related information. The satisfaction of this new online shopping platform for cosmetics and skincare has a vast influence on whether or not the consumer chooses to use it and recommends it to others. The higher the user satisfaction rate of the new online shopping

platform for cosmetics and skincare products, the more satisfied customers will be in purchasing and analyzing cosmetics and skincare products, acquiring information, and thus more likely to choose the platform. Given this, this paper proposes the following hypotheses:

$H_1$ : Platform satisfaction positively contributes to a customer's willingness to use a new platform.

Perceived risk is a complex factor composed of multiple dimensions such as time, economy, and psychology, which exists and leads to the user's negative usage behavior. Risk perception is a major impediment to users adopting new technologies, especially in e-commerce environments<sup>14</sup>. Meanwhile, customer satisfaction with the platform can be categorized into the following two dimensions: platform utilization risk and cost of platform use<sup>15</sup>.

The risk of platform use consists mainly of the purpose of use, the variability of the results of use, and losses resulting from misuse. Unlike traditional offline stores for purchasing products, when users use online platforms to purchase products, their personal information is exposed to the public at risk of information theft, fraud, etc.<sup>16</sup>. If users perceive a risk during the online purchasing process, they will hesitate. Due to the fact that consumers' mobile devices always store their personal information, the security and privacy risks associated with monetary transactions conducted through mobile devices are often higher<sup>17</sup>. Customers will inevitably encounter threats to information security and property safety when using online shopping platforms for long-distance interactions, and the risk of platform use is the level of threat that customers will encounter. The greater the stage of risk, the greater the sense of distrust and insecurity of the customer, and the lower their satisfaction will be. Trust is the foundation of all business behavior. Customers' original intention of using the platform is to facilitate their lives rather than to be cheated. Therefore, the greater the risk of platform use, the lower the customers' willingness to use the new platform. Given this, this paper proposes the following hypotheses:

$H_{1a}$ : Platform usage risk reduces customers' willingness to use new platforms.

Perceived cost is defined as the aggregate of all the expenses that users perceive during the use of the platform, including unnecessary economic losses and time losses due to the inability to obtain useful information<sup>18</sup>. Consumers do not make decisions blindly, but rather make a tendency to purchase or not based on an evaluation of the benefits and costs. The higher the benefits and the lower the costs, the more likely consumers are to experience high levels of perceived value, and high perceived value may act on user satisfaction and indirectly influence the willingness to continue using. Customers' exposure to new online shopping platforms comes with a cost in terms of time and effort, as well as a cost in terms of network traffic expenses incurred during the learning process, and some potential sunk costs, etc.<sup>19</sup>. Cheong<sup>20</sup> argue that users who face a high cost of paying for the use of an online product are less likely to be willing to use. Cosmetics and skincare online shopping platform is also a network product, and its use has the special characteristics of mobile business, mobile payment, etc.<sup>21</sup>. Therefore, the variable of platform use cost is introduced into the model of this study. If the customer's learning cost is large and time-consuming during the process of using a new online shopping platform for Cosmetics and skincare, then the possibility that the residents will tend to use the platform will be low<sup>22</sup>. Given this, this paper puts forward the following hypotheses:

$H_{1b}$ : The cost of platform usage reduces customers' willingness to use new platforms.

### The mediating role of customer perceived value

Customer perceived value is the mid-twentieth century since foreign scholars such as Drucker, Zeithaml, and Holbrook proposed and developed mature. Customer perceived value is the customer's certain attributes of the product. The performance of the attributes and the specific situation helps or hinders the achievement of its goals and intentions of the product use results of the perceived preferences and evaluation<sup>23</sup>. Customer perceived value is not a single type of value, such as practical value, social value, emotional value, cognitive value, and situational value<sup>24</sup>. At present, there are fewer studies on the relationship between customers' perceived value and willingness to choose a new platform, but some scholars have achieved some results in the research related to online shopping platforms. Zeithaml<sup>15</sup> consider that perceived value has a direct affect on willingness to use when researching customer behavior. Chinese scholar Zhu Ge<sup>25</sup> in studying the mobile payment context, it was confirmed that the customer's willingness to use depends on the comparison of perceived advantages and perceived costs, i.e. on the customer's perceived value.

In the context of e-commerce, since online shopping platforms are unique from offline stores and customers do not have access to the goods. It is necessary to generate the corresponding perceived value through the perception of online shopping platform attributes. When user perception is improved, users truly accept the platform information, which then enhances their willingness to use the online shopping platform. Davis<sup>26</sup> in studying the influence of platform satisfaction on perceived usefulness and perceived usability, the attitude-intention-behavior model is constructed. It is confirmed that information perception influences the willingness to use. As a result, in the online shopping platform, after receiving the perceived external factors given by the attribute characteristics of the platform, the customer will produce the corresponding attitude of satisfaction or dissatisfaction and then will produce a certain perceived value of the platform, and then produce the corresponding emotional attitude. They ultimately realize the platform's willingness to use. The degree of customer satisfaction with an online shopping platform affects its perceived value, which is an important basis for customers to compare and choose a certain online shopping platform<sup>27</sup>. At the beginning of the twenty-first century, Kim<sup>28</sup> proposed VAM based on TAM of Davis et al. according to the theory of customer value. Theoretical models such as TAM and TRA consider willingness to use as the dependent variable. Different online shopping platforms differ greatly in terms of platform functionality, information content, and platform branding, which will have an impact on customer satisfaction with the platform, and thus will affect customer perceived value.

At present, the relationship between perceived value and willingness to use has been confirmed by many scholars. It has been shown that customers' choice of online shopping platforms and their loyalty are largely

influenced by their perceived value, which can be obtained by weighing and comparing the perceived gains and losses of customers before, during, and after the whole process of consumption<sup>29</sup>. Moslehpour<sup>30</sup> studied the intention to use online shopping platforms based on TAM and PT theory, the consequences exhibit that customers' satisfaction with the platform positively affects their perceived value and has a good sized influence on their intention to choose an online shopping platform. Lin's findings<sup>31</sup> indicate that customers' attitudes toward the platform have a significant effect on their willingness to choose that online shopping platform.

In the Internet era, online consumers often want to maintain a good image, be recognized by others, and improve their social status in an interconnected social environment<sup>32</sup>. Therefore, the higher the perceived value that a customer generates via the use of the new platform, the higher willingness to use the new platform.

In summary, this study concludes that user perceived value is a effective transition factor, both as an outcome variable of consumer platform satisfaction and as a key determinant of whether or not a consumer chooses to use a new online shopping platform. Accordingly, this paper proposes the following hypotheses:

H<sub>2</sub>: Customer perceived value mediates platform satisfaction and customers' willingness to use new platforms.

Meanwhile, since platform satisfaction was divided into two dimensions above platform usage risk and platform usage cost, this study considers customer perceived value as an outcome variable of platform usage risk and platform usage cost as well. Lee<sup>33</sup> integrates perceived value, perceived risk, and perceived trust to construct a new theoretical framework to explain customers' willingness to use online shopping platforms. It can be seen that customers need to make value considerations when deciding whether or not to use a new online shopping platform. The perceived benefits generated by customers when using a new online shopping platform will offset the risks and costs of using the platform, resulting in a positive sense of identity and sense of belonging, among other things<sup>34</sup>. The advancement of internet technology has weakened the impact of physical, psychological, and other risk dimensions on users in the traditional marketing environment, but it is difficult to avoid the potential threat of privacy issues to users<sup>35</sup>. User privacy information may be at risk of leaking due to imperfect platform protection measures, inadequate privacy policies, and other factors. The platform itself may also use some of the privacy data to make personalized recommendations for users. Users can express their experience after using the platform through comments. Since users in the e-commerce field can fully view the feelings of other users, there will be a greater perceived risk before using the new platform. Negative reviews can shake the confidence of other users who intend to use the new platform. The impact of browsing other users' reviews on perceived risk is even greater. Accordingly, the following hypotheses can be proposed:

H<sub>2a</sub>: Customer perceived value mediates between platform usage risk and customers' willingness to use a new platform.

Perceived cost is defined as the aggregate of all the expenses that users perceive during the use of the platform, including unnecessary economic losses and time losses due to the inability to obtain useful information<sup>36</sup>. The increase in perceived cost means additional time and money spent, which will give users psychological pressure and reduce their willingness to use new platforms<sup>37</sup>. In the context of e-commerce, since online platforms are different from offline stores, consumers need to spend time and effort to understand the reliability. Some platforms even require membership fees to use normally<sup>38</sup>. The product price is a key factor for users to make their payment decisions, especially after the emergence of membership and buyout payment strategies, most of the high-quality knowledge information on shopping platforms needs to be paid for separately<sup>39</sup>. When users purchase paid memberships or skincare products without being able to predict the quality of the products in advance, they face the risk of inconsistency between actual effectiveness and expected effectiveness, which may lead to unnecessary economic losses. In addition, the problem of content homogeneity has led to the proliferation of similar information, increasing the difficulty of users' information filtering and generating unnecessary time consumption. Therefore, it is necessary to generate corresponding perceived value through the use cost of online shopping platforms, when the user's perception is improved, the user truly accepts the platform information, and then enhances the willingness to use the platform, users are willing to pay to enjoy high-quality service content that meets their needs. But if they do not perceive the value of the service, the content is not attractive enough, their willingness to use platform will decrease significantly<sup>40</sup>. Accordingly, the following hypotheses can be proposed:

H<sub>2b</sub>: Customer perceived value mediates between platform usage costs and customers' willingness to use the new platform.

### The mediating role of individual subjective will

Fishbein first studied "willingness", which is an important antecedent variable of customer behavior. Currently, academic research on factors affecting customer willingness is mainly based on a theoretical model, such as the TRA, TPB, TAM, VAM, and VAM, etc. According to TRA, willingness determines behavior, and the relevant variables are willingness, attitudes, behavioral beliefs, appraisals, subjective norms, normative beliefs and motivation, and normative beliefs and motivation.

In 1980, Martin Fishbein and Icek Ajzen fleshed out the TRB, which consists of the following key elements: ① Individual Behavior Intention determines character behavior. The greater a person's Behavior Intention, the greater the likelihood that he will engage in a particular behavior. Other factors that influence individual behavior have an indirect effect on individual behavior through behavior intention. ② Behavioral intentions are influenced by both attitude toward the behavior and subjective norm. Behavioral attitudes are an individual's nice or bad evaluation of taking the conduct, subjective norms are the social pressures perceived by the character to take the behavior. This theory has had a significant impact on the study of consumer behavior and has been studied and confirmed by many scholars and organizations after Martin Fishbein.

According to the TRB, individual subjective willingness refers to the degree to which people perceive what others (meaning those who are important to them) think they should or should not do. That is to say, some people do not initially have the willingness to adopt a certain behavior but change your mind about accepting



a certain behavior. Because you are perceived by some important people around you<sup>41</sup>. As the new online shopping platform for cosmetics and skincare is an emerging technology product, the number of initial users is relatively small, so in addition to their interest in active understanding. They are also likely to be influenced by the surrounding environment or the recommendation of friends and relatives to use it. Shirley uses the principle of technological conduct as the main theory, supplemented by the principle of rational behavior and the idea of deliberate behavior, to analyze the influencing factors on the consumer's choice of the online platform, and concludes that: the customer's understanding of the value of the platform positively influences the customer's willingness to use the new platform. Shirley's analysis of the elements influencing consumers' choice of online buying platforms, based on the principle of technological conduct and the principle of rational behavior, and the concept of deliberate behavior. He concludes that the customer's perceived value positively influences the customer's willingness to use a new platform, and the customer's delight with the platform and the customer's subjective willingness positively influences the customer's willingness to use the new platform. When Kang<sup>42</sup> analyzes the influencing elements of consumers' APP mobile shopping behavior, the rational behavior theory is used as the theoretical support. It is concluded that consumers' satisfaction with the APP and consumers' subjective willingness to use the APP positively affect consumers' willingness to use the APP. In terms of willingness to use a new online shopping platform, user behavior is usually influenced by social relationships, such as groups of classmates, friends, etc.<sup>26</sup>. Based on the combination of the technological acceptance mannequin and customer perceived value theory, this study adds the variable of consumers' subjective willingness to use new online shopping platforms, i.e., consumers' willingness to use new online shopping platforms will be affected by their own perceived external environment and interpersonal relationships. Consumers are usually willing to share the valuable information they obtain with friends or family members, and they will also refer to the opinions of their neighboring groups before choosing a new online shopping platform. Cui Xuelian<sup>43</sup> showed that the influence of the external environment and interpersonal relationships received by consumers has the strongest effect on whether they will choose a new online shopping platform. While studies have shown that interpersonal relationships are an essential issue in the subjective willingness of individual consumers.

Convergent effects are a mechanism in the evolution of a system that allows consumers to interact with each other and perform the same or similar adaptive activities<sup>44</sup>. In this research situation, different consumers live in their respective communities and circles, and the behavior and awareness of other people in the community will have a relatively strong homophobic influence on consumers' behavior and awareness. Therefore, it is reasonable to hypothesize that consumers' subjective willingness will have an impact on whether they decide to use a new online cosmetics and skincare shopping platform. Accordingly, this paper proposes the following hypotheses:

H<sub>3</sub>: Individual subjective willingness mediates between platform satisfaction and customers' willingness to purchase a new platform.

Perceived risk is a subjective feeling of consumers, arising from the possibility that the actions they take may produce unforeseen results, which are usually unpleasant<sup>45</sup>. Individual subjective intention is a risk-taking behavior that is easily influenced by others in risky situations, which affects consumers' perception of the risks associated with using new platforms. It is also subject to change based on the relationship of trust with others, which can affect consumers' perception of the risks associated with platform use and ultimately affect their willingness to use the platform. Lee and Turban<sup>46</sup> believe that consumers cannot experience products before shopping online, and their willingness to use the platform is also dynamically changing based on the influence of others. When consumers browse reviews and videos of online products, this further changes their perception of the product. If consumers perceive the risks and uncertainties of online shopping, their willingness to use the platform will decrease<sup>47</sup>. Similarly, the following hypotheses can be formulated based on the two dimensions of platform satisfaction segmentation:

H<sub>3a</sub>: Individual subjective willingness mediates between platform usage risk and customers' willingness to use a new platform.

The platform usage costs include both tangible and intangible costs, which are the costs that consumers feel they have incurred either before or after they have come into contact with or started using the platform<sup>48</sup>. China's shopping platform Pinduoduo, which offers daily billion-yuan subsidies and subsidies for agricultural products and limited-time flash sales, creates an atmosphere where users can enjoy "11.11" and "618" every day, making them feel that the cost of using the platform is lower than any other platform, influencing consumers' subjective intentions. Since the platform provides extensive information on products and the purchasing process, it offers customers a wide range of choices, including sellers, which may make the online platform a true competitive market, allowing consumers to make informed decisions and gain a comprehensive understanding of product prices, enabling them to shop on the platform using the platform that they believe has the lowest product cost<sup>49</sup>. Additionally, the time cost is an aspect that cannot be ignored, as it is a measure of the interactivity between buyers and sellers. It refers to the reduction of information asymmetry and the reduction of unexpected events such as incorrect product delivery and missed delivery dates, making consumers feel that the platform is easy to use and saves time, which will make them more inclined to choose the platform<sup>50</sup>.

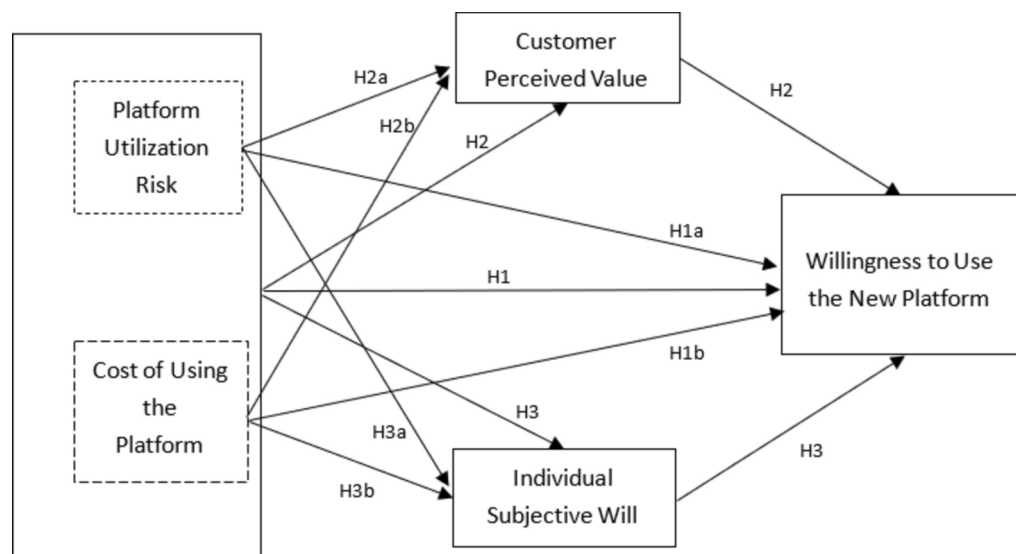
H<sub>3b</sub>: Individual subjective willingness mediates between the cost of platform use and customers' willingness to use a new platform.

Based on the above analysis, this study concludes that platform satisfaction has a facilitating effect on customers' willingness to use the new platform, in which customers' perceived value and individual subjective willingness play a mediating role, as shown in Fig. 1.

## Research design

### Data collection and sample selection

This study mainly obtains research data through online questionnaires, by designing tencent questionnaires and by distributing questionnaires in the classroom. So that the students can help to forward them again to the



**Fig. 1.** Conceptual model diagram.

customers who have the experience of purchasing cosmetics and skincare products on online platforms. A complete of 800 questionnaires were disbursed and 753 were retrieved. To ensure the reliability of the research sample, the returned questionnaires were further screened, and the screening principles were as follows: (1) questionnaires with obvious mutually exclusive questions in the logic of the answers were excluded, for example, questionnaires whose age was under 20 years old and whose education level was a Ph.D.; (2) according to the pre-study, this study considered that the questionnaire filling time was at least 90 s per copy, so the answer sheets with an answering time of less than 90 s were deleted; (3) answer sheets with answers of obvious pattern, and the answers of several consecutive questions are the same. A whole of 540 legitimate questionnaires were bought after removing the invalid answer sheets, with an effective return rate of 71.7%, and the sample size meets the needs of this study.

The proportion of males among the respondents is slightly higher than that of females, and the age of the respondents is 30 years old and below, accounting for about 60% of the respondents. Most of the respondents have a bachelor's degree accounting for about 60% of the respondents. More than 60% of the respondents have a monthly consumption level of 2000 RMB and below. More than 60% of the respondents have been purchasing cosmetics and skincare beverages using online platforms for less than one year. More than 70% of the respondents have purchased cosmetics and skincare beverages using online platforms for two times and below over the past 1 year, and the specific statistics of the samples are shown in Table 1.

### Variable definition

Since the data of this study cannot be obtained through direct measurement of users' thoughts and perceptions, it is necessary to obtain the data from the side by means of questionnaires. The scales used in this study are referred to the present mature scales, and are modified in accordance to the Chinese language after combining with the content of the study. All the questions were measured on a five-point Likert scale, with a rating of 1 indicating that the respondent strongly disagreed with the content of the question, and a rating of 5 indicating that the respondent strongly agreed with the content of the question.

#### *Explained variable: willingness to use the new platform*

Most of the scales of the existing studies on platform usage willingness have been placed in the context of continuous usage, and fewer studies have measured the willingness to use a new platform. Considering that this paper is based on the idea of customer perception and the idea of rational conduct to study the relationship between patron pleasure with the platform and the willingness to use the new platform. In such a situation, "the customer's willingness to choose the new cosmetics and skincare e-commerce platform" is essentially a kind of "willingness to choose" for new things. In such a situation, "the customer's willingness to choose a new cosmetics and skincare e-commerce platform" is essentially a "willingness to choose" a new thing, which reflects the customer's judgment of the perceived value and the effect of personal subjective will influenced by others. Some scholars, citing the doctrine of technology acceptance model, define the intention to use the new online shopping platform as the customer's state of mind on the use of the new online shopping platform, which is jointly ruled by the perceived usefulness and perceived ease of use<sup>51</sup>. For the measurement of willingness to use new platforms, four questions were used: I will prioritize this platform when I have shopping needs. I will use this platform to shop. I will use this platform to shop in the future. I will recommend this platform to my friends and family. In the context of this study, the questions of "willingness to use a new platform" were designed based on the measurement of perceived value, external environment, and interpersonal relationships from existing studies. Through literature review, this study found that many scholars' measurement items on the existing scale

Sample type	Sample characteristics	Sample size	Proportions (%)
Sex	Male	292	54.1
	Female	248	45.9
Age	30 and under	322	59.6
	31–50 years	186	34.4
	51 and over	32	5.9
Educational attainment	College and below	171	31.7
	Undergraduates	329	60.9
	Master	34	6.3
	PhD	6	1.1
Monthly consumption level	Less than 2000	347	64.3
	2000–5000	140	25.9
	5000 or more	53	9.8
Time spent using online platforms to purchase cosmetics and skincare	Less than 1 year	360	66.7
	1–2 years	90	16.7
	2–3 years	32	5.9
	3–4 years	13	2.4
	More than 4 years	45	8.3
Frequency of using online platforms to purchase cosmetics and skincare in the past year	0–2 times	420	77.8
	3–6 times	98	18.1
	7–11 times	13	2.4
	12 or more	9	1.7

**Table 1.** Statistics on the characteristics of the sample.

of "willingness to choose" are related to whether customers can obtain the perceived value they want to get in the process of using the new platform, whether they make use of it or purchase it, and whether they are willing to recommend it to others, etc. Their reliability and validity are shown to be good by empirical tests. Therefore, this study refers to the scale used by Hajli<sup>52</sup>, using the following questions: In the future shopping, I will pick the new online purchasing platform if it can visualize and perceive the fabricating process of cosmetics and skincare. I will choose the new online shopping platform if the new online shopping platform can realize the functions of collecting, investing, and trading of cosmetics and skincare. I will choose the new online purchasing platform, and I am willing to recommend the new online shopping platform to others. I will recommend the new online shopping platform to others.

*Explanatory variable: platform satisfaction*

Platform satisfaction research is to analyze the factors affecting customer satisfaction with online shopping platforms, and to reduce customer loss or increase customer usage through effective improvement measures. Commonly used methods to analyze customer satisfaction with online shopping platforms include hierarchical analysis, fuzzy comprehensive evaluation, structural equation modeling, and questionnaire survey. Hierarchical analysis is a combination of qualitative and quantitative analysis methods proposed by Thomas, an American operations researcher, in the 1970s. The fuzzy comprehensive evaluation method takes qualitative into quantitative as the core theory, takes the optimal evaluation value as the benchmark1, and evaluates the corresponding evaluation value according to the degree of under-optimization for the rest. At the same time the method determines the functional relationship between each factor and the evaluation value according to the characteristics of each evaluation factor. Since it is difficult to obtain customer satisfaction with the new platform through direct measurement of users' thoughts and perceptions, most of the studies chose to obtain the corresponding data from the side by means of questionnaire surveys.

Platform usage risk mainly refers to the possible losses perceived by customers when using a new online shopping platform for shopping. In this paper, platform usage risk mainly refers to the possible information leakage and monetary losses during or after the process, and is defined as the user's concern about the possible leakage of personal privacy, basic information, and transaction information that may be triggered by the use of a new online shopping platform. Referring to the scale items of Wu<sup>53</sup> the risk of platform use in platform satisfaction was measured using the items: I think a good online shopping platform must be able to better protect customer information and I think it is important to choose a good online shopping platform whose payment methods are secure.

When a customer chooses to use a new online shopping platform, he or she will compare the product costs incurred in purchasing with the costs of other online shopping platforms or offline stores that he or she has used, as well as consider the non-commodity-value costs incurred in using the new online shopping platform. The cost of using the platform refers to the user's subjective understanding of the objective price of the product, i.e., the extent to which the price is perceived to be fair and reasonable if he or she is using the new online shopping platform. In this paper, based on Chan and Gupta's<sup>54</sup> scale, the measurement question items for the cost of platform usage were obtained by combining them with the scenarios of this study.

*Mediating variables: customer perceived value and individual subjective will*

## (1) Customer perceived value.

Customer perceived value is a variable that contains multiple dimensions. In traditional business studies, Sheth<sup>55</sup> developed a more complete theoretical framework on customer perceived value, which consists of five dimensions: social, cognitive, emotional, functional, and conditional. Zeithama<sup>15</sup> defines perception as an overall assessment of the utilization of online shopping platforms by customers who measure the benefits and contributions they receive from the services during the use of the platform. Davis<sup>26</sup> builds on this by using four question items to measure customer perceived value. Sweeney and Soutar<sup>56</sup> developed the well-known PERVAL perceived value scale and categorized perceived value into four dimensions: price-based purposeful value, quality-based purposeful value, social value, and emotional value. Fandos<sup>57</sup> and others have further developed a multi-item scale for social, emotional, and functional values. Sweeney and Soutar's research<sup>58</sup> proposed a three-dimensional framework for measuring customers' perceived value of a new online shopping platform, including perceived practical value, perceived benefit value, and perceived social value, and used three question items to measure it.

## (2) Individual subjective will.

Individual subjective will means that customers' choice of online shopping platforms is often influenced by the surrounding environment as well as interpersonal relationship networks. In other words, in addition to the mass media, the strong and weak social relations around the user can also become an important channel for the publicity and promotion of the new online purchasing platform, which is conducive to the proliferation of this innovation. Algesheimer, Dholakia and Herrmann<sup>59</sup> proposed a model that illustrates how consumers' subjective intentions affect their intentions and behaviors. They empirically found a positive correlation between consumers' identification with their subjective intentions and their willingness to engage, maintain interpersonal relationships, and their willingness to use the new platform. Bearden and Etzel<sup>60</sup> in their study to analyze the influence of personal subjective willingness on consumers' choice of platforms, chose to examine personal subjective willingness by using three questions. For example, "I think I will refer to my online friends' evaluations of the platform when choosing an online shopping platform". Ajzen<sup>61</sup> examined the subjective willingness of individuals by dividing it into two dimensions, the external environment and interpersonal relationships. In the study of external environment, we used two items: "I would choose a certain online shopping platform because of mass media and advertisements, and I would choose an online shopping platform that has a good reputation for shopping". In the study of interpersonal relationships, two items used were as follows: "I would choose an online shopping platform that many of my friends use, and I would choose an online shopping platform that my friends and relatives recommend me to use". In light of the research situation, this paper chooses to refer to Fishbein & Ajzen's questionnaire to measure the subjective willingness of individuals.

*Control variables*

The psychology of customers in choosing whether or not to use a particular new online shopping platform is complex, and the outcome is influenced by a variety of factors. Existing research in the field of customer behavior and psychology has confirmed that customer gender<sup>62</sup>, age<sup>63</sup>, education level, and economic income have an impact on customer behavior. Therefore, this paper chooses four control variables, namely, gender, age, education level, and average consumption level, to be included in the hypothesis testing model. Among them, age is divided into three levels, which are 30 years old and below, 31–50 years old, and 51 years old and above. Education level is divided into four categories, which are college and below, bachelor, master, and doctor. Monthly consumption level is divided into three levels, which are below 2,000 yuan, 2,000–5,000 yuan and above 5,000 yuan.

*Ethical approval and consent to participate*

This study was approved by the Research Ethics Committee of Anhui University. All methods were carried out in accordance with relevant guidelines and regulations. Informed consent was obtained from all subjects following a detailed explanation of the study objectives and protocol to each subject. All subjects provided written informed consent prior to being monitored.

**Reliability and validity analysis**

The reasonableness and accuracy of the subsequent data analysis require that the questionnaire consists of a certain degree of reliability, and this paper adopts Cronbach's coefficient to measure the reliability of the questionnaire from the internal consistency. As proven in Table 2, the coefficients of the platform satisfaction, customer perceived value, personal subjective willingness and the willingness to use the new platform are all higher than 0.7, which indicates that the questionnaire reliability is good. In addition, as shown in Table 2, the KMO coefficients of platform satisfaction, customer perceived value, personal subjective willingness, and willingness to use the new platform are all higher than 0.7 and the importance stage is 0.000, indicating that the validity of the questionnaire is up to standard. Therefore, the subsequent analysis can be carried out.

**Empirical results and analysis**  
**Correlation analysis**

In this study, Pearson's coefficient in SPSS 25.0 software was used to verify the interrelationships between variables. The imply and general deviation of the variables and the correlation coefficients between the variables



Concept	Test item	Cronbach's $\alpha$	KMO sample suitability quantity	Significance
Platform satisfaction	1. I think a good online shopping platform must be able to better protect customer information	0.853	0.745	0.000
	2. I think it's important to choose a good online shopping platform whose payment method is secure			
	3. I think choosing a good online shopping platform can reduce the cost of shopping			
	4. I think good online shopping platforms have cheaper prices for goods			
Customer perceived value	1. I'll choose a new online shopping platform if it helps me make more friends	0.800	0.712	0.000
	2. I will choose a new online shopping platform if the products and services it offers are worth what I pay for them			
	3. I'll choose a new online shopping platform if it has a clear advantage in terms of features			
Individual subjective will	1. I would choose a new platform based on mass media and advertising campaigns	0.757	0.729	0.000
	2. I would shop with a reputable platform			
	3. I would choose an online shopping platform that many of my friends around me are using			
	4. I will choose the online shopping platforms that my friends and relatives recommend me to use			
Willingness to use the new platform	1. In my future shopping, I will choose a new online shopping platform to buy cosmetics and skin care products	0.847	0.805	0.000
	2. I would choose a new online shopping platform if it could visualize and perceive the process of fabricating cosmetics and skin care products			
	3. I would choose the new online shopping platform if it can realize the collection, investment, and trading functions of cosmetics and skincare			
	4. I would recommend new online shopping platform to others			

**Table 2.** Results of the reliability test.

Variable	Average value	Standard deviation	1	2	3	4	5	6
1. Platform satisfaction	4.2032	0.84021	1					
2. Platform Perceived Risk	4.4157	0.89879	0.893***	1				
3. Platform Perceived Costs	3.9907	0.96598	0.908***	0.624***	1			
4. Customer Perceived Value	3.6648	0.92191	0.561***	0.462***	0.546***	1		
5. Individual subject will	3.8079	0.83799	0.485***	0.450***	0.426***	0.477***	1	
6. Willingness to use the new platform	3.4278	0.92425	0.399***	0.318***	0.398***	0.635***	0.446***	1

**Table 3.** Descriptive statistics and correlation analysis. \*Denotes a significance level of 0.05; \*\*denotes a significance level of 0.01; \*\*\*denotes a significance level of 0.001; the table below is the same.

are presented in Table 3, and the consequences of these statistics initially support the lookup hypotheses of this paper.

### Regression analysis

In this paper, the mediating effect was tested by SPSS25.0, using stepwise regression. Referring to Baron, Kenny and Wen Zhonglin, the mediating effect was tested. For the sake of concise expression, the control variable gender was set as  $C_1$ , age as  $C_2$ , education level as  $C_3$ , consumption level as  $C_4$ . Independent variable platform satisfaction was set as  $X$ , Platform perceived risk as  $X_1$ , platform perceived cost as  $X_2$ . Mediator variable customer perceived value was set as  $M_1$ , individual subjective willingness as  $M_2$ . Dependent variable willingness to use the new platform was set as  $Y$ .

Since the measurement items of platform usage risk and platform usage cost were designed according to the fact that the greater the positive score the lower the usage risk and usage cost, the regression analysis is still validated according to the positive score.

To verify the direct and indirect relationships between platform satisfaction and customers' willingness to use the new platform, the following validations are needed: Firstly, verify the direct effect of platform satisfaction, as well as platform perceived chance and platform perceived cost on the willingness to use the new platform. Secondly, verify the impact of platform satisfaction, as well as platform perceived risk and platform perceived cost, on the two mediator variables of customers' perceived value and individuals' subjective willingness, respectively. Finally, we verify the consequences of the impartial variables and the mediator variables on the willingness to use the new platform. In the validation results, if the impact of the unbiased variable on the mediator variable is significant, and at the same time when testing the impact of the unbiased variable and the mediator variable on the willingness to use the new platform, the impact of the unbiased variable and the mediator variable on the willingness to use the new platform are both significant. Then it means that the mediator variable plays the role of incomplete mediation. If the impact of the mediator variable is big, and the impact of the unbiased variable is not significant, then the mediator variable plays the role of complete mediation. The regression consequences are shown in Tables 4 and 5, and from the consequences of Models 2–4, it is clear that the  $H_1$ ,  $H_{1a}$ ,  $H_{1b}$  holds. From the results of Models 5–7, we can see that  $H_2$  holds and that customer perceived value performs a fully

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Variable	Y	Y	Y	Y	M <sub>1</sub>	M1	Y	M1	Y
C <sub>1</sub>	− 0.054	− 0.017	− 0.031	− 0.017	− 0.113	− 0.060	0.019	− 0.078	0.018
C <sub>2</sub>	− 0.154	− 0.083	− 0.090	− 0.106*	− 0.170	− 0.070	− 0.041	− 0.076	− 0.043
C <sub>3</sub>	− 0.049	− 0.035	− 0.045	− 0.029	− 0.056	− 0.037	− 0.013	− 0.051	− 0.013
C <sub>4</sub>	− 0.004	− 0.029	− 0.024	− 0.024	− 0.002	− 0.037	− 0.007	− 0.031	− 0.005
X		0.390***				0.551***	0.061		
X <sub>1</sub>			0.306***					0.451***	0.027
X <sub>2</sub>				0.391***					
M <sub>1</sub>							0.597***		0.618***
R <sup>2</sup>	0.019	0.167	0.109	0.170	0.027	0.323	0.408	0.224	0.406
F	2.540*	21.356***	13.070***	21.798***	3.734**	50.900***	61.164***	30.770***	60.668***
MAX VIF	1.545	1.579	1.590	1.560	1.545	1.579	1.586	1.590	1.597

**Table 4.** Results of regression analysis (1).

	Model10	Model11	Model12	Model13	Model14	Model15	Model16	Model17	Model18
Variable	M1	Y	M2	M2	Y	M2	Y	M2	Y
C <sub>1</sub>	− 0.062	0.020	− 0.039	0.006	− 0.019	− 0.006	− 0.029	0.001	− 0.017
C <sub>2</sub>	− 0.104	− 0.044	− 0.217***	− 0.131**	− 0.040	− 0.127**	− 0.042	− 0.165***	− 0.051
C <sub>3</sub>	− 0.030	− 0.012	− 0.011	0.005	− 0.037	− 0.006	− 0.043	0.010	− 0.032
C <sub>4</sub>	− 0.030	− 0.007	− 0.030	− 0.060	− 0.010	− 0.057	− 0.002	− 0.051	− 0.008
X				0.471***	0.237***				
X <sub>1</sub>						0.430***	0.144***		
X <sub>2</sub>	0.536***	0.075						0.418***	0.254***
M <sub>1</sub>		0.589***							
M <sub>2</sub>					0.325***		0.376***		0.329***
R <sup>2</sup>	0.310	0.409	0.047	0.262	0.244	0.225	0.219	0.218	0.254
F	48.023***	61.529***	6.538***	38.011***	28.743***	31.036***	24.842***	29.824***	30.286***
MAX VIF	1.560	1.576	1.545	1.579	1.602	1.590	1.611	1.560	1.595

**Table 5.** Results of regression analysis (2). Note: The data in the table are standardized coefficients beta.

mediating function between platform satisfaction and willingness to use a new platform. The results of Models 8–9 show that  $H_{2a}$  holds and that customer-perceived value performs a fully mediating function between perceived platform risk and willingness to use a new platform. The results of models 10–11 show that  $H_{2b}$  holds, and customer perceived value performs a complete mediating function between platform perceived cost and willingness to use the new platform. From the results of models 12–14,  $H_3$  holds, and individual subjective willingness plays an incomplete mediating role between platform satisfaction and willingness to use the new platform. From the results of models 15–16,  $H_{3a}$  holds, and individual subjective willingness plays an incomplete mediating role between platform perceived  $H_{3a}$  holds, and individual subjective willingness plays an incomplete mediating position between platform perceived risk and willingness to use the new platform. From the results of model 17–18,  $H_{3b}$  holds, and individual subjective willingness plays an incomplete mediating function between platform perceived cost and willingness to use the new platform.

### Robustness testing

To confirm the reliability of facts evaluation and enhance the rigor of the study, this paper conducted further grouping tests. In this study, when the respondents had different purposes for purchasing cosmetics and skincare products, significant differences were found in the survey answers, indicating a clear difference in the way they organized their data. Therefore, this paper conducted grouping tests for the research samples separately according to the purpose of customers' purchasing cosmetics and skincare. It is expected to test the robustness of the above empirical results and provide some suggestions for the implementation of differentiation strategies in the operation of cosmetics and skincare vertical e-commerce platforms. The test consequences are shown in Tables 6, 7, 8 and 9, and the regression outcomes are still significant in the different grouping test results, indicating that the above hypotheses and test Models are somewhat stable.

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Variable	Y	Y	Y	Y	M <sub>1</sub>	M1	Y	M1	Y
C <sub>1</sub>	− 0.113	− 0.068	− 0.078	− 0.076	− 0.167	− 0.101	− 0.009	− 0.114	− 0.009
C <sub>2</sub>	− 0.163	− 0.085	− 0.096	− 0.106	− 0.166	− 0.054	− 0.054	− 0.067	− 0.056
C <sub>3</sub>	0.026	0.022	0.014	0.034	0.011	0.006	0.019	− 0.007	0.018
C <sub>4</sub>	− 0.059	− 0.078	− 0.075	− 0.073	− 0.036	− 0.065	− 0.041	− 0.061	− 0.038
X		0.385***				0.557***	0.060		
X <sub>1</sub>			0.304***					0.453***	0.030
X <sub>2</sub>				0.386***					
M <sub>1</sub>							0.584***		0.604***
R <sup>2</sup>	0.039	0.182	0.127	0.186	0.044	0.341	0.407	0.238	0.405
F	4.259**	18.440***	12.034***	18.864***	4.741***	42.891***	47.219***	25.874***	46.882***
MAX VIF	1.515	1.557	1.565	1.537	1.515	1.557	1.561	1.565	1.571

**Table 6.** Results of subgroups where the purpose of purchase is using it oneself(1).

	Model10	Model11	Model12	Model13	Model14	Model15	Model16	Model17	Model18
Variable	M1	Y	M2	M2	Y	M2	Y	M2	Y
C <sub>1</sub>	− 0.113	− 0.010	− 0.054	0.003	− 0.069	− 0.002	− 0.077	− 0.013	− 0.071
C <sub>2</sub>	− 0.086	− 0.056	− 0.222	− 0.126	− 0.044	− 0.126	− 0.049	− 0.161	− 0.052
C <sub>3</sub>	0.022	0.021	0.004	− 0.001	0.023	− 0.013	0.020	0.012	0.030
C <sub>4</sub>	− 0.057	− 0.040	− 0.042	− 0.066	− 0.057	− 0.066	− 0.050	− 0.057	− 0.054
X				0.479***	0.227***				
X <sub>1</sub>						0.444***	0.135**		
X <sub>2</sub>	0.544***	0.071						0.419***	0.246***
M <sub>1</sub>		0.578***							
M <sub>2</sub>					0.330***		0.381***		0.334***
R <sup>2</sup>	0.334	0.408	0.053	0.274	0.261	0.240	0.237	0.225	0.272
F	41.554***	47.430***	5.831***	31.241***	24.335***	26.151***	21.377***	24.093***	25.689***
MAX VIF	1.537	1.548	1.515	1.557	1.579	1.565	1.586	1.537	1.570

**Table 7.** Results of subgroups where the purpose of purchase is using it oneself(2).

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9
Variable	Y	Y	Y	Y	M <sub>1</sub>	M1	Y	M1	Y
C <sub>1</sub>	0.033	0.074	0.066	0.062	− 0.062	− 0.010	0.080	− 0.020	0.079
C <sub>2</sub>	− 0.075	− 0.061	− 0.054	− 0.075	− 0.113	− 0.095	0.003	− 0.086	0.006
C <sub>3</sub>	− 0.104	− 0.080	− 0.105	− 0.066	− 0.075	− 0.043	− 0.051	− 0.075	− 0.053
C <sub>4</sub>	0.024	0.035	0.034	0.031	− 0.046	− 0.032	0.057	− 0.033	0.057
X		0.407***				0.518***	0.060		
X <sub>1</sub>			0.305***					0.390***	0.037
X <sub>2</sub>				0.398***					
M <sub>1</sub>							0.670***		0.686***
R <sup>2</sup>	0.012	0.176	0.104	0.168	0.018	0.283	0.498	0.168	0.496
F	0.568	7.683***	4.196***	7.293***	0.811	14.195***	29.574***	7.277***	29.407***
MAX VIF	1.452	1.453	1.457	1.452	1.452	1.453	1.466	1.457	1.466

**Table 8.** Results of the grouping where the purpose of purchase is to give away (1).

## Conclusions and implications of the study

### Findings

Most of the existing research on platform usage willingness is placed in the context of continuous use, less lookup on the use of new platforms, and the lack of systematic empirical testing, especially for the use of platforms for cosmetics and skincare purchases. Therefore, based on the concepts of perceived value and rational behavior,

	Model10	Model11	Model12	Model13	Model14	Model15	Model16	Model17	Model18
Variable	M1	Y	M2	M2	Y	M2	Y	M2	Y
C <sub>1</sub>	− 0.025	0.079	0.000	0.040	0.060	0.033	0.053	0.028	0.052
C <sub>2</sub>	− 0.113	0.001	− 0.185	− 0.172	− 0.002	− 0.165	0.011	− 0.186	− 0.011
C <sub>3</sub>	− 0.026	− 0.049	− 0.089	− 0.064	− 0.058	− 0.089	− 0.070	− 0.051	− 0.048
C <sub>4</sub>	− 0.038	0.056	− 0.131	− 0.120	0.076	− 0.120	0.082	− 0.124	0.073
X				0.399***	0.272***				
X <sub>1</sub>						0.303***	0.186**		
X <sub>2</sub>	0.506***	0.059						0.387***	0.264***
M <sub>1</sub>		0.671***							
M <sub>2</sub>					0.339***		0.394***		0.346***
R <sup>2</sup>	0.269	0.498	0.067	0.224	0.265	0.158	0.235	0.215	0.262
F	13.274***	29.568***	3.260*	10.411***	10.757***	6.746***	9.174***	9.855***	10.605***
MAX VIF	1.452	1.470	1.452	1.453	1.491	1.457	1.489	1.452	1.496

**Table 9.** Results of the grouping where the purpose of purchase is to give away (2).

this paper uses empirical data collected from 540 respondents on platform satisfaction, customer perceived value, individual subjective intention, and the influencing mechanisms of individual willingness to use the new platform to draw the following conclusions:

First, customer satisfaction with the platform positively affects the customer’s willingness to use the new platform. When a customer chooses to use a new online shopping platform for cosmetics and skincare, the expected experience is satisfied in the process of using it, which will result in a sense of satisfaction. When the experience in the process of using it exceeds the expectation, the higher the customer’s pleasure with the platform, and the more inclined they are to choose to use this new online shopping platform.

At the same time, when customers choose to use a new online shopping platform, they will consider the risk and cost of using the platform. When customers think that their personal information and payment methods are safer when using a new platform, they will be more inclined to choose this new online shopping platform, and vice versa, they will be inclined to choose the existing online shopping platforms that they are familiar with. Moreover, there will be the cost of time and energy when customers are exposed to new online shopping platforms, and when customers think that the cost they need to pay for the use of a new online shopping platform is higher than the value of the harvest, they will refuse to use the new online shopping platform.

Second, customer-perceived value performs a mediating function between platform satisfaction and customers’ intention to use the new platform. The outcomes of the study exhibit that in both dimensions of platform satisfaction, customer satisfaction with the platform affects the customer’s perceived value, which in turn affects the customer’s willingness to choose a new online shopping platform.

Meanwhile, personal subjective willingness also performs a mediating function between platform satisfaction and customers’ willingness to use the new platform. The regression results show that after adding the variable of personal subjective willingness, the regression results of platform satisfaction and personal subjective willingness on the willingness to use the new platform are both significant, indicating that personal subjective willingness also plays a mediating role.

Finally, it can be considered in the regression outcomes that the influence coefficient of platform use cost on the willingness to use the new platform is higher than that of platform use risk, indicating that users will pay extra interest to the consideration of cost when choosing whether to use the new online shopping platform. The influence factor coefficient of customer perceived value on the willingness to use the new platform is higher than that of personal subjective will, indicating that customers will pay more attention to their own perceived value when choosing whether to use the new online shopping platform, and will pay less attention to the consideration of the external environment and interpersonal relationship.

**Theoretical contribution**

In terms of theoretical significance, this study provides new insights into the relationship between customers’ satisfaction with platforms and their willingness to use new online shopping platforms. Firstly, the research findings show that customer satisfaction with platforms has a positive impact on their willingness to use new platforms. This emphasizes the crucial role of customer satisfaction in the development of sales platforms and highlights the focus of developing entirely new online shopping platforms. At the same time, this study, based on the research findings of LIN et al.<sup>64</sup>, provides a profound insight into the methods of enhancing the stickiness of users of existing shopping platforms and the factors that companies should pay attention to in order to become industry leaders when building entirely new online shopping platforms, providing a theoretical basis for the relationship between product research and consumer behavior. Secondly, the research findings show that customer perceived value and personal subjective willingness act as bridges between customer satisfaction and willingness to use platforms, verifying Peng et al.’s conclusions from an empirical perspective<sup>65</sup>. In addition, this study has innovatively discovered that customer-perceived value plays a higher mediating role than individual subjective willingness. This provides a more cutting-edge research perspective for the study of perception of value theory. Making it compatible with the use platform makes it more practically significant. Finally, by

categorizing the satisfaction with using platforms into economic and non-economic costs, namely platform usage cost and platform usage risk, this study also suggests the economic costs that customers value more when they are willing to accept new shopping platforms. By integrating TRA, TAM and other theories, this study innovatively compares the gap in perceived value, external environment, and interpersonal relationships when using new online shopping platforms; providing a more comprehensive and novel theoretical perspective on customers' willingness to use new platforms.

### Practical contribution

First, The platform should hold appropriate promotional activities to attract consumers to turn their short-term and long-term shopping needs into reality, achieve shopping or "stockpiling" behavior, i.e. by holding promotional activities, enhancing consumer awareness, and thus increasing the willingness to use the platform. E-commerce enterprises should establish a user-friendly and humanized interface platform, making it easier for consumers to operate, saving them time and effort. Consumers are more willing to shop from such a platform, promoting the sustainable development of the platform.

Second, businesses looking to establish a new online shopping platform must focus on the platform's appeal to customers while minimizing risks and costs. The company should restrict bulk queries of customer information by business personnel through technical means, limit the export of customer information, and ban screen captures. It should also disable USB drives, portable hard drives, and other mobile storage devices through its terminal security system, and limit the types of tool software that can be installed on work computers. Additionally, the company should use technical means to physically isolate the business network and the office network, and establish a comprehensive internal security system for the enterprise.

At last, companies can promote the sustainable development of a new online shopping platform through the AAARR model. "AAARR" stands for "Acquisition, Activation, Retention, Revenue, Referral." The platform can organize multiple large marketing events regularly and lock in marketing resources to support the exposure of activities, creating a buzz and driving traffic to the platform. At the same time, focus on creating "viral marketing," utilizing the trust relationship between acquaintances to encourage existing customers to share the platform and guide users to spread the word.

### Shortcomings and prospects

This study still has certain shortcomings and needs to be similarly extended and deepened in the future.

First, this study concludes that customers' perceived value and individual subjective intentions mediate the relationship between platform delight and willingness to use the new platform, and future research could further look for other direct and indirect factors that influence customers' willingness to use the new platform.

Second, this paper takes customer satisfaction with the platform as the unbiased variable to examine the degree of its influence on the willingness to use the new platform. Future research can further construct a complete mannequin to discover the antecedent influencing elements affecting customer satisfaction with the platform, to deepen the understanding of the path of the platform satisfaction and the willingness to use the new platform.

### Data availability

All data are available on reasonable request, and directed to the corresponding author, Yifei Chen (00020@ahu.edu.cn).

Received: 23 May 2024; Accepted: 6 November 2024

Published online: 19 November 2024

### References

1. China Internet Network Information Center. The 51st statistical report on the development of the Internet in China [EB/OL].
2. Zhang, L. P. & Ren, S. P. Promoting the healthy development of consumer finance to unleash the consumption potential. *J. Manag. World.* **38**(05), 107–114+132+115–116 (2022).
3. Huang, B. & Matthew, P. When AI-based services fail: examining the effect of the self AI connection on willingness to share negative word-of-mouth after service failures. *Serv. Ind. J.* **41**(13–14), 877–899 (2021).
4. Zhu, Q. & Wang, X. Y. The influential mechanism of perceived product innovativeness on consumers' purchase intention: The moderating role of country-of-origin image and price sensitivity. *Bus. Manag. J.* **38**(07), 107–118 (2016).
5. Devaraj, S., Ming, F. & Kohli, R. Antecedents of b2c channel satisfaction and preference: Validating e-commerce metrics. *Inf. Syst. Res.* **13**(3), 316–333 (2002).
6. Oliver, R. L. A cognitive model of the antecedents and consequences of satisfaction decisions. *J. Mark. Res.* **17**(4), 460–469 (1980).
7. Lapidus, R. S. & Pinkerton, L. Customer complaint situations: An equity theory perspective. *Psychol. Mark.* **12**(2), 105–122 (1995).
8. Hill, R., Fishbein, M. & Ajzen, I. Belief, attitude, intention, and behavior: An introduction to theory and research. *Philos. Rhetor.* **10**(2), 130–132 (1977).
9. Davis, F. D. Perceived usefulness, perceived ease of use and user acceptance of information technology. *Manag. Inf. Syst. Q.* **13**(3), 319–340 (1989).
10. Yang, K. Determinants of US consumer mobile shopping services adoption: Implications for designing mobile shopping services. *J. Consum. Mark.* **27**(3), 262–270 (2010).
11. Lin, H., Fan, W. & Chau, P. Y. K. Determinants of users' continuance of social networking sites: A self-regulation perspective. *Inf. Manag.* **51**(5), 595–603 (2014).
12. Li, H. X. & Liu, Y. Understanding post-adoption behaviors of e-service users in the context of online travel services. *Inf. Manag.* **51**(8), 1043–1052 (2014).
13. Shang, D. & Wu, W. Understanding mobile shopping consumers' continuance intention. *Ind. Manag. Data Syst.* **117**(1), 213–227 (2017).
14. Wang, S., Wang, J., Lin, S. & Li, J. Public perceptions and acceptance of nuclear energy in China: The role of public knowledge, perceived benefit, perceived risk and public engagement. *Energy Policy.* **126**, 352–360 (2019).



15. Zeithaml, V. Consumer perceptions of price, quality and value: A means-end model and synthesis of evidence. *J. Mark.* **52**(3), 2–22 (1988).
16. Dinev, T. & Hart, P. An extended privacy calculus model for e-commerce transactions. *Inf. Syst. Res.* **17**(1), 61–80 (2006).
17. Chawla, N. & Kumar, B. E-commerce and consumer protection in India: The emerging trend. *J. Bus. Ethics.* **180**(2), 581–604 (2022).
18. Sedighi, M., Splunter, S. V., Brazier, F., Beers, C. V. & Lukosch, S. Exploration of multi-layered knowledge sharing participation: The roles of perceived benefits and costs. *J. Knowl. Manag.* **20**(6), 1247–1267 (2016).
19. Zhang, L., Shao, Z., Li, X. & Feng, Y. Gamification and online impulse buying: The moderating effect of gender and age. *Int. J. Inf. Manag.* **61**, 102267 (2021).
20. Cheong, P. Mobile internet acceptance in Korea. *Internet Res.* **15**(2), 125–140 (2005).
21. Greine, M. E. & Wang, H. Building consumer-to-consumer trust in e-finance marketplaces: An empirical analysis. *Int. J. Electron. Commer.* **15**(2), 105–136 (2010).
22. Muller, E. & Peres, R. The effect of social networks structure on innovation performance: A review and directions for research. *Int. J. Res. Market.* **36**(1), 3–19 (2019).
23. Chen, Y. & Xu, J. Digital transformation and firm cost stickiness: Evidence from China. *Fin-ance Res. Lett.* **52**, 103510 (2023).
24. El-Adly, M. I. Modelling the relationship between hotel perceived value, customer satisfaction, and customer loyalty. *J. Retail. Consum. Serv.* **50**, 322–332 (2019).
25. Zhu, G., Ma, L., Sunanda, S. W. & Lv, T. J. Consumer adoption model and empirical research based on social cognitive theory. *Nankai Bus. Rev. Int.* **13**(03), 12–21 (2010).
26. Davis, F. D. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Q.* **13**(3), 319–340 (1989).
27. Joung, J. & Kim, H. Interpretable machine learning-based approach for customer segmentation for new product development from online product reviews. *Int. J. Inf. Manag.* **70**, 102641 (2023).
28. Kim, H. W., Chan, H. C. & Gupta, S. Value-based adoption of mobile internet: an empirical investigation. *Decis. Support Syst.* **43**(1), 111–126 (2007).
29. Adapa, S. et al. Examining the antecedents and consequences of perceived shopping value through smart retail technology. *J. Retail. Consum. Serv.* **52**(1), 101901 (2020).
30. Moshlepour, M., Pham, V. K. & Wong, W. K. E-purchase intention of taiwanese consumers: sustainable mediation of perceived usefulness and perceived ease of use. *Sustainability.* **10**(1), 1–17 (2018).
31. Lin, H. F. Predicting consumer intentions to shop online: An empirical test of competing theories. *Electron. Commer. Res. Appl.* **6**(4), 433–442 (2008).
32. Chen, Z. & Dubinsky, A. J. A conceptual model of perceived customer value in e-commerce: A preliminary investigation. *Psychol. Mark.* **20**(4), 323–347 (2010).
33. Lee, M. C. Factors influencing the adoption of internet banking: an integration of tam and tpb with perceived risk and perceived benefit. *Commer. Res. Appl.* **8**(3), 130–141 (2009).
34. Bhattacharjee, A. Individual trust in online firms: Scale development and initial test. *J. Manag. Inform. Syst.* **19**(1), 211–241 (2002).
35. El-Adly, M. I. Modelling the relationship between hotel perceived value, customer satisfaction, and customer loyalty. *J. Retail. Consum. Serv.* **50**(9), 322–332 (2019).
36. Liang, T. P., Lin, Y. L. & Hou, H. C. What drives consumers to adopt a sharing platform: An integrated model of value-based and transaction cost theories. *Inf. Manag.* **58**(4), 103471 (2021).
37. Blut, M., Chaney, D., Lunardo, R., Mencarelli, R., & Grewal, D. Customer perceived value: A comprehensive meta-analysis. *J. Serv. Res.* 10946705231222295 (2023).
38. Xu, L. & Meng, Z. The role of membership fees in online retail market competition. *Res. Int. Bus. Finance* **67**, 102089 (2024).
39. Lin, X., Zhou, Y. W., Xie, W., Zhong, Y., & Cao, B. Pricing and product-bundling strategies for e-commerce platforms with competition. *Eur. J. Oper. Res.* **283** (2020).
40. Yang, C. Z. Research on effect of filed scene experience on network information sharing intention in brand crisis. *Soft Sci.* **34**(01), 65–69+82 (2020).
41. Taylor, S. & Todd, P. Decomposition and crossover effects in the theory of planned behavior: a study of consumer adoption intentions. *Int. J. Res. Mark.* **12**(2), 137–155 (1995).
42. Kang, J., Mun, J. M. & Johnson, K. In-store mobile usage: downloading and usage intention toward mobile location-based retail apps. *Comput. Hum. Behav.* **46**(5), 210–219 (2015).
43. Cui, X. L. & Narisa. Modeling of online word-of-mouth information diffusion based on consumer trust relationship. *J. Syst. Manag.* **29**(6), 1090–1100 (2020).
44. Wang, B. Research on the evolution mechanism of knowledge transfer stock under the perspective of network convergence effect. *Inf. Stud. Theory Appl.* **36**(5), 45–49 (2013).
45. Rather, R. A. Demystifying the effects of perceived risk and fear on customer engagement, co-creation and revisit intention during COVID-19: A protection motivation theory approach. *J. Destin. Market. Manag.* **20**, 100564 (2021).
46. Lee, M. K. & Turban, E. A trust model for consumer internet shop\*\*. *Int. J. Electron. Commerce.* **6**(1), 75–91 (2001).
47. Uzir, M. U. H., Halbusi, H. A., Thurasamy, R., Hock, R. L. T. & Hamid, M. The effects of service quality, perceived value and trust in home delivery service personnel on customer satisfaction: Evidence from a developing country. *J. Retail. Consum. Serv.* **63**(2), 102721 (2021).
48. Xin, B., Hao, Y. & Xie, L. Strategic product showcasing mode of E-commerce live streaming. *J. Retail. Consum. Serv.* **73**, 103360 (2023).
49. Tran, L. T. T. Managing the effectiveness of e-commerce platforms in a pandemic. *J. Retail. Consum. Serv.* **58**, 102287 (2021).
50. Kowalczyk, P., Siepmann, C. & Adler, J. Cognitive, affective, and behavioral consumer responses to augmented reality in e-commerce: A comparative study. *J. Bus. Res.* **124**, 357–373 (2021).
51. Scherer, R., Siddiq, F. & Tondeur, J. The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Comput. Educ.* **128**, 13–35 (2019).
52. Hajli, N., Sims, J., Zadeh, A. H. & Richard, M. O. A social commerce investigation of the role of trust in a social networking site on purchase intentions. *J. Bus. Res.* **71**, 133–141 (2017).
53. Wu, K. W., Vassileva, J. & Noorian, Z. How do you feel when you see a list of prices? The interplay among price dispersion, perceived risk and initial trust in Chinese C2C market. *J. Retail. Consum. Serv.* **25**, 36–46 (2015).
54. Kim, H., Chan, H. & Gupta, S. Value-based adoption of mobile internet: an empirical investigation. *Decis. Support Syst.* **43**(1), 116–126 (2007).
55. Sheth, J. N., Newman, B. I. & Gross, B. L. Why we buy what we buy: A theory of consumption values. *J. Bus. Res.* **22**(2), 159–170 (1991).
56. Sweeney, J. C., Soutar, G. N. & Johnson, L. W. The role of perceived risk in the quality-value relationship: A study in a retail environment. *J. Retail.* **75**(1), 77–105 (1999).
57. Roig, J. C. F., Garcia, J. S. & Tena, M. A. Perceived value and customer loyalty in financial services. *Serv. Ind. J.* **29**(6), 775–789 (2009).
58. Sweeney, J. C. & Soutar, G. N. Consumer perceived value: The development of a multiple item scale. *J. Retail.* **77**(2), 203–220 (2001).

59. Algesheimer, R., Dholakia, U. M. & Herrmann, A. The social influence of brand community: evidence from European car clubs. *J. Mark.* **69**(3), 19–34 (2005).
60. Bearden, W. O. & Etzel, M. J. Reference group influence on product and brand purchase decisions. *J. Consum. Res.* **9**(2), 183–194 (1982).
61. Ajzen, I. From intentions to actions: A theory of planned behavior. In *Action Control: From Cognition to Behavior*. 11–39 (1985).
62. Ziegler, A. Individual characteristics and stated preferences for alternative energy sources and propulsion technologies in vehicles: A discrete choice analysis for Germany. *Transp. Res. Pt. A-Policy Pract.* **46**(8), 1372–1385 (2012).
63. Musti, S. & Kockelman, K. M. Evolution of the household vehicle fleet: anticipating fleet composition, PHEV adoption and GHG emissions in Austin, Texas. *Transp. Res. Pt. A-Policy Pract.* **45**(8), 707–720 (2011).
64. Lin, C. How does perceived retail service innovativeness affect retail patronage intentions?. *Creat. Innov. Manag.* **28**(6), 519–532 (2019).
65. Peng, L., Zhang, W., Wang, X. & Liang, S. Moderating effects of time pressure on the relationship between perceived value and purchase intention in social e-commerce sales promotion: Considering the impact of product involvement. *Inf. Manag.* **56**(2), 317–328 (2019).

## Acknowledgements

The authors thank you to the editors and all reviewers for their comments and suggestion. The authors also appreciate the people who patiently participate in the study.

## Author contributions

P.X. develops overall research objectives, supervises and leads the planning and conducts of research activities. Y. J.S. prepares, creates, or expresses published content, especially to write a first draft, including substantive translation. Y.F.C. conducts research and collects data. X.R.W. determines the research method and makes the scale.

## Competing interests

The authors declare no competing interests.

## Additional information

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1038/s41598-024-79085-9>.

**Correspondence** and requests for materials should be addressed to Y.C.

**Reprints and permissions information** is available at [www.nature.com/reprints](http://www.nature.com/reprints).

**Publisher's note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

© The Author(s) 2024