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Influences of Reference Group on Users' Purchase Intentions in Network Communities: From the Perspective of Trial Purchase and Upgrade Purchase

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Abstract: Reference group is an important factor influencing users' purchase in the network communities. The reference group's influences involve informative influence and normative influence, and users' purchases are divided into the trial purchase and upgrade purchase. In different purchases, users have different product information, consumer experience, and purchase attitudes, making different responses to the reference group. Thus, a research model of reference groups' influences on users' purchase intentions from the perspective of trial purchase and upgrade purchase is constructed. The model and hypotheses are tested by analyzing 349 valid questionnaires. The results indicate that both informative and normative influences have significant positive effects on users' trial purchase intentions. Informative influence has a significant positive effect on users' upgrade intentions, while the normative influence on users' upgrade purchase intentions is not significant. Both informative influence and normative influence have significant positive effects on trust in the product. Trust in the product has a significant positive effect on trial purchase intentions, but its effect on upgrade purchase intentions is not significant. Purchase involvement positively regulates the relationship between informative influence and trial purchase intentions and negatively regulates the relationship between informative influence and upgrade purchase intentions. The results further enrich the theoretical system of users' purchase behaviors in a virtual environment. The research can also have important implications for network communities wishing to improve online marketing.

Keywords: reference group; informative influence; normative influence; trial purchase; upgrade purchase

1. Introduction

With the rapid development of the Internet, the network community characterized by information networking and interactive participation is booming. The network community is an efficient tool for information exchange and social communication. It has become an important channel for persons to exchange information and communicate emotions. Users can obtain and share information, establish an interpersonal network through the network community [1]. The network community largely meets the growing information needs and social needs of users. Many users who use the network community are consumers with potential or specific consumer needs, often use the community to search for product information, participate in shopping discussions, obtain valuable consumption information, and establish good interpersonal relationships [2]. A report conducted by iiMedia Group [3] pointed out that users' trust and dependence on the network community was gradually increasing. The users have



a habit of searching for relevant information and interacting with other members before purchasing goods. Using the network community to assist purchase has become a frequently used way of consumption for users.

The network community provides a low-cost and high-efficiency platform for disseminating consumption information. The information transmission is fast and large. Abundant information helps users to make purchase decisions. However, information sources are diverse. Useful and useless information is mixed in the network community. The complex information flow hides redundant information, and excessive information is far beyond users' processing ability [4]. Reducing the amount of information to an acceptable and processing level and obtaining valuable information for purchasing decisions is a practical problem. Because of the limitation of cognitive ability and the principle of minimizing the cost, users tend to choose the consumption information recommended by reference groups in the network community, which helps to reduce the burden of information processing and improve the efficiency of using external information to assist shopping [5]. The information recommended by the reference groups will increase the consumer knowledge and trust of users and affect users' purchase intentions [6]. Besides, users' purchases will also be affected by interpersonal factors, and the psychology of conformity is obvious [7]. Users will take the reference group as the comparison object and carry out self-evaluation to make their behavior results consistent with the reference group [8]. The behavior norms from the reference group will have a crucial influence on users' purchase intentions. When choosing products, users will comply with the norms and actively cater to the reference group's expectations to obtain recognition and approval. The reference group can have an informative and normative influence on users' purchase intentions in the network community.

Purchase is one aspect of consumer behavior. Consumers' purchases can be divided into various categories in terms of different criteria [9]. For the same kind of product, trial purchase and upgrade purchase are two typical purchase behaviors. Trial purchase refers to the first-time purchase, and upgrade purchase means that the consumer continues to purchase a new, enhanced version when they have already purchased a product [10,11]. For example, a consumer who had owned an iPhone 11 goes on to purchase an iPhone 12. Upgrade purchase belongs to repetitive purchase [12]. The reference group is an important factor influencing users' purchase intentions in network communities. Previous research has given little attention to reference groups' influence on users' purchase intentions from trial purchase and upgrade purchase. The difference between the reference group's influence on users' trial purchase and upgrade purchase intentions was not compared [13,14]. The users in different purchases have different product information, consumer experience, and consumer attitudes, which may have different responses to the reference group [14]. As two different purchases, how does the reference group differently influence users' trial purchase and upgrade purchase intentions in the network communities? Exploring this problem will help us understand the similarities and differences of influence from reference groups in two situations. Based on these, a research model explaining the reference group's influence on users' purchase intentions is constructed. Informative influence and normative influence of reference groups on users' purchase intentions in the trial purchase and upgrade purchase is discussed, which further enriches the theoretical system of users' purchase behaviors in the network environment.

The rest of our work is organized as follows. Section 2 provides a literature review to establish a theoretical framework for the research model for investigating the relationship between the reference group and users' purchase intentions. Section 3 proposes the research model and develops hypotheses. Section 4 reviews the research methodology, including the research design. Section 5 presents the results, and Section 6 concludes with discussions, contributions, implications, limitations, and future research.

2. Previous Literature

2.1. Reference Group Influence

Reference group refers to the individuals or groups compared and imitated by others and who are usually considered reliable persons in a certain field [15]. In recent years, with the development of social networking applications and more abundant information access channels, individuals have been able to more directly and conveniently access the reference group displayed in different identities [16]. Celebrities, idols, internet celebrities, and opinion leaders have a great influence on individuals.

The reference group has key influences on individuals' beliefs, attitudes, and decisions. These influences are mainly based on the fact that individuals will take the group as the reference and comparison object in self-evaluation to make their behavior results consistent with the reference group [17]. The reference group's influences on individual behaviors are mainly reflected in two aspects: informative influence and normative influence [18–20]. Informative influence entails that the reference group delivers information about themselves or others to the individuals, which works in two ways [6]. One is that individuals obtain direct information by communicating with the reference group. The other is that individuals obtain indirect information by judgment from the reference group's behaviors. Informative influence increases individuals' relevant knowledge by obtaining information from the reference group. It results from the joint action of information transmission and acceptance, which reflects an internalization process [21]. When individuals do not fully know something and perceive latent risks, they will actively seek a reference group's help and directly or indirectly collect relevant information. If the information that individuals get from the reference group increases their understanding of something, reduces the uncertainty, or improves individuals' abilities to deal with the latent risks, the informative influence will work.

Normative influence refers to when the reference group can give individuals some important rewards or punishments. Individuals positively obey the reference group's expectation to gain appreciation or avoid punishment [22]. Normative influence usually occurs in the context of social interaction. In the process of interpersonal interaction, individuals will feel the importance of following the group norms and actively establish identity with other members. Individuals usually compare themselves with the reference group, carry out self-evaluation seriously, and make some adjustments consistent with the reference group [23]. Normative influence can be divided into utility influence and value influence [7]. Utility influence reflects that individuals are forced to comply with group norms to ensure that their behaviors are "correct," meet the group's expectations, obtain recognition and appreciation, or avoid being punished. Utility influence works through obedience [19]. When individuals are recognized for meeting the group's expectations or avoid punishment for complying with group norms, obedience will occur [24]. Value influence reflects that individuals are voluntarily consistent with the reference group to get identification. Value influence works through identification [25]. When individuals voluntarily abide by the group norms, the identification will occur [7]. Normative influence is essentially a value choice and emotional response, guiding and maintaining the reference group's expected behaviors.

2.2. User Consumption Behavior

In the consumption situation, although consumers' attitudes and cognition play a leading role in consumer decision-making, the reference group will also influence consumers' purchase behaviors to a great extent. The reference group provides consumers with product information and group norms, enhancing the consumers' consumption intentions. The higher the degree of consumers' socialization, the closer the interpersonal relationship, the greater the reference group's influence on consumer behavior [26].

Consumers' behaviors can be affected by informative influence and normative influence from reference groups [27]. The informative influence originates in consumers' desires to obtain information from the reference group to understand reality, reduce the perceived purchase risks, and make the

right purchase decisions under the condition of sufficient information [28]. When consumers are not familiar with the products, they will actively collect recommended information from the reference group. The informative influence of the reference group will promote the purchase decision-making process. The reference group's suggestions will influence consumers' perceptions and attitudes towards products and influence their product choices. Ma, Krishnan, and Montgomery [29] found that consumers could process more efficiently and deeply for the consumption information from a reference group and have a more profound memory, positively influencing their subsequent purchase behaviors. Park et al. [30] studied the relationships between reference groups and purchase decision-making, and found that informative influence can enhance consumers' cognition and emotion and improve their purchase intentions. Yan, Peng, and Tan [31] investigated the reference group's informative influence in virtual brand communities. The results showed that the recommended information could influence consumers' purchase intentions by reducing purchase uncertainty. Etemad-Sajadi [32] proposed that opinion leaders' comments positively influenced users' perceived value and loyalty of the products, which promoted the repurchase intentions in the C2C shopping community.

Similarly, consumers will also be influenced by normative pressure from reference groups in the decision-making process. The group norms from reference groups will have important influences on consumers' cognition, attitudes, and behaviors, forcing them to abide by group norms in purchase decisions [18]. Consumers usually actively meet the reference group's expectations, strive to comply with the group norms. The normative influence from the reference group will influence consumers' intentions. Harris, Brookshire, and Chin [33] analyzed the relationship between the reference group's influence and consumer behaviors and found that the reference group's normative influence positively correlates with consumption intentions. Goodman et al. [34] further pointed out that opinion leaders' deeds have a prominent exemplary role, directly affecting users' purchase decisions. Hew et al. [35] claimed that consumers could judge product quality by observing other persons' behaviors, their behaviors can have an important effect on consumers' purchase intentions in virtual communities. Further, Hong [36] found that reference groups' normative influence positively influences and analyzed group norms' influence on users' perceived benefit, community commitment, and repurchase intention.

Previous studies have discussed the relationship between the reference group's influences and consumers' purchase intentions. However, the internal psychological factors have not been paid enough attention. For example, as an important factor influencing consumers' intentions, purchasing trust plays a role in the reference group's influences and consumer purchase intentions. Besides, in trial purchases and upgrade purchases, consumers have different product information, consumer experience, consumer attitudes, etc. Consumers can make different responses to the influences of the reference group. It should compare and analyze the reference groups' influences on consumers' purchase intentions in different decision-making processes. Therefore, it is meaningful to explore the reference group's influence on users' purchase intentions from trial purchase and upgrade purchase.

3. Research Model and Hypotheses

3.1. Research Model

Based on the previous literature, a research model of the influences of reference groups on users' purchase intentions in network communities is presented in Figure 1. The basic model's constructs are informative influence, normative influence, trust in product, trial purchase intention, upgrade purchase intention, and purchase involvement. The relationships among these variables are shown clearly in the model.



Figure 1. Research model with hypotheses.

3.2. Hypotheses Development

3.2.1. Reference Group Influence and Purchase Intention

(1) Informative influence and purchase intention

The function of the reference group's information influence is to provide consumers with relevant product information and influence their purchase decisions. Verkijika [38] put forward that consumers would take the initiative to communicate directly with the reference group to obtain relevant consumption information and make purchase decisions. Bringula et al. [39] analyzed the relationship between the reference group and consumers' purchase intentions and found that the reference group's informative influence has a significant positive effect on consumers' purchase intentions. Zahid and Dastane [40] pointed out that the reference group's informative influence improved consumers' willingness to buy luxury goods. In trial purchases, users have less information and a limited understanding of a product. Using the information recommended by the reference group can make up for the lack of product information, increase the understanding of a product, and encourage users to make purchase decisions [8,17]. Upgrade purchase means that users continue to purchase improved or new products after purchasing the original products [11,41]. In upgrade purchase, new product information recommended by the reference group can supplement users' existing information, make them have more comprehensive understanding of the products, and enhance users' purchase intentions [14]. Therefore, the reference group's information promotes users' purchase intentions in the network communities. The hypothesis is shown as follows:

Hypothesis 1a (H1a). Informative influence of reference group has a positive effect on users' trial purchase intention.

Hypothesis 1b (H1b). *Informative influence of reference group has a positive effect on users' upgrade purchase intention.*

(2) Normative influence and purchase intention

Group norms influence individuals' behavior intentions. When individuals' behavior is inconsistent with the group to which they belong, the difference will cause psychological pressure and discomfort [42]. To eliminate such differences and avoid being punished, individuals will be motivated to act by the group and abide by group norms. It has been found that persons are vulnerable to influence from group norms in existing research studies on consumers' purchasing decisions. Jadhav & Khanna [43] studied group norms' influence on consumers' purchase intention using a

scenario simulation experiment. The results showed that group norms influenced consumers' purchase intentions through perceived value. Arif et al. [44] confirmed that group norms from reference groups easily influenced consumers' purchase intention, the perceived risk is higher, and the influence is more obvious. Users are not familiar with a product and lack comprehensive product information in the trial purchase [45]. On the one hand, users urgently need to obtain information through reference groups and become familiar with the product to make purchase decisions. On the other hand, users also hope to learn from the reference group's practice to make purchase decisions and ensure that the decisions are "correct" and recognized by group members [46]. Therefore, the normative influence from the reference group can promote users' purchase intention in the trial purchase. Normative influence is accumulative and will gradually increase in the future. As time goes on, the relationship between users and reference groups is strengthened in the upgrade purchase [20]. Users become more reliable in reference groups and form a certain "alliance." Their links have changed from obtaining information to safeguarding group interests, which will make users more actively abide by group norms. Therefore, the reference group's normative influence will have a greater effect on the formation of users' purchase intention to upgrade purchases [14]. Thus, the hypothesis is shown as follows:

Hypothesis 2a (H2a). Normative influence from a reference group has a positive effect on users' trial purchase intention.

Hypothesis 2b (H2b). *Normative influence from a reference group has a positive effect on users' upgrade purchase intention.*

3.2.2. Reference Group Influence and Trust in the Product

There are many ways to establish trust. On the one hand, individuals may directly judge the credibility of the trustee. On the other hand, individuals can also indirectly assess the trustee's credibility by referring to others' information or behaviors [47]. There is no face-to-face communication between buyers and sellers in many transactions. Consumers can not directly check the quality of goods, and the uncertainties stimulate consumers to evaluate carefully the purchase risk. Referring to others' information or behaviors can reduce the perceived risk [48]. Consumers will establish trust in products based on recommended information by reference groups or reference groups' behaviors. Gumussoy [49] found that consumers could actively refer to other persons' suggestions when purchasing goods, and reference groups' suggestions would influence consumers' trust tendency. Hsiao, Chang, and Tang [50] proposed that consumers would use the reference group's information to establish the relationship between themselves and products, increase the understanding of products, and promote consumers' trust in products. In the network community, information sharing among users is a kind of communication behavior with mutual help. Referring to information recommended by reference groups, users can understand specific products and establish trust in the product [51]. Thus, the hypothesis is shown as follows:

Hypothesis 3 (H3). Informative influence from a reference group has a positive effect on users' trust in the product.

Due to normative influence, individuals' performance confronts potential awards or punishments from the group [45]. An individual's compliance in-group norms will make their behaviors conform to the group's expectations and be recognized by the group [52]. Non-compliance will make an individual's actions deviate from group norms and be punished [53]. Group norms have an important effect on an individual's cognition and behaviors. The individual usually reduces the potential behavior risk by complying with the group norms [54]. Therefore, in the purchase, on the one hand, an individual's compliance with the group norms can stem from recognizing group norms. This compliance will promote an individual to believe voluntarily in products recommended or purchased by the reference group. So the compliance as a result of recognization will lead to individuals' trust in products. On the

other hand, an individual's compliance with the group norms can also originate from the deterrence of group norms. This compliance will force the individual to believe in the products recommended or purchased by the reference group. So the compliance resulting from deterrence will also lead to an individual's trust in products [55]. There is a close relationship among members in the network community, and normative influence is widespread. Users' cognition and behaviors tend to meet the reference groups' expectations, and group norms will influence users' trust tendencies [6]. So it can be inferred that the reference group's normative influence positively affects users' trust in the product. Through the above analysis, the hypothesis is put forward as follows:

Hypothesis 4 (H4). Normative influence from a reference group has a positive effect on users' trust in the product.

3.2.3. Trust in Product and Purchase Intention

Trust is a prerequisite for a successful transaction. Trust in a product is an important factor influencing persons' purchase intention, and there is a close relationship between trust in a product and purchase intention [56]. Hong and Cha [57] proposed that trust was an antecedent variable of purchase in the social business environment and positively affected consumers' purchase intentions. Wang, Huang & Zhou [13] claimed that trust in a product could reduce consumers' perceived risks in the transaction and enhance their purchase desires. It was a crucial factor in promoting consumers' first-time purchases. Further, Yang [58] found that consumers' trust in products was dynamic and leaped from a simple cognitive level to a higher emotional level with the accumulation of time and experience. With the deepening of trust, consumers' willingness to repurchase was enhanced [59]. Therefore, it can be inferred that trust in a product can significantly promote users' trial purchase intention and upgrade purchase intention. According to the above analysis, the hypothesis is shown as follows:

Hypothesis 5a (H5a). Trust in the product has a positive effect on users' trial purchase intention.

Hypothesis 5b (H5b). Trust in the product has a positive effect on users' upgrade purchase intention.

3.2.4. Moderation Effect of Purchase Involvement

Purchase involvement refers to the degree of care required by purchase or the amount of effort expended on the purchase based on consumers' own needs, values, interests, etc. [9]. Purchase involvement can play a moderating role in the relationship between informative influence and purchase intentions.

In trial purchase, when users know little about the product, it is not easy to make a purchase decision based on their product knowledge. Before purchase, users are more sensitive to the potential risks and have intense desires to deeply understand the product and process the product information. Users usually collect information extensively, make evaluations carefully, understand product quality, price, and other attributes in detail, and avoid purchase risk. At this time, users' purchase involvement is high. They pay more attention to product information. Users will actively use the information recommended by reference groups to make decisions. Informative influence has great effects on purchase intentions. So, it can be inferred, the higher the purchase involvement, the greater the influence of information on users' purchase intentions in the trial purchase [60].

On the contrary, in upgrade purchase, users are familiar with the product and have their own purchase experience. They feel that the purchase risk is in control and are unwilling to spend too much time and energy collecting product information again before purchasing. Users will seek other support to make a purchase decision. They tend to purchase products according to their own experience or referring to other persons' behaviors [61]. If users' purchase involvement is higher, they pay less attention to product information, and informative influence has less effect on purchase intentions.

Therefore, it can be inferred, the higher the purchase involvement, the less influence of information on users' purchase intentions in upgrade purchase. Through analysis, the hypothesis is shown as follows:

Hypothesis 6a (H6a). *Purchase involvement positively regulates the relationship between informative influence and trial purchase intention.*

Hypothesis 6b (H6b). Purchase involvement negatively regulates the relationship between informative influence and upgrade purchase intention.

4. Research Methods

4.1. Respondents

After the preliminary completion of measurement variables development, one e-commerce scholar and two marketing scholars reviewed the measurement variables and provided feedback on the length and clarity of each item. Besides increasing the measurement model's validity, 30 network community users with rich consumption experience were invited to participate in an offline survey. According to the test results and users' feedback, the initial questionnaire was revised several times. The formal questionnaire was distributed on the Internet, and the objects were users in WeChat. The questionnaires were spread through acquaintances and friends, and users were invited to fill in the questionnaires. The respondents were informed of the survey's purpose and the network community's concept was explained to them through some examples before starting the questionnaires. A total of 376 questionnaires were collected in this survey. Out of the responses, 27 invalid questionnaires were excluded because of similar options, malicious answers, missing items, etc. Finally, a total of 349 valid questionnaires were obtained. The demographics of the survey respondents are shown in Table 1. The proportion of males and females is 53.3% and 46.7%, respectively. Respondents in the age of 18–33 account for 76.5%. This shows that respondents are mostly young persons. These persons are active users in network communities and pay more attention to consumer issues, and are willing to discuss on the Internet. From the perspective of education level, 81.95% of the respondents have a bachelor's degree or above and have a higher knowledge level. The respondents can fully understand items and correctly answer questions according to their judgment, ensuring the survey's accuracy. Of the respondents, 53.58% have used a network community for 3–5 years, and 58.45% have online purchase experience for 3 years or more. The results show that most of the respondents are familiar with network applications, ensuring the survey's quality. On the whole, this survey is representative and effective.

Demographic Categories	Range	Frequency	Percentage (%)
	male	186	53.30
Gender	female	163	46.70
	under 18	27	7.74
	18-23	153	43.84
Age	24-33	114	32.66
	34-45	44	12.61
	More than 45	11	3.15
	high school	19	5.44
	College	35	10.03
Education level	university	164	46.99
	Postgraduate study	122	34.96
	other	9	2.58
	<1 year	13	3.72
I ongth of notwork community use	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	33.81	
Length of network community use	\geq 3, <5 years	187	53.58
	≥5 years	31	8.88
	<1 year	26	7.45
Length of online shopping use	$\geq 1, <3$ years	119	34.10
	≥3 years	204	58.45

4.2. Measurement

The items for each construct refer to the measurement scales in previous research. According to the network community and Chinese culture characteristics, the sample is modified to meet the proposed model's needs. For example, informative influence and normative influence were measured using items adapted from the study [14]. Informative influence consists of three items, and normative influence consists of four items. Trust in the product was measured using items adapted from several studies [62,63], consisting of four items. Purchase involvement was developed by modifying and amalgamating some items from these studies [64,65], which is composed of four items. Purchase intention was developed by modifying and amalgamating some items from these studies [57,66]. The trial purchase intention consists of three items; the upgrade purchase intention consists of three items. For all items, a five-point Likert scale ranging from "strongly disagree (1)" to "strongly agree (5)" was employed. Appendix A shows the final measurement items.

5. Data Analysis and Results

Following the two-step approach recommended by Anderson and Gerbing [67], we first examine the measurement model to verify the instrument's reliability and validity and then assess the structural model. The covariance-based SEM is the appropriate approach for this study, and AMOS v22.0 (IBM, Armonk, NY, USA) is used to estimate both the measurement and structural models [68]. The normality of samples is an important assumption for covariance-based AMOS estimation, so we first examine the skewness and kurtosis of the data to estimate the normality of samples [69]. The skewness values of items are between 0.117 to 2.463, which are below the threshold of 3.0. The kurtosis values of items range from 0.256 and 5.857, which are also below the threshold of 8 [70]. Therefore, the samples can be accepted as fulfilling the assumption of normality.

5.1. Assessment of the Measurement Model

Cronbach's coefficient (Cronbach's α) and composite reliability (C.R.) are used to assess scales' reliability [71]. The results are shown in Table 2. In each construct, values for Cronbach's α range from 0.795 to 0.913, and values for composite reliability range from 0.780 to 0.874, which were above the suggested threshold of 0.7. It indicates that the scale has good reliability [71]. Convergent validity was confirmed by examining both the indicator loadings and average variance extracted (AVE). As shown in Table 2, the standard loadings range from 0.682 to 0.828, above the desired threshold of 0.6. The average variance extracted (AVE) ranges from 0.543 to 0.635, which is higher than the recommended level of 0.5. It showed good convergent validity [71]. The test results of discriminant validity are shown in Table 3. The minimum in square roots of AVEs is 0.737, and the maximum in correlation coefficients is 0.679. Every square root of AVE exceeds the off-diagonal correlations between the constructs, demonstrating that the scale has good discriminant validity [72]. Besides, since each construct's items refer to mature scales in previous research, making some modifications according to the actual situation, and carrying out the prediction, the scale's content validity can be ensured.

As the data collected were self-reported from a single source, this might lead to a potential common method bias problem. Therefore, it is necessary to test and control the deviation of data. The extent of common method bias was assessed with Harman's single-factor test [73]. Exploratory factor analysis was carried out on all items. Six factors were extracted from the data. The first factor only explained about 32.631% of the variance. No single factor dominated a majority of the total variance. The result shows that the common method bias of data was not obvious. So the following analysis could be carried out.

Latent Variable	Item	Standard Loading	C.R.	Cronbach's a	AVE
	II1	0.776			
informative influence, II	II2	0.698	0.780	0.795	0.543
	II3	0.734			
	NI1	0.765			0.604
normative influence NI	NI2	0.828	0.859	0.877	
normative influence, M	NI3	0.749		0.823	
	NI4	0.764			
	TP1	0.695			
truct in the product TP	TP2	0.811	0.863	0.000	0.612
trust in the product, 11	TP3	0.792		0.902	
	TP4	0.824			
	PI1	0.762			0.635
purchase involvement PI	PI2	0.796	0.874	0.913	
purchase involvement, i i	PI3	0.806			
	PI4	0.821			
	TPI1	0.682			
trial purchase intention, TPI	TPI2	0.790	0.807	0.878	0.584
	TPI3	0.814			
	UPI1	0.786			
upgrade purchase intention, UPI	UPI2	0.772	0.835	0.904	0.628
	UPI3	0.819			

Table 2. Reliability and validity analysis.

Table 3. Discriminant validity test.

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Note: values in bold type along the diagonal indicate the square root of AVE.

5.2. Assessment of the Structural Model

After examining the measurement validity and reliability, we test the structural model. The structural model is estimated with AMOS v22.0. First, we estimate the model fit; the model fit indices' actual and recommended values are listed in Table 4. The model's fit indices are better than the recommended thresholds, demonstrating a good fit between the model and data. Next, path analysis can be carried out. Second, we estimate the hypotheses. The results are shown in Figure 2. Informative influence has a significant positive effect on trial purchase intention ($\beta = 0.403$, p < 0.001), providing support for H1a. Informative influence also has a significant effect on upgrade purchase intention $(\beta = 0.251, p < 0.01)$, providing support for H1b; Normative influence has a significant positive effect on trial purchase intention ($\beta = 0.224$, p < 0.05), providing support for H2a. However, normative influence has no significant effect on upgrade purchase intention ($\beta = 0.084$, p > 0.05), providing no support for H2b. Both informative and normative influences have significant positive effects on trust in the product $(\beta = 0.306, p < 0.001; \beta = 0.245, p < 0.01, respectively)$, providing support for H3 and H4. Trust in the product has a significant positive effect on trial purchase intention ($\beta = 0.383$, p < 0.001), providing support for H5a. However, trust in the product has no significant effect on upgrade purchase intention $(\beta = 0.156, p > 0.05)$, providing no support for H5b. Besides, the model successfully accounted for a fair amount of variability in trial purchase intention ($R^2 = 0.434$), and substantial variability in trust in the product ($R^2 = 0.382$) and upgrade purchase intention ($R^2 = 0.341$).



Table 4. Measures of the model fit.

Figure 2. Results of the research model tests. Note: * p < 0.05, ** p < 0.01, *** p < 0.001; ns: nonsignificant at the 0.05 level.

5.3. Moderating Effect

We conduct moderation analysis using PROCESS in SPSS 22.0 (IBM, Armonk, NY, USA) to test purchase involvement's moderating effect on the relationship between informative influence and purchase intention [74]. The results are shown in Table 5. In the influence of informative influence on the trial purchase intention, for the consumers with low purchase involvement, the influence effect (Effect size = 0.093) is smaller than that of the consumers with high purchase involvement (Effect size = 0.232), and the 95% bias-corrected CI excluded zero. This indicates that purchase involvement positively moderates the relationship between informative influence and trial purchase intention, providing support for H6a. Users' deep understanding of the product can improve the effect of informative influence on trial purchase intention. On the contrary, in the influence of informative influence on the upgrade purchase intention, for the consumers with low purchase involvement, the influence effect (Effect size = 0.169) is higher than that (Effect size = 0.075) of the consumers with high purchase involvement, and the 95% bias-corrected CI excluded zero. It indicates that purchase involvement negatively moderates the relationship between informative influence and upgrade purchase intention, providing support for H6b. Users' decision-making is more likely to rely on other support without product information in upgrade purchases.

Table 5. Test results of the moderator effect of purchase involvement.

Outcome Variable	Moderation Variable	Effect Size	Boot SE	LL 95% CI	UL 95% CI
זמד	Low PI	0.093	0.038	0.0380	0.1706
111	High PI	0.232	0.061	0.1175	0.3347
UPI	Low PI	0.169	0.043	0.1095	0.2645
	High PI	0.075	0.032	0.0314	0.1551

6. Conclusions

6.1. Discussion of Results

Through analysis, some interesting findings are observed, as follows:

(1) The informative influence has a significant positive effect on trial purchase intention and upgrade purchase intention and a lower effect on upgrade purchase intention, reflecting that users usually need to obtain more product information in the trial purchase. Lacking understanding of a product makes them actively obtain external information to reduce the purchase uncertainties and use the product information recommended by reference groups to make purchase decisions [8]. In contrast, users need to have a comprehensive understanding and evaluation of the trial purchase product. While in upgrade purchase, users have had more knowledge of the product and accumulated consumption experience, they will use their knowledge and experience to make purchase decisions. Information acquisition is relatively unimportant. However, in upgrade purchase, the product has been improved to a certain extent, and the user's understanding of the new product is not complete. The informative influence can just make up for this deficiency. Informative influence can still play a positive role in upgrade purchases [14]; only the degree is greatly weakened.

(2) Normative influence has a positive effect on trial purchase intention, which is inconsistent with previous research findings. Westphal, Gulati & Shortell [75] believe that the network community is a virtual community. The relationship among members is weak, and the establishment of community norms is slow. It takes a long time for normative influence to work. Users interact less with others and are not easily influenced by group norms in the trial purchase. Our work shows that it is different from most social networks that feature weak ties. The network communities selected are mostly the extension of real social relations, which have the characteristics of acquaintance relationship, and are relatively strong [6]. Group norms will influence users' behavior intentions from beginning to end. In trial purchase, users usually learn something by observation, conformity psychology is obvious, and make their own purchase decisions according to others' behavior.

The effect of normative influence on upgrade purchase intention is not significant, not consistent with relevant conclusions. Iyengar, Van den Bulte & Valente [10] believe that, in the repetitive purchase, users gradually become familiar with each other and form a specific relationship with the deepening of communication and interaction. Users have a deeper understanding of group norms, stronger community awareness, and normative influence greatly affects purchase decisions. The present result may be caused by the sample. In this study, the majority of respondents are young persons. They have more individual personalities and a strong desire to break from the convention and innovate. They always seek admiration or praise from others by unusual means. To a certain extent, it impacts the inherent constraints of group norms on individuals. So, the reference group's normative influence has no significant effect on users' purchase intention to upgrade purchases [76].

(3) Both informative influence and normative influence have positive effects on trust in the product. In the network community, users' interaction is a kind of communication behavior with mutual help. Using the information recommended by reference groups or abiding by group norms, users can easily understand specific products and establish trust in the product. Trust in products positively affects trial purchase intention, but its effect on upgrade purchase intention is not significant. These results may be caused by the interference of users' perceived risk. In trial purchase, users' perceived risk is higher. There is more dependence on the reference group, strengthening trust's influence on purchase intention [17]. While in upgrade purchases, as users have gained their understanding and experience, the perceived risk is lower. Users usually make purchase decisions mainly depending on their cognition and experience, which weakens the trust's influence on purchase intention [77].

(4) Purchase involvement positively moderates the relationship between informative influence and purchase intention in the trial purchase and negatively moderates the relationship between informative influence and upgrade purchase intention. In trial purchase, users know less about the product and are more sensitive to potential risks. They tend to deeply process the product information and try to avoid

the purchase risk. Therefore, purchase involvement is high, and the informative influence is strong [60]. In upgrade purchase, users are reluctant to spend too much time collecting relevant information due to their own consumption experience. Making purchase decisions mostly relies on their own cognitive or other support without product information [61]. The higher the purchase involvement, the less attention is paid to product information, so the effect of informative influence is weaker.

6.2. Contributions and Implications

6.2.1. Theoretical Contributions

The contributions of our work are concluded as follows. First, reference groups are important factors influencing users' purchase behaviors. Most studies have focused on the influences on users' trial purchase intentions or discussed the influences without distinguishing different purchase stages [17,78]. However, few studies have discussed the relationships between reference groups and users' purchase intentions from trial purchase and upgrade purchase. In this regard, the present study contributes to the literature by providing new insights into the relationships between the reference group and users' purchase intentions. Second, we confirm that normative influence has a significant positive effect on trial purchase intentions, but its effect on upgrade purchase intentions is not significant. It concludes with inconsistent research [10,75], and makes in-depth interpretation. In this regard, the present study supplements the reference group's existing conclusions on users' purchase intentions, trust in the product on purchase intentions, and the different moderating effects of purchase involvement. In this regard, it further enriches the theory of users' consumption behavior in a virtual environment.

6.2.2. Managerial Implications

In terms of practical implications, we make some important contributions to network community management. The informative influence of the reference group has a positive effect on users' trial purchase intention. The result reveals that the recommended information from community members will influence users' trial purchase decisions. Therefore, community managers should encourage users to communicate with each other, share information to provide more value to others, and give spiritual or material rewards to those enthusiastic users who actively help others solve problems. The normative influence of the reference group has a positive effect on users' trial purchase intention. It reveals that the example of a reference group will influence users' trial purchase decisions. Community managers should strive to attract those users with rich experience and extensive influence to set an example, guide users' consumption behaviors.

Besides, the reference group's informative influence and normative influence positively affect trust in the product. Therefore, it is necessary to use reference groups to reduce perceived consumption risks, enhance trust in the product, and promote users' purchase behaviors. Specifically, community managers should guide opinion leaders to master more product knowledge and consumption experience, encourage them to share the latest product information and purchase experience in time, to enhance trust in product and purchase intention. Besides, trust in the product has a positive effect on users' trial purchase intention. It reflects that risk concerns make users more dependent on the reference group in a trial purchase decision. Therefore, community managers should encourage opinion leaders to test products, share product information, and provide consumption knowledge and consumption experience to users. It will promote users' trust in the product and generate purchase intention.

6.3. Limitations and Future Research Directions

As in the case of many empirical studies, this present study has some limitations. First, the study only takes the users in Wechat as the research object, so the users' purchase intentions are differently influenced by the reference group in different network communities. Therefore, future studies should further explore the influence of reference groups on users' purchase intentions in other kinds of network

communities. Second, the present study only discusses the influence of reference groups on individuals' purchase intentions and does not consider the reference group's influence on group purchase intentions. Future research should also discuss the reference group's influence on the group's purchase intentions and analyze the reference group's influence on their decision-making. Third, the present study does not distinguish between different types of products. Purchase involvement varies from different kinds of products. For example, mobile phones, electronic readers, and laptops are normally considered as high purchase involvement products, while foods and drinks usually are considered as low purchase involvement products, which may alter the results and respective interpretations. Future studies may analyze the influence of reference groups on users' purchase intention according to a specific kind of product. Fourth, the fuzzy linguistic methods in measuring informative influence and normative influence considering the advantage of fuzzy linguistic methods in expressing uncertainty of normative and informative influence, fuzzy linguistic methods will be introduced to measure the normative and informative influence [79–81]. Fifth, this study does not consider the specific cultural context. In different cultural situations, the influence of the reference group on users' behavior may be different. Future studies should discuss the reference group's influence on users' purchase intentions according to specific cultural contexts.

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Construct	Item	Source	
Informative influence	 II1: If I have little experience with a product, I often ask my friends about the product. II2: I often consult other people to help choose the best alternative available from a product class. II3: I frequently gather information from friends or family about a product before I buy. 		
Normative influence	NI1: I often identify with other people by purchasing the same products they purchase. NI2: If I want to be like someone, I often try to buy the same product that they buy. NI3: If other people can see me using a product, I often purchase product they expect me to buy.		
	TP1. Purchase behaviors of other users set an example for me to purchase a product in		
Trust in the product	 TP2: Expectations of members promote my confidence in a product in the online community. TP3: Information provided by members enhances my product knowledge in the online community. TP4: Information sharing affects my attitudes towards the product in the online community. 	[62,63]	
Purchase involvement	PI1: I am very concerned about the information content of the product. PI2: I feel that the information content of the product is of great value to me. PI3: I need to understand the information content of this product. PI4: I will carefully study the information content of the product.		
Trial purchase intention	TPI1: I actively seek advice from community members in the trial purchase. TPI2: I will refer to the purchase experience shared by the community members in the trial purchase. TPI3: I was willing to purchase the products recommended by community members in the trial purchase.		
Upgrade purchase intention	grade purchase intention UPI1: I will actively seek advice from community members in the next purchase. UPI2: I will also refer to the community members' purchase experience in the next purchase. UPI3: I am still willing to purchase the products recommended by community members in a future purchase.		

Appendix A. Questionnaire

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